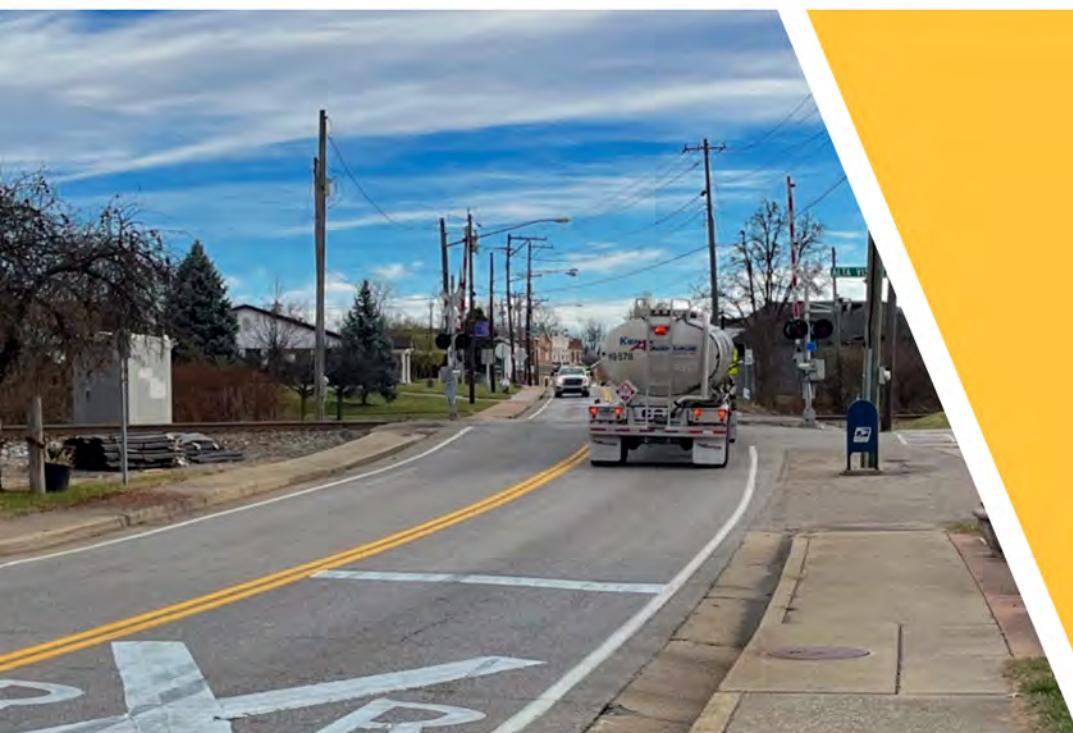




WALTON AREA CONGESTION RELIEF



US 25 Corridor Study

From KY 14/16 to North of the City of Walton
Boone and Kenton Counties, KY
Item No. 6-105.00

November 2023



Walton Area Congestion Relief

US 25 CORRIDOR STUDY

From KY 14/16 to North of the City of Walton,
Boone and Kenton Counties, KY
Item No. 6-105.00

Prepared for the
Kentucky Transportation Cabinet

by

LOCHNER

Michael Baker
INTERNATIONAL

November 2023

EXECUTIVE SUMMARY

INTRODUCTION AND STUDY BACKGROUND

Rapid growth in commercial, industrial, and residential land uses in the Walton area, coupled with a steady rise in freight traffic on US 25, has created a need to improve mobility and safety in the area. The Kentucky Transportation Cabinet, in cooperation with regional and local governments, initiated the Walton Area Congestion Relief Study to identify improvement options at several key locations in the area. This document presents the options developed for the US 25 corridor through Walton; other area congestion relief strategies, including improving the I-75/KY 14 interchange, are being studied separately.

Funding for this project is identified in Kentucky's 2022-2028 Enacted Highway Plan (generally referred to as the Six Year Highway Plan) as Item No. 6-105.00. Currently, the Six Year Highway Plan includes only planning funds for this project.

EXISTING CONDITIONS

The study area is located at the confluence of I-71 and I-75, approximately 13 miles south of the Cincinnati-Northern Kentucky International Airport and 16 miles southwest of downtown Cincinnati. The overall location of the project study area is shown in **Figure ES-1**. US 25 is one of the primary north-south routes through this area and is a major freight corridor. The I-71/I-75 corridor lies to the west of US 25 and includes the I-75/KY 14 interchange, at Walton. To the immediate east of US 25 for the majority of the project length, the CSX and Norfolk Southern railroad lines also run north-south, with several at-grade crossings in the Walton area.

The study segment of US 25 is a two-lane minor arterial located in one of the most rapidly developing areas in Kentucky. With a location that is advantageous to regional and national freight routes, and with extensive transportation infrastructure in place, northern Kentucky has become a hub for freight logistics and distribution services. With limited alternative routes, US 25 provides an important north-south connection for these industries.

Lined with historic buildings, US 25 serves as Walton's Main Street. It is used by a substantial number of pedestrians and includes on-street parking. With narrow 10-foot travel lanes and 1-foot shoulders, its design is not compatible with current or expected future traffic volumes and types, which, in addition to local use, includes an increasing volume of heavy trucks. Various intersections along US 25 are also deficient.

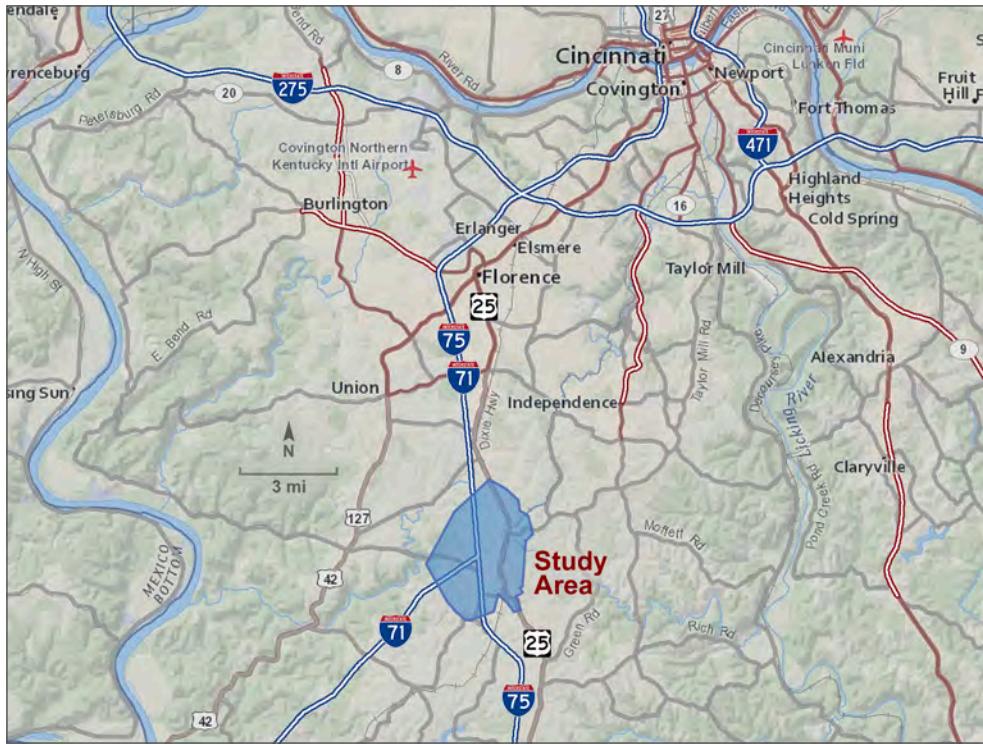


FIGURE ES-1 – Regional Location

There is local concern about recent increases in truck traffic on US 25, which is primarily the result of an increase in industrial development in the area. With many parcels on the periphery of Walton slated for additional industrial development, further increases in truck traffic on US 25 are expected. This is a concern because it is seen as incompatible with the City of Walton's goal of protecting its small-town character.¹

Currently, the corridor is not experiencing a large number of crashes, but the planned increase in industrial development to the north, east, and south of Walton will likely increase conflicts between vehicular traffic, pedestrians, and freight, which could increase the potential for crashes.

STUDY GOALS AND OBJECTIVES

The primary purpose of this project is to improve regional connectivity and accommodate ongoing growth in the Walton area. Additionally, the Boone County Trans-

¹ Walton Main Street Strategic Plan. 2015. https://www.boonecountyky.org/planning_commission/walton_main_street_strategic_plan.php. Accessed March 2023.

portation Plan emphasizes several county-wide goals, four of which are considered secondary purposes of this project:

1. Improve safety and security for all travelers
2. Provide sufficient future capacity and mobility
3. Facilitate freight logistics
4. Support economic vitality

To help achieve these goals, the concepts developed for this project should strive to address the mobility needs of pedestrians, cyclists, and transit users, should consider the needs of freight and rail operations, and should seek to remove truck traffic from US 25 through Walton, as much as possible. Doing so would help achieve the goals of improving safety and mobility, facilitating freight logistics, and supporting economic vitality.

IMPROVEMENT CONCEPTS CONSIDERED

Various concepts were developed for meeting the purpose of the project. These include Transportation System Management and Operations (TSMO) options and new corridor concepts. The No-Build concept also remains under consideration.

The No-Build Concept

The No-Build Concept would maintain the existing year (2023) lane configuration and traffic control for all study area roadways and intersections.

Transportation System Management and Operations (TSMO) Concepts

Referred to as spot improvements, three physical improvement TSMO concepts were developed, each intended to provide short-term, cost-effective ways of meeting the project purposes. Their locations are shown on **Figure ES-2**.

By providing operational improvements at three deficient locations, the proposed spot improvements would help achieve two of the Boone County goals: (1) Improve safety and security for all travelers, and (2) Provide sufficient future capacity and mobility. Improving sight distance and providing protected turns are expected to decrease crash frequency and thus improve safety. Removing turning movements from through lanes would help provide for future capacity and mobility. The spot improvements would not achieve the project's primary purpose, however: to improve regional connectivity and support ongoing growth in the Walton area.

Spot Improvement 1: US 25 and KY 14/KY 16 (Mary Grubbs Highway)

The US 25 and KY 14/KY 16 intersection is approximately 0.75 miles east of the I-75/KY 14 interchange. The US 25 southbound approach, between the north end

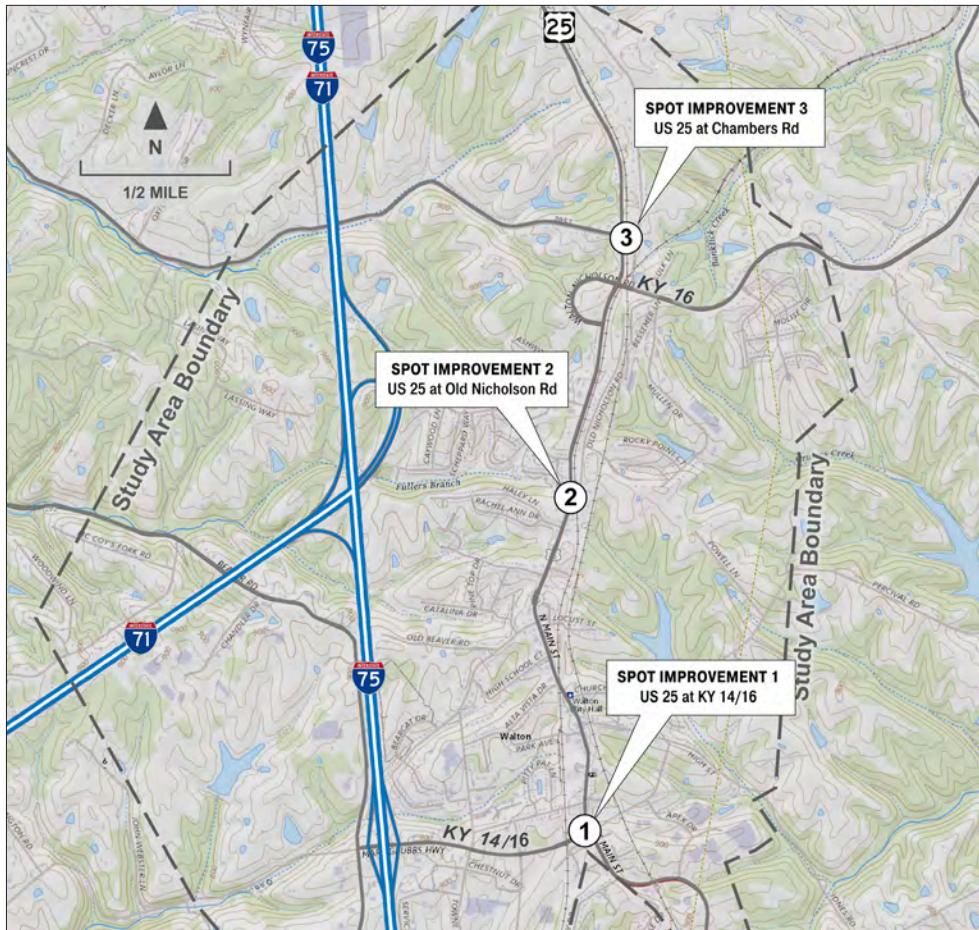


Figure ES-2 – Spot Improvement Locations

of Needmore Street and KY 14/KY 16, is a two-lane curb and gutter design. It abuts residential and business properties. Lack of dedicated storage or movement for right turn and through traffic causes delays and encourages cut-through traffic on local streets to reach KY 14/KY 16. The local streets in this area are not designed for the higher volumes caused by this cut-through traffic.

The KY 14/KY 16 eastbound approach to US 25 has documented crashes resulting primarily from lane change traffic movements. KY 16 is controlled access roadway, with dedicated left, through and right turn lanes and no private access.

As shown in red in **Figure ES-3**, Spot Improvement 1 would include widening this section to allow for dedicated right turn and through lanes, which would relieve traffic backups and reduce cut-through traffic. In this concept, the dedicated left turn lane would be extended for increased storage, along with upgraded striping, directional arrows, and signage, to improve traffic flow. Upgraded striping, directional arrows,

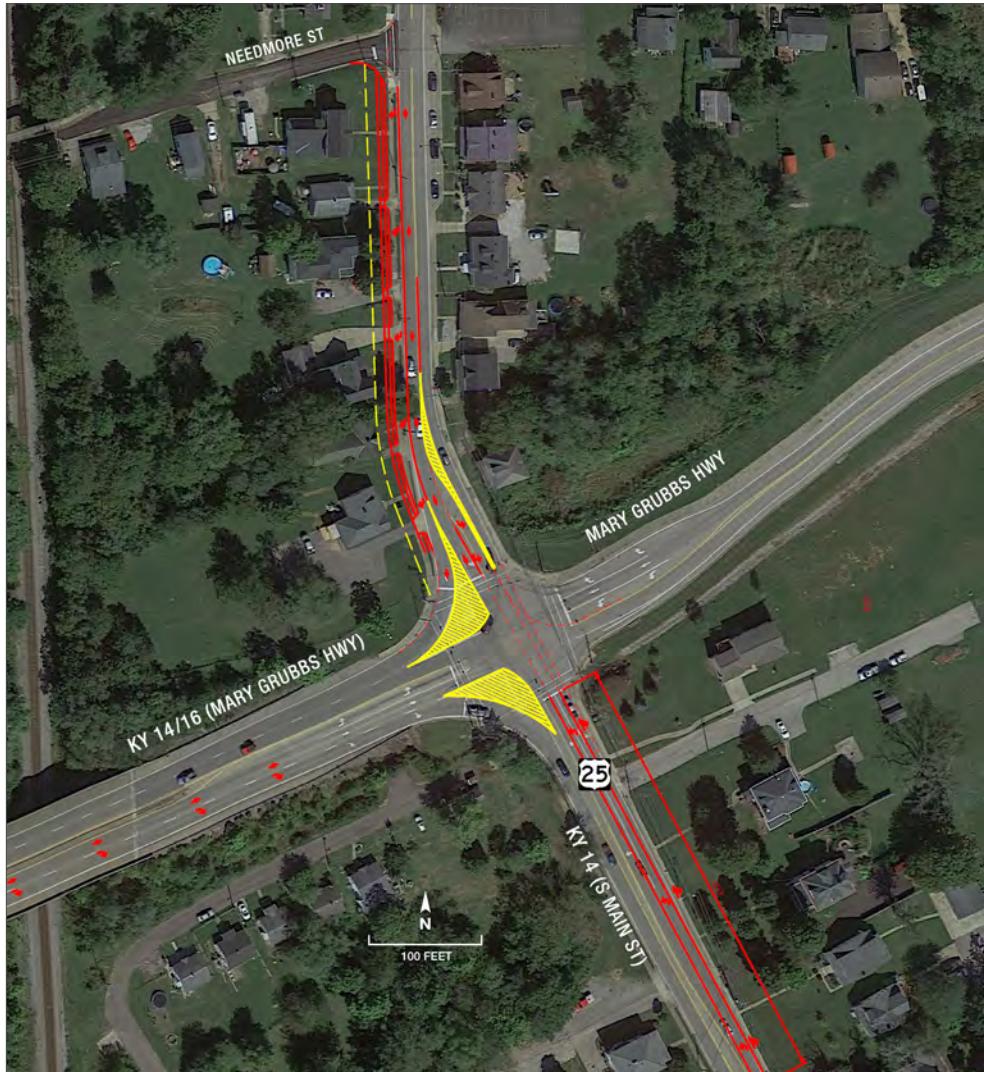


Figure ES-3 – Spot Improvement No. 1

and signing would be implemented on the KY 14/KY16 approach to improve traffic channelization, driver awareness, and safety.

This improvement would require two residential relocations, the purchase of additional right-of-way, relocation of utility service poles, relocation of storm sewer inlets, removal of driveway entrances, and modifications to existing sidewalks.

Spot Improvement 2: US 25 and Old Nicholson Road

The US 25/Old Nicholson Road intersection is approximately 1.3 miles north of the US 25 and KY 14/KY 16 intersection along US 25. As shown in **Figure ES-4**, the northern legs of the US 25 and Old Nicholson Road intersection are severely

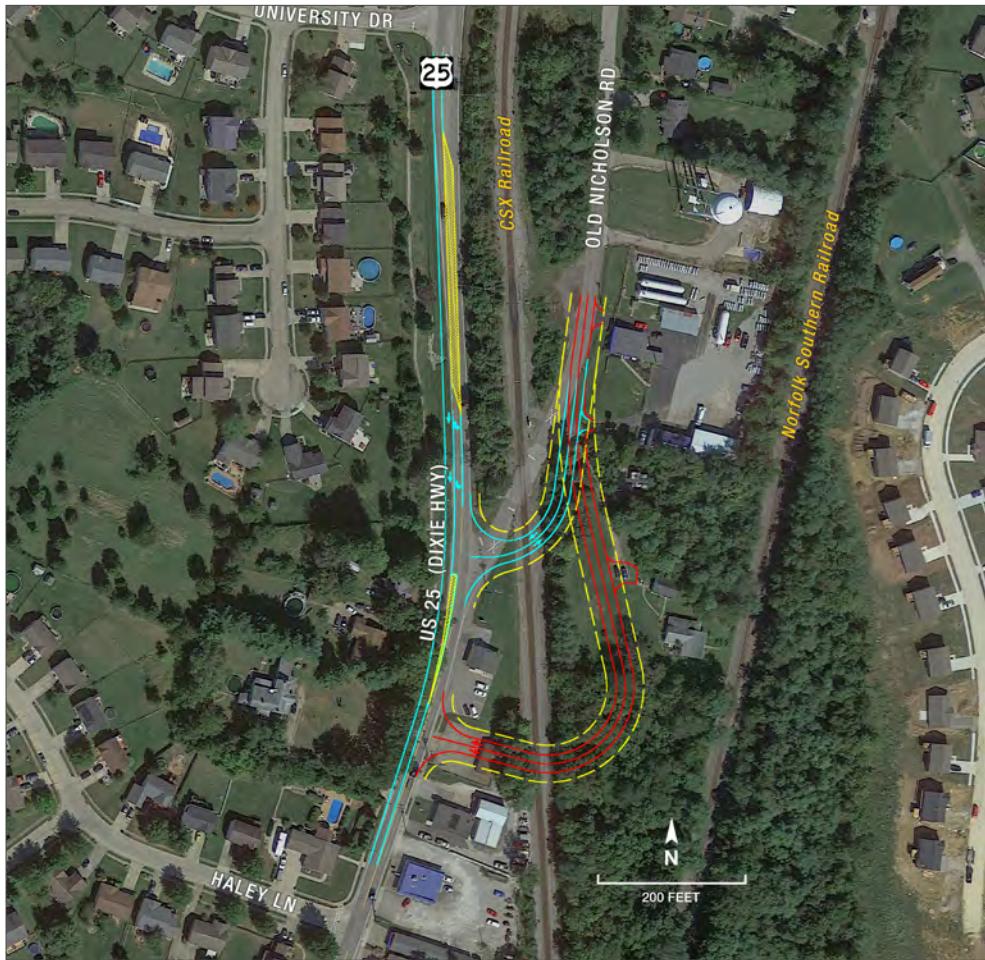


Figure ES-4 – Spot Improvement No. 2 Realignment Options (Red and Blue)

skewed (by approximately 26 degrees). This intersection serves as the only point of access to residents and businesses on Old Nicholson Road, which is a dead-end to the north. North of the US 25 intersection, an at-grade crossing with CSX railroad frequently causes traffic disruption and limits traffic storage on Old Nicholson Road between US 25 and the railroad crossing. The southbound right turn radius from Old Nicholson Road to US 25 is too sharp to accommodate semi-trailer trucks. Lack of left-turn storage from southbound US 25 to Old Nicholson Road can also cause disruption to through movements in this location.

As shown in **Figure ES-4**, Spot Improvement 2 includes two intersection realignment options for the CSX at-grade crossing (one in blue and one in red). The northern option (blue) would provide semi-trailer truck storage for left turns from southbound US 25 and improve the northbound right turn radius from Old Nicholson Road.

The southern option (red) would provide semi-trailer truck lane storage between US 25 and CSX Railroad and improve the right turn radius for southbound Old Nicholson Road to access northbound US 25. Widening and adding a left turn lane would likely not be necessary; storage for one tractor trailer would be sufficient at the railroad crossing.

The third option (green) would connect Old Nicholson Road to Mullen Drive, approximately 0.33 miles north of the existing Old Nicholson/US 25 intersection. This new connection would make it possible to close the Old Nicholson Road at US 25 and eliminate the at-grade crossing of the CSX railroad tracks. It would, however, require a new at-grade crossing of the Norfolk Southern tracks (see **Figure ES-5**).

The northern option (blue) would potentially affect utility poles and would require right-of-way acquisition. The southern option (red) would potentially require utility relocations, right-of-way acquisition, and one business relocation. Likely impacts associated with the third option (green) include utility relocations at the project termini and right-of-way acquisition from the Norfolk Southern Railroad.

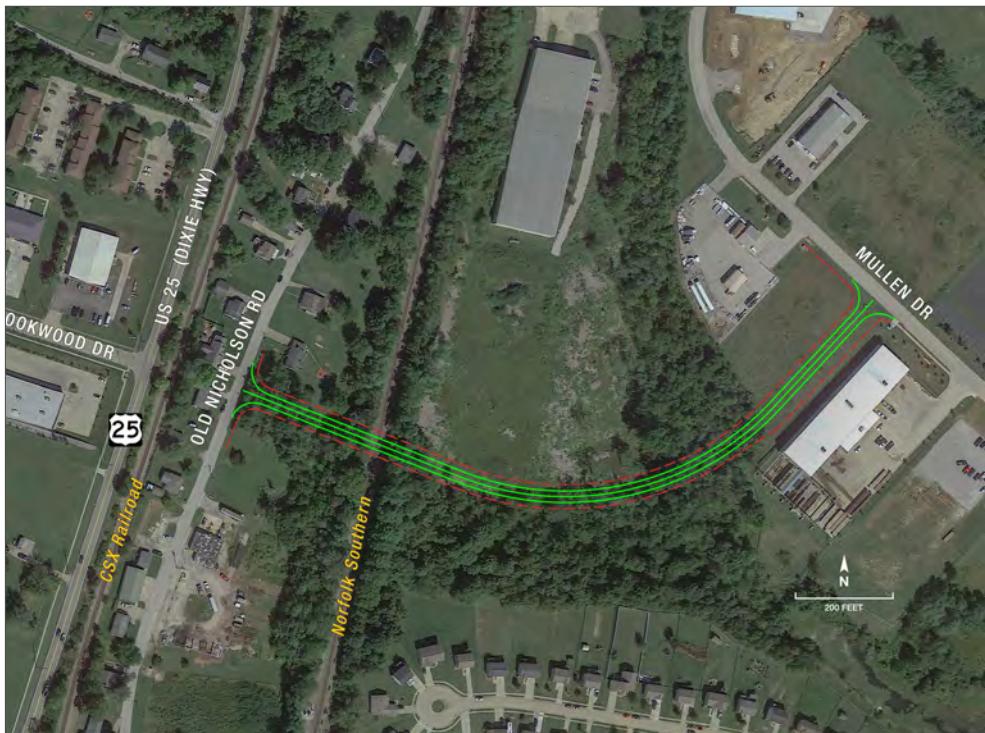


Figure ES-5 – Spot Improvement No. 2, Third Option (Green)

Spot Improvement 3: US 25 and Chambers Road

As shown in **Figure ES-6** (on the following page), Spot Improvement 3 includes improvements to the US 25/Chambers Road intersection, which is approximately 2.1 miles north of the US 25 and KY 14/KY 16 intersection.

US 25 has a two-lane rural cross section through the Chambers Road intersection. To the east, Chambers Road crosses the CSX railroad at-grade and ties into Old Lexington Pike. Turning radii and sight distances are deficient for traffic turning movements at this intersection. Land uses along Chambers Road and US 25 are primarily residential through this section of the study area.

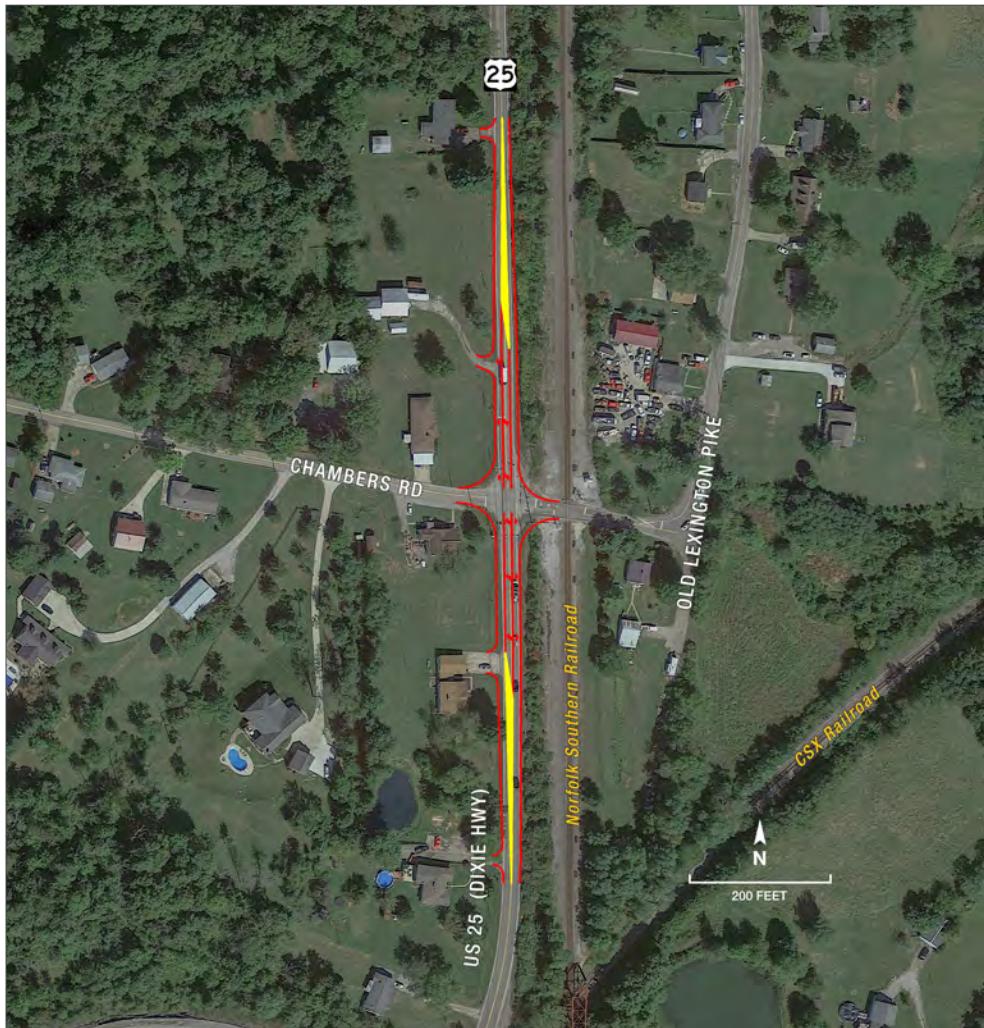


Figure ES-6 – Spot Improvement No. 3

Spot Improvement 3 includes northbound and southbound dedicated left turn storage lanes on US 25 at Chambers Road and increased turning radii at the intersection.

Potential impacts for this concept would be limited to one or more utility pole relocations, modification of the existing traffic signal, a water line relocation, and right-of-way acquisition.

Spot Improvement Costs

The estimated costs for each spot improvement are shown in **Table ES-1**.

Table ES-1 – Spot Improvement Cost Estimates

Spot Improvement 1	Spot Improvement 2			Spot Improvement 3	
	Red Option	Blue Option	Green Option		
Engineering and Design	\$36,000	\$56,000	\$101,000	\$96,000	\$131,000
Right-of-Way	\$893,000	\$487,000	\$46,000	\$88,000	\$29,000
Utilities Relocation	\$78,000	\$180,000	\$180,000	\$29,000	\$106,000
Construction	\$239,000	\$379,000	\$671,000	\$636,000	\$871,000
Total	\$1,246,000	\$1,102,000	\$998,000	\$849,000	\$1,137,000

New Corridor Concepts

While the spot improvements could be made with minimal new construction, a greater level of project benefits may result from concepts that would construct an entirely new roadway through the study area. Four new routes were developed for consideration, each with a different set of benefits and impacts. Two of these are west of US 25 and two are to the east. They have been named as follows:

- Western Concept #1 (Yellow)
- Western Concept #2 (Blue)
- Eastern Concept #3 (Red)
- Eastern Concept #4 (Green)

The locations of these four concepts are shown in **Figure ES-7**.

Each of the new corridor concepts has the potential to improve area connectivity and to help create a more robust regional highway network. In so doing, each would

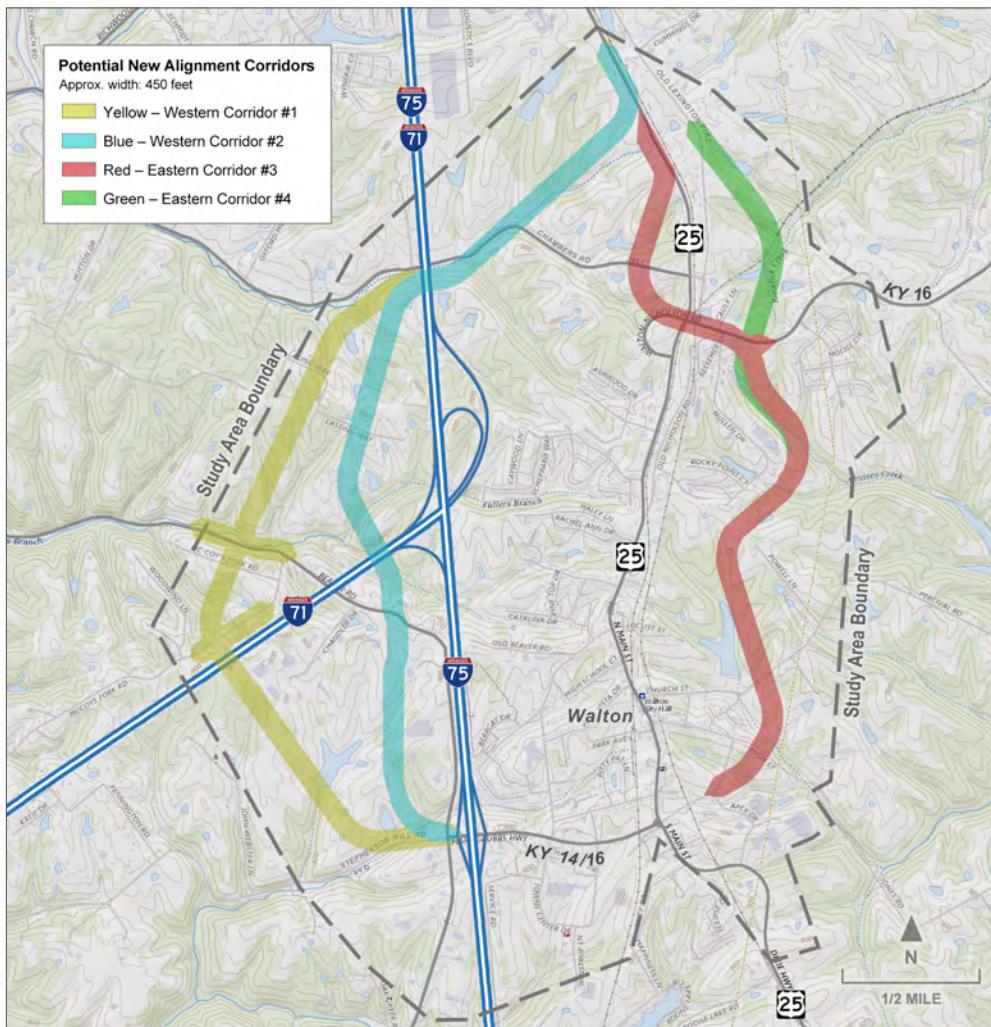


Figure ES-7 – New Corridor Concepts

support ongoing freight-oriented growth in the area. They also have the potential to reduce the volume of freight traffic on US 25, which would improve the pedestrian experience in Walton. These concepts would differ in the level of benefit they could potentially achieve, however.

Both western concepts are longer than the eastern concepts and thus both have higher projected travel times—which means they are projected to attract lower volumes of future traffic. Because they are shorter, the eastern concepts have lower travel times and would therefore attract more traffic.

Because they would require multiple bridges over interstate highways, the Western concepts are substantially more expensive than the Eastern concepts. These costs, and the other key potential impacts of the new corridor concepts, are shown in **Table ES-2**.

Table ES-2 – Key Impacts of New Corridor Concepts

	Miles of New Construction	Residential Relocations	Stream Impact (linear ft)	Wetland Impact (acres)	Farmland Impact (acres)	Historic Property Impact	Cost Estimate (\$ million)
Alt 1	4.8	10	6,400	2.4	17.1	0	39.7
Alt 2	3.6	6	3,206	1.6	20.8	2	33.0
Alt 3	2.9	6	1,366	1.2	10.9	1	18.6
Alt 4	2.9	6	3,160	2.0	8.8	0	17.8

RECOMMENDATIONS

It is recommended that the TSMO spot improvement concepts be advanced when funding becomes available. These improvements would provide immediate safety and congestion relief benefits at a modest cost and with minimal impacts. They would continue to provide benefit even if a new corridor concept is advanced in the future.

If funding is available for a new corridor concept, both eastern concepts (#3 and #4) should be advanced for further study, as they provide the greatest benefit with the lowest cost and have fewer overall environmental impacts than the western concepts. They more directly serve existing and planned industrial and residential development and provide the opportunity to further evaluate and address the bridge carrying KY 16 over US 25, which is critical to the local traffic network. Combining corridor concepts #3 and #4 would improve direct access to US 25 and provide direct access to the developing industrial sites along Old Lexington Pike.

If advanced, the new corridor concept should be designed as the US 25 thru-movement, requiring turns onto existing US 25. This would make it easier to use the new route to access existing and future development and support the goal of reducing truck traffic through Walton. This goal could be further advanced by formally removing the US 25 designation from the existing route and designating the new route as US 25. This would require an interlocal agreement between KYTC and a local government (either Boone County, or the City of Walton) to transfer maintenance

of the existing route. That action would then allow a wide range of traffic calming and Complete Streets solutions that would not be possible if the route remains a designated truck route.

Complete Streets solutions should be advanced appropriate, based on anticipated future conditions. Complete Street concepts were not explored in detail, because the appropriate solutions will depend on other project decisions. If US 25 remains a designated freight route, then a modest implementation of sidewalk improvements through Walton to address gaps and poor conditions would be appropriate. If a new route becomes the designated US 25 route and the existing US 25 through Walton becomes a local street, more comprehensive solutions such as speed tables, sidewalk bump-outs, bicycle lanes, etc., should be considered to address the local vision for improved mobility for all modes. Each of these improvements would provide benefits and address portions of the project purpose and need. If all of these solutions are implemented, the projects purpose and need would be met.

NEXT STEPS

Funding recommendations for future phases should be prioritized through KYTC's SHIFT (Strategic Highway Investment Formula for Tomorrow) process to feed into a future state highway plan. Once funding is secured, the next phase for the development of any future project is Phase I Preliminary Design, including environmental analyses, which is required to be eligible for federal funding for future phases. KYTC's STIP should be amended to reflect any future project development phases. Coordination with local officials, key stakeholders, and the public should be considered as part of the design process.

ADDITIONAL INFORMATION

Written requests for additional information should be sent to:

KYTC Division of Planning
ATTN: Director
200 Mero Street
Frankfort, KY 40622
Phone: 502.564.7183

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2. Walton Area Congestion Relief Environmental Overview
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6. Crash Maps
7. US 25 Corridor Analysis Report (Traffic Analysis)
8. Cost Estimates
9. Meeting Notes

1.0 INTRODUCTION

Rapid growth in commercial, industrial, and residential land uses in the Walton area, coupled with a steady rise in freight traffic on US 25, has created a need to improve mobility and safety in the area. The Kentucky Transportation Cabinet, in cooperation with regional and local governments, initiated the Walton Area Congestion Relief Study to identify improvement options at several key locations in the area. This document presents the options developed for the US 25 corridor through Walton; other area congestion relief strategies, including improving the I-75/KY 14 interchange, are being studied separately (see **Appendix 1**).

Funding for this project is identified in Kentucky's 2022-2028 Enacted Highway Plan (generally referred to as the Six Year Highway Plan), as Item No. 6-105.00.¹ Currently, the Six Year Highway Plan includes only planning funds for this project.

1.1 PROJECT LOCATION

The study area is located at the confluence of I-71 and I-75, approximately 13 miles south of the Cincinnati-Northern Kentucky International Airport and 16 miles southwest of downtown Cincinnati. The overall location of the project study area is shown in **Figure 1**. US 25 is one of the primary north-south routes through this area and is a major freight corridor. The I-71/I-75 corridor lies to the west of US 25 and includes the I-75/KY 14 interchange, at Walton. To the immediate east of US 25 for the majority of the project length, the CSX and Norfolk Southern railroad lines also run north-south, with several at-grade crossings in the Walton area.

Although the Six Year Highway Plan lists the project as beginning at MP 0.470 KY 14 (Mary Grubbs Highway) and ending at MP 4.859 KY 338 (Richwood Road), in 2020 KYTC divided the project at KY 16 (Walton Nicholson Road) and prepared separate Data Needs Analysis (DNA) studies for the two segments. The southern segment begins at MP 0.470 and extends northward to MP 2.264; the northern segment begins at MP 2.264 and extends to MP 4.857.

The southern segment of US 25 that is the focus of this Corridor Study is a two-lane minor arterial located in one of the most rapidly developing areas in Kentucky.² With a location that is advantageous to regional and national freight routes, and with extensive transportation infrastructure in place, northern Kentucky has become a hub for freight logistics and distribution services. With limited alternative routes, US 25 provides an important north-south connection for these industries.

¹ Kentucky Transportation Cabinet. 2022 Enacted Highway Plan. <https://transportation.ky.gov/Program-Management/Pages/2022-Enacted-Highway-Plan.aspx>

² Ohio-Kentucky-Indiana Regional Council of Governments (OKI). 2050 Metropolitan Transportation Plan (2020). <https://2050.oki.org/population/>

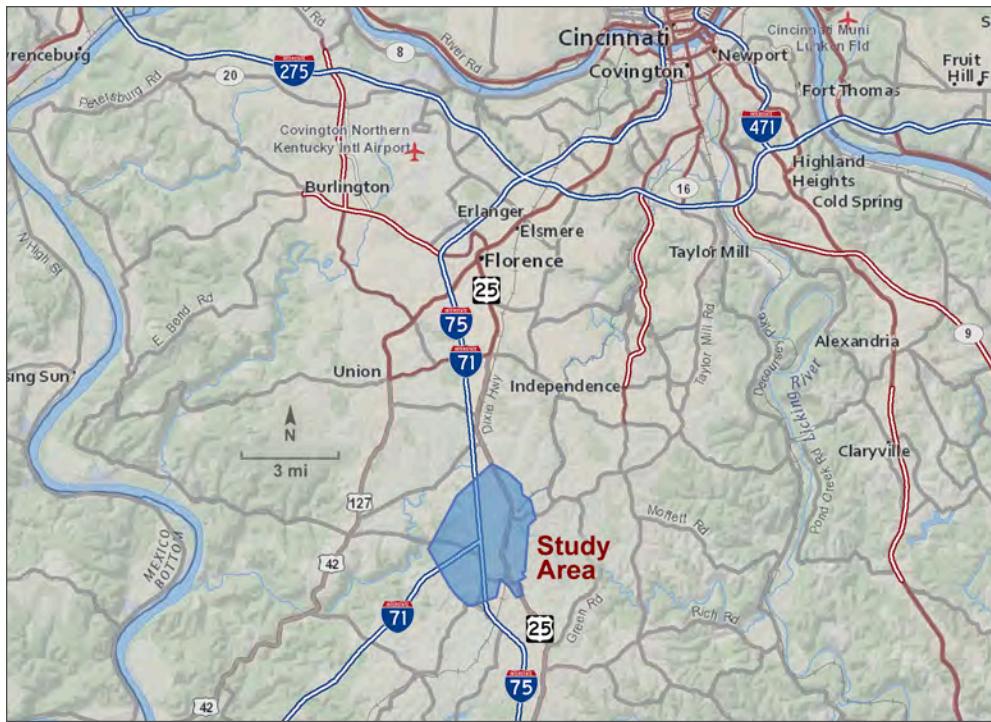


FIGURE 1
Regional Location

The study area is located at the confluence of I-71 and I-75, approximately 13 miles south of the Cincinnati-Northern Kentucky International Airport and 16 miles southwest of downtown Cincinnati. The area is a hub for freight movements in the region.

1.2 PURPOSE AND NEED

Project Needs

Lined with historic buildings, US 25 serves as Walton's Main Street. It is used by a substantial number of pedestrians and includes on-street parking. With narrow 10-foot travel lanes and 1-foot shoulders, its design is not compatible with current or expected future traffic volumes and types, which, in addition to local use, includes an increasing volume of heavy trucks. Various intersections along US 25 are also deficient.

There is local concern about recent increases in truck traffic on US 25, which is primarily the result of an increase in industrial development in the area. With many parcels on the periphery of Walton slated for additional industrial development, further increases in truck traffic on US 25 are expected. This is a concern because it is seen as incompatible with the City of Walton's goal of protecting its small-town character.³

Currently, the corridor is not experiencing a large number of crashes, but the planned increase in industrial development to the north, east, and south of Walton will likely

³ Walton Main Street Strategic Plan. 2015. https://www.boonecountky.org/planning_commission/walton_main_street_strategic_plan.php. Accessed March 2023.

increase conflicts between vehicular traffic, pedestrians, and freight, which could increase the potential for crashes.

Project Purposes

The primary purpose of this project is to improve regional connectivity and accommodate ongoing growth in the Walton area. Additionally, the Boone County Transportation Plan emphasizes several county-wide goals, four of which are considered secondary purposes of this project:

1. Improve safety and security for all travelers
2. Provide sufficient future capacity and mobility
3. Facilitate freight logistics
4. Support economic vitality

To help achieve these goals, the concepts developed for this project should strive to address the mobility needs of pedestrians, cyclists, and transit users; should consider the needs of freight and rail operations; and should seek to remove truck traffic from US 25 through Walton as much as possible. Doing so would help achieve the goals of improving safety and mobility, facilitating freight logistics, and supporting economic vitality.

1.3 PROJECT HISTORY AND PREVIOUS STUDIES

Two previous Data Needs Analysis Scoping Studies were completed by KYTC in 2020 for portions of US 25 in Boone County. These studies identified corridor needs, capacity, system linkage, safety, and geometric deficiencies.

Five previous studies or land use/transportation plans have been prepared in recent years that are relevant to the goals and objectives of the Walton Area Congestion Relief project. Each is summarized below.

Mary Grubbs Highway Extension, Boone and Kenton Counties, from Walton to Nicholson (2006)

In July 2006, KYTC completed a study to address connectivity and access between KY 17, a north-south corridor east of US 25, and I-75, which included providing an alternative route for travel when there are road closures on I-75. Because of low forecasted traffic volumes, poor geological conditions, and low public support, the study concluded that the alternative



route should not be considered at that time. The study did, however, recommend that improvements should be made along KY 16 to address safety concerns and increase capacity, and that a US 25 bypass in Walton should be studied to address congestion in the corridor. Options for those improvements are now part of the Walton Area Congestion Relief Study.

[Walton Main Street Strategic Plan \(2015\)](#)

In December 2015 the City of Walton published a multi-part strategic plan to address the vitality of its downtown. As noted in the plan, “Walton’s historic Main Street is in danger of being marginalized by a series of bypasses (especially I-75), new developments outside the Main Street corridor (Walton Towne Center), and an aging building stock. This plan will serve as a guide to help Walton’s historic Main Street remain relevant and vibrant in light of the changes that have impacted it over the past several decades. This plan will attempt to put forth achievable strategies to help the historic Main Street not only survive with the surrounding developments, but also thrive as a unique entity on its own. It is also the goal of this plan to reinforce the qualities which have made historic Main Street the long-standing center of the City of Walton despite the changes and challenges it confronts.”

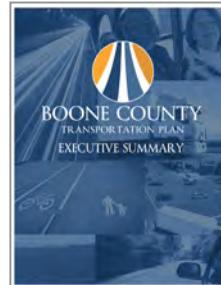


Some of the plan’s objectives relating to transportation included: improve Main Street pedestrian crossing(s) and sidewalks; have a plan for pedestrian access features in future streetscape changes and/or redevelopment; improve signage (informational and directional); install entrance signage at both the north and south end of study area; incorporate traffic calming features; and, identify and maximize existing parking, both on-street and off-street (e.g., signage, restriping).

The findings of this plan were considered in the development of recommendations of the Walton Congestion Relief Study.

[Boone County Transportation Plan \(2017\)](#)

This 2017 plan identifies eight goals, four of which were incorporated into the goals for the Walton Congestion Relief Study: (1) Improve Safety and Security for all Travelers; (2) Preserve and Optimize the Existing Infrastructure; (3) Provide Sufficient Future Capacity and Mobility; (4) Facilitate Freight Logistics; (5) Support Economic Vitality; (6) Enrich Quality of Life; (7) Promote Environmental Sustainability; and (8) Utilize Innovative Designs and “Smart” Technologies.

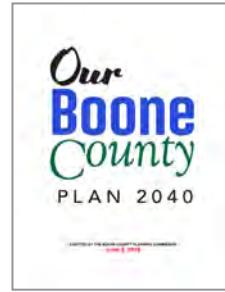


Some 84 projects are recommended in the plan, including KY 14/I-75 interchange improvements and US 25 widening projects. The plan discusses the Traffic Safety

Committee, a group of local leaders and stakeholders who work collectively to address safety concerns in Boone County. Finally, the plan encourages transportation systems that "accommodate new growth with mixed land uses and densities." This plan supports the Walton Area Congestion Relief Study.

Our Boone County - Plan 2040 (2019)

This is Boone County's Comprehensive Plan. Adopted in 2019, it describes many of the environmental and cultural assets in the Walton community, as well as the potential for industrial growth and how that growth is tied to transportation improvements. The plan recommends a connector extending east from Mary Grubbs Highway to KY 16 and/or KY 17, to support mixed use development in the area.



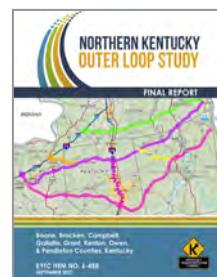
The plan anticipates that east of I-75, Walton will continue to experience "gradual commercial, residential, and industrial growth" primarily from the Walton interchange area and from the Walton Towne Center, located near the southeast corner of the I-75/KY 14 interchange. The plan encourages addressing "the coordination and limitation of access points to insure safe access at the interchange and along Mary Grubbs Highway, Stephenson Mill Road, and Walton-Verona Road." It also encourages commercial development not oriented to truck traffic in this area. The plan encourages lower density residential development that minimizes traffic on this roadway.

The plan states that on the west side of the I-75/KY 14 interchange, the northern area is suitable for light industrial and suburban residential development. To the south, the plan encourages that no additional commercial uses oriented to truck traffic be approved. The plan also states that traffic circulation improvements are needed at this location. Finally, the plan addresses the lack of utilities as a possible barrier to growth west of the study area.

This plan provides guidance toward the future land uses in the study area and anticipated transportation needs associated with those land use for the Walton Area Congestion Relief Study.

Northern Kentucky Outer Loop Study (2021)

Completed in September 2021, this study evaluated the benefits of new multi-county, east-west corridor from I-71 to KY 9 (AA Highway). A new highway south of, and providing access to, the I-275 corridor would support economic growth and complete the Kentucky portion of a future Cincinnati Eastern



Bypass (CEB). The northernmost alternative in the study, Alternative A, would cross I-75 south of Walton and north of the I-75 interchange near Crittenden. Although the document concluded that Alternative A would be good for workforce accessibility, travel time savings, and crash reduction, and would have the lowest construction cost, the Ohio Department of Transportation (ODOT) has stated that there would be no further expenditures on the CEB in Ohio. This project has also not received funding in Kentucky. Given this lack of funding, this project will not be pursued in the foreseeable future and will have no effect on the Walton Area Congestion Relief Study.

1.4 PROGRAMMED PROJECTS

Several projects in our near the study area have been programmed for implementation, based in part on the studies described above. These are reflected either in KYTC's 2022-Enacted-Highway-Plan, its Strategic Highway Investment Formula for Tomorrow (SHIFT) list, or plans prepared by the Ohio-Kentucky-Indiana Regional Council of Governments. Those projects, and their key details, are listed and mapped in **Figure 2**.

2.0 STUDY AREA PROFILE

A detailed community resource study was not conducted for this Corridor Study. Instead, existing databases and other secondary source materials were reviewed, and a preliminary site review was conducted, to gather information on the human, natural, and physical environments within the project's study area. This information provided the basis for screening the concepts and is presented in the sections that follow.

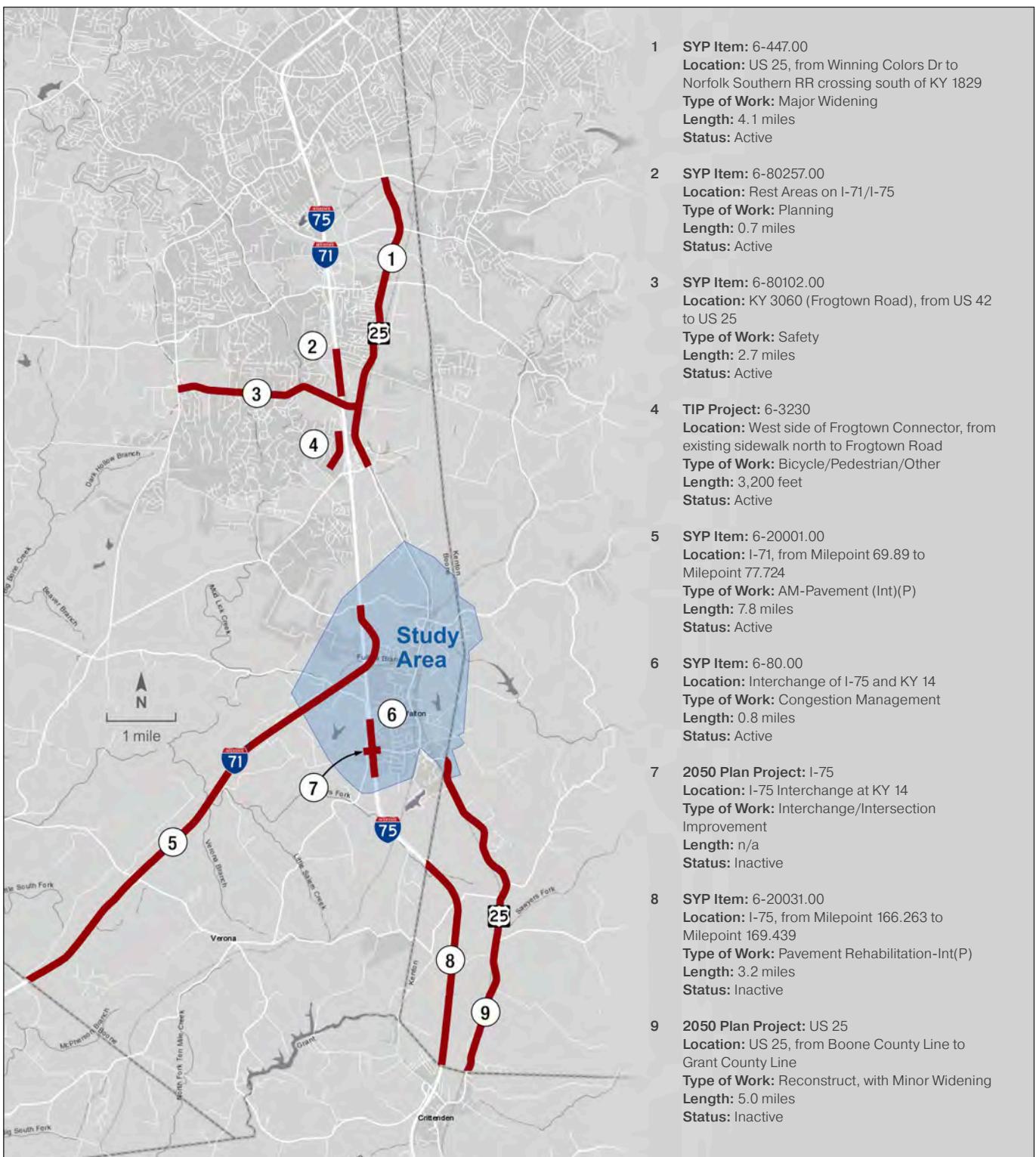
2.1 HUMAN ENVIRONMENT

The key aspects of the study area's human environment are discussed below. These include land uses and community facilities, demographics and environmental justice considerations, and historic and archaeological resources.

Existing and Future Land Use

The US 25 Corridor study area encompasses approximately 4,285 acres (6.7 square miles) and is centered on the US 25 corridor in the greater Walton area, including an

FIGURE 2 – Programmed Transportation Projects



I-75/I-71 system-to-system interchange. The majority of the study area is in south-eastern Boone County, with a small portion in southwestern Kenton County (see **Figure 3**).

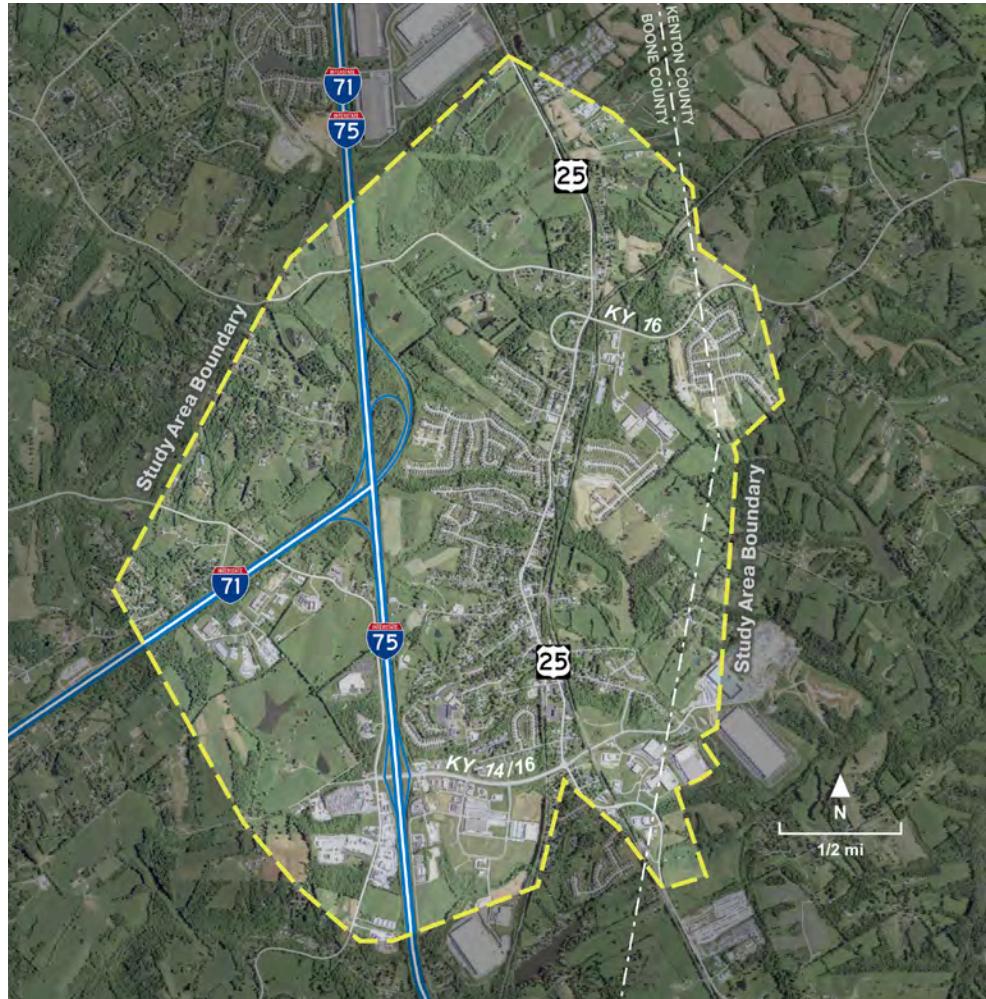


FIGURE 3
The Study Area

The study area encompasses the interchange of I-71 and I-75 and US 25 through the city of Walton. Kentucky 14/16 (Mary Grubbs Hwy.) is in the southern study area and KY 16 (Walton-Nicholson Road) is in the northern study area.

The city of Walton contains a mixture of older commercial and residential buildings, especially along US 25 and its side streets, with more modern commercial development found in the south. Most of the commercial buildings along US 25 are concentrated in the central portion of the study area. Housing developments dating from the 1950s to the 2010s can be found east and west of US 25. New housing developments are also being developed throughout the study area. The northern portion of the study area consists of farmland and industrial areas, with some residential development. The area west of Walton is mostly farmland and woodland, with residences along the rural roads west of I-71 and I-75. Modern industrial and religious buildings can be found south of the I-71 exit ramp. Two railroads—CSX (formerly the Louisville,

Cincinnati, Lexington) and Norfolk Southern (formerly the Cincinnati Southern)—pass through the study area. The CSX line runs northeast-southwest through the study area, while the Norfolk Southern line runs north-south.

The study area is representative of a typical rural/small town environment in which the economy and growth was closely tied to its proximity to major railways and roadways. Today, Walton is increasingly becoming a bedroom community as sprawl from the northern communities progresses southward, with residential growth supported by urban work centers to the north.

Boone County is among the fastest growing counties in Kentucky.⁴ As the home of the Cincinnati-Northern Kentucky International Airport (CVG), and with a robust interstate system located within a day's drive of 65 percent of the US population,⁵ the greater Walton area is a top location for national logistical warehousing and transportation services. Boone County is attractive to freight logistics and distribution industries because of its proximity to major interstates, CVG Airport, rail yards, and ports, which allow freight distribution on a local, regional, and global scale.

Growth in the project study area is expected to be mostly industrial, with plans to add more logistics and distribution hubs along the corridor. US 25 is on the National Truck Network and is a major freight corridor in the Northern Kentucky Area. This route provides access to freight logistics and distribution industries located on US 25 between Walton and Richwood. Trucks use the route to quickly access I-75 via interchanges at KY 14 and KY 338.

Boone and Kenton County Future land use mapping (**Figure 4**) shows a change in land use from agricultural to industrial, commercial and business park uses.^{6,7} A large industrial corridor is identified just east of the city of Walton. The area between I-71 and Chambers Drive is also zoned for industrial in the 2040 plan. This industrial development, coupled with an increase in land zoned for suburban density residential, will increase demand on the local transportation network, if these areas are developed as zoned.

Community Facilities

Walton was established in 1840 and began growing in 1869 with the extension of the railroad into the area. Since that time, community resources such as parks, schools, and government offices have been built as part of the area's overall growth and development. The South Main Historic District, located along South Main Street in

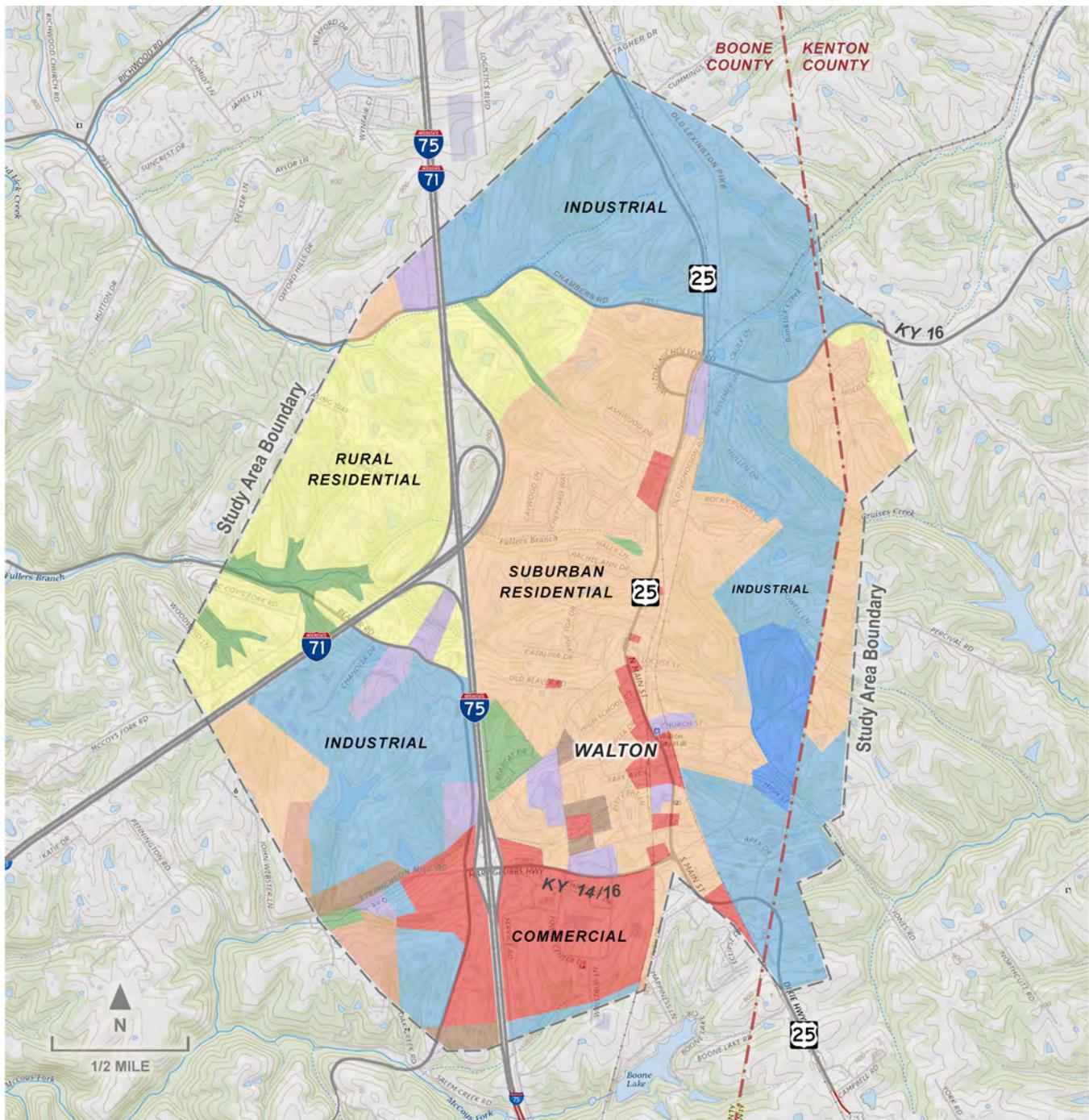
4 Ohio-Kentucky-Indiana Regional Council of Governments (OKI). *2050 Metropolitan Transportation Plan* (2020). <https://2050.oki.org/population/>

5 Hailey, Lorie. The Lane Report, January 31, 2020. <https://www.lanereport.com/121443/2020/01/logistics/>.

6 Boone County. Our Boone County—Plan 2040 (2019). https://www.boonecountky.org/planning_commission/plan_2040.php

7 Kenton County. Direction 2030: The Comprehensive Plan for Kenton County. <http://direction2030.org/>

FIGURE 4 – Study Area Future Land Uses



- Rural Residential
- Suburban Residential
- High Density Suburban Residential
- Urban Residential
- Development-Sensitive/Recreation

- Public/Institutional
- Commercial
- Business Park
- Industrial

Note: Boone County's land uses are from the County's adopted 2040 comprehensive plan. Kenton County land uses are from its adopted 2030 plan and have been converted to Boone County's categories for visual continuity.

Walton, has remained an area of emphasis as the community continues to protect and enhance the local resources. The Boone County Planning Commission developed the 2015 Walton Main Street Strategic Plan (described previously) to seek ways of enhancing Main Street and preserving the city's historic features. The study area is also home to several places of worship as well as Walton Cemetery. Benton Farm Agricultural Learning Center is a community resource located in the northern part of the study area.

One public park in the study area—Walton Community Park—was developed with funds available through the federal Land and Water Conservation Act.⁸ This is notable because Section 6(f) of the Act contains strong protections for properties receiving such funding, making the park in Walton a substantial constraint to the location of project concepts.

Government facilities in the area include Walton City Hall, Boone County Public Library-Walton Branch, the Walton Post Office, and the Walton Fire Protection District. The study area is located within the Walton-Verona Independent School system. Local schools include Walton-Verona Middle and High Schools, St. Joseph Academy, and Our Lady of the Sacred Heart Academy. The location of these community features are shown in **Figure 5**.

Demographic Characteristics

An overview of the demographic characteristics within the study area was prepared by the Northern Kentucky Area Development District (NKADD) to help identify the possible presence of minority, low-income, elderly, disabled, and limited-English populations that could be disproportionately affected by the Walton Congestion Relief Study's recommended improvements (see **Appendix 2**). Census data from the 2015-2019 American Community Survey five-year estimate was used for the overview.

Census data is important in identifying areas that may require Environmental Justice (EJ) considerations. Stemming from Executive Order 12898, Environmental Justice means "identifying and addressing disproportionately high and adverse effects of the agency's programs, policies, and activities on minority populations and low-income populations to achieve an equitable distribution of benefits and burdens."⁹ Agencies must demonstrate meaningful involvement with these groups with respect to development, implementation and enforcement of environmental laws, regulations, and policies. EJ analysis is undertaken for any study that has federal funding or approval and may result in impacts on a minority or low-income population. The demographic overview prepared for the study identified two block groups where the

8 Land and Water Conservation Fund. Past Project Mapping. <https://lwcf.tplgis.org/mappast/> Accessed October 2022.

9 FHWA. Environmental Review Toolkit,. https://www.environment.fhwa.dot.gov/env_topics/environmental_justice.aspx. Accessed Octover 2022.

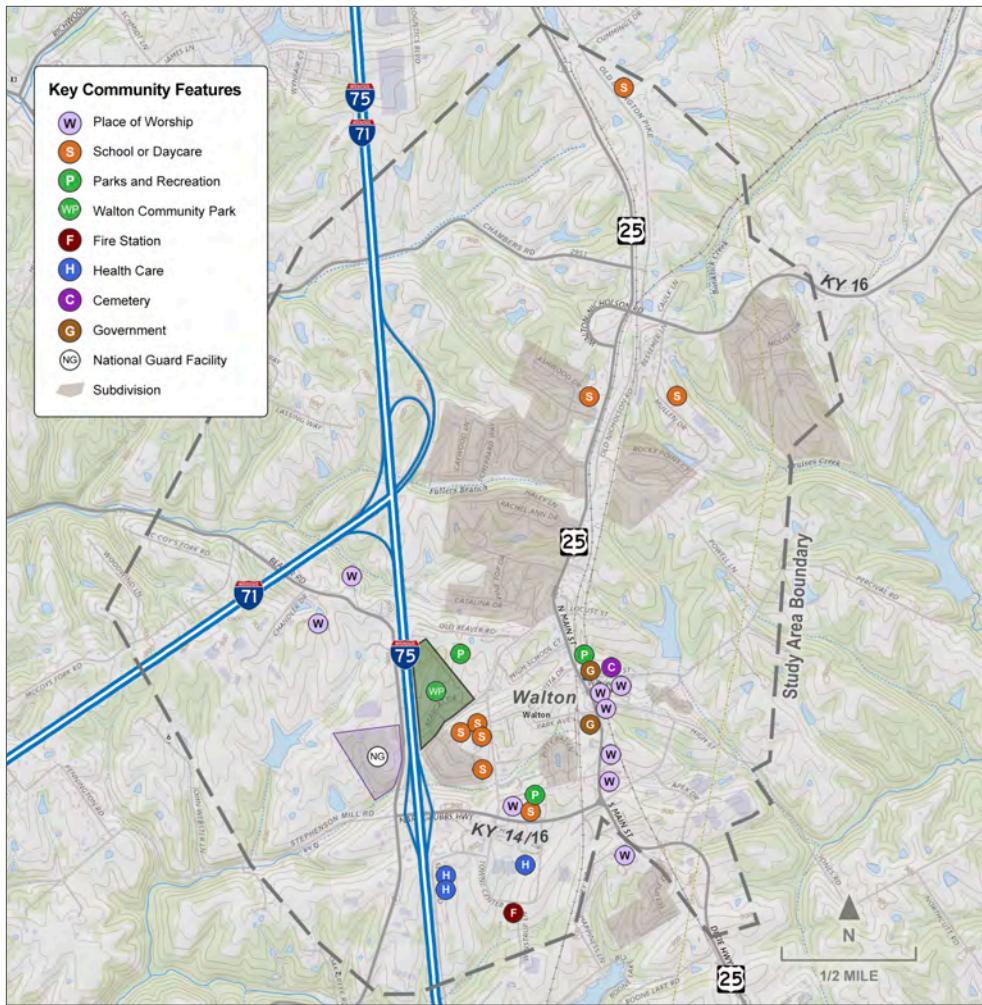


FIGURE 5
Key Community Features

The community features in the study area were compiled through field visits and a review of a variety of secondary sources

population exceeds the county threshold for poverty. Any proposed improvements recommended from the study should include additional investigation to assess potential impacts to low income populations.

As noted in the NKADD overview document, the study area includes parts of five census tracts and six block groups. Two of the block groups in the study area were found to exceed county percentages in two of the analysis categories; two other block groups exceed county percentages in one category; and one block group did not exceed any county thresholds. **Figure 6** shows the locations of these tracts and block groups and the categories in which county thresholds are exceeded. The data set with regional, state, and national data included is shown in **Table 1**. Cells with red, bold text are indicate block groups that exceed county thresholds.

It should be noted that the study area portion of Census Tract 636.05 (Block Group 3) is only 9.5 acres. Because this is a very small percentage of the overall block

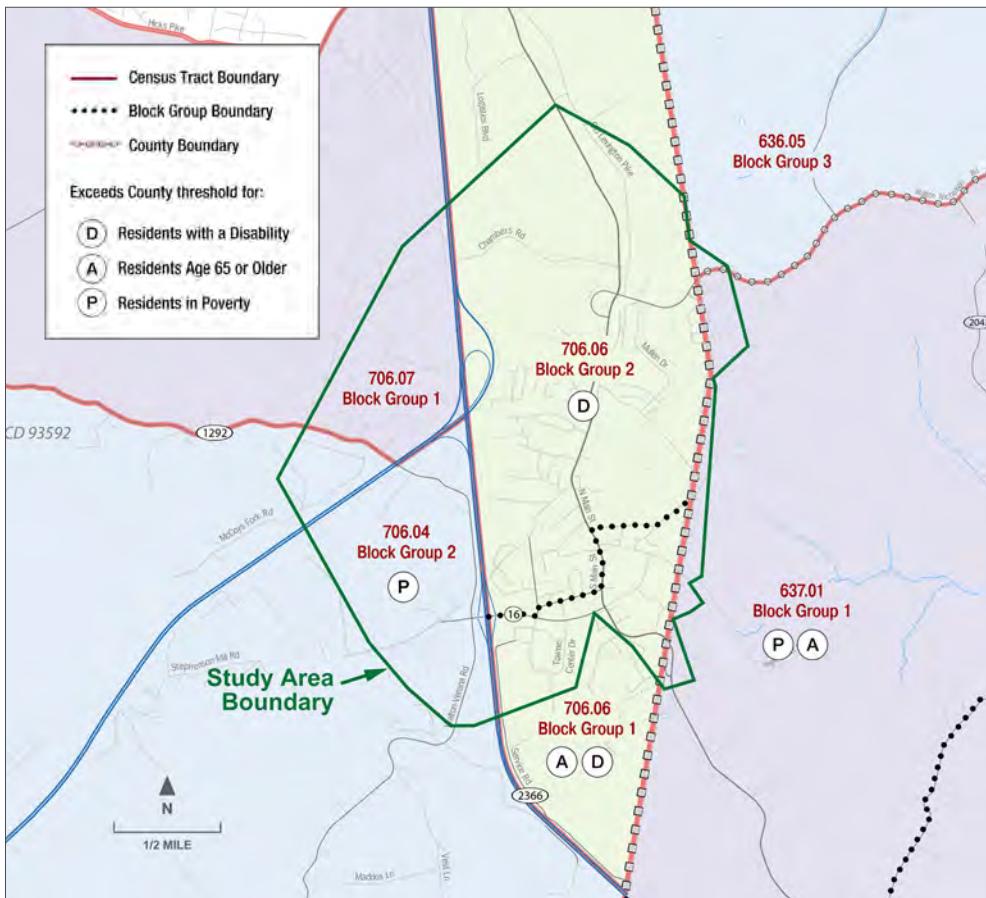


FIGURE 6
Census Tracts, Block Groups and Thresholds Exceeded

The study area falls within portions of five census tracts and six block groups. Because the study area portion of tract 635.03 is only 9.5 acres in size and has a population of zero, data for this tract is not included in the analysis.

Table 1 – Key Local, State, and National Census Data

(percentage of total population)

Red text indicates thresholds exceeded

	United States	Kentucky	NKADD	Boone Co.	Kenton Co.	CT637.01-BG 1	CT706.06-BG 2	CT706.06-BG 1	CT706.07-BG 1	CT706.04-BG 2
Members of a Minority Group	39.9	15.9	10.3	12.3	11.5	1.9	2.8	0	5.9	1.7
Individuals Below the Poverty Threshold	13.4	17.3	11.6	7.2	11.5	11.3	7.5	1.5	6.9	8.7
Individuals over Age 65	16.5	16.8	14.2	12.9	14.0	19.9	9.6	20.3	10.5	11.1
Individuals with Limited English Proficiency	21.6	5.6	1.8	3.2	2.0	0.4	0	0	1.6	0.4
Persons with a Disability	15.2	21.1	13.2	11.5	13.8	12.4	17.3	19.0	11.0	7.9

Source: Northern Kentucky Area Development District. "Walton Area Congestion Relief Socioeconomic Study" 2022.

group, and because it has a population of zero, data associated with this tract and block group have been excluded from the findings.

In general, because the study area extends into only relatively small portions of each block group, data from those groups can only reflect potential population characteristics. More detailed analysis will be required at a later stage of the project development process to determine whether those conditions are present in the study area.

Archaeological Resources

To help ensure compliance with Section 106 of the National Historic Preservation Act of 1966, a literature and database review was conducted by a qualified cultural resource specialist to identify previous archaeological surveys and recorded archaeological sites in the study area, and to provide an assessment of the potential for the study area to contain previously unrecorded archaeological sites.¹⁰ The paragraphs below summarize the review's findings.

The data review did not identify any previously recorded prehistoric archaeological sites in the study area. Six previously recorded historic archaeological sites were found to have been investigated in the study area, all of which were for historic farms or residences. Five of the six sites were found to be not eligible for the National Register of Historic Places (NRHP); the sixth is a currently-listed NRHP property. Previous fieldwork within the region has noted that the highest concentration of prehistoric sites in upland areas along major streams and drainages. Several creeks are located within the study area, and any upland areas adjacent to them are considered to have a moderate potential for prehistoric occupations.

The highest potential for historic archaeological sites is in and around Walton, with a moderate to low potential for historic sites within the surrounding areas and mostly near historic roadways and residences. Historic maps were reviewed to identify buildings in the study area that were constructed at least 45 years ago. The results indicated several rural and urban residences, a schoolhouse, churches, hotels, general stores, a post office, and a few professional offices. The properties where these buildings are located are considered to have a high potential for historic archaeological deposits. There is a very low potential for the presence of archaeological remains associated with modern commercial or public buildings outside of Walton.

Historic industrial sites are most likely to be found close to a means of transportation, such as major roadways, railroads, and larger streams or rivers. A steam powered

¹⁰ Due to the confidential nature of archaeological resource locations, the Archaeological Assessment is not included in the study appendices. It is on file at KYTC, Division of Planning.

grist mill and a steam powered sawmill are both shown on a historic map of Walton. A high probability exists for the archaeological remains associated with these mills. In addition, the CSX and Norfolk Southern railways, which were historically the Louisville, Cincinnati & Lexington and Cincinnati Southern railways, bisect the study area. Industrial site potential adjacent to these railroad lines is considered moderate to high.

Only two historic cemeteries are depicted on historic maps of the study area. The probability of additional, unrecorded historic cemeteries within the study area is considered to be low. Alluvial soils located within the narrow floodplains of the creeks found within the study area may have the potential to contain deeply buried soils or buried prehistoric or historic archaeological deposits. However, based on where sites have been previously identified, there is a low probability for the presence of large or potentially significant deeply buried archaeological sites within these alluvial soils.

Historic Architecture

A literature and database review was conducted to identify any previously identified historic architectural resources in the area, as well as to assess the potential for area to contain additional properties that may be considered eligible for the NHRP (see **Appendix 2**). Background research included a review of the NRHP database, the Kentucky Heritage Council (KHC) database, and a literature review of primary and secondary historical sources to establish the historic context for the area. All potentially historic properties in the area were evaluated for NRHP eligibility.

Within the study area, 260 previously surveyed architectural resources were identified in the KHC records. These resources meet the 50-year minimum age requirement but the majority do not meet other NRHP criteria or have not been assessed for eligibility. Most of these resources are on US 25/Main Street, with no major concentrations of resources outside of the US 25 corridor. Some resources have been demolished to make way for residential, commercial, and road construction. Thirteen primary structures and their outbuildings are individually listed on the NRHP within the study area. There is also one NRHP-listed historic district (KHC 373/NPS No. 04001249), located along South Main Street, in Walton. In addition to these listed sites, eight additional resources that meet the criteria for inclusion in the NRHP were identified. More sites may be determined NRHP-eligible after conducting a site visit and additional research. The remainder of the 260 previously surveyed sites do not appear to meet NRHP eligibility requirements. **Figure 7** shows the locations of resources in the project area that are currently on the National Register or are eligible for listing on the Register.

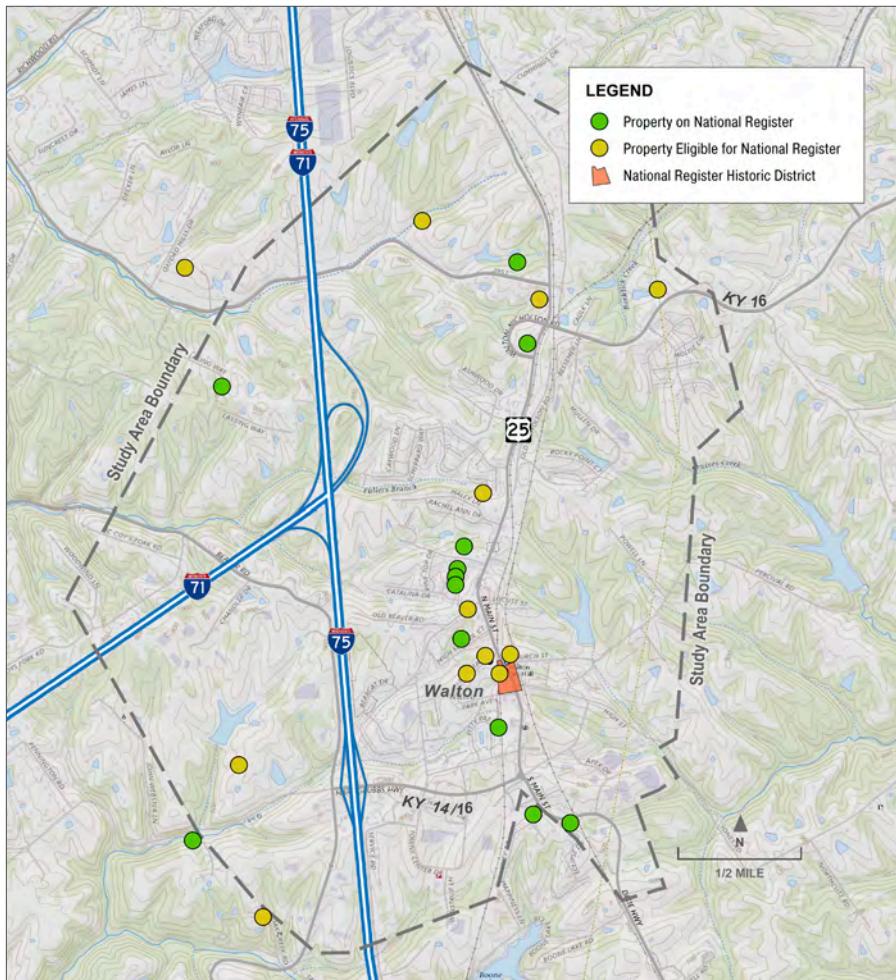


FIGURE 7
Historic Properties

The project area contains one historic district listed on the National Register of Historic Places and several individual properties on or eligible for listing on the National Register.

2.2 NATURAL ENVIRONMENT

The following sections summarize data collection findings for the study area's wetlands and streams, 100-year floodplains, and habitat areas for federal threatened and endangered species.

Wetlands and Streams

National Wetland Inventory (NWI) mapping was used to identify probable wetland areas. Seven wetland types were identified within the project area, each associated with either ponds, rivers, or wetlands. Streams were identified using the National Hydrography Dataset (NHD) Stream map. Four stream classifications were identified within the project area, including canal, ditch, stream, and river, as shown in **Table 2**.

States must identify waters that do not or are not expected to meet water quality standards under the Clean Water Act. Section 305(b) requires states to develop

Table 2 – Project Area Streams

Feature Name	Stream Classification	Stream Flow Regime
Banklick Creek	Stream/River	Perennial/Intermittent/Ephemeral
Cruises Creek	Stream/River	Perennial/Intermittent/Ephemeral
Cruises Creek	Artifical Path	Intermittent
Fuller Branch	Stream/River	Perennial/Intermittent/Ephemeral
Multiple Identified	Canal/Ditch	N/A

an inventory of waterbodies and assess their water quality. Section 303(d) lists the waterbodies that do not meet water quality standards. A portion of Banklick Creek is listed as a 305(b)/303(d) impaired stream in the study area due to Fecal Coliform (bacteria), eutrophication, and organic enrichment from point source discharges, urban stormwater, agricultural land use, and on-site treatment systems located in the area.

Figure 8 shows NWI wetland areas, major study area streams, and the segment of Banklick Creek listed as impaired.

100-Year Floodplain Areas

For regulatory purposes, floodplains are defined by the area inundated during the one percent probability flood event, more commonly referred to as the 100-year flood zone. Official Federal Emergency Management Agency Flood Insurance Rate Maps were consulted to identify any 100-year flood zones in the study area. No such floodplains were found. The nearest mapped floodplain was found to be located along a portion of a stream called McCoys Fork, approximately 0.03 miles southwest of the study area.

Threatened & Endangered Species Habitat

The potential presence of federally protected species in the study area was assessed using the US Fish and Wildlife Service's IPaC system.¹¹ Three species of protected bats and one protected mussel species was identified. The total area of habitat in the study area for these species (forests and perennial streams) was calculated using

¹¹ US Fish and Wildlife Service. IPaC Information for Planning and Consultation. <https://ipac.ecosphere.fws.gov>. Accessed November 2022.

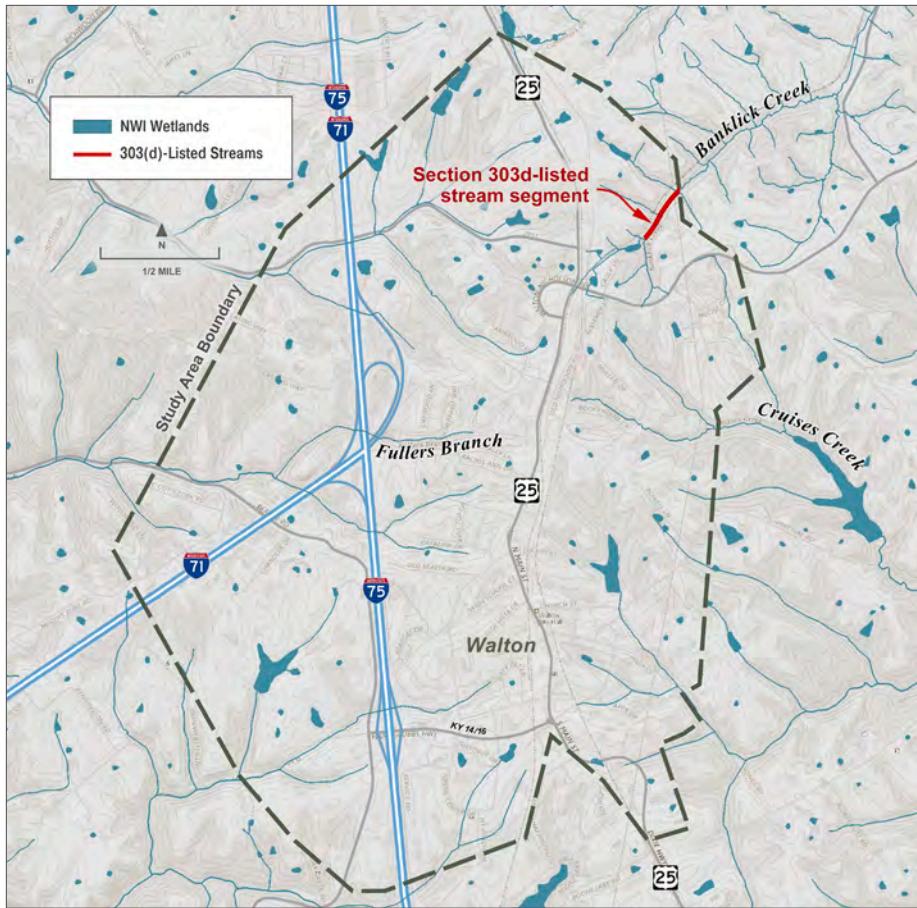


FIGURE 8
Wetlands, Streams,
and Impaired
Waters

General wetland areas were identified using NWI mapping. An approximately 1,500-foot segment of Banklick Creek is the only impaired stream in the study area.

the US Forest Service Tree Canopy Cover Database¹² and National Hydrography Dataset.¹³ **Table 3** identifies the species, status, habitat type, and amount of suitable habitat identified within the project area.

2.3 PHYSICAL ENVIRONMENT

The following sections summarize data collected for the study area's geology, soil, farmland, hazardous materials and contamination, and air quality.

Subsurface Characteristics and Soils

A geotechnical overview of the study area was conducted using published geotechnical data¹⁴ and the KYTC Geotechnical Branch's expertise with respect to highway

12 US Department of Agriculture, Forest Service. USFS Tree Canopy Cover Datasets. <https://data.fs.usda.gov/geodata/rastergateway/treecanopycover/> Accessed November 2022.

13 US Geological Service. National Hydrology Dataset. <https://www.usgs.gov/national-hydrography/national-hydrography-dataset> Accessed November 2022.

14 e.g. McGrain, Preston. "The Geological Story of Kentucky," Kentucky Geological Survey, Special Publication 8, Series XI. Lexington: University of Kentucky, 1983.

Table 3 – Potential Protected Species and Habitat in the Study Area

Species	Protected Status	Habitat Type	Suitable Habitat
Gray Bat	Endangered	Forest	1,237 Acres
Indiana Bat	Endangered	Forest	1,237 Acres
Northern Long-eared Bat	Threatened	Forest	1,237 Acres
Pink Musket (pearlymussel)	Endangered	Perennial Streams	114,280 Linear Ft

design and construction in the region. A site investigation was also conducted within the study area. The paragraphs below summarize the review's key findings.

Karst features such as sinkholes and springs are present but not prevalent, and the project corridor is in a low-risk Karst potential zone. The Ordovician strata in this area is not as subject to solutioning and in other areas. The strata have high shale contents making it less prone to produce typical Karst features. A feature of the area that may be of concern is the instability of slopes, which lead to numerous landslides in the region. The Kope Formation consists of soft easily deformed shale, which is unstable and readily slumps when wet. Over-steepened banks and artificial cuts should be avoided or properly designed and drained. A detailed geotechnical exploration will be required for areas that involve widening existing, or creating new, cuts and fills.

The study area contains soil units that are unique to Northern Kentucky as well as deposits typically seen throughout Kentucky such as Alluvium (fluvial system deposits) and Colluvium (gravity driven deposits). Glacial deposits are known to overlay the Ordovician bedrock within the designated study area. Glacial drift is a general term used for these deposits and refers to all deposits of rock material, clay silt gravel and boulders transported by or deposited by the ice. These deposits in the study area consist of loess deposits (unstratified silty or loamy deposits primarily deposited by the wind) and eolian deposits (wind deposited materials that consist of sand or silt sized particles). These materials are typically extremely well sorted and free of coarse fragments). The NRCS Web Soil Survey (2022)¹⁵ indicates that there are 13 mapped soil types located within the study area. KYTC's geological overview document contains more detailed information on the range of soils in the study area (see **Appendix 3**).

Farmland

The US Department of Agriculture defines prime farmland as land that has the best combination of physical and chemical characteristics for producing food, feed,

¹⁵ US Department of Agriculture, National Resources Conservation Service. Web Soil Survey. <https://websoilsurvey.nrcs.usda.gov/app/>. Accessed November 2022.

forage, fiber, and oilseed crops and that is available for these uses. The study corridor contains 968 acres of prime farmland. This accounts for 23% of the total project area. The USDA defines farmlands of statewide importance generally as those that are nearly prime farmland and that economically produce high yields of crops when treated and managed according to acceptable farming methods. Some may produce as high a yield as prime farmlands if conditions are favorable. The study corridor includes 1,166 acres of farmland of statewide importance. This accounts for 27% of the total project area. These figures were derived from the USDA's Web Soil Survey.¹⁶

Transportation projects with federal participation that would irreversibly convert farmland to nonagricultural uses are subject to the provisions of the Farmland Protection Policy Act of 1981. Coordination with the USDA is required on such projects. This coordination results in a scoring of each project alternative, based on a point system contained in the USDA's Farmland Conversion Impact Rating Form for Corridor Type Projects (NRCS-CPA-106). If a project alternative receives a score of 160 points or higher, the project sponsor must consider alternative actions, as appropriate, that could reduce adverse impacts (e.g. Alternative Sites, Modifications or Mitigation). Given the extent of prime farmland and farmland of statewide importance in the study area, USDA coordination will likely need to take place as the project advances. The general locations of prime and statewide important farmland are shown in **Figure 9**.

Air Quality

The Clean Air Act of 1963 was established to control air pollution on a national level. It authorized the US Environmental Protection Agency to establish National Ambient Air Quality Standards (NAAQS) for air quality to protect public health and welfare and to regulate emissions of hazardous air pollutants.¹⁷ When a region's concentrations of any of these pollutants are above the established standards, the region is designated as a "non-attainment" area. Once the concentrations of specific pollutants are reduced enough to be within the standards, the area is designated as a "maintenance area."

The study area is included in the Metropolitan Cincinnati (Ohio) Interstate Air Quality Control Region. These counties are currently in attainment with National Ambient Air Quality (NAAQ) standards for carbon monoxide, nitrogen dioxide, particulate matter, sulfur dioxide, and lead. As part of the Cincinnati, Ohio-Kentucky area, Boone and Kenton Counties are included in an area currently designated as moderate nonattainment for ozone. The southern parts of the counties are in attainment and the

¹⁶ US Department of Agriculture, National Resources Conservation Service, Web Soil Survey 2019. <https://websoil-survey.sc.egov.usda.gov/App/HomePage.htm>. Accessed March 2022.

¹⁷ US EPA. Evolution of the Clean Air Act. <https://www.epa.gov/clean-air-act-overview/evolution-clean-air-act>. Accessed March 2023.

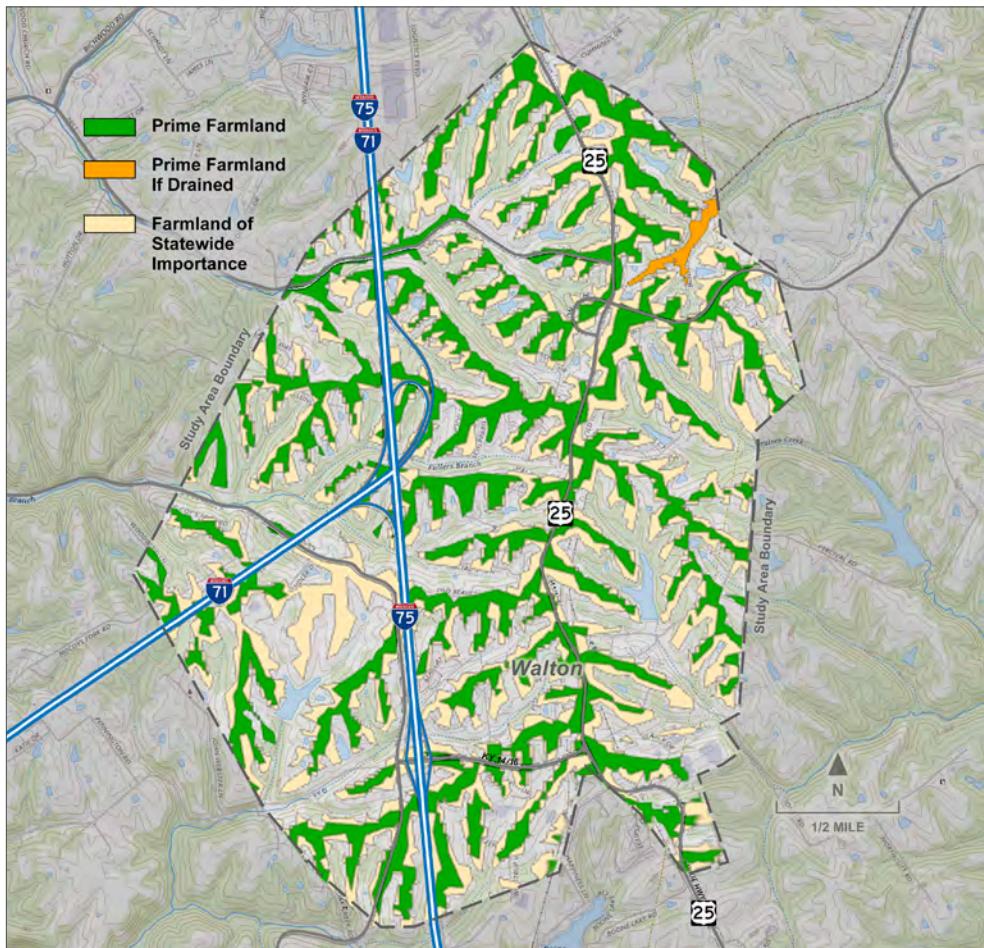


FIGURE 9
**Prime and Statewide
Important Farmland**

A large percentage of the study area contains prime farmland or farmland of statewide importance, generally located along ridges between streams.

northern parts are in moderate nonattainment. The location of the study area falls within the area of the counties included in the “moderate nonattainment” area.

KYTC evaluates ozone primarily as a regional pollutant during the transportation planning process. When projects are identified, they are evaluated on a regional level using the State Implementation Plan (SIP) development and conformity process. The Transportation Improvements Program (TIP/SIP) evaluates ozone on a regional level but it is not a concern as a hot-spot pollutant. For a project to move forward in the project development process, it must demonstrate its conformity on a regional level.

Traffic Noise

Traffic noise can disrupt normal activities when the noise reaches certain levels and when noises are distinctly louder than the typical ambient noise environment. Sound from highway traffic is primarily generated from tire-pavement interaction, vehicle

exhaust, and engines. In addition to increased noise levels associated with traffic, roadway construction activities can also temporarily increase noise levels.

Consideration of noise impacts are typically included as part of the planning, design, and construction of a highway project; noise sensitive sites are identified during the planning phase of the project and evaluated for traffic noise impacts during project design. If impacts are identified during the planning phase, options for mitigating noise impacts are considered. Methods employed for these considerations can be found in 23 Code of Federal Regulations (CFR) Part 772, Procedures for Abatement of Highway Traffic Noise and Construction Noise.

Several noise-sensitive receivers are located in the study area, particularly along US 25 in Walton. Pockets of residential housing can be found throughout the project area in both urban and rural areas, which may also be considered noise-sensitive receivers. **Table 4** identifies noise-sensitive community resources, their addresses and associated land use, and the noise levels beyond which investigation of abatement/mitigation of noise impacts is warranted. For this US 25 Corridor Study, a Traffic Noise Impact Assessment is recommended at a future stage of project development.

Table 4 – Noise-Sensitive Community Resources

Name	Address	Land Use	NAC Level
Walton United Methodist Church	68 S. Main Street	Place of Worship	52 / Interior
Walton Christian Church	50 S. Main Street	Place of Worship	52 / Interior
Walton Christian Church	50 S. Main Street	Playground	67 / Exterior
First Baptist Church of Walton	47 S. Main Street	Place of Worship	52 / Interior
First Baptist Church of Walton	47 S. Main Street	Outdoor seating area	67 / Exterior
Boone County Public Library, Walton Branch	21 S. Main Street	Library	52 / Interior
Flour Creek Christian	18 N. Main Street	Place of Worship	52 / Interior
True Vine Praise and Worship	26 N. Main Street	Place of Worship	52 / Interior
Zion Baptist Church	35 Church Street	Place of Worship	52 / Interior
Walton Cemetery	30 Church Street	Cemetery	67 / Exterior
Walton-Verona Veterans Memorial	40 N. Main Street	Park	67 / Exterior
Citizens Park	40 N. Main Street	Park	67 / Exterior
Little Learners Learning Center	130 Mullen Drive	Daycare	52 / Interior
Walton Learning Center	121 Brookwood Drive	Daycare	52 / Interior
Our Lady of the Assumption Church/Academy	472 Beaver Road	Place of Worship/School	52 / Interior

Underground Storage Tanks/Hazardous Materials

A high-level overview of environmental conditions was completed to identify environmental conditions associated with the current and historic usage of properties in the study area (see **Appendix 3**). The overview report identified 647 UST/Hazmat

records within one mile of the project study area (see **Figure 10**). The majority of records are identified by KY SPILLS and FINDs databases, which identify hazards spills (SPILLS) and register them in a Facility Index System (FINDs). The high density of records is reflective of the industrial/commercial land uses within the project corridor.

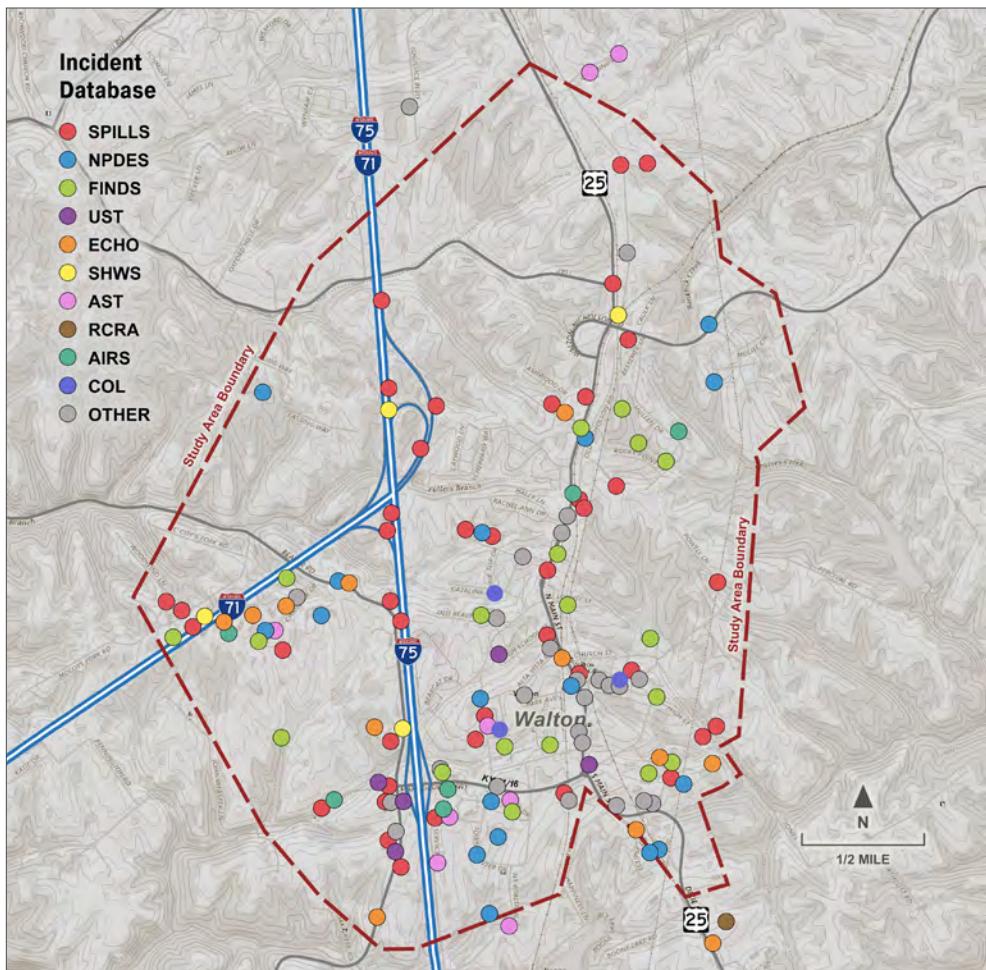


FIGURE 10
**Hazardous Materials
and Contamination**

A large number of hazardous material sites and areas of contamination have been recorded in the study area, owing to the concentration of industrial and commercial land uses in the area.

According to the Kentucky Geological Survey's Water Well and Spring Records Database,¹⁸ oil and water wells are scattered throughout the southern portion of the project study area, with clustering around the KY 14 interchange area. Two ground-water wells and 15 groundwater monitoring wells were identified within the study area. No water springs were identified within the project study area.

¹⁸ Kentucky Geological Survey. Water Well and Spring Records Database, KY Groundwater Data Repository. <https://kgs.uky.edu/kgsweb/datasearching/water/waterwellsearch.asp>. Accessed March 2022.

3.0 ROADWAY, TRAFFIC, AND SAFETY DATA

Information about the state-managed roadways in the study area, data on current traffic conditions, and data on crashes and safety, are presented in this section.

3.1 EXISTING ROADWAY CHARACTERISTICS

Existing roadway characteristics were obtained from the KYTC Planning Highway Information (HIS Database),¹⁹ KYTC General Highway Map, Google Aerial Imagery, Google Street View, and an online inventory (Bridgereports.com).

Highway Designations

The US 25 corridor is designated as a Tier 3 highway under criteria established in the Kentucky Freight Plan.²⁰ Tier 3 highways are defined as arterials or collectors of regional significance with Average Annual Daily Truck Traffic volumes of between 500 and 4,000. I-71 and I-75 are a part of the National Highway System, the National Truck Network, National Freight Network; and the Kentucky Highway Freight Network. I-75 is also part of the Coal Haul Highway System in Kentucky.²¹ (See **Figure 11**.)

Functional Classification

Road functional classification is a land use and transportation planning tool that classifies roads based on their relationship between mobility and access. The separate functions of mobility and access can be incompatible and often conflict with each other, especially where through traffic combines with local traffic. In the study area, US 25 is classified as an urban minor arterial. It connects to several urban major collectors, including KY 14, KY 16, and Chambers Road. Old Lexington Pike, which runs parallel to US 25 north of the US 25/KY 16 intersection, is designated as a local collector. (See **Figure 12**.)

Bridges

A review of the KYTC Bridge Data Miner (accessed September 2023) identified 12 bridges within the project study area. A map showing the locations and a table with key condition characteristics is located in **Appendix 4**.

¹⁹ Kentucky Transportation Cabinet. Planning Highway Information (HIS Database). <https://transportation.ky.gov/Planning/Pages/Roadway-Information-and-Data.aspx> Accessed October 2022.

²⁰ Kentucky Transportation Cabinet. Kentucky Freight Plan. <https://transportation.ky.gov/MultimodalFreight/Documents/2017%20Kentucky%20Freight%20Plan/2017%20Kentucky%20Freight%20Plan%2012-4-2017.pdf> Accessed March 2023.

²¹ KYTC, Division of Planning. (Various sub-pages.) <https://transportation.ky.gov/Planning/Pages/default.aspx>

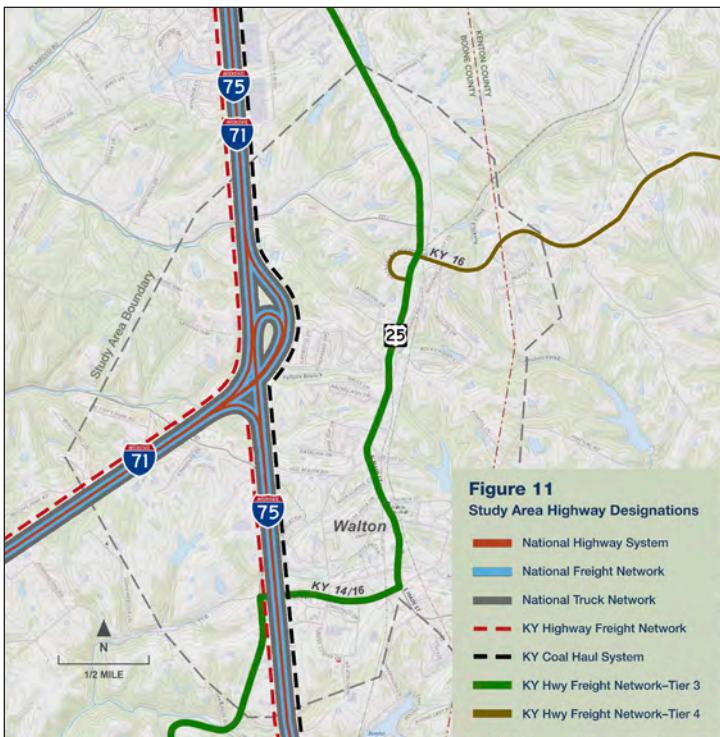


Figure 11
Study Area Highway Designations

- National Highway System
- National Freight Network
- National Truck Network
- KY Highway Freight Network
- KY Coal Haul System
- KY Hwy Freight Network-Tier 3
- KY Hwy Freight Network-Tier 4

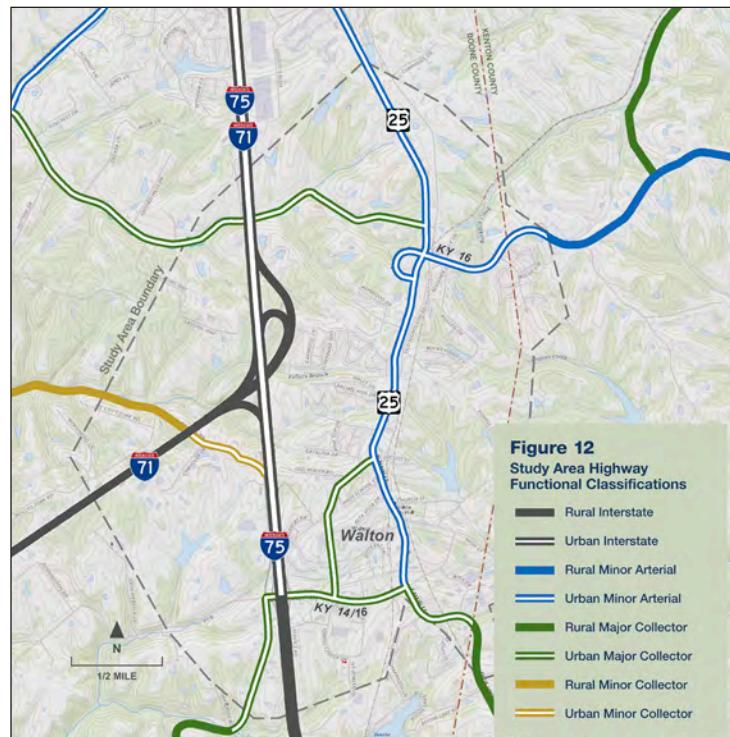


Figure 12
Study Area Highway Functional Classifications

- Rural Interstate
- Urban Interstate
- Rural Minor Arterial
- Urban Minor Arterial
- Rural Major Collector
- Urban Major Collector
- Rural Minor Collector
- Urban Minor Collector

The NBI Condition and Criticality Index ratings for these bridges were reviewed as part of the US 25 Corridor Study data collection effort. The Criticality Index measures how integral an asset is to a transportation network and is based on the fact that closure of critical assets can have substantial negative effects on traffic flows, diminishing the overall performance of a network and negatively affecting the movement of people and goods.

The Criticality Index is calculated using various National Bridge Inventory elements and assigns ratings on a scale of 1.0 (not as critical) to 3.0 (highly critical). The only bridge in the study area receiving a Criticality Rating greater than 2.0 is the bridge carrying KY 16 over two railroads and US 25. The score for this bridge is a 2.05.

More information on the study area bridges can be found by accessing the Bridge Data Miner site, at <https://maps.kytc.ky.gov/bridgedataminer>.

Access Control

Access control can affect both traffic congestion and the potential for crashes. Access management is a tool used for new and existing development to reduce the number of driveway and cross street openings or extend the distance between them. There is no access control along US 25, and the corridor has many driveways and business entrances. It also contains two signalized intersections and numerous non-signalized intersections. Similarly, Old Lexington Pike also has no access control and serves residences and businesses.

US 25 Roadway Characteristics

The study segment of US 25 starts at the Mary Grubbs Highway intersection (Mile Point 1.226) and continues to the Old Lexington Pike-KY 2951/Chambers Road intersection (MP 2.582). This segment has one 10- to 12-foot lane in each direction, with the narrower lanes and on-street parking within the city of Walton. (See **Table 5**.) Sidewalks are present from the southern end of the study area to just north of Brookwood Drive, a distance of approximately 1.6 miles. North of Walton, the sidewalks are predominately on the western side, where subdivisions and other residential properties are present. A 12-foot, flush median is present on the southbound approach at the Mary Grubbs intersection; aside from that location, the roadway is undivided.

Table 5 – US 25 Lane and Shoulder Information

Begin Mile Point	End Mile Point	Lane Width	Lanes	Shoulder Width
1.226	1.602	11 feet	2	0-2 feet
1.602	1.678	11 feet	2	5 feet
1.678	2.176	10 feet	2	10 feet
2.176	2.358	12 feet	2	12 feet
2.358	2.582	10 feet	2	10 feet

Throughout the study area, US 25 is relatively straight, with the only significant curve (10 degrees) at the southbound approach to Mary Grubbs Highway. Although the area is classified as having rolling terrain, the road's vertical curves do not present sight distance concerns anywhere along the corridor. Sight distance is undesirable on Old Nicholson Road at the US 25 intersection, however, due to its extreme angle, its grade, and the presence of vegetation. The steepest grade along the road is 5.3% through the Mary Grubbs intersection (between MP 1.140 and 1.264). The posted speed limit is 35 mph from Mary Grubbs Highway to just north of Haley lane (MP 1.970), where it increases to 45 mph through the remainder of the study segment.

Complete Street Elements

Sidewalks are found on the west side of US 25, from the KY 14 intersection north to about 485 feet past Brookwood Drive. On the east side, sidewalks are present from the KY 14 intersection to Old Nicholson Road. Many of the sidewalks in downtown Walton do not meet current ADA²² design standards, with substantial deficiencies in cross slopes, grade of slopes, and width. A review of information available through the database company [Strava Metro](#) (accessed September 2023) shows that US 25

22 Americans With Disabilities Act of 1990. <https://www.ada.gov/law-and-regs/ada/>

is frequently used by recreational cyclists to connect to rural routes north of Walton and is less often used to access areas south of Walton. Pedestrian use is heaviest along US 25 through Walton's downtown area, which connects to neighborhoods, but almost non-existent north of Brookwood Drive, where the sidewalk ends (See **Appendix 5** for bike and ped usage maps).

It has been expressed that sidewalks and other pedestrian accommodations are important to the community of Walton and that future transportation improvements should include these elements.²³ As in many older downtowns, however, space constraints and utilities along the corridor present challenges for providing Complete Streets elements. There are no dedicated bike lanes or multi-use trails along US 25, and the shoulders are too narrow to accommodate bicyclists. Likewise, there are no sidewalks or bike lanes along Old Lexington Pike or Old Nicholson Road.

3.2 SAFETY CONSIDERATIONS

Existing roadway safety was reviewed in terms of data on recent crashes in the study area and the area's Level of Service of Safety.

Crash Data

Crash data was obtained from the Kentucky Transportation Center's Crash Data Analysis Tool (CDAT),²⁴ which is a tool to assist with access to and analysis of crash safety data in Kentucky. Crash data gathered for years 2016 to 2020 revealed that most of the crashes in this time frame occurred in or near signalized intersections. Nearly half of the total crashes involved rear end collisions, which is a common crash type at signalized intersections and areas of turning movements on two-lane roadways. The highest density of crashes involving injuries within the project area occurred both ends of the US 25 study corridor, at the US 25/KY 14 intersection and US 25/KY 16 intersection. (See **Appendix 6**.)

Level of Safety Service

To analyze safety on US 25, the roadway was divided into five segments. Individual segments were analyzed in CDAT for excess expected crashes (EEC), which are predicted crashes in excess of what a similar roadway would produce, and for the Level of Service of Safety (LOSS) on the segments. The LOSS value represents statistically how well a segment performs compared to the expected average roadway and includes four rating categories:

23 Boone County. Walton Main Street Strategic Plan, 2015. https://www.boonecountyky.org/planning_commission/walton_main_street_strategic_plan.php

24 Green, Eric R., and Paul Ross. *Crash Data Analysis Tool: Research Report + User Guide*. 2020. Available at: https://uknowledge.uky.edu/ktc_researchreports/1708/

- LOSS 1** Crashes are below the 20th percentile, segment functioning substantially better than average, low potential for crash reduction.
- LOSS 2** Crashes are between 20th percentile and the mean. Low to moderate potential for crash reduction.
- LOSS 3** Crashes are between the mean and the 80th percentile. Moderate to high potential for crash reduction.
- LOSS 4** Crashes are above the 80th percentile. High potential for crash reduction.

As can be seen on **Table 6**, all US 25 segments have a LOSS value of 2 and ECC scores in the negative range. The one exception is the KY 14/16 intersection, where the EEC is positive for crashes resulting in injuries or fatalities and the LOSS value is 3. Given this information, the US 25 intersection with KY 14/16 is the one intersection recommended for consideration of improvements intended to reduce crashes.

Table 6 – Safety Service Data for Selected Locations on US 25

Description	Length (miles)	KAB*		CO*	
		EEC	LOSS	EEC	LOSS
Approach to intersection (2-lane w/2-way left turn lane)	0.38	-0.6	2	-12.9	2
Intersection with KY 14/16 (2-lane w/left turn lane)	0.17	0.4	3	-5.5	2
Downtown Walton (2-lane)	1.15	-1.2	2	-54	2
North of downtown through KY 16 Intersection (2-lane rural)	0.66	-2.2	2	-31.5	2
North of KY 16 Intersection (2-lane rural)	1.22	-1.1	2	-35.7	2

*INJURY CODES: K-Fatal A-Incapacitating B-Non-Incapacitating C-Possible Injury O-None Detected

3.3 EXISTING TRAFFIC CONDITIONS

Existing year traffic volumes were developed using traffic counts collected in 2022 and year 2019 StreetLight data.²⁵ StreetLight Data is an on-demand mobility analytics platform that collects data from a large number of mobile devices and then translates that data into information on traffic volumes, trip information, and travel times for select roads. The StreetLight data was used to supplement collected counts in the data collection.

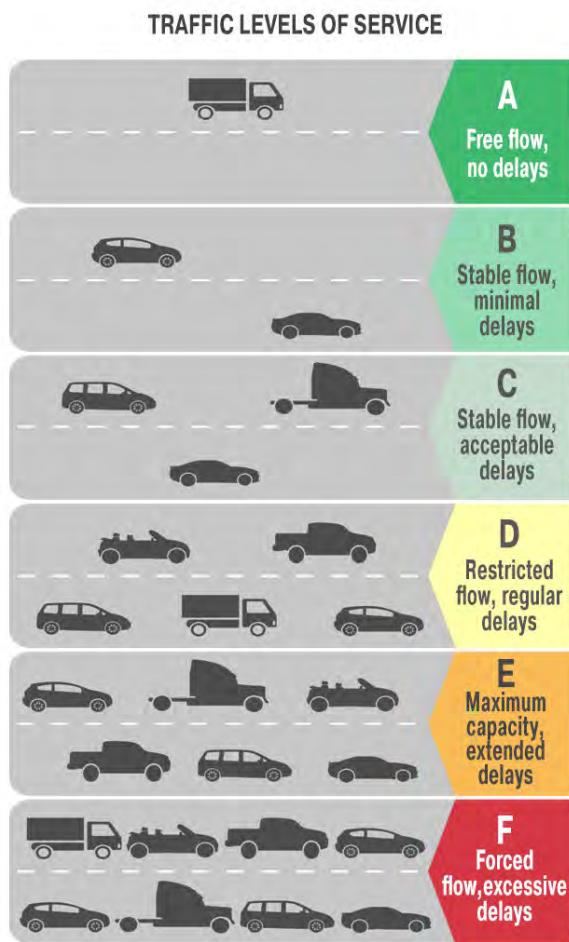
²⁵ Due to Covid-19 interruptions, more recent data is not considered reliable.

Existing traffic conditions on US 25 were assessed in terms of Level of Service (LOS), using highway capacity (HCS) software. LOS is a qualitative measurement used to analyze roadways and intersections where levels of service are assigned a designation from A to F, with A representing free flow traffic and F representing gridlock conditions. In rural areas LOS C or better is typically desirable; in urban areas LOS D or better is typically desirable.

The LOS analysis conducted for US 25 (see **Appendix 7**) indicate that the corridor is experiencing acceptable LOS values in the AM and PM peak periods—better than the target LOS D during both AM and PM peak hour of the existing year (2022). **Figure 13** and **Table 7** summarize the peak hour LOS ratings and the estimated Average Annual Daily Traffic (AADT). The traffic volumes shown in **Figure 14** are for two key US 25 intersections.

3.4 FUTURE YEAR TRAFFIC CONDITIONS

Future year levels of service were calculated as part of the study's traffic analysis. An arterial level operational analysis was conducted for US 25, using HCS, based on segments established for the corridor. The results indicated that future traffic is expected to be slightly worse than existing traffic and that the areas currently experiencing delays will experience more delay in 2050. **Table 8** provides the corridor analysis results for the No-Build condition. The US 25/KY 14 intersection is operating at a LOS D, with the southbound approach operating at a LOS F because of significant queuing. More detailed information can be found in **Appendix 7**.



4.0 DEVELOPMENT OF PROJECT CONCEPTS

Various concepts were developed for meeting the purpose of the project. These include Transportation System Management and Operations (TSMO) options and new corridor concepts. The No-Build concept also remains under consideration.

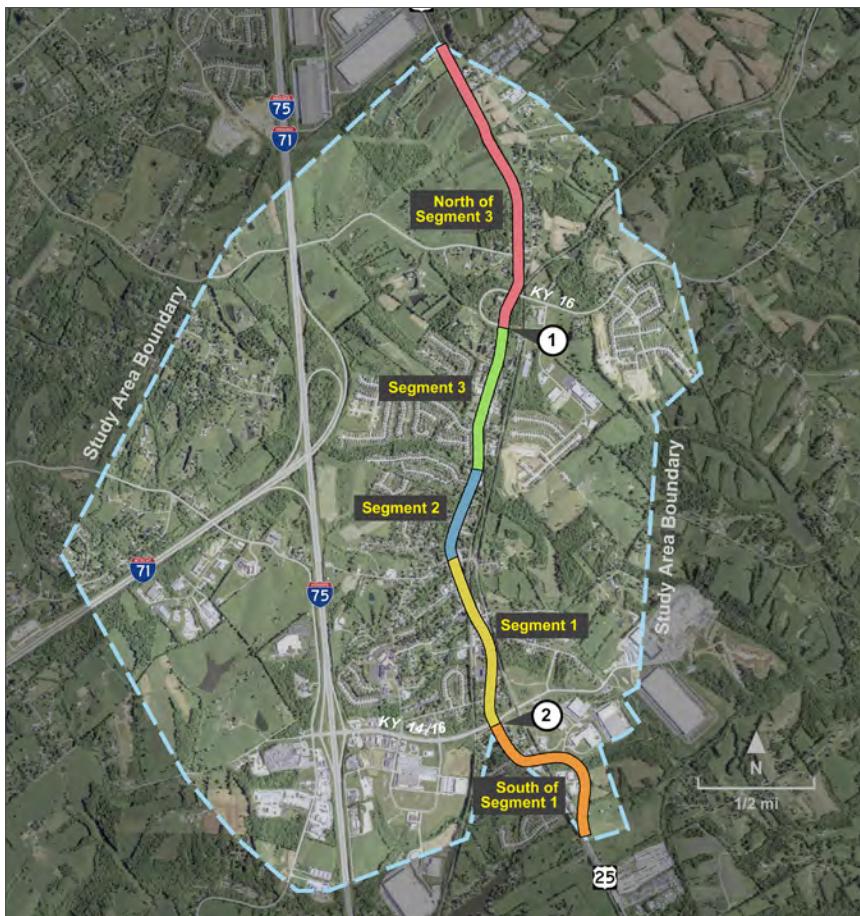


FIGURE 13
Traffic Analysis
Segments

US 25 was divided into five segments for the purposes of study's traffic analysis, as shown here. This map also shows the locations of two intersections where traffic count data was collected: KY 16 and KY 14/16.

Table 7 – Existing Year (2022) US 25 Corridor Analysis Results

Segment	Location	AM Peak Hour			PM Peak Hour		
		Volume (veh/hr)	Density (veh/mi/ln)	LOS	Volume (veh/hr)	Density (veh/mi/ln)	LOS
South of Segment 1	South of KY 14/16/ Mary Grubbs Hwy	265	3.1	B	399	5.8	C
Segment 1	Mary Grubbs Hwy to Old Beaver Road	297	3.7	B	435	6.6	C
Segment 2	Old Beaver Road to Old Nicholson Road	317	4.2	B	488	8.0	C
Segment 3	Old Nicholson Road to KY 16	326	3.7	B	523	7.6	C
North of Segment 3	North of KY 16	315	4.1	B	437	6.6	C

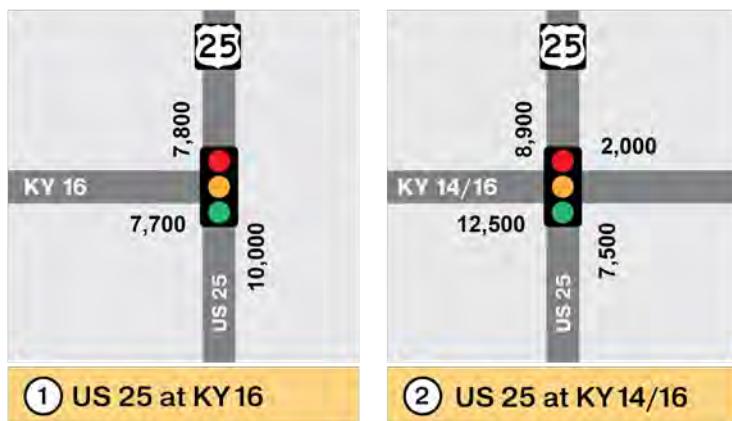


FIGURE 14
**Existing Average
Annual Daily Traffic at
Intersections**

Shown here are the AADT figures for the US 25 intersections at KY 16 and KY 14/16.

Table 8 – No-Build Concept (2050) US 25 Corridor Analysis Results

Segment	Location	AM Peak Hour			PM Peak Hour		
		Volume (veh/hr)	Density (veh/mi/ln)	LOS	Volume (veh/hr)	Density (veh/mi/ln)	LOS
South of Segment 1	South of KY 14/16/ Mary Grubbs Hwy	520	8.6	C	770	5.8	D
Segment 1	Mary Grubbs Hwy to Old Beaver Road	423	6.3	C	634	6.6	D
Segment 2	Old Beaver Road to Old Nicholson Road	456	7.2	C	704	8.0	D
Segment 3	Old Nicholson Road to KY 16	503	7.1	C	777	7.6	D
North of Segment 3	North of KY 16	450	6.0	C	620	6.6	C

4.1 THE NO-BUILD CONCEPT

The No-Build Concept would maintain the existing year (2023) lane configuration and traffic control for all study area roadways and intersections.

4.2 TRANSPORTATION SYSTEM MANAGEMENT AND OPERATIONS

Transportation System Management and Operations concepts typically consist of low-cost, minor transportation improvements to increase the capacity or operational efficiency of an existing facility. There are two main types of TSMO improvements: operational and physical. Examples of operational improvements include traffic law

enforcement, access control, signal coordination, turn prohibitions, speed restrictions, and signal phasing or timing changes. Examples of physical improvements include construction of turn lanes, intersection realignment, improved warning and information signs, new signals or stop signs, and intersection geometric and signalization improvements.

The presence of I-71/75 to the west of US 25, and two railroads to the east, along with historic structures and on-street parking in Walton's historic downtown, meant that options for upgrading the existing US 25 were severely limited. To determine the feasibility of such an upgrade, an urban, three-lane typical section, with sidewalks, was developed along the existing US 25 centerline. The right-of-way width was minimized using 11-foot lanes, curb and gutter for drainage, and 3-foot utility strips. Even with these minimization techniques, this design was found to affect 176 parcels, either in the form of permanent land acquisition or easement acquisition. Fourteen buildings would be affected, along with 74 potential historic properties and 283 potential noise receptors. Due to the extent of these impacts, a full reconstruction of US 25 was not carried forward; various TSMO concepts were developed on US 25 instead

Referred to as spot improvements, three physical improvement TSMO concepts were developed, each intended to provide short-term, cost-effective ways of meeting the project purposes. Each of these improvements assumes 12-foot lanes, with 2-foot shoulders on rural sections and curb and gutter at the US 25/KY 16 intersection. Their locations are shown on **Figure 15**.

Spot Improvement 1: US 25 and KY 14/KY 16 (Mary Grubbs Highway)

The US 25 and KY 14/KY 16 intersection is approximately 0.75 miles east of the I-75/KY 14 interchange. The US 25 southbound approach, between the north end of Needmore Street and KY 14/KY 16, is a two-lane curb and gutter design. It abuts residential and business properties. Storm sewer and utility poles are located on both sides of the road. At the intersection, the US 25 southbound approach includes channelization for a short left-turn storage lane; there is no channelization for the right turn and through movements. Lack of dedicated storage or movement for right turn and through traffic causes delays and encourages cut-through traffic on local streets to reach KY 14/KY 16. The local streets in this area are not designed for the higher volumes caused by this cut-through traffic.

The KY 14/KY 16 eastbound approach to US 25 has documented crashes resulting primarily from lane change traffic movements. KY 16 is a partially controlled-access roadway, with dedicated left, through, and right turn lanes and no private access.

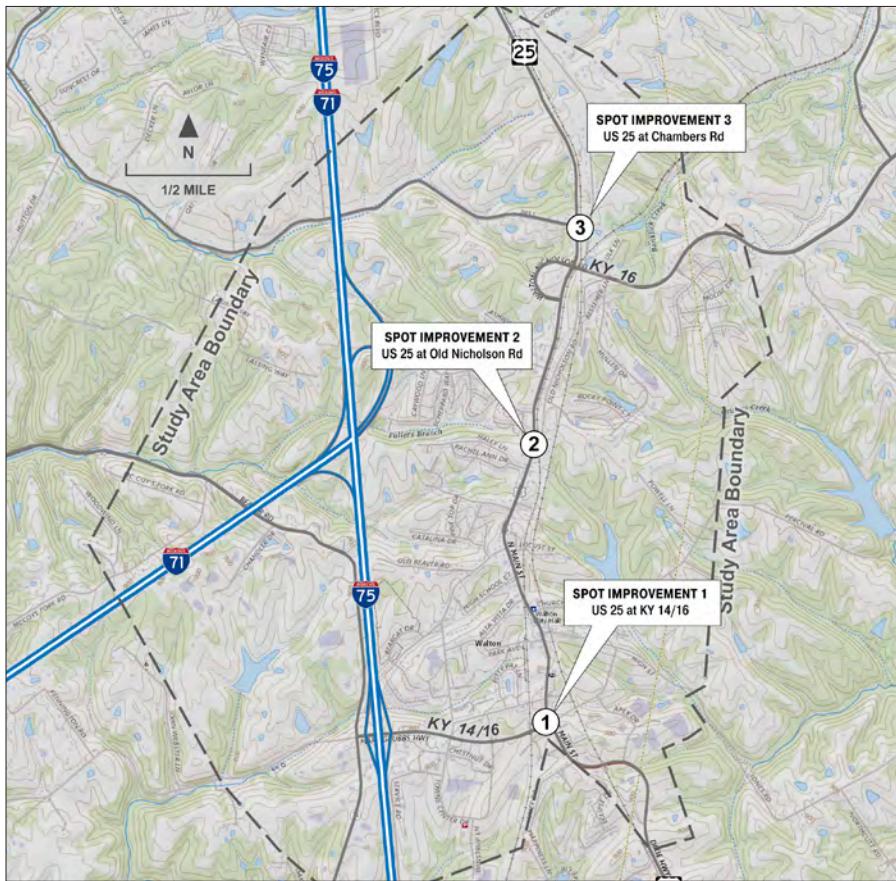


FIGURE 15
Spot Improvement Locations

Three Spot Improvements, with options, were developed at key locations along US 25. Together, these form the study's TSMO Concept.

As shown in **Figure 16**, Spot Improvement 1 would include widening the southbound US 25 approach to allow for dedicated right turn and through lanes, which would relieve traffic backups and reduce cut-through traffic on the local roads that results from delays at this intersection. The dedicated left turn lane would be extended for increased storage, along with upgraded striping, directional arrows, and signage, to improve traffic flow. Upgraded striping, directional arrows, and signing would be implemented on the KY 14/KY 16 approach to improve traffic channelization, driver awareness, and safety. This improvement would require two residential relocations, the purchase of additional right-of-way, relocation of utility service poles, relocation of storm sewer inlets, removal of driveway entrances, and modifications to existing sidewalks.

Spot Improvement 2: US 25 and Old Nicholson Road

The US 25/Old Nicholson Road intersection is approximately 1.3 miles north of the US 25 and KY 14/KY 16 intersection along US 25. This intersection serves as the

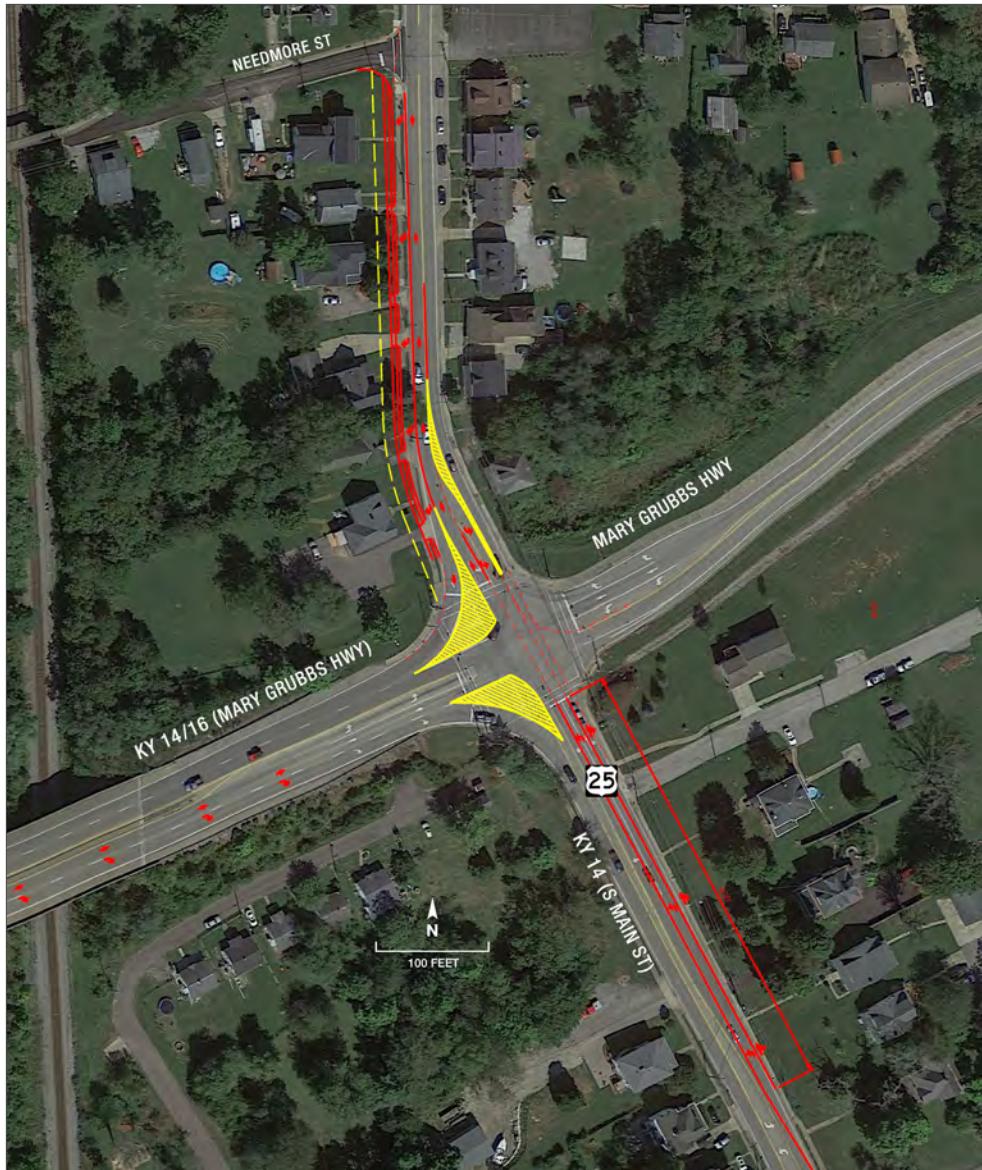


FIGURE 16
Spot Improvement No. 1

This TSMO concept would add a right-turn lane and a thru-lane southbound on US 25. Striping, arrows, and signage on KY 14/KY 16 would be upgraded.

only point of access to residents and businesses on Old Nicholson Road, which is a dead-end to the north. North of the US 25 intersection, an at-grade crossing with CSX railroad frequently causes traffic disruption and limits traffic storage on Old Nicholson Road between US 25 and the railroad crossing. The skew of the intersection also creates sight distance issues for drivers turning from Old Nicholson Road. Old Nicholson Road connects to US 25 at a severe skew (approximately 26 degrees), making the right turn radius from Old Nicholson Road to US 25 too sharp to accommodate semi-trailer trucks. Lack of left-turn storage from southbound US 25 to Old Nicholson Road can also cause disruption to through movements in this location.

As shown in **Figure 17**, Spot Improvement 2 includes three options. Two would realign Old Nicholson Road at US 25; the third would build a new connection between Old Nicholson and Mullen Road. A second new connection—between Old Nicholson Road and US 25 north of the existing intersection—was also considered. It was ultimately dismissed because steep terrain and the presence of an historic property negated any advantage this option would have had.

Of the two options for realigning the existing intersection, the northern option (blue) would provide semi-trailer truck storage for left turns from southbound US 25 and improve the northbound right turn radius from Old Nicholson Road (see **Figure 18**).

The southern option (red) would provide semi-trailer truck lane storage between US 25 and CSX Railroad and improve the right turn radius for southbound Old Nicholson Road to access northbound US 25. Widening and adding a left turn lane would likely not be necessary; storage for one tractor trailer would be sufficient at the railroad crossing.

The third option (green) would connect Old Nicholson Road to Mullen Drive, approximately 0.33 miles north of the existing Old Nicholson/US 25 intersection. It would

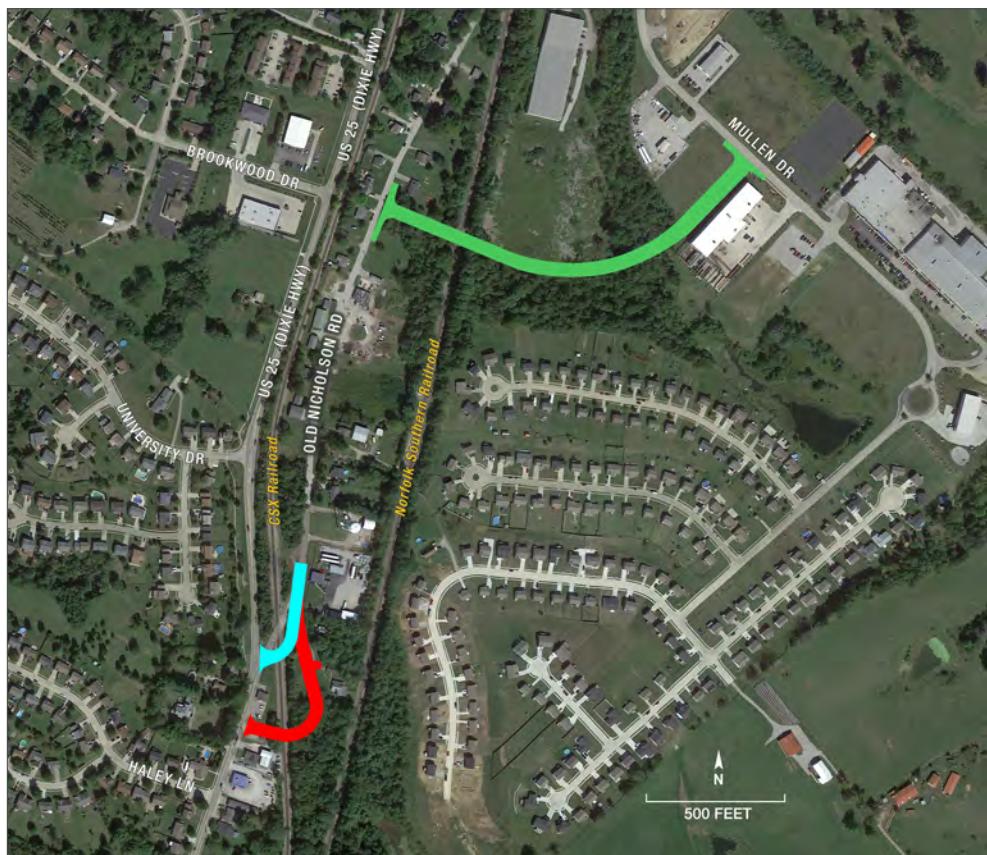


FIGURE 17
Spot Improvement
No. 2 Options

This Spot Improvement includes two options for realigning Old Nicholson Road's intersection with US 25 and a third option that would connect Old Nicholson Road to Mullen Road.

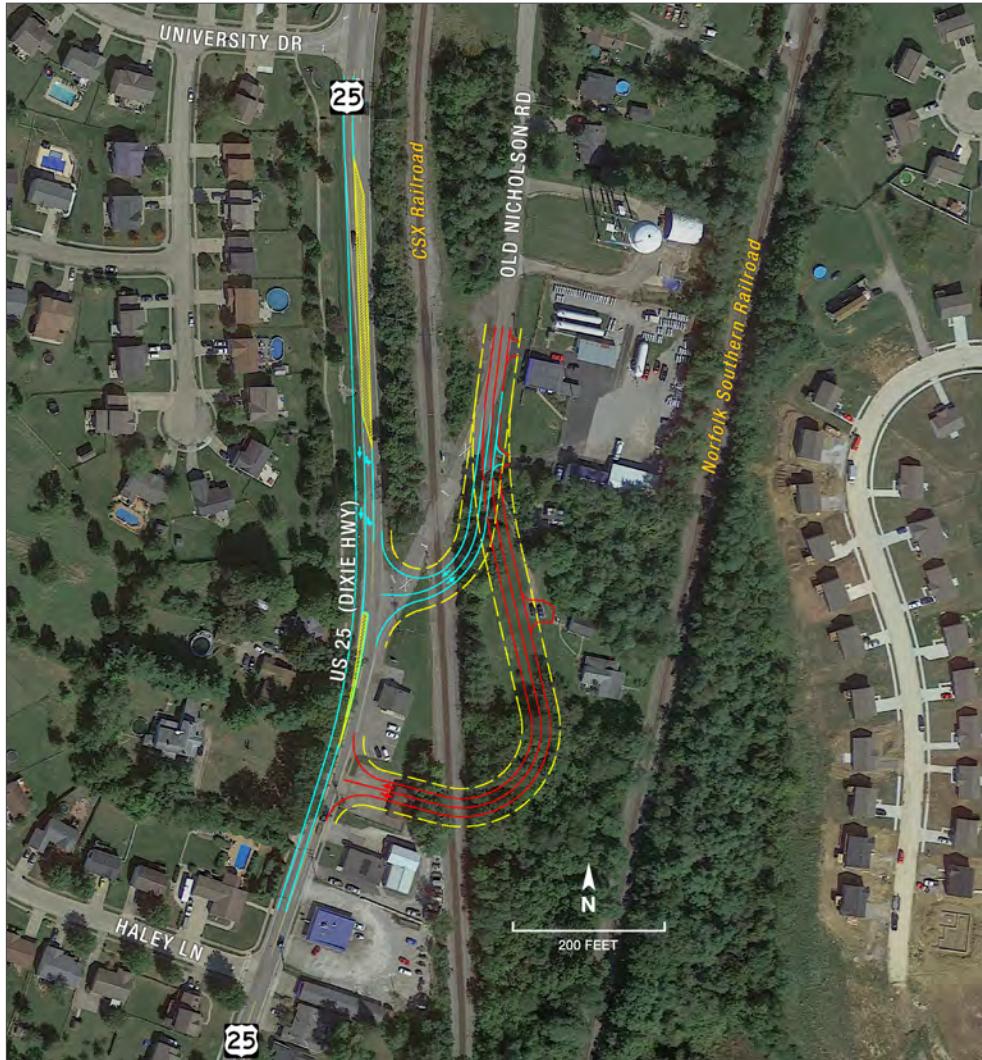


FIGURE 18
Spot Improvement
No. 2, Realignment
Options

Two options have been developed for realigning the Old Nicholson Road intersection with US 25.

have two 12-foot lanes, with 2-foot shoulders. This new connection would make it possible to close the Old Nicholson Road at US 25 and eliminate the at-grade crossing of the CSX railroad tracks. It would, however, require a new at-grade crossing of the Norfolk Southern tracks (see **Figure 19**).

The green option would require the purchase of additional right-of-way from Norfolk Southern Railroad and the relocation of a water line. The blue option would require the purchase of additional right-of-way, relocation of utility poles, and the relocation of a water line. The red option would require the purchase of additional right-of-way, acquisition of one standing structure/business, relocation of utility poles, and the relocation of a water line.

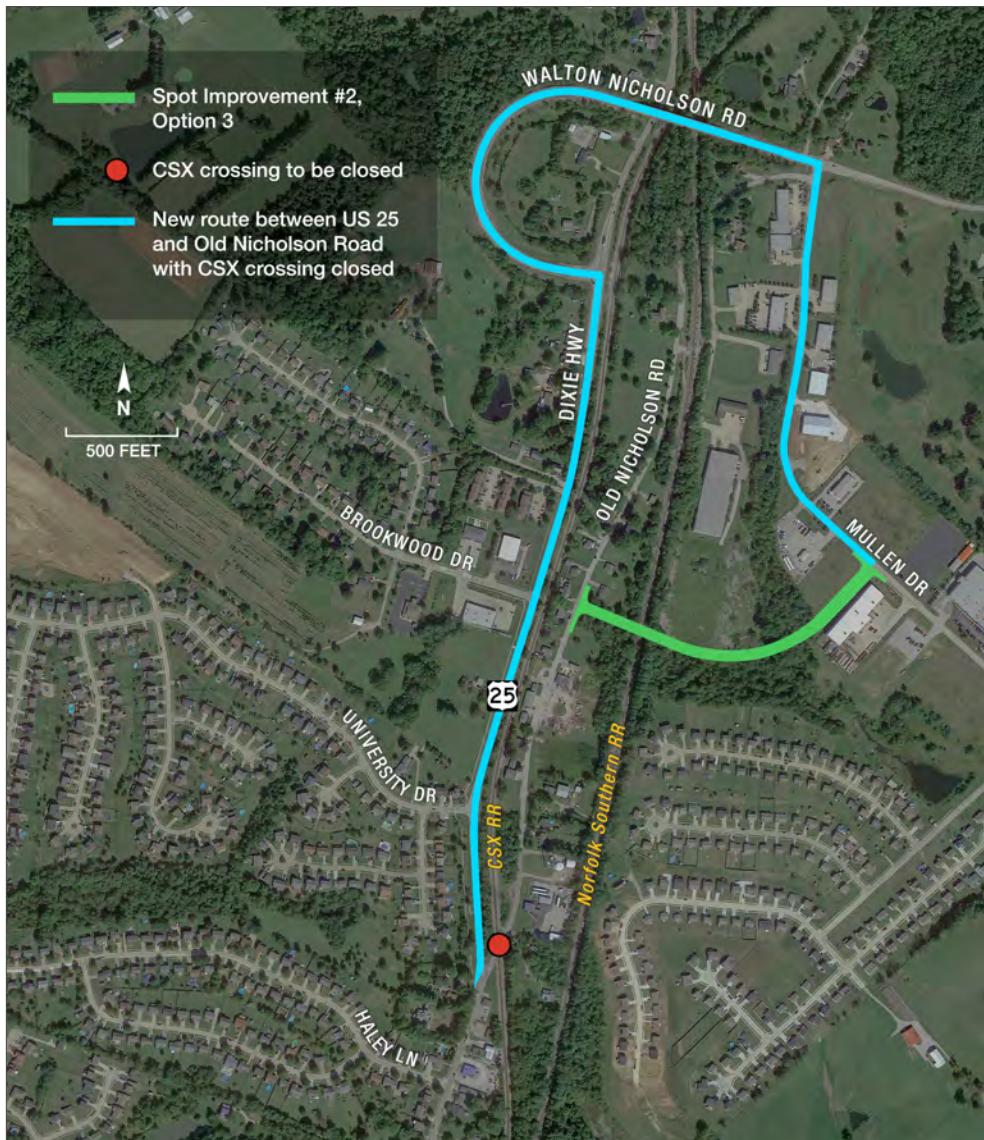


FIGURE 19
Spot Improvement No. 2,
Third Option

This third option would connect Old Nicholson Road to Mullen Drive. This new connection would allow closure of both the highly skewed Old Nicholson Road intersection and the undesirable CSX railroad crossing on Old Nicholson Road.

Spot Improvement 3: US 25 and Chambers Road

As shown in **Figure 20**, Spot Improvement 3 includes improvements to the US 25/Chambers Road intersection, which is approximately 2.1 miles north of the US 25 and KY 14/KY 16 intersection.

US 25 has a two-lane rural cross section through the Chambers Road intersection. To the east, Chambers Road crosses the CSX railroad at-grade and ties into Old Lexington Pike. Turning radii and sight distances are deficient for traffic turning movements at this intersection. Land uses along Chambers Road and US 25 are primarily residential through this section of the study area.

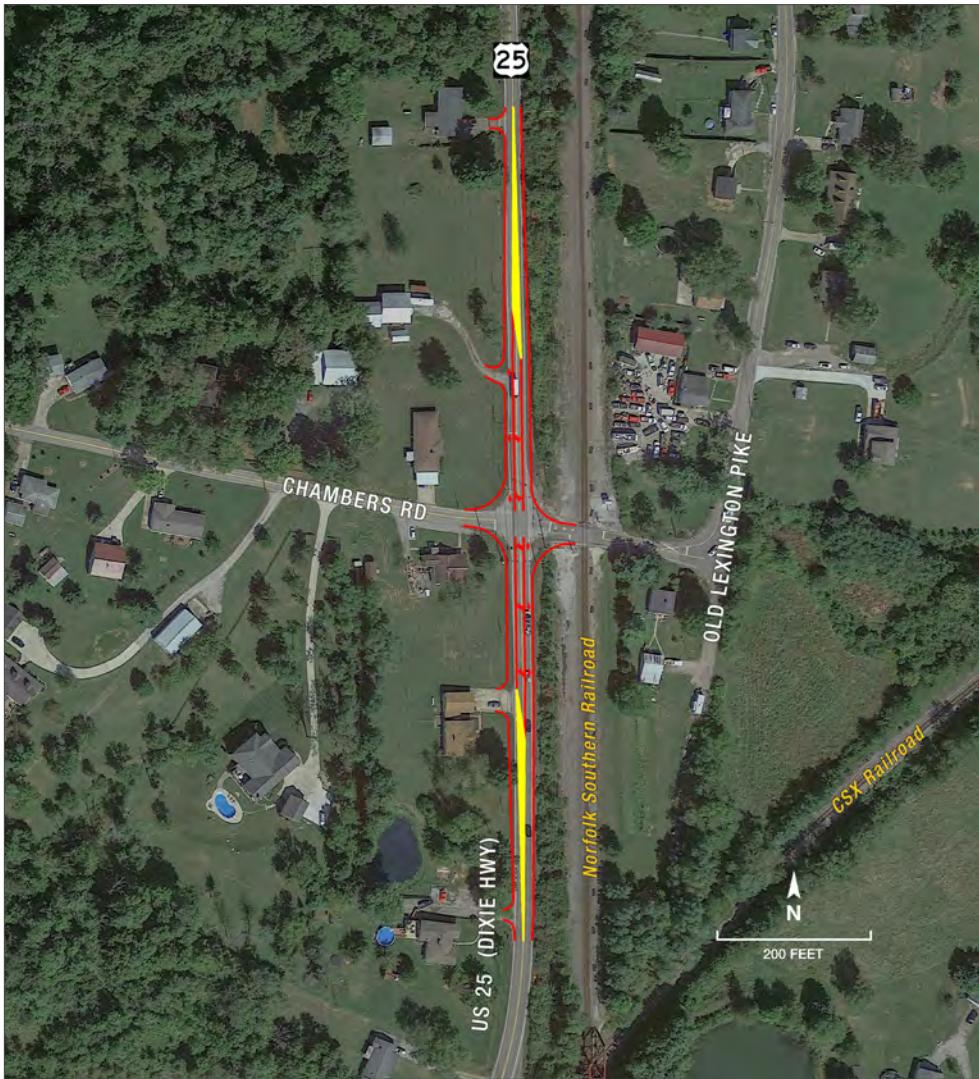


FIGURE 20
Spot Improvement No. 3

This TSMO concept would add northbound and southbound dedicated left turn storage lanes on US 25 at Chambers Road.

Spot Improvement 3 includes northbound and southbound dedicated left turn storage lanes on US 25 at Chambers Road and increased turning radii at the intersection.

4.3 NEW CORRIDOR CONCEPTS

While the spot improvements could be made with minimal new construction, a greater level of project benefits may result from concepts that would construct an entirely new roadway through the study area. Four new corridors were developed for consideration, each with a different set of benefits and impacts. Two of these are west of US 25 and two are to the east. They have been named as follows:

- Western Concept #1 (Yellow)
- Western Concept #2 (Blue)
- Eastern Concept #3 (Red)
- Eastern Concept #4 (Green)

The locations of these four concepts are shown in **Figure 21**. Each concept would be designed with the same basic typical cross section, as shown in **Figure 22**.

Western Concept #1 (Yellow)

This concept begins on US 25 near Tagher Drive, at the northern edge of the study area. Proceeding southward, it crosses Chambers Road, I-71/I-75, Gaines Way, KY 1292, McCoys Fork Road, and I-71. Its southern terminus is a connection to Stephenson Mill Road.

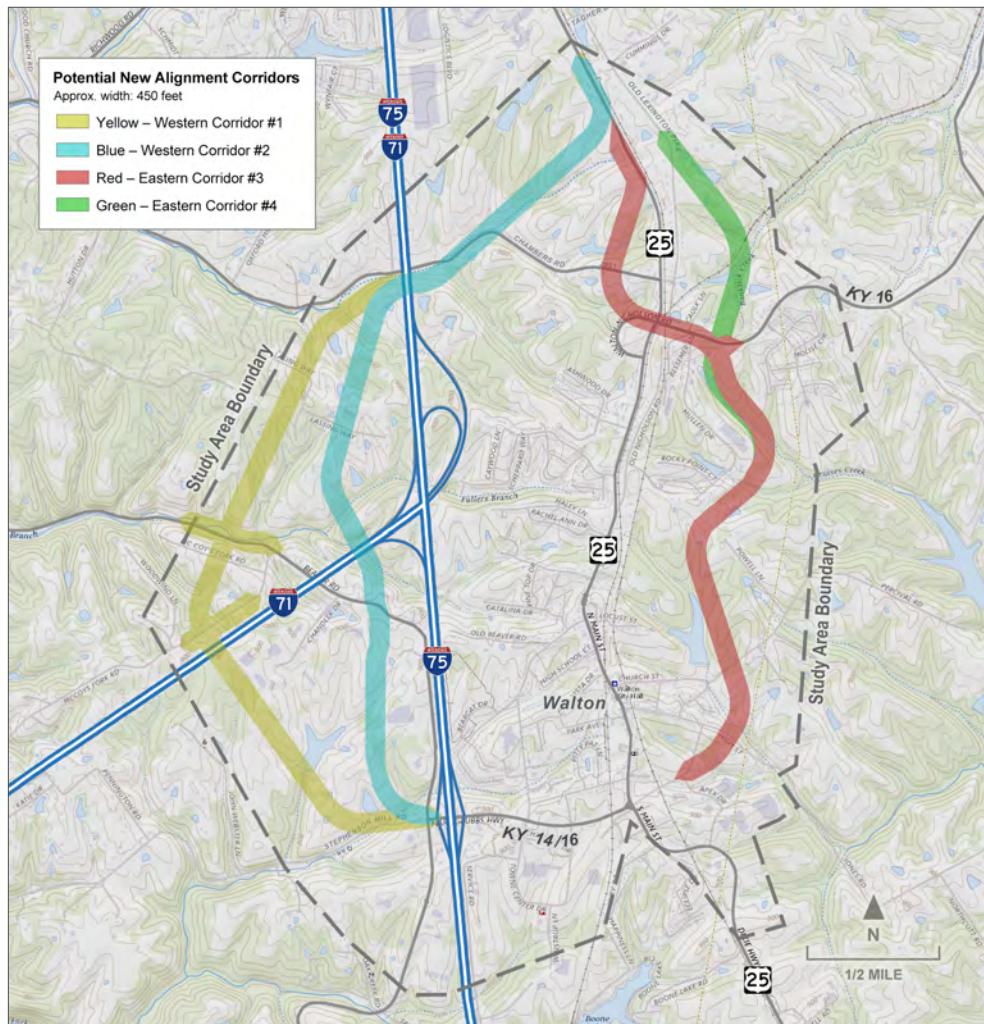
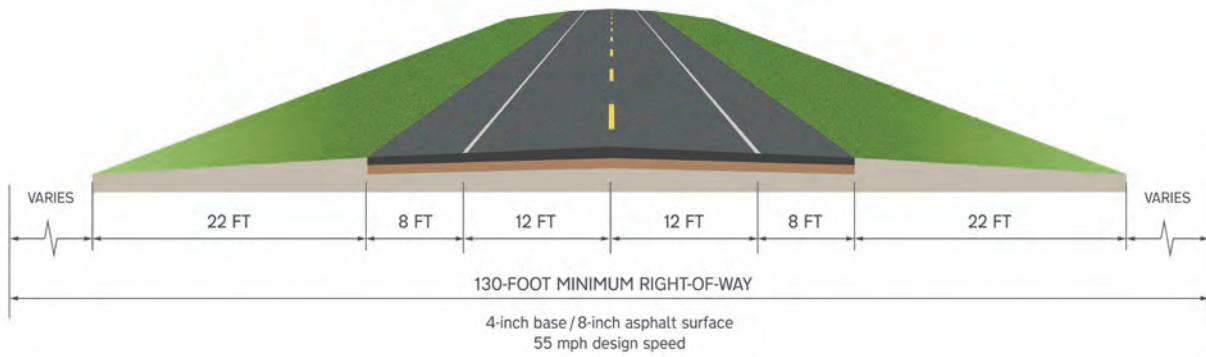


FIGURE 21
New Corridor Concepts

Four new corridor concepts were developed between KY 14/16 and US 25 in the northern study area.

FIGURE 22
New Corridor Typical Section



Concept #1 was designed to provide more direct access to developing industrial areas south of I-71 and west of I-75 and developing residential areas north of I-71 and west of I-71/75. It would require new bridges over I-71 and I-71/75.

Western Concept #2 (Blue)

This concept follows the same path as Concept #1 from Tagher Drive to Chambers Road. At that point it follows a more easterly path, crossing I-71 just west of the I-71/I-75 interchange. Its southern terminus is the same as Concept #1, at Stephenson Mill Road.

Concept #2 is a shorter route than Concept #1 that would also provide more direct access to developing industrial areas south of I-71 and west of I-75 and developing residential areas north of I-71 and West of I-71/75. Like Concept #1, it would require new bridges over I-71 and I-71/75.

Eastern Concept #3 (Red)

This concept's northern terminus is on the west side US 25 just south of Concepts #1 and #2. It crosses to the east of US 25 at KY 16, on the existing bridge, then continues south, ending at Mary Grubbs Highway, east of the US 25 intersection.

The segment of Mary Grubbs Highway east of US 25 has been improved in recent years to include two 12-foot lanes, curb and gutter, and a continuous 10-foot sidewalk/multi-use path along the north side of the road. The road passes under the Northfolk Southern Railroad. The main span of this 2009 railroad bridge is 80 feet 3 inches, with a minimum vertical clearance of 18 feet, 57 inches. It would provide adequate capacity for the proposed two-lane eastern concepts.

Concept #3 was designed to provide a more direct route to the developing areas north and east of Walton/US 25 and to provide a better connection than the existing loop ramp from KY 16 to US 25.

Eastern Concept #4 (Green)

This concept does not begin on US 25 and instead begins on Old Lexington Pike, just east of US 25. This segment of Old Lexington Pike serves existing and planned industrial development. It converges with the Alt. #3 path at KY 16 and follows the same path to its southern terminus at Mary Grubbs Highway. The KY 16 intersection would be at-grade and access to US 25 would be via KY 16.

Concept #4 was designed to provide a more direct route to the developing areas north and east of Walton/US 25 and provide an concept to the existing loop ramp from KY 16 to US 25. By tying to Old Lexington Pike, it would more directly connect to existing industrial access points.

4.4 COMPLETE STREETS

While not a separate project concept, elements of a transportation approach called "Complete Streets" could be applied to each of the other concepts, to some degree.

Complete Streets is an approach to planning, designing and building streets that enables safe access for all users, including pedestrians, bicyclists, motorists and transit riders of all ages and abilities. This approach also emphasizes the needs of those who have experienced systemic underinvestment, or those whose needs have not been met through a traditional transportation approach.²⁶ Complete Streets reduce motor vehicle-related crashes and pedestrian risk, as well as bicyclist risk when well-designed bicycle-specific infrastructure is included.²⁷

Complete Streets approaches vary based on community context. They may address a wide range of elements, such as sidewalks, bicycle lanes, bus lanes, public transportation stops, crossing opportunities, median islands, accessible pedestrian signals, curb extensions, modified vehicle travel lanes, streetscape, and landscape treatments.²⁸

During this study KYTC released their "Complete Streets, Roads and Highways Manual." This document "provides guidance for transportation planning organizations and agencies to promote equitable and safe roadway designs that prior-

26 Smart Growth America. Complete Streets. <https://smartgrowthamerica.org/what-are-complete-streets/>. Accessed March 2023.

27 USDOT. Complete Streets. <https://www.transportation.gov/mission/health/complete-streets>. Accessed March 2023.

28 USDOT. Complete Streets. <https://www.transportation.gov/mission/health/complete-streets>. Accessed March 2023.

itize safety, convenience and comfort for all road users." The Complete Streets improvements developed for this US 25 Corridor Study were prepared using the KYTC Manual as a guide.

Many of the sidewalks in downtown Walton do not meet current ADA²⁹ design standards, with substantial deficiencies in cross slopes, grade of slopes, and width (see **Appendix 5**). It has been expressed that sidewalks and other pedestrian accommodations are important to the community of Walton and that future transportation improvements should include these elements.³⁰ As in many older downtowns, however, space constraints and utilities along the corridor present challenges for providing Complete Streets elements.

For Complete Streets approaches for bicycle use, sharing and overlap between bicyclists and motor vehicle traffic could achieve some Complete Street objectives. Shared facilities for bicycles and motor vehicles provide a separated space for pedestrians and partial- or fully-shared lanes for bicyclists. Shared bicycle and motor vehicle lanes would be accommodated most easily in areas with low motor vehicle speeds and low-to-moderate motor vehicle volumes. Accommodations may include:

- Sidewalk, shared-use path, or shoulder separated from the roadway by a raised curb, landscaped verge, paint and post buffer, or appropriate barrier
- Shared vehicle lane (fully-shared), advisory lanes (partial-shared), or shared bus lanes (partial-shared) for bicycles, e-bicycles, and e-scooters
- Signs and pavement markings indicating that the roadway is shared between bicycles, e-bicycles, e-scooter, and motor vehicles or transit vehicles

5.0 SCREENING OF CONCEPTS

The information collected on the study area's human, natural, and physical environment was used as the basis for assessing the likely impacts of each concept. Future land use plans, economic development goals, and community preferences were also used to estimate the level of benefit that could be realized by each concept. Those impacts and benefits are described below and are summarized in a comparative matrix at the end of this section.

29 The Americans With Disabilities Act of 1990. <https://www.ada.gov/law-and-regs/ada/>

30 Boone County. *Walton Main Street Strategic Plan, 2015*. https://www.boonecountky.org/planning_commission/walton_main_street_strategic_plan.php

5.1 THE NO-BUILD CONCEPT

While the No-Build Concept would not have direct socioeconomic, environmental, or cost impacts, it would not address pedestrian impacts in the future as traffic volumes continue to increase. This concept would not meet the project purposes and would not support the recommendations of the previous studies in the area, which call for addressing congestion along US 25. It would also not improve roadway safety or multi-modal mobility in the project area.

5.2 TRANSPORTATION SYSTEM MANAGEMENT AND OPERATIONS

Taken together, the TSMO spot improvements would provide several benefits, with relatively low impacts.

Spot Improvement Benefits

By providing operational improvements at three deficient locations, the proposed spot improvements would help achieve two of the Boone County goals: (1) Improve safety and security for all travelers, and (2) Provide sufficient future capacity and mobility. Improving sight distance and providing protected turns are expected to decrease crash frequency and thus improve safety. Removing turning movements from through lanes would improve mobility at the spot improvement locations. The spot improvements would not achieve the project's primary purpose, however, which is to improve regional connectivity and support ongoing growth in the Walton area.

Spot Improvement Impacts

The impacts associated with each of the three spot improvements are expected to be minor in all cases.

Spot Improvement 1 (US 25 at KY 14/16) — This improvement would potentially require two residential relocations. It would also affect several utility service poles, storm sewer inlets, driveway entrances, and adjacent sidewalks.

Spot Improvement 2: US 25 and Old Nicholson Road — The northern option (blue) would potentially affect utility poles and would require right-of-way acquisition. The southern option (red) would potentially require utility relocations, right-of-way acquisition, and one business relocation. Likely impacts associated with the third option (green) include utility relocations at the project termini and right-of-way acquisition from the Norfolk Southern Railroad.

Spot Improvement 3: US 25 and Chambers Road — Potential impacts for this concept would be limited to one or more utility pole relocations, modification of the existing traffic signal, a water line relocation, and right-of-way acquisition.

The estimated costs for each spot improvement are shown in **Table 9**: Details of the cost estimates are contained in **Appendix 8**.

Table 9 – Spot Improvement Cost Estimates

	Spot Improvement 1	Spot Improvement 2			Spot Improvement 3
		Red Option	Blue Option	Green Option	
Engineering and Design	\$36,000	\$56,000	\$101,000	\$96,000	\$131,000
Right-of-Way	\$893,000	\$487,000	\$46,000	\$88,000	\$29,000
Utilities Relocation	\$78,000	\$180,000	\$180,000	\$29,000	\$106,000
Construction	\$239,000	\$379,000	\$671,000	\$636,000	\$871,000
Total	\$1,246,000	\$1,102,000	\$998,000	\$849,000	\$1,137,000

5.3 NEW CORRIDOR CONCEPTS

The intent of the new corridors was to provide concepts that would avoid the congested and narrow US 25 route through Walton while more directly serving the existing and planned industrial land uses on the fringes of Walton.

The corridor concepts were laid out to avoid or minimize impacts to existing human and natural environmental features while maximizing benefits. **Figure 23** shows the four new corridor concepts and spatial data for many of the human, natural, and physical resources that influenced their locations.

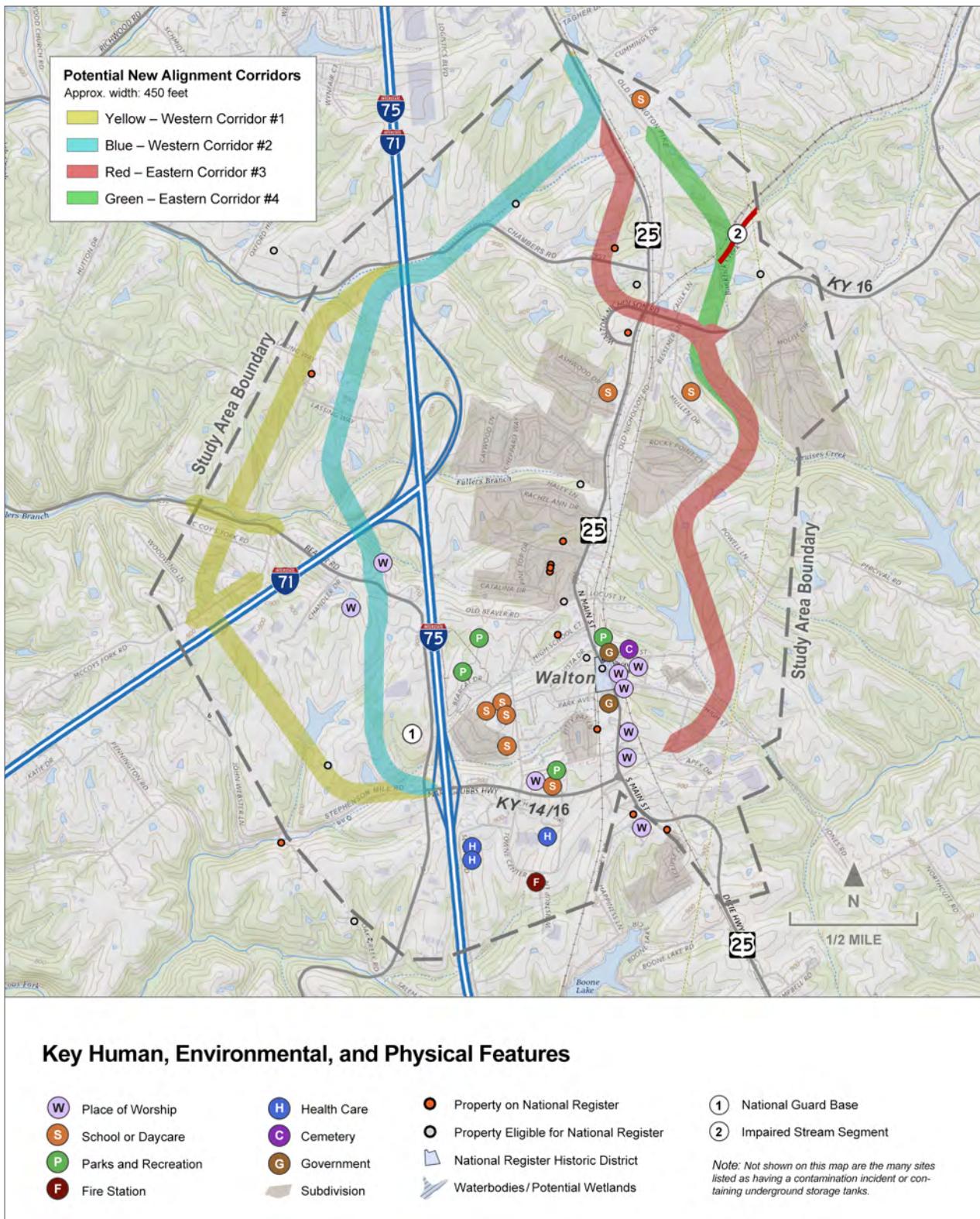
New Corridor Benefits

Each of the new corridor concepts has the potential to improve area connectivity and to help create a more robust regional highway network. In so doing, each would support ongoing freight-oriented growth in the area. They also have the potential to reduce the volume of freight traffic on US 25, which would improve the pedestrian experience in Walton. These concepts would differ in the level of benefit they could potentially achieve, however.

Both western concepts are longer than the eastern concepts and thus both have higher projected travel times—which means they are projected to attract lower volumes of future traffic. Concept 1 is projected to carry only 100 vehicles per day, and Concept 2 only 650 vehicles per day, in 2050.

Because they are shorter, the eastern concepts have lower travel times and would therefore attract more traffic, with Concept 3 carrying 900 vehicles per day and Concept 4 carrying 1,000 vehicles per day in 2050.

Figure 23 – New Corridor Concepts with Key Study Area Features



It should be noted that the study area is changing more quickly than the traffic model can project. As existing land use types change and more industrial and higher density residential land use are approved, it is anticipated that the future year traffic volumes for the new corridor concepts would significantly increase.

The design year (2050) AADT volumes and levels of service for each new corridor concept are shown in **Figure 24**, along with a comparison of 2050 travel times between these concepts and US 25.

Although each of the new corridor concepts would require slightly longer travel times than the existing US 25 corridor, this could change if various modifications were made along US 25. Key among these would be to remove the US 25 designation from the existing route through Walton and apply it to the new corridor.³¹ This would allow the former US 25 to be removed from the official truck network, which would in turn allow a range of traffic calming techniques or other design features to be implemented along it. Where the concepts tie into US 25, another important modification would be to design the new corridor as the thru-movement, with access to the old US 25 requiring a turning movement. Each of these modifications would help reduce travel times through Walton and encourage freight traffic to use the new corridor.

New Corridor Impacts

Because they would require multiple bridges over interstate highways, the Western concepts are substantially more expensive than the Eastern concepts. These costs, and the other key potential impacts of the new corridor concepts, are shown in **Table 10**. Cost estimate details are contained in **Appendix 8**

Table 10 – Key Impacts of New Corridor Concepts

	Miles of New Construction	Relocations (residential)*	Stream Impact (linear ft)	Wetland Impact (acres)	Farmland Impact (acres)	Historic Property Impact	Cost Estimate (\$ million)
Alt 1	4.8	10	6,400	2.4	17.1	0	39.7
Alt 2	3.6	6	3,206	1.6	20.8	2	33.0
Alt 3	2.9	6	1,366	1.2	10.9	1	18.6
Alt 4	2.9	6	3,160	2.0	8.8	0	17.8

* No business relocations are anticipated with the New Corridor concepts.

³¹ This would require that the local government formally accept maintenance responsibilities for the existing route.

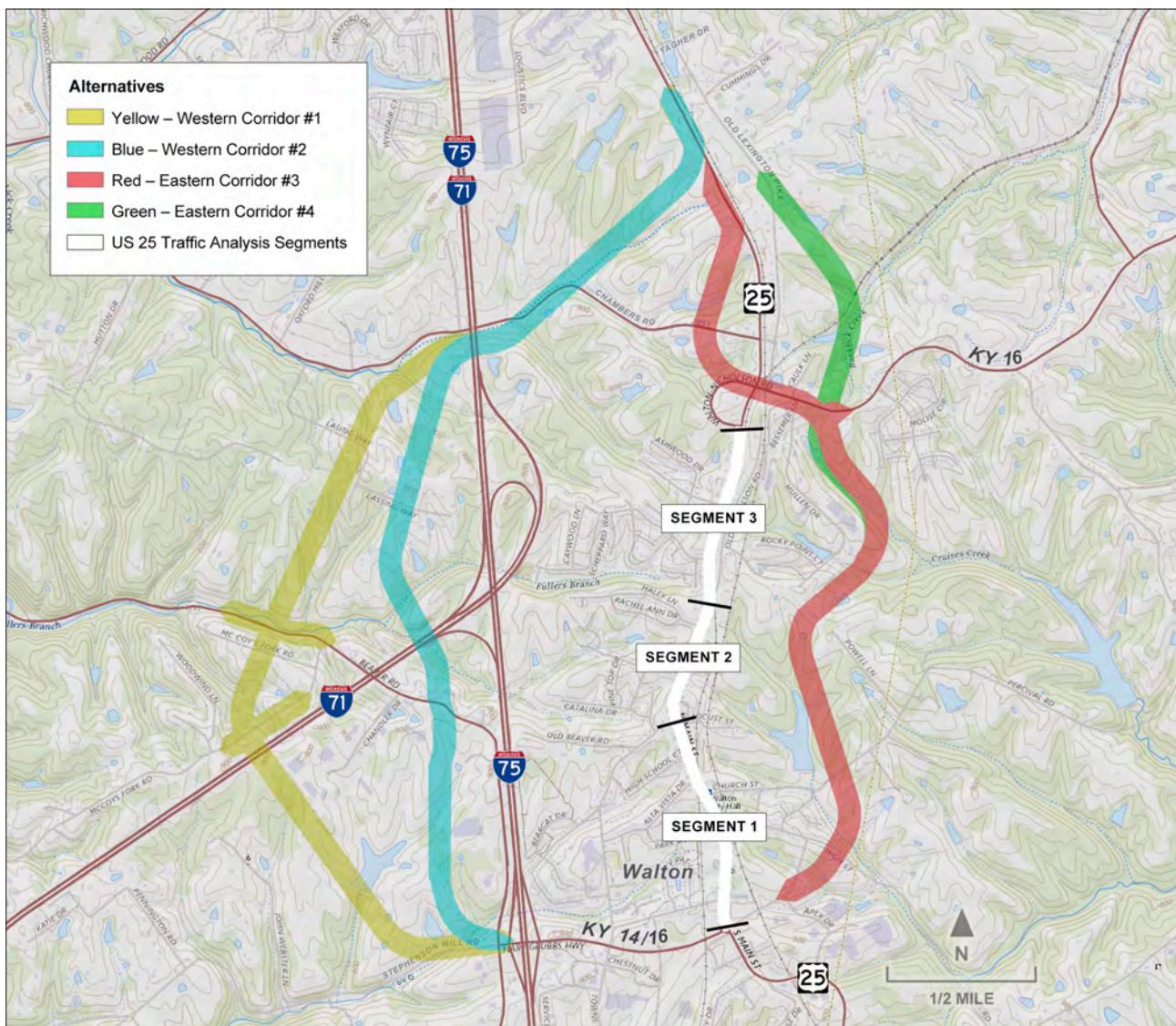


FIGURE 24 – 2050 No-Build and Build Traffic Data

2050 No-Build Volumes (AADT)	US 25 Traffic Analysis Segments						2050 Travel Times	minutes*	
	Segment 1		Segment 2		Segment 3				
	volume	% change	volume	% change	volume	% change			
	12,000		15,000		15,000				
2050 Build Volumes (AADT)	Segment 1	Segment 2	Segment 3						
Alt 1 (Yellow)	100	11,880	-1%	14,850	-1%	14,850	-1%	US 25	3.9**
Alt 2 (Blue)	650	11,400	-5%	14,400	-4%	14,400	-4%	Alt 1 (Yellow)	5.8
Alt 3 (Red)	950	11,040	-8%	14,100	-6%	14,100	-6%	Alt 2 (Blue)	4.6
Alt 4 (Green)	1,000	11,040	-8%	14,100	-6%	14,100	-6%	Alt 3 (Red)	4.5
							Alt 4 (Green)	4.6	

* PM peak travel time between KY 14/16 and US 25 northern project terminus.

** This travel time does not reflect potential traffic calming modifications on US 25 in downtown Walton.

5.4 COMPARATIVE EVALUATION MATRIX

The potential effects of all the concepts—both TSMO and New Corridor Concepts—are summarized in a comparative evaluation matrix (see **Figure 25**). This matrix was developed to provide a side-by-side comparison of the full range of benefits and impacts examined.

It is important to note that these are considered potential impacts. Design refinements and more in-depth study as the project progresses will likely lower the impacts in some categories.

6.0 RECOMMENDATIONS

As described in Section 4.0, the US 25 Corridor Study resulted in two very different types of concepts, neither of which would readily achieve each of the purposes and goals established at the beginning of the study. Some of those goals could be achieved at low cost and with minor impacts by implementing the TSMO concept. This concept would not, however, achieve the project's primary purpose. The new corridor concepts would be substantially more expensive, but they could achieve the primary purpose and secondary goals of the project. Their ability to do so, however, would depend on additional modifications (i.e., Complete Streets improvements) being made to US 25, other than the TSMO improvements.

It is recommended that the TSMO spot improvement concepts be advanced, when funding becomes available. These improvements would provide immediate safety and congestion relief benefits at a modest cost and with minimal impacts. They would continue to provide these benefits even if a new corridor concept is advanced in the future.

If funding is available for a new corridor concept, both eastern concepts (#3 and #4) should be advanced for further study, as they provide the greatest benefit with the lowest cost and have fewer overall environmental impacts than the western concepts. They more directly serve existing and planned industrial and residential development and provide the opportunity to further evaluate and address the bridge carrying KY 16 over US 25, which is critical to the local traffic network. Combining corridor concepts #3 and #4 would improve direct access to US 25 and provide direct access to the developing industrial sites along Old Lexington Pike.

If advanced, the new corridor concept should be designed as the US 25 thru- movement, requiring turns onto existing US 25. This would make it easier to use the new route to access existing and future development and support the goal of reducing truck traffic through Walton. This goal could be further advanced by formally remov-

Figure 25 – Comparative Evaluation Matrix

	SPOT IMPROVEMENT OPTIONS					NEW CORRIDOR CONCEPTS			
	#1	#2 Red Option	#2 Blue Option	#2 Green Option	#3	Yellow Western #1	Blue Western #2	Red Eastern #3	Green Eastern #4
1. Socioeconomic Effects and Land Use Planning									
Would this concept have a negative effect on neighborhoods or community resources?	No	No	No	No	No	No	No	No	No
Would this concept benefit neighborhoods or community resources?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Could this concept adversely or disproportionately impact minority or low-income population?	No	No	No	No	No	No	Yes	Yes	Yes
Number of relocations of residences or businesses required	2	1	0	0	0	0	6	6	6
Would this concept be compatible with other planned transportation improvements in the area?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Is this concept compatible with zoning and land use planning?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Would this concept support industrial growth?	Yes	No	No	No	No	No	Yes	Yes	Yes
Would this concept be consistent with the urban or rural character of the area?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Would this concept improve access to area schools?	Yes	No	No	No	Yes	Yes	Yes	Yes	Yes
Would this concept impact utilities?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2. Potential Environmental Impacts									
Water resources affected (linear feet of jurisdictional streams)	0	0	0	0	0	0	3206	1366	3160
Acres of NWI wetlands affected	0	0	0	0	0	0	1.6	1.2	2.0
Acres of 100-Year floodplain affected	0	0	0	0	0	0	0	0	0
UST/HAZMAT sites affected	0	0	0	0	0	0	5	1	1
Archaeology sites affected	0	0	0	0	0	0	0	0	0
Historic properties/structures affected	0	0	0	0	0	0	1	1	0
Threatened/endangered species habitat affected	No	No	No	No	No	No	Yes	Yes	Yes
Air quality impacts?	No	No	No	No	No	No	No	No	No
Noise impacts?	n/a	n/a	n/a	n/a	n/a	72	39	144	118
Geotechnical constraints	No	No	No	No	No	No	Yes	Yes	Yes
Acres of prime farmland affected	0	0	0	0	0	0	20.8	10.9	8.8
Miles of new roadways that would need to be built	0	0	0	0	0	0	3.6	2.9	2.9
3. Operational Considerations									
Would this concept improve safety?	Low	Low	Low	Low	Low	Low	Low	Low	Low
Would this concept improve travel times?	Slightly	No	No	No	Slightly	Slightly	No	No	No
Would this concept improve freight mobility?	No	No	No	No	No	No	Yes	Yes	Yes
Would this concept improve pedestrian mobility?	No	No	No	No	No	No	Yes	Yes	Yes
Would this concept improve mobility for bicyclists?	No	No	No	No	No	No	Yes	Yes	Yes
Would this concept improve mobility for school-related traffic?	No	No	No	No	No	No	Yes	Yes	Yes
5. Costs	(See Appendix 8 for detailed cost breakdown, by concept)								
	thousands					millions			
Engineering and Design	\$36.0	\$56.0	\$101.0	\$96.0	\$131.0	\$3.8	\$3.2	\$1.4	\$1.6
Right-of-Way	\$893.0	\$487.0	\$46.0	\$88.0	\$29.0	\$8.0	\$7.4	\$6.7	\$4.3
Utilities Relocation	\$78.0	\$180.0	\$180.0	\$29.0	\$170.0	\$12.9	\$1.2	\$1.1	\$1.0
Construction	\$239.0	\$379.0	\$671.0	\$636.0	\$871.0	\$25.0	\$21.2	\$9.4	\$10.9
TOTAL COST	\$1,246.0	\$1,103.0	\$998.0	\$849.0	\$1,201.0	\$39.7	\$33.0	\$18.6	\$17.8

ing the US 25 designation from the existing route and designating the new route as US 25. This would require an interlocal agreement between KYTC and a local government (either Boone County, or the City of Walton) to transfer maintenance of the existing route. That action would then allow a wide range of traffic calming and Complete Streets solutions that would not be possible if the route remains a designated truck route.

Complete Streets solutions should be advanced as appropriate, based on anticipated future conditions. Complete Street concepts were not explored in detail, because the appropriate solutions will depend on other project decisions. If US 25 remains a designated freight route, then a modest implementation of sidewalk improvements through Walton to address gaps and poor conditions would be appropriate. If a new route becomes the designated US 25 route and the existing US 25 through Walton becomes a local street, more comprehensive solutions such as speed tables, sidewalk bump-outs, bicycle lanes, etc., should be considered to address the local vision for improved mobility for all modes. Each of these improvements would provide benefits and address portions of the project purpose and need. If all of these solutions are implemented, the projects purpose and need would be met. (Note: Summaries of meetings held for this project are contained in **Appendix 9**.)

7.0 NEXT STEPS

Funding recommendations for future phases should be prioritized through KYTC's SHIFT (Strategic Highway Investment Formula for Tomorrow) process to feed into a future state highway plan. Once funding is secured, the next phase for the development of any future project is Phase I Preliminary Design, including environmental analyses, which is required to be eligible for federal funding for future phases. KYTC's STIP should be amended to reflect any future project development phases. Coordination with local officials, key stakeholders, and the public should be considered as part of the design process.

8.0 ADDITIONAL INFORMATION

Written requests for additional information should be sent to:

KYTC Division of Planning
ATTN: Director
200 Mero Street
Frankfort, KY 40622
Phone: 502.564.7183

APPENDICES

Under Separate Cover