FINAL REPORT

RICHMOND – BEREA SMALL URBAN AREA STUDY

Prepared for:

KENTUCKY TRANSPORTATION CABINET

Kentucky Transportation Cabinet
Central Office, Division of Planning
District 7, Lexington

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April 2017

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Executive Summary

The Kentucky Transportation Cabinet (KYTC) initiated the Richmond – Berea Small Urban Area (SUA) study in Madison County. The purpose of the study is to identify and examine transportation issues within the study area related to safety, operations, and congestion along state-maintained (US and KY) routes in the Cities of Richmond and Berea. The study's primary goal was to propose a prioritized list of both short- and long-term project recommendations that could be used for further project development decisions by the KYTC, City of Richmond, City of Berea, Madison County, and/or private developers.

The SUA study area includes the incorporated Cities of Richmond and Berea, along with portions of Madison County surrounding and connecting the incorporated areas, including the Madison County airport. The KYTC District 7 recommended the study, as the last SUA study of the area was completed in 2004. This SUA study was funded using Kentucky's State Planning and Research (SPR) funds.

Tasks accomplished under this study include the following:

- Analysis of existing conditions, environmental resources, and crash history;
- Estimation of future capacity needs;
- Involvement of Local Officials / Stakeholders (LO/S) and the Project Team to identify transportation issues and priorities; and
- Produce a recommended and prioritized list of improvement options to address short- and long-term concerns.

The Richmond – Berea SUA Study Project Team included staff from the KYTC District 7, KYTC Central Office Division of Planning, BGADD, LAMPO, and the study consultant, WSP | Parsons Brinckerhoff (WSP | PB).

The first LO/S meeting was held on January 19, 2016, in Richmond. The meeting discussed existing conditions and identified needs related to safety, operations, and congestion. In addition, bicycle and pedestrian connectivity, access to tourist sites, and flooding issues were discussed. The LO/S attendees completed a survey to identify locations with transportation issues.

Transportation issues were identified from a technical analysis of existing conditions, the future travel demand, and the results of LO/S surveys. The study project needs were further refined to focus on safety, capacity, roadway deficiencies (drainage), and modal interrelationships (multi-modal).

Project alternatives were developed after field visits and sorted into implementation categories, as follows:

- **Short-term:** Projects that are typically easy to implement without further project development. These types of projects may use existing KYTC resources, or could be individually funded with safety, traffic, or maintenance funds.

- **Long-term:** More complicated projects with a higher cost, and would require further project development. These projects could be considered for inclusion in the KYTC Highway Plan.

- **Local:** Projects not located on the state-maintained system; would need to be funded by the Cities of Richmond or Berea, Madison County, quasi-public agencies, or developers.

On May 24, 2016, the second LO/S meeting was held in Richmond. During this meeting, participants were asked to score projects by assigning points among two or more projects in each implementation category. The scoring process was further separated by jurisdiction with officials from Richmond and Berea scoring their own projects to set local priorities. Representatives of agencies and organizations that covered the entire study area could choose to rank projects in all of the scoring sheets.

Each project was assigned an initial priority of high, medium, or low based on results from the LO/S scoring. A technical ranking was prepared for each project based on analysis results, field reviews, input received, and engineering judgment. KYTC then reviewed and established a final ranking of high, medium, or low priority for each short- and long-term project. Local project priorities remained consistent with the LO/S scoring results.

The prioritization effort led to the development of 60 improvement projects for implementation or future project development. These projects are consistent with the purpose of the study to identify and examine transportation issues related to safety, operations, and congestion along state-maintained routes in Madison County as well as the Cities of Richmond and Berea. Project cost estimates were developed based on fiscal year 2016 dollars.

Final study recommendations include 24 short-term, 26 long-term, and 10 local projects. These projects were prioritized as 13 high, 23 medium, and 24 low priority projects. Recommended projects sorted by jurisdictional boundaries include 30 Richmond, 19 Madison County, and 11 Berea projects.

Short-term project locations are found in **Figure ES-1**. Long-term projects in Richmond, Madison County, and Berea are shown in **Figures ES-2**, **ES-3**, and **ES-4,** respectively. **Figure ES-5** shows the locations of local projects. Projects identified as high, medium, and low priorities are listed in **Tables ES-1**, **ES-2**, and **ES-3**, respectively.

Project recommendations were differentiated with a project identification standard consisting of the project category, project location, and assigned project letter. Projects were categorized as short-term (**ST**), long-term (**LT**), or local (**L**). Next, a jurisdictional area identifier was added: Richmond (**R**), Madison County (**M**), or Berea (**B**). Every project within a jurisdictional area was further assigned a unique letter. An alphabetical lettering system was chosen to identify individual projects instead of a numerical listing that may indicate preferences or a hierarchy. As examples in the use of the project identification standard, the project identified as "**ST R-C**" refers to a short-term (**ST**) project in Richmond (**R**), and can be found as the third (**C**) project sheet of the short-term project listings for Richmond. The project identified as "**LT M-A**" refers to a long-term (**LT**) project in Madison County (**M**), and can be found as the first (**A**) project sheet in the long-term project listings for Madison County.

FIGURE ES-1: RECOMMENDED SHORT-TERM PROJECTS

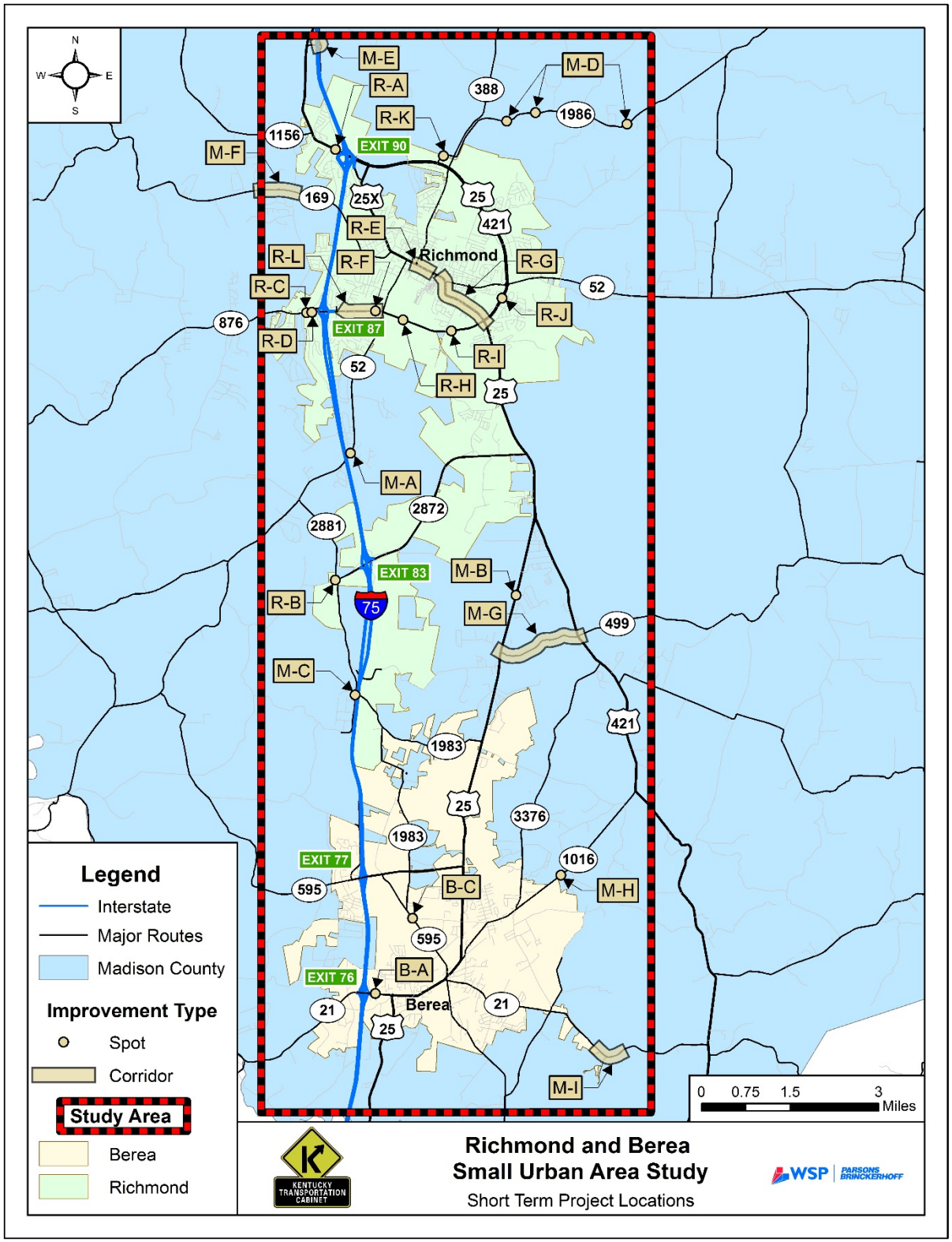


FIGURE ES-2: RECOMMENDED LONG-TERM PROJECTS IN RICHMOND

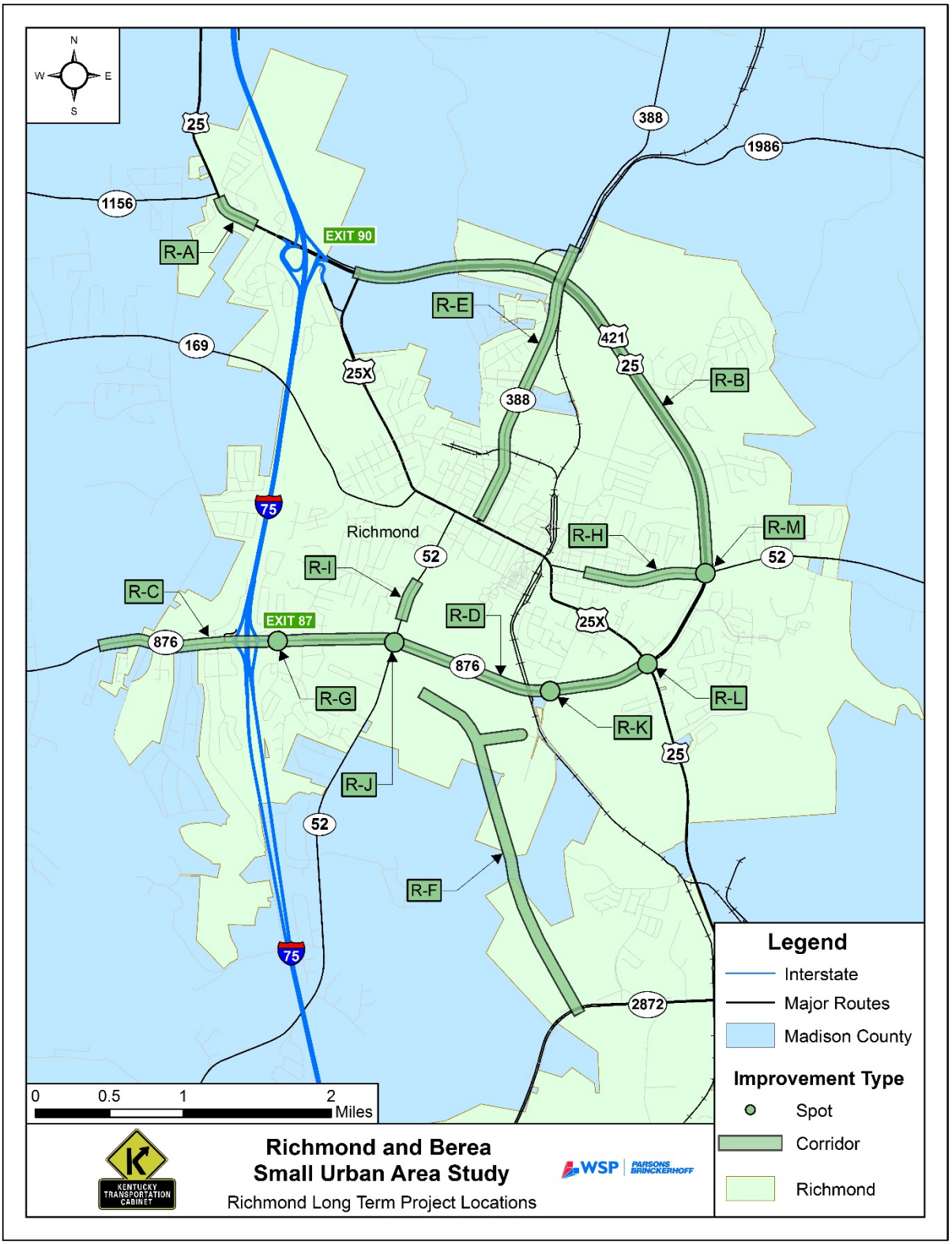


FIGURE ES-3: RECOMMENDED LONG-TERM PROJECTS IN MADISON COUNTY

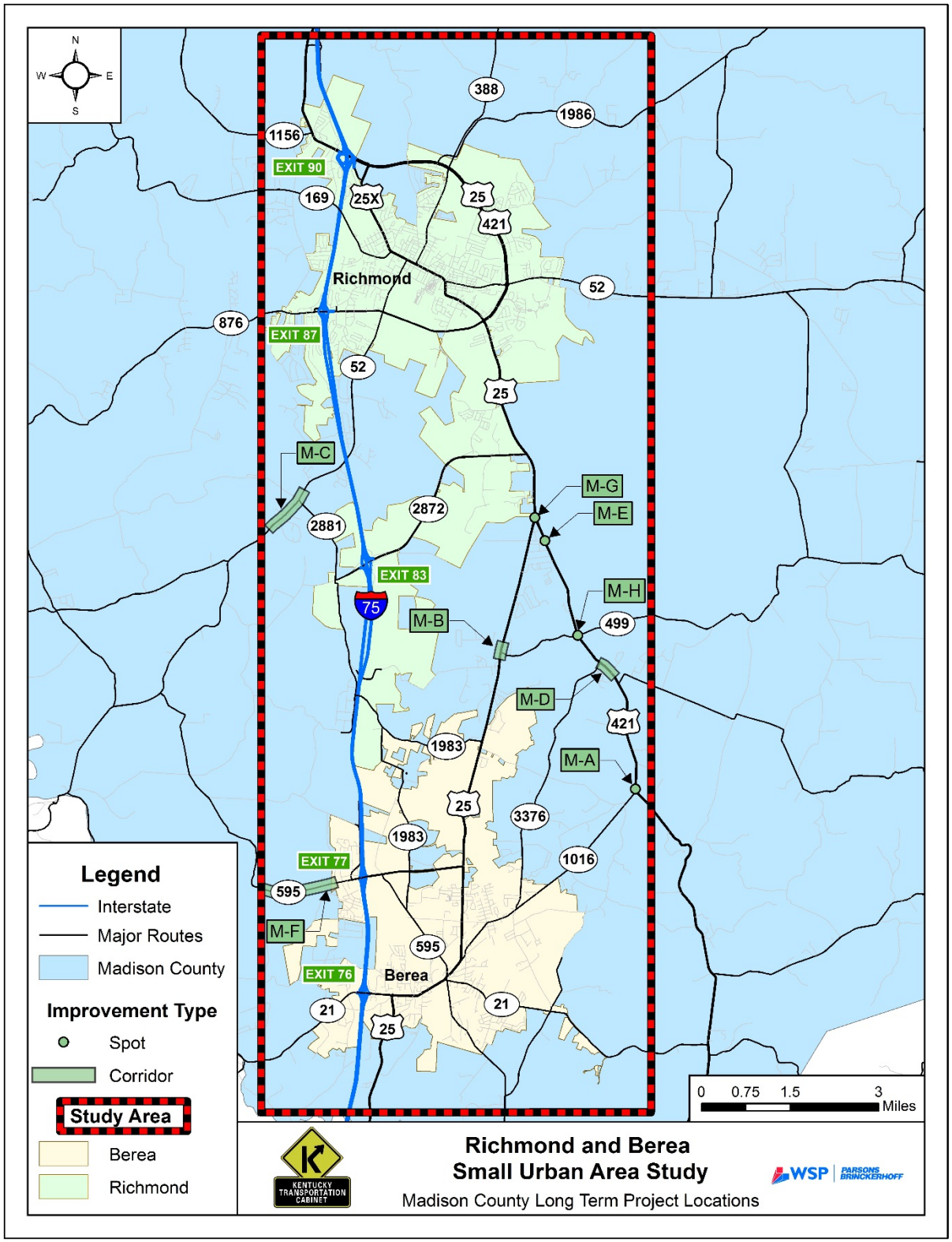


FIGURE ES-4: RECOMMENDED LONG-TERM PROJECTS IN BEREA

FIGURE ES-5: RECOMMENDED LOCAL PROJECTS

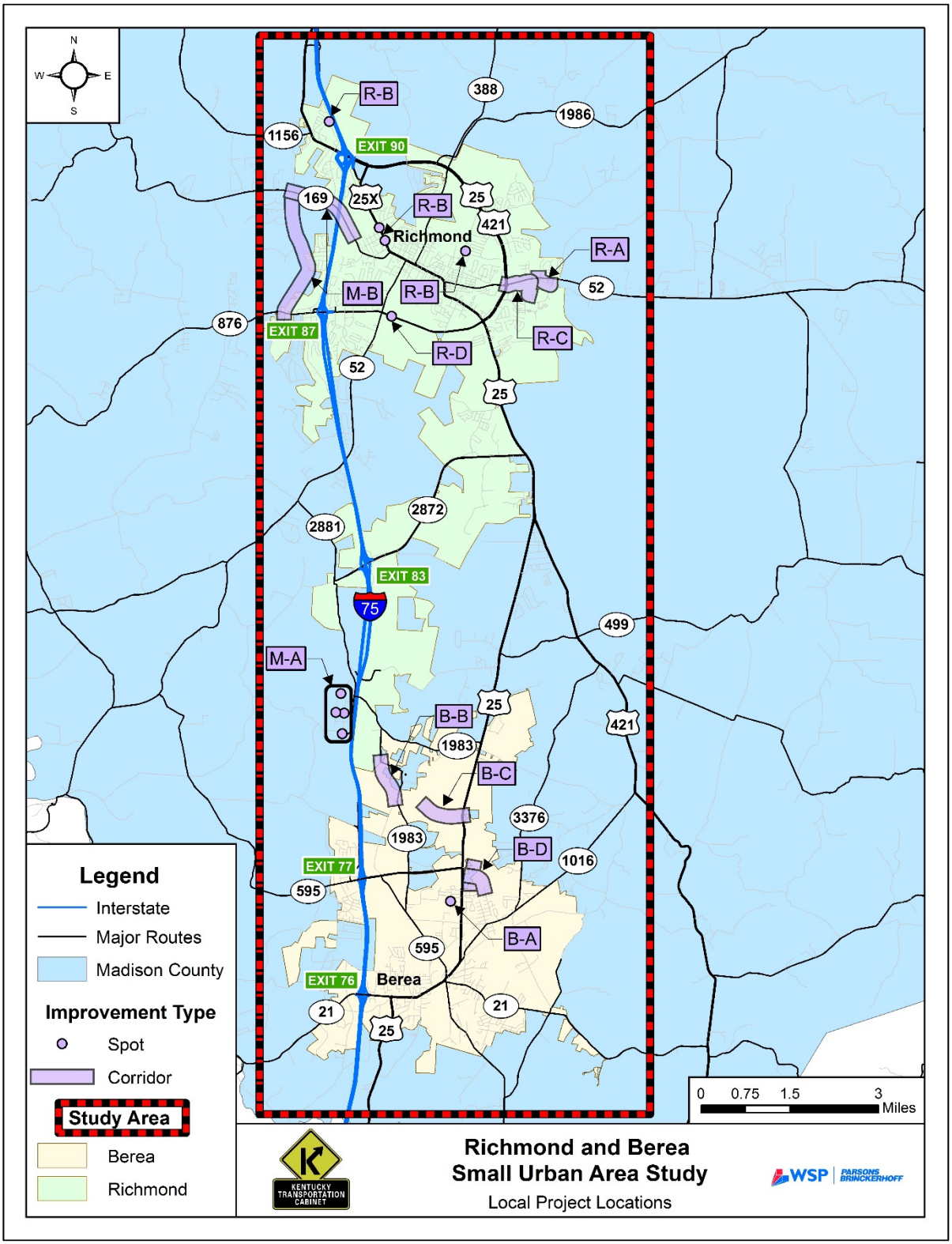


TABLE ES-1: RECOMMENDED HIGH PRIORITY PROJECTS

Project Priority	Project Type	Project ID	Project Description	Cost Estimate
High	Short-Term	ST M-B	US 25 at General Nelson Drive: Address reverse crown issue at low point to eliminate standing water	$66,000
		ST M-E	KY 2878 Corridor from I-75 Underpass to Northridge Way: Assess need for curve warning signs and high friction surface treatment	$46,000
		ST R-A	US 25 at Keeneland Dr Intersection: Consider phase change to allow flashing yellow arrow; Modify striping	$88,000
	Long-Term	LT M-A	US 421 at KY 1016 Intersection: Re-align intersection and reduce speeds	$1,034,000
		LT M-G	US 421 at US 25 Intersection: Re-align intersection and reduce speeds	$1,206,000
		LT B-E	US 25, KY 21, KY 595 Intersection: Ongoing Berea College study will provide recommendations for improvements	NA
		LT R-A	US 25 Corridor from Taco Bell Driveway to Michelle Dr: Improve cross-section - 2 12' lanes and center two-way left-turn lane	$2,273,000
		LT R-E	KY 388 Corridor from US 25X to KY 1986: Improve cross-section - 2 12' lanes and center two-way left-turn lane with sidewalks; Signal warrant analysis	$10,732,000
		LT R-G	KY 876 at Killarney Ln Intersection: Consider phase change for flashing yellow arrow; Install island for channelized right turns; Add ramps for pedestrian crossings; Limit access through gas station	$258,000
		LT R-M	US 25 at KY 52 (Irvine St) Intersection: Add capacity through lane additions and extended storage	$1,036,000
	Local	L B-B	New Corridor - Farristown to KY 1983: New connection from KY 1983 to Mayde Road	$4,860,000
		L M-B	Goggins Ln / KY 169 to KY 876 Corridor: Repair existing sidewalk and provide connection to Kit Carson Elementary	$500,000
		L R-A	Catalpa Loop Rd / Old Irvine Rd at KY 52: Realign intersection approach and improve drainage	$684,000

Note: Projects in each project type are not listed in order of preference.

TABLE ES-2: RECOMMENDED MEDIUM PRIORITY PROJECTS

Project Priority	Project Type	Project ID	Project Description	Cost Estimate
Medium	Short-Term	ST M-D	KY 1986 Corridor: Improve bridge and culvert capacity (cost per structure)	$175,000
		ST M-I	KY 21 Corridor near KY 1617 to Bear Mountain Rd: Assess need to increase culvert capacity (cost per structure) and prioritize corridor resurfacing schedule	$175,000
		ST R-C	KY 876 at Hampton Way Intersection: Add dedicated right turn lane to Hampton Way and make Hampton Way right-in/right-out	$7,000
		ST R-H	KY 876 at Kit Carson Dr Intersection: Consider phase change for flashing yellow arrow and removal of split phasing on side street; Extend KY 876 left turn lane storage; Add wayfinding signage	$142,000
		ST R-I	KY 876 at Walmart Intersection: Eliminate left turns from side streets	$118,000
		ST R-J	US 25 at Gibson Bay Dr Intersection: Consider phase change to eliminate split phasing; Provide dedicated left, through, and right turn lanes on to US 25; Extend sidewalk to north side of Gibson Bay Drive	$162,000
	Long-Term	LT M-C	KY 52 Corridor from Cavalier Ct to KY 2881: Improve cross-section - 2 12' lanes and center two-way left-turn lane	$1,388,000
		LT M-D	US 421 Corridor from KY 3376 (Old US 25) to KY 3376: Improve cross-section - 2 12' lanes and center two-way left-turn lane; Install sidewalk	$1,662,000
		LT M-H	US 421 at KY 499 Intersection: Paint stop bars and lane lines on KY 499; re-align intersection	$1,373,000
		LT B-A	KY 1016 and KY 3376 Corridors: Add left-turn lanes and provide pedestrian accomodations from school	$4,873,000
		LT B-C	KY 21 at US 25 Intersection: Re-align US 25 to connect with KY 21 at Estridge Court	$1,797,000
		LT R-B	US 25 / US 421 Corridor from KY 52 to US 25X: Multi-use path; Offset left turns; Signal warrant analysis	$2,118,000
		LT R-C	KY 876 Corridor from Hager Dr to KY 52 (Lancaster): Add sidewalks; pedestrian connectivity improvements	$3,160,000
		LT R-D	KY 876 Corridor from KY 52 (Lancaster) to US 25: Extend sidewalk	$1,234,000
		LT R-F	New Corridor from KY 876 (Via Kit Carson Dr) to KY 2872: New corridor from KY 876 via Kit Carson Drive to KY 2872; Extend Cycle Drive to connect with new corridor	$22,278,000
		LT R-H	KY 52 Corridor from Oakland Ave to US 25: Continue sidewalk along KY 52 to US 25 Bypass	$2,114,000
		LT R-I	KY 52 Corridor from Hycliff Dr to Barnes Mill Rd: Add turn lanes and extended storage through restriping existing pavement; Extend sidewalks along Barnes Mill Rd EB and KY 52 NB to Park Drive	$369,000
		LT R-J	KY 876 at KY 52 Intersection: Consider phase change for flashing yellow arrow; Add capacity through turn lanes and channelization; Install sidewalks	$873,000
		LT R-L	KY 876 at US 25 Intersection: Add right turn lanes; Make Commercial Drive right-in/right-out only	$394,000
	Local	L B-C	New Corridor - Farristown Industrial Dr to US 25: Provide a direct connection to Farristown Middle School and US 25	$5,600,000
		L R-B	Multiple Locations in Richmond: Improve drainage	NA
		L R-C	KY 52 at US 25 Pedestrian Access to Lake Reba: Install sidewalk from KY 52 to park	$949,000
		L M-A	Neighborhood off KY 2881 and KY 2877: Pavement treatment assessment and multi-modal connectivity	$33,000

Note: Projects in each project type are not listed in order of preference.

TABLE ES-3: RECOMMENDED LOW PRIORITY PROJECTS

Project Priority	Project Type	Project ID	Project Description	Cost Estimate
Low	Short-Term	ST M-A	KY 52 at Elliott Ford Rd Intersection: Cut back slope and trim trees	$70,000
		ST M-C	KY 2881 at KY 2877 Intersection: Evaluate control devices and apply new pavement markings	$10,000
		ST M-F	KY 169 Corridor from Goggins Ln to Cartier Dr: Enhanced driver awareness of signal ahead; maintenance to improve sight distance	$104,000
		ST M-G	KY 499 Corridor from US 25 to US 421: Curve warning signs; maintenance to improve sight distance	$104,000
		ST M-H	KY 1016 near Moonlight Dr Intersection to Barker Ln: Assess need to increase culvert capacity (cost per structure)	$175,000
		ST B-A	KY 21 from McKinney St to Knights Inn Entrance: Pedestrian connectivity	$149,000
		ST B-C	KY 595 at Glades Rd Intersection: Conduct traffic signal warrant analysis	$5,000
		ST R-B	KY 2881 at KY 2872 Intersection: Pavement treatment assessment	$58,000
		ST R-D	KY 876 at Amberly Way Intersection: Consider phase change to remove split phasing on side street; Extend WB left turn lanes on KY 876; Restripe Amberly Way NB left turn lane	$28,000
		ST R-E	US 25X Corridor from Collins St to 3rd St: Conduct study to eliminate left turns on US 25X utilizing parallel streets	$200,000
		ST R-F	KY 876 at Dwight Dr Intersection: Prohibit left turns from side streets; Add right turn pocket on KY 876	$98,000
		ST R-G	US 25X Corridor from US 25 / KY 876 to Collins St: Conduct study to assess need for access management strategy	$100,000
		ST R-K	KY 1986 at Caudill Dr Intersection: Improve curve radius for bus traffic entering Caudill Middle School	$39,000
		ST R-L	KY 876 Corridor from I-75 to KY 52: Conduct a study to evaluate frontage road solutions to improve traffic progression	$150,000
		ST R-M	Corridor Signal Retiming Bypass (KY 876, US 25 and Downtown): Reevaluate signal timing and coordination of traffic signals of three corridors	$175,000
		ST B-B	THIS PROJECT HAS BEEN REMOVED	
	Long-Term	LT M-B	US 25 Corridor from KY 499 to Pioneer Dr: Add two-way left-turn lane	$529,000
		LT M-E	US 421 at Bluegrass Army Depot Intersection: Conduct traffic signal warrant analysis; if warranted, re-align intersection	$642,000
		LT M-F	KY 595 Corridor from Guynn Rd to 1.099 miles west of Ogg Cemetery Rd: Move utility poles	$6,660,000
		LT B-B	KY 21 Corridor: Access management strategies and re-align Old KY 21 / entrance to Rite Aid intersection	$347,000
		LT B-D	KY 21 Corridor from west of Neely St to O'Donnell Ln: Construct 6' paved shoulders	$476,000
		LT R-K	KY 876 at Boggs Ln Intersection: Extend EB KY 876 left turn lane; Add or extend right turn lanes on all approaches	$406,000
	Local	L B-A	Baugh St at Oakwood Dr Intersection: Close Baugh Street at Oakwood Drive and create pedestrian access only to school	$22,000
		L R-D	KY 876 at Veterans Blvd Intersection: Add sidewalk along Veterans Boulevard	$17,300
		L B-D	Extension East of KY 956 at US 25 Intersection: Extend Pine Street and Kenway Street to access new KY 956 bypass	$1,780,000

Note: Projects in each project type are not listed in order of preference.

1.0 INTRODUCTION

In 2015, the Kentucky Transportation Cabinet (KYTC) initiated a Small Urban Area (SUA) study for the Cities of Richmond and Berea, Kentucky in Madison County. The purpose of the study was to identify and examine transportation issues related to safety, operations, and congestion along state-maintained (US and KY) routes in the Cities of Richmond and Berea. The study's primary goal was to propose a prioritized list of both short-term and long-term recommendations to be used for further project development decisions by the KYTC, City of Richmond, City of Berea, Madison County, and/or private developers.

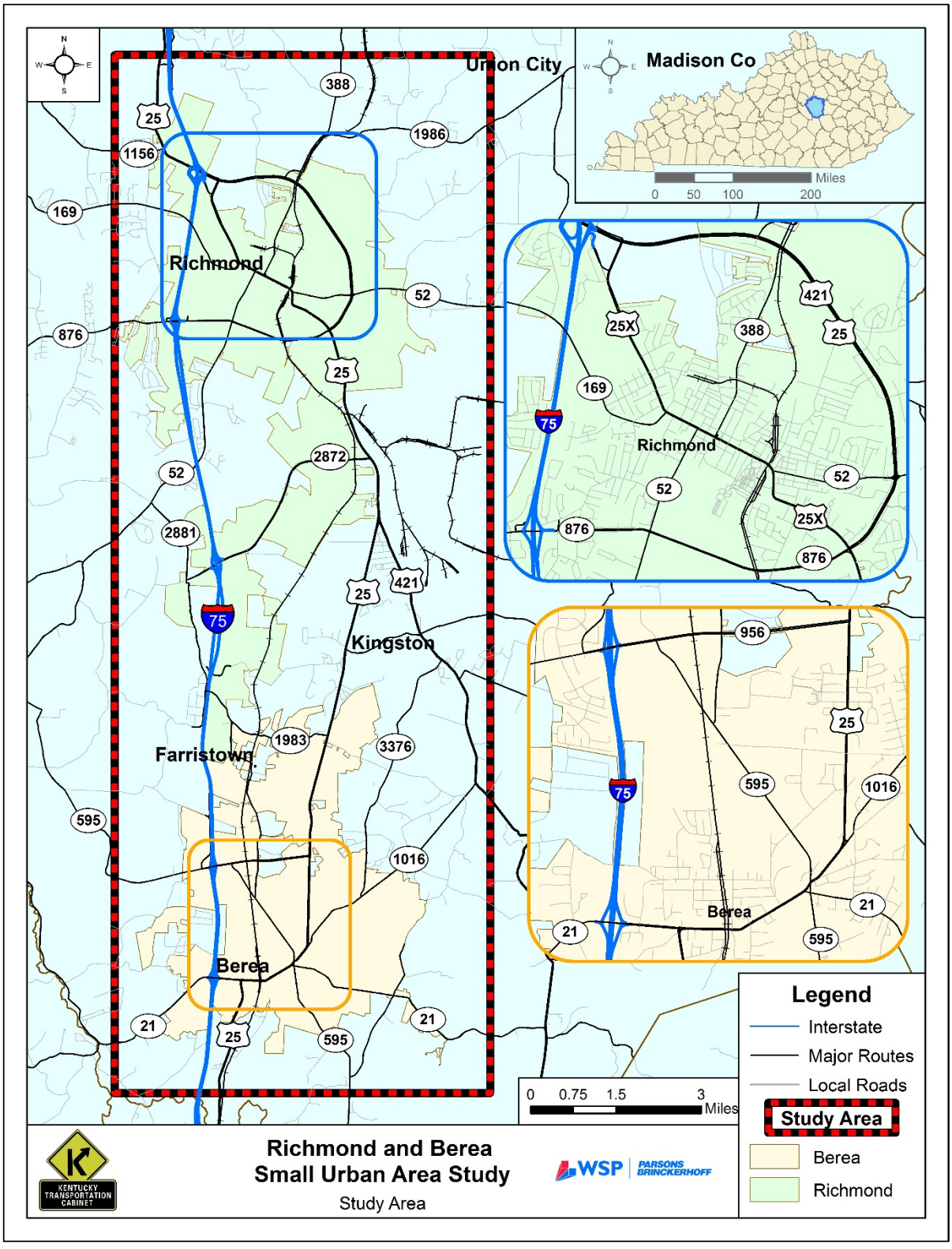
The KYTC Division of Planning conducts SUA studies in Kentucky for areas with populations of 5,000 to 50,000. The KYTC District 7 recommended the development of the SUA study for the Richmond – Berea area, as the last SUA study was completed in 2004. This SUA study was funded using Kentucky's State Planning and Research (SPR) funds. Future studies and project development phases for any identified projects from this study have not received funding and are not guaranteed to be funded through federal or state committed plans.

1.1 STUDY AREA

The study area includes the incorporated Cities of Richmond and Berea, along with portions of Madison County surrounding and connecting the incorporated areas, including the Madison County airport. The total study area includes over 116 square miles, as shown in **Figure 1**.

Madison County's land area covers 437 square miles, the twenty-third largest county in Kentucky. Population estimates provided by the Kentucky State Data Center show Madison County has a 2015 population of 87,824, the ninth largest in Kentucky. By 2040, Madison County is anticipated to have a population of 106,301, a 21 percent increase from 2015. Individual city population projections to 2040 are not available, but Richmond's current population estimate of 33,533 and Berea's current population estimate of 14,882 reflect a growth of 6.9 percent and 9.7 percent, respectively, from the 2010 Census to the 2015 population estimates. The 2015 combined area population of 48,415 is approaching the upper limits of a small urban area, and may be designated as a metropolitan planning area (MPA) with a combined population over 50,000 in the 2020 Census if the current population growth trend continues. The Richmond – Berea SUA is the second largest urban area in KYTC District 7 after the Lexington MPA located in Fayette and Jessamine counties.

FIGURE 1: STUDY AREA



1.2 STUDY PROCESS

The Richmond – Berea SUA study has been conducted under the direction of the KYTC District 7 and the KYTC Central Office Division of Planning. The work items accomplished under this study included the following:

- Existing Conditions Analysis;
- Future Traffic Analysis;
- Public Involvement;
- Environmental Overview;
- Analysis and Development of Improvement Options; and
- Study Report Documentation.

The Richmond – Berea SUA Study Project Team included staff from the KYTC District 7, KYTC Central Office Division of Planning, BGADD, LAMPO, and the study consultant, WSP | Parsons Brinckerhoff (WSP|PB). The Project Team provided input on transportation system deficiencies, issues, development and evaluation of alternatives, and prioritization of recommended projects.

An analysis of the existing transportation system was conducted to identify deficiencies and to provide a baseline for comparison of alternatives. This effort also included the review of previous planning documents and the compilation of committed transportation projects. The travel demand model was updated in coordination with the Lexington Area Metropolitan Planning Organization (LAMPO) and the KYTC Division of Planning Modal Branch. Traffic forecasts were developed and future conditions were analyzed. The study area environmental resources and geotechnical conditions were identified. A socioeconomic data overview was provided by the Bluegrass Area Development District (BGADD).

Public involvement was captured via coordination with the Richmond – Berea SUA Study Local Officials / Stakeholders (LO/S). The LO/S consisted of Madison County officials, city officials from Richmond and Berea, state elected officials, the Bluegrass Army Depot, the Madison County Airport Board, emergency responders, Kentucky River Foothills (transit provider), Eastern Kentucky University, Berea College, etc. The LO/S were used to disseminate information, gather input, identify project needs and goals, and score projects. The LO/S provided the essential link in the planning process to ensure the needs of the community were considered.

The analysis and development of improvement options began with identified needs from the LO/S and Project Team input, analysis of existing conditions, and future traffic conditions. Project alternatives were developed to address the identified needs. These projects included three categories of improvements: local, short-term, and long-term.

Projects were evaluated to ensure identified needs were addressed. The Project Team developed a recommended list of projects. Associated year 2016 cost estimates were provided for the list of developed projects.

1.3 PLANNED AND COMMITTED PROJECTS

There are several planned and committed transportation improvements identified within the Richmond – Berea SUA study area. Ten projects identified in the KYTC's FY 2016 - 2022 Highway Plan are shown in **Figure 2** with project details listed in **Table 1**. Nineteen projects identified from the KYTC's Unscheduled Projects List (UPL), a summary of statewide needs documented with project identification forms (PIFs), are shown in **Figure 3** with project details listed in **Table 2**. Additional resources reviewed for identified state priority projects were the KYTC Statewide Transportation Improvement Program (2016-2019) and the Lexington Area MPO travel demand model.

Additional planning documents were reviewed for future expected growth patterns and transportation needs. These documents included the following:

- Comprehensive Plan for Madison County, Kentucky (2010);
- City of Richmond, Kentucky Comprehensive Plan (2011);
- City of Berea 2015 Comprehensive Plan Draft (2015);
- Madison County Transportation Study (2004, KYTC);
- Bicycle Comfort Index (2015, KYTC);
- Madison County School Master Plan (2015); and
- Berea Bicycle and Pedestrian Plan (2015).

FIGURE 2: KENTUCKY'S FY 2016 – FY 2022 HIGHWAY PLAN

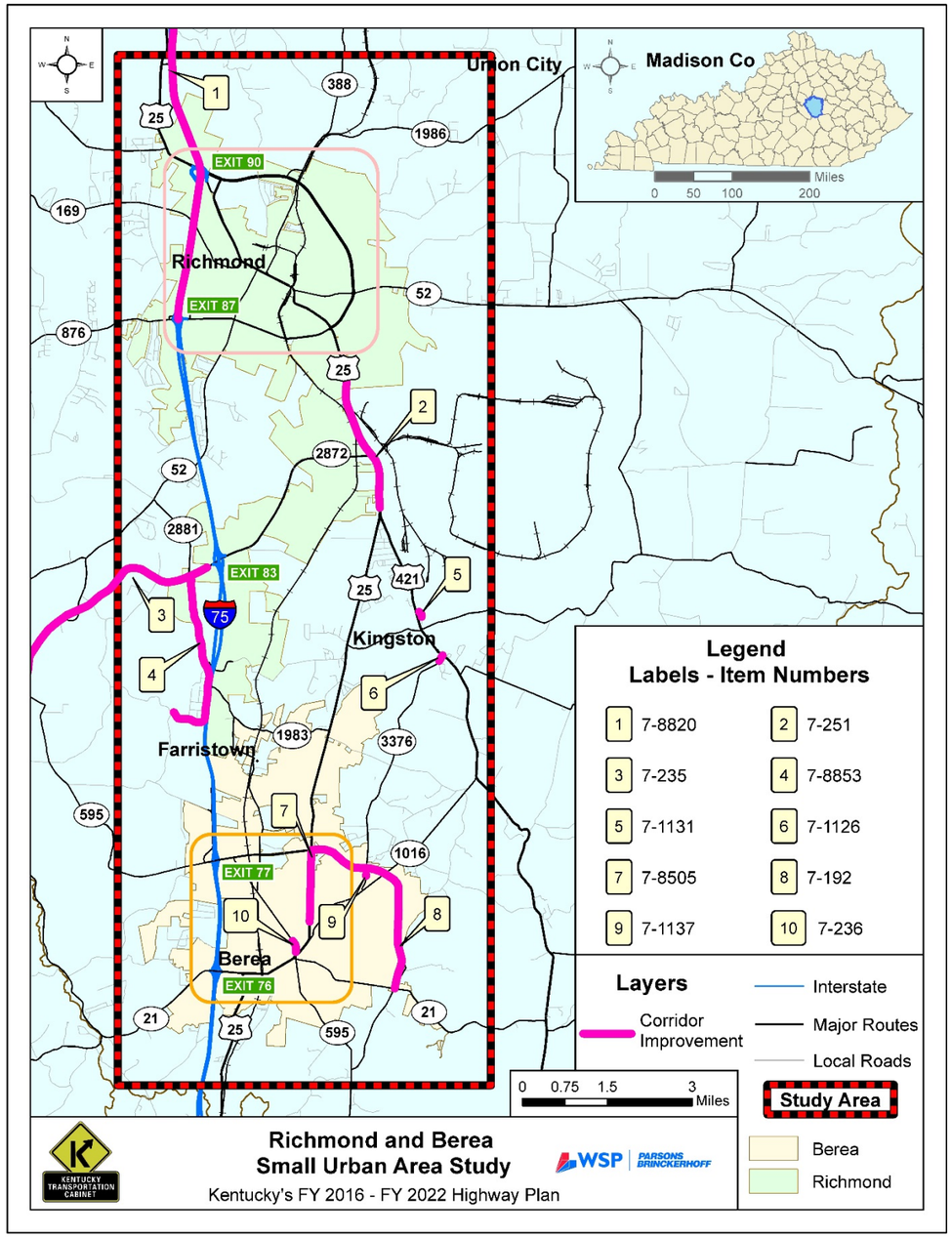


TABLE 1: KENTUCKY'S FY 2016 – FY 2022 HIGHWAY PLAN

Map #	KYTC Item #	BMP	EMP	Route	Description	Year (C)	Total Plan Cost
1	7-8820.00	87.16	97.54	I 75	REHABILITATION FROM CLAY'S FERRY BRIDGE TO BARNES MILL ROAD	2016	$1,500,000
2	7-251.01	11.90	15.44	US 25	WIDEN US-25 FROM US-421 NORTH TO KY-876	2017	$719,921
2	7-251.10	11.90	12.74	US 25	PRIORITY SECTION III: WIDEN US 25 FROM US 421 TO 1500' SOUTH OF DUNCANNON LANE	2018	$6,600,000
2	7-251.40	11.90	14.88	US 25	PRIORITY SECTION II & III: WIDEN US-25 FROM US 421 TO PUMPKIN RUN	2018	$10,880,000
3	7-235.00	1.17	4.19	KY 52	RELOCATE AND/OR REALIGN KY-52 FROM WALLACE MILL ROAD TO INTERSTATE 75 AT THE DUNCANNON ROAD INTERCHANGE	2019	$49,710,000
4	7-8853.00	0.78	2.78	KY 2881	DUNCANNON RD TO THE MADISON CO AIRPORT TO INCLUDE CALEAST RD (KY 2881 MP .783-MP 2.780), JOHN BALLARD RD (KY 2877 MP 0-MP .806) & CR 1236 MP0-MP.429 FROM MENELAUS TO AIRPORT RD, & A NEW BRIDGE OVER SILVER CREEK	2022	$13,200,000
5	7-1131.00	0.25	2.92	CR 1158	REPLACE BRIDGE ON OLD HAYS FORK LN (CR 1158) OVER BRANCH OF HAYS FORK 0.2 MILE SE OF US 421	2017	$480,000
6	7-1126.00	4.59	4.63	KY 3376	REPLACE BRIDGE ON KY 3376 OVER HAYS FORK 0.048 SOUTH OF US 421	2016	$760,000
7	7-8505.00	4.64	5.86	US 25	IMPROVE ROADWAY, SIDEWALKS, AND BIKE PATHS ON US-25 BETWEEN ELLIPSE STREET TO GLADES ROAD AND THEN CONTINUES ON TO THE BEREA BYPASS	2016	$6,220,000
8	7-192.20	-	-	-	CONSTRUCT 4-LANE BEREA BYPASS SECTION 2; FROM 150' EAST OF US-25, SE TO KY-21	2016	$22,420,000
9	7-1137.00	0.28	0.30	KY 3376	REPLACE BRIDGE OVER TERRILL BRANCH ROAD ON KY 3376 IN BEREA 200 FT N OF PEACHTREE DRIVE (CS 2072)	2022	$1,450,000
10	7-236.00	2.57	2.67	KY 595	COMPREHENSIVE TRAFFIC STUDY FOR INTERSECTION OF MAIN STREET AND BEREA COLLEGE CAMPUS, BEREA	2016	$500,000

FIGURE 3: KYTC UNSCHEDULED NEEDS LIST

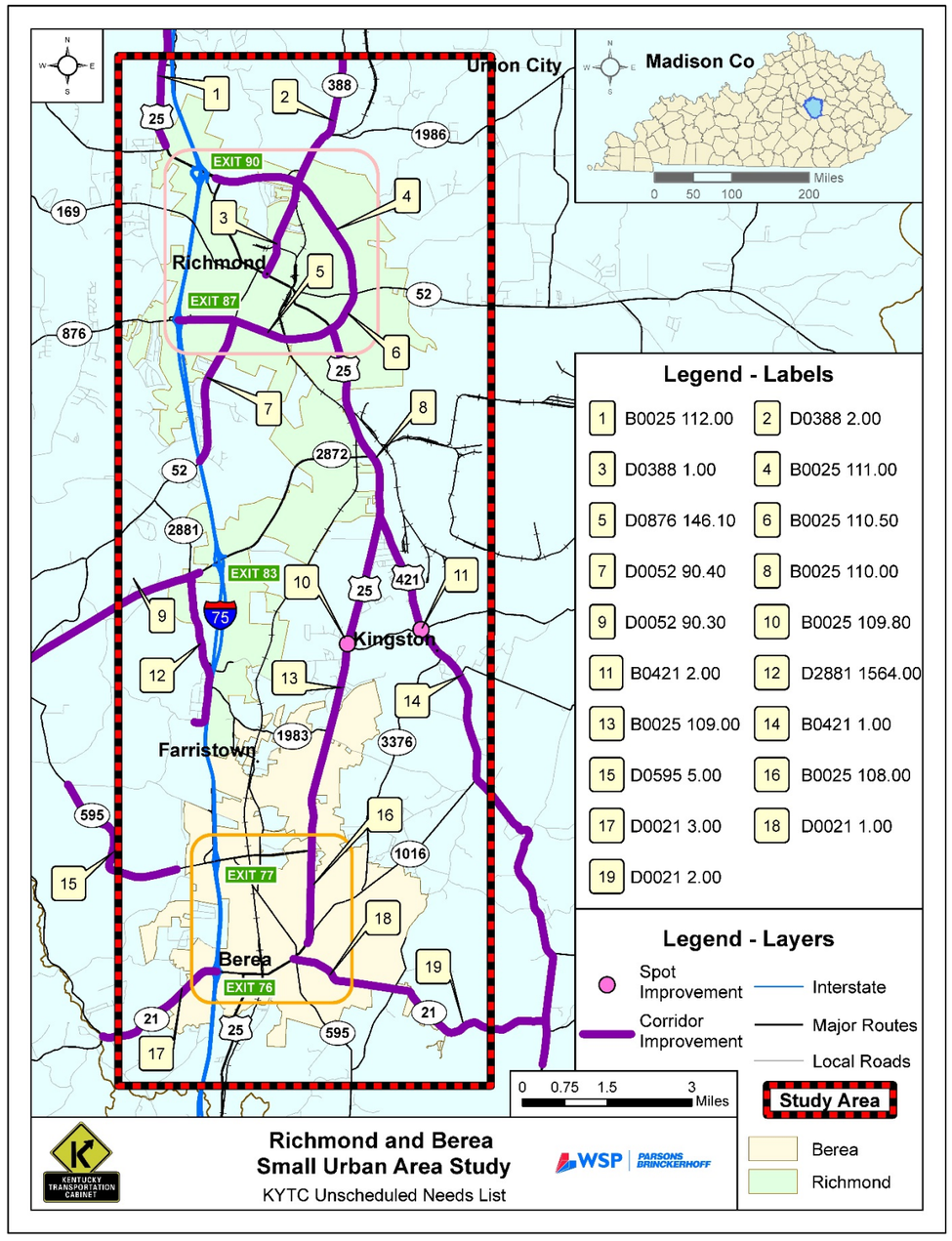


TABLE 2: KYTC UNSCHEDULED NEEDS LIST PROJECTS

Map #	PIF #	BMP	EMP	Type	Cost	Purpose Statement
1	B0025 112.00	21.02	28.16	Major Widening	$ 40,184,000	Reconstruct US 25 (KY 1156 to I-75 Exit 90)
2	D0388 2.00	1.97	6.02	Major Widening	$ 20,549,000	Address safety and LOS on KY 388 from KY1986 to Redhouse
3	D0388 1.00	0.00	1.97	Major Widening	$ 12,473,000	Improve safety on KY 388 (US25X to KY 1986)
4	B0025 111.00	16.26	19.93	Major Widening	$ 28,025,000	Address anticipated congestion and safety on US 25 (KY 52 to I-75)
5	D0876 146.10	7.17	9.96	Major Widening	$ 26,136,000	Improve safety and reduce congestion from I-75 to US 25
6	B0025 110.50	15.44	16.20	Major Widening	$ 7,989,000	Improve safety and reduce congestion US 25 (KY 876 to KY 52)
7	D0052 90.40	8.25	10.91	Major Widening	$ 24,760,000	Relieve congestion and improve safety on KY 52 (I-75 to KY 876)
8	B0025 110.00	11.96	15.50	Major Widening	$ 47,080,000	Major widening US 421 to KY 876
9	D0052 90.30	5.44	8.25	New Route	$ 19,786,400	Relocation from KY 1259 to I-75 at Duncannon Lane (Alternative 9 Option US 27/I-75 Connector Study)
10	B0025 109.80	9.57	9.67	Spot Improvement	$ 393,000	Eliminate sight distance problems and increase safety (US 25 at KY 499)
11	B0421 2.00	10.35	10.45	Spot Improvement	$ 471,000	Improve Safety and reduce conflict points at US 421 at KY 499
12	D2881 1564.00	0.78	2.78	Empty	$ 13,200,000	Improve KY 2881, KY 2877 and CR 1236 from KY 1983 to Airport
13	B0025 109.00	5.48	11.90	Major Widening	$ 34,174,000	Improve LOS and safety US 25 (Highland Dr to US 421)
14	B0421 1.00	1.55	12.57	Major Widening	$ 53,500,000	Reconstruct US 421 from County line to US 25)
15	D0595 5.00	5.00	5.45	Major Widening	$ 1,325,000	Widen KY 595 to 3 lanes (Peggy Flats to CR 1230)
16	B0025 108.00	4.24	5.48	Major Widening	$ 8,836,000	Relieve congestion and improve safety on US 25 (Highland Dr to KY 1016)
17	D0021 3.00	6.18	8.62	Reconstruction	$ 9,917,000	Adress Safety and LOS on KY 21 (I-75 to KY 954)
18	D0021 1.00	9.12	11.07	Reconstruction	$ 10,376,000	Improve safety on KY 21 (US25 to KY 1617)
19	D0021 2.00	11.07	14.20	Relocation	$ 14,000,000	Reconstruct KY 21 (KY 1617 to US 421

2.0 EXISTING CONDITIONS

Existing conditions of the study area transportation system were gathered and analyzed to provide a baseline of safety and operational characteristics. The following evaluations are summarized in this section:

- Planned and Committed Projects;
- Existing Transportation Network;
- Geometrics;
- Existing Travel Volumes;
- Crash Analysis; and
- Multimodal Facilities.

2.1 EXISTING TRANSPORTATION NETWORK

Analysis within this study area focused on state-maintained routes. Interstate 75 (I-75), a limited access route that runs north-south throughout the western portion of the study area, was not included. Interstate studies are conducted under the direction of the Federal Highway Administration, and are outside the scope of an SUA study.

The transportation network within the study area includes the following federal (US) and state (KY) roadways:

- US 25
- US 25X
- US 421
- KY 1016
- KY 1156
- KY 1617
- KY 169
- KY 1983
- KY 1986
- KY 21
- KY 2327
- KY 2872
- KY 2873
- KY 2874
- KY 2875
- KY 2877
- KY 2878
- KY 2879
- KY 2880
- KY 2881
- KY 3087
- KY 3376
- KY 388
- KY 499
- KY 52
- KY 595
- KY 876
- KY 956

2.2 GEOMETRICS

Existing transportation roadway characteristics gathered from KYTC's Highway Information System (HIS) database and verified with field reviews are summarized in **Table 3**. The gathered information includes functional classification, number of lanes, lane width, shoulder width, median type, median width, and posted speed limits. The roadways were divided into segments based on changes in characteristics or traffic count stations.

TABLE 3: ROADWAY CHARACTERISTICS SUMMARY

Route #	Section	Begin Milepoint	End Milepoint	Section Length (miles)	Functional Class (Class Description)	Number of Lanes	Lane Width (feet)	Shoulder Type CL (feet)	Median Type	Median Width (feet)	Posted Speed Limit (MPH)	Truck Percentage	Count Station	Last Count ADT	Last Count Year	2015 ADT
KY 21	1	6.454	8.359	1.91	Rural Minor Arterial	2	10-12	Stabilized / Paved w/ Bituminous Material	None	0	45-55	9.2%	076C73	6,320	2006	6,610
		East of KY 954	S DOGWOOD DR/N DOGWOOD DRIVE					2 - 10								
KY 21	2	8.359	8.416	0.06	Urban Minor Arterial Street	3	11	Paved w/ Bituminous Material			45	4.9%	076D12	12,558	2014	12,620
		S DOGWOOD DR/N DOGWOOD DRIVE						12								
KY 21	3	8.416	8.615	0.20		4	11	Paved w/ Bituminous Material				4.9%	076D12	12,558	2014	12,620
			I 75 BRIDGE					12								
KY 21	4	8.615	9.115	0.50			11-12	Paved w/ Bituminous Material - Curbed	Raised Non	16		4.9%	076C44	14,083	2013	14,220
		I 75 BRIDGE	US 25 JUNCTION					0 - 12								
KY 21	5	9.115	9.458	0.34		2	11-15	Curbed	None	0	35	7.6%	076C32	5,923	2012	6,010
		US 25 JUNCTION	FOREST STREET					0								
KY 21	6	9.458	10.140	0.68			11	Curbed - Combination				7.6%	076C33	7,064	2014	7,100
		FOREST STREET	BRATCHER LANE					0 - 2								
KY 21	7	10.140	11.066	0.93			10	Combination			35-55	7.6%	076C80	6,640	2012	6,740
		BRATCHER LANE	KY 1617					2								
KY 21	8	11.066	13.238	2.17	Rural Minor Arterial	2	10	Combination			55	7.6%	076C83	3,728	2013	3,770
		KY 1617	WEST OF HONEYSUCKLE CT					2								
KY 52	1	6.204	7.150	0.95	Rural Minor Arterial	2	10	Combination			55	5.5%	076512	4,080	2012	4,140
		WEST OF WILDCAT DR	KY 2881/HAGANS MILL					3								
KY 52	2	7.150	8.250	1.10				Combination				5.5%	076558	5,820	2014	5,850
		KY 2881/HAGANS MILL	I 75 UNDERPASS					3								
KY 52	3	8.250	10.530	2.28	Urban Minor Arterial Street	2	10	Combination			45-55	5.5%	076612	7,860	2013	7,940
		I 75 UNDERPASS	KIT CARSON DRIVE					3								
KY 52	4	10.530	10.753	0.22				Combination / Paved w/ Bituminous Material			45	5.5%	076A87	11,451	2012	11,620
		KIT CARSON DRIVE						3-10								
KY 52	5	10.753	10.910	0.16		4	11	Curbed	None	0	35-45	5.5%	076A87	11,451	2012	11,620
			KY 876					1								
KY 52	6	10.910	11.412	0.50		4	11	Curbed			35	5.5%	076A48	15,296	2014	15,370
		KY 876						1								
KY 52	7	11.412	11.513	0.10		3	11	Curbed				5.5%	076A48	15,296	2014	15,370
								0 - 1								
KY 52	8	11.513	11.896	0.38		2	10-11	Curbed				5.5%	076A48	15,296	2014	15,370
			US 25X JUNCTION					0 - 1								
KY 52	9	11.896	12.970	1.07			12	Curbed / Combination / Paved w/ Bituminous Material			35-45	6.9%	076A72	6,786	2014	6,820
		US 25X JUNCTION	US 25					0 - 10								
KY 52	10	12.970	15.400	2.43	Rural Minor Arterial	4	12	Paved w/ Bituminous Material			45-55	4.8%	076P87	19,639	2014	19,840
		US 25	GREENS CIRCLE					10								
KY 169	1	0.000	2.215	2.22	Urban Collector Street	2	11	Curbed / Paved w/ Bituminous Material	None	0	35-55	3.4%	076A82	5,330	2013	5,490
		US 25	GOGGINS LANE					1 - 10								
KY 169	2	2.215	2.782	0.57			10	Combination			55	3.4%	076799	2,514	2014	2,530
		GOGGINS LANE	CARTIER DR					2 - 10								
KY 388	1	0.000	0.456	0.46	Rural Local	2	15	Curbed	None	0	25-35	8.1%	076A64	6,148	2013	6,210
		US 25X	EAST WALNUT STREET					0								
KY 388	2	0.456	0.709	0.25			11-15	Curbed / No Shoulder or Curbs Exist / Combination	Flush	8	35	8.1%	076A58	6,163	2012	6,260
		EAST WALNUT STREET						0 - 10								
KY 388	3	0.709	0.930	0.22			10	Combination	None	0		8.1%	076A58	6,163	2012	6,260
			BOONESBORO DRIVE					3 - 6								
KY 388	4	0.930	1.967	1.04	Rural Minor Collector	2	10	Combination / Paved w/ Bituminous Material			45-55	8.1%	076A63	4,309	2014	4,330
			KY 1986					3 - 7								
KY 388	5	1.967	4.479	2.51				Combination / Paved w/ Bituminous Material			55	6.6%	076A69	1,512	2014	4,330
		KY 1986	NORTH OF BEAVER DR					2 - 7								

TABLE 3: ROADWAY CHARACTERISTICS SUMMARY (CONT'D)

Route #	Section	Begin Milepoint	End Milepoint	Section Length (miles)	Functional Class (Class Description)	Number of Lanes	Lane Width (feet)	Shoulder Type CL (feet)	Median Type	Median Width (feet)	Posted Speed Limit (MPH)	Truck Percentage	Count Station	Last Count ADT	Last Count Year	2015 ADT
KY 499	1	0.000	1.449	1.45	Rural Local	2	7-8	Stabilized / Combination	None	0	55	0.0%	76564	757	2012	790
		US 25	US 421 JUNCTION					1								
KY 499	2	1.449	2.735	1.29	Rural Minor Collector	2	7	Combination				0.0%	76253	1,024	2013	1,050
		US 421 DEPARTURE	WEST OF OGG LN					2								
KY 595	1	1.808	2.321	0.51	Urban Collector Street	2	9-11	Combination / Curbed	None	0	35-45	4.9%	076C15	3,947	2014	3,970
		SOUTH OF MASON LAKE RD	KY 21					0 - 2								
KY 595	2	2.321	2.397	0.08	Urban Minor Arterial Street	2	11	Curbed			35	0.0%	076C13	6,141	2013	6,200
		KY 21	US 25					0								
KY 595	3	2.397	2.809	0.41			12	Curbed			25-35	4.9%	076C16	4,914	2012	4,990
		US 25	ELLIPSE STREET					0 - 2								
KY 595	4	2.809	3.558	0.75				Curbed			35-45	4.9%	076C18	6,403	2014	6,440
		ELLIPSE STREET	GLADES ROAD					2								
KY 595	5	3.558	4.471	0.91				Combination / Curbed			45-55	4.7%	076C70	8,280	2013	8,610
		GLADES ROAD	KY 956/MAYDE ROAD					2 - 10								
KY 595	6	4.471	4.874	0.40		4	12	Curbed / Paved w/ Bituminous Material	Raised Non	20		0.0%	076C94	19,111	2014	19,490
		KY 956/MAYDE ROAD						2 - 12								
KY 595	7	4.874	5.364	0.49		2	9-12	Curbed / Paved w/ Bituminous Material / Combination	None	0		0.0%	076551	4,762	2012	5,050
			GUYNN ROAD					2 - 12								
KY 595	8	5.364	6.618	1.25	Rural Minor Collector	2	9	Combination			55	0.0%	076634	674	2010	740
		GUYNN ROAD	WEST OF GUYNN ROAD					3								
KY 876	1	5.755	6.491	0.74	Urban Collector Street	2	12	Combination	None	0	45	0.0%	076635	7,190	2010	8,130
		WEST OF HAGER DR	WILLIS BRANCH RD/GOGGINS LN					4 - 5								
KY 876	2	6.491	6.705	0.21				Combiantion / Curbed				8.4%	076A03	16,957	2014	17,380
		WILLIS BRANCH RD/GOGGINS LN						2 - 5								
KY 876	3	6.705	7.129	0.42		4	11	Combination / Paved w/ Bituminous Material	None - Flush	0-15		8.4%	076A03	16,957	2014	17,380
			I 75 INTERCHANGE					5 - 10								
KY 876	4	7.129	8.146	1.02	Urban Principal Arterial	4	11	Curbed / No Shoulder or Curbs Exist	None - Flush -	0-16		8.4%	076A54	30,315	2012	30,770
		I 75 INTERCHANGE	KY 52					0								
KY 876	5	8.146	8.528	0.38				Curbed / Paved w/ Bituminous Material	Raised Non	16		8.4%	076A51	26,758	2014	26,890
		KY 52	KIT CARSON DRIVE					2 - 10								
KY 876	6	8.528	9.959	1.43				Curbed / Paved w/ Bituminous Material	Concrete Barrier -	16-20		8.4%	076A65	23,904	2013	24,140
		KIT CARSON DRIVE	US 25-US 25X					2 - 10								
KY 956	1	0.000	0.466	0.47	Urban Minor Arterial Street	4	12	Curbed / Paved w/ Bituminous Material	Raised Non	14	55	5.7%	076C60	5,979	2012	6,070
		KY 595	KY 1983					1 - 12								
KY 956	2	0.466	1.383	0.92				Curbed / Paved w/ Bituminous Material	Raised Non	14-28		5.7%	076C61	5,332	2012	5,410
		KY 1983	US 25					1 - 12								
KY 1016	1	0.000	0.167	0.17	Urban Collector Street	2	14	Curbed	None	0	35	0.0%	076C43	5,384	2013	5,440
		US 25	LORRAINE COURT					0								
KY 1016	2	0.167	0.801	0.63			10-14	Curbed / Combination				4.0%	076C26	3,569	2014	3,590
		LORRAINE COURT	SOUTH POWELL AVE/GLADES ROAD					1 - 5								
KY 1016	3	0.801	1.367	0.57			10	Curbed / Combination			35-45	4.0%	076C72	9,968	2012	10,120
		SOUTH POWELL AVE/GLADES ROAD	KY 3376					1 - 2								
KY 1016	4	1.367	4.246	2.88	Rural Major Collector	2	10	Curbed / Combination			45-55	4.0%	076269	4,357	2013	4,440
		KY 3376	US 421					2								
KY 1156	1	0.000	0.884	0.88	Urban Collector Street	2	9-12	Combination	None	0	35-55	5.9%	076781	1,580	2013	1,600
		US 25	EAST OF BOONE WAY					2								
KY 1617	1	1.449	2.089	0.64	Rural Minor Collector	2	8	Combination	None	0	35	0.0%	076523	1,145	2014	1,150
		KINDRED ROAD	KY 595					2								
KY 1617	2	2.089	3.766	1.68			9	Combination			35-55	0.0%	076528	639	2012	650
		KY 595	KY 21					2								
KY 1617	3	3.766	4.766	1.00	Rural Local	2	8-9	Combination				0.0%	076530	221	2013	220
		KY 21	BLUE LICK ROAD					2								

TABLE 3: ROADWAY CHARACTERISTICS SUMMARY (CONT'D)

Route #	Section	Begin Milepoint	End Milepoint	Section Length (miles)	Functional Class (Class Description)	Number of Lanes	Lane Width (feet)	Shoulder Type CL (feet)	Median Type	Median Width (feet)	Posted Speed Limit (MPH)	Truck Percentage	Count Station	Last Count ADT	Last Count Year	2015 ADT
KY 1983	1	0.000	0.870	0.87	Urban Minor Arterial Street	2	10-11	Curbed / Combination	None	0	45	13.4%	076C64	1,902	2014	1,930
		KY 595	KY 956					2 - 3								
KY 1983	2	0.870	1.847	0.98	Urban Collector Street	2	11	Curbed			35-55	1.1%	076D11	1,226	2013	1,260
		KY 956	MAYDE ROAD					2								
KY 1983	3	1.847	3.408	1.56	Rural Minor Collector	2	9-11	Combination			55	0.0%	076567	297	2012	310
		MAYDE ROAD	KY 2881					3								
KY 1983	4	3.408	5.237	1.83			10	Combination				0.0%	076522	1,081	2014	1,090
		KY 2881	US 25					3								
KY 1986	1	0.000	0.337	0.34	Urban Collector Street	2	11	No Shoulder or Curb Exist / Combination	None - Flush	0-10	55	0.0%	076B09	5,222	2013	5,430
		US 25	KY 388					0 - 4								
KY 1986	2	0.337	2.428	2.09	Rural Minor Collector	2	10	No Shoulder or Curb Exist / Combination	None	0		0.0%	076765	2,932	2014	2,990
		KY 388	HACKETT PIKE					0 - 4								
KY 1986	3	2.428	4.196	1.77				No Shoulder or Curb Exist / Combination				0.0%	076018	1,709	2012	1,810
		HACKETT PIKE	DUNBAR LN					0 - 4								
KY 2327	1	0.000	0.088	0.09	Urban Local	2	9	Stabilized	None	0	55	0.0%	076A96	4,460	2012	4,940
		KY 876	BARNES MILL ROAD					2								
KY 2872	1	0.000	0.179	0.18	Rural Minor Collector	2	12	Paved w/ Bitimous Material	None	0		10.7%	076560	2,609	2014	2,700
		DUNCANNON LANE	I 75 OVERPASS					10								
KY 2872	2	0.179	0.601	0.42		4	12	No Shoulder or Curb Exist	Flush	24-32	55	10.7%	076560	2,609	2014	2,700
			I 75 OVERPASS					0								
KY 2872	3	0.601	4.271	3.67	Rural Minor Arterial	4	12	No Shoulder or Curb / Paved w/ Bituminous Material /	Flush - Depresse	20-40		10.7%	076636	6,399	2012	7,090
		I 75 OVERPASS	US 25					0 - 3								
KY 2873	1	0.000	0.421	0.42	Rural Local	2	6	Stabilized	None	0	55	0.0%	076630	57	2012	60
		KY 2874	NUL-END OF STATE MAINTENANCE					4								
KY 2874	1	0.000	0.983	0.98	Urban Local	2	10	Combination	None	0	55	0.0%	076626	2,228	2012	2,580
		KY 595	PEGGY FLATS					5								
KY 2875	1	0.000	0.267	0.27	Rural Local	2	12	Stabilized	None	0	55	0.0%	076628	89	2013	90
		US 25 (SE OF I 75)	MCCORD LANE					4								
KY 2877	1	0.000	0.806	0.81	Urban Local	2	9	stabilized	None	0	55	0.0%	076624	529	2013	580
		JOHN BALLARD ROAD	KY 2881					3								
KY 2878	1	0.000	0.394	0.39	Rural Minor Collector	2	10	Combination	None	0	55	0.0%	076811	1,928	2014	1,940
		US 25	NORTH OF NORTHRIDGE WAY					3								
KY 2879	1	0.000	0.475	0.48	Rural Local	2	7	Earth	None	0	55	0.0%	076832	38	2012	40
		0.475 MI S OF KY 2878	KY 2878					3								
KY 2880	1	0.000	0.570	0.57	Rural Local	2	7-9	Earth	None	0	55	0.0%	076601	151	2012	150
		MENELAUS ROAD	MENELAUS ROAD					3								
KY 2881	1	0.000	2.791	2.79	Rural Minor Collector	2	8-9	Earth / Combination	None	0	55	0.0%	076562	1,209	2013	1,270
		KY 1983	DUNCANNON LANE					2 - 6								
KY 2881	2	2.791	4.361	1.57	Rural Minor Collector	2	9	Combination		0	55	0.0%	076559	2,020	2014	2,070
		DUNCANNON LANE	KY 52					2								
KY 3087	1	0.000	0.256	0.26	Urban Collector Street	4	12	No Shoulder or Curb Exist / Combination / Curbed / Paved	Raised Mountab	0-16	55	0.0%	076A62	1,652	2014	1,660
		NORTHGATE DR (AT I 75 NB OFFRA	US 25X					0 - 10								
KY 3376	1	0.000	1.165	1.17	Urban Local	2	9	Stabilized	None	0	45-55	0.0%	076532	2,557	2013	2,740
		KY 1016	HICKORY LANE					2 - 3								
KY 3376	2	1.165	4.679	3.51	Rural Local	2	9	Stabilized / Earth			55	0.0%	076273	1,052	2012	1,170
		HICKORY LANE	US 421 JUNCTION					2 - 3								
KY 3376	3	4.679	5.384	0.71	Rural Minor Collector	2	9	Earth				0.0%	076272	2,518	2014	2,610
		US 421 DEPARTURE	KINGSTON ACRES					3								

TABLE 3: ROADWAY CHARACTERISTICS SUMMARY (CONT'D)

Route #	Section	Begin Milepoint	End Milepoint	Section Length (miles)	Functional Class (Class Description)	Number of Lanes	Lane Width (feet)	Shoulder Type CL (feet)	Median Type	Median Width (feet)	Posted Speed Limit (MPH)	Truck Percentage	Count Station	Last Count ADT	Last Count Year	2015 ADT
US 25	1	0.786	1.486	0.70	Rural Major Collector	2	12	Paved w/ Bituminous Material	None	0	55	12.9%	076602	8,283	2014	8,450
		SOUTH OF EAGLE POINT DR	SLATE LICK ROAD					8								
US 25	2	1.486	2.863	1.38	Urban Collector Street	2	12	Paved w/ Bituminous Material / Curbed			45-55	12.9%	076501	5,292	2012	5,370
		SLATE LICK ROAD	KY 21					1 - 8								
US 25	3	2.863	3.222	0.36	Urban Minor Arterial Street	2	15	Curbed			35	3.8%	076C06	11,598	2013	11,710
		KY 21	S BROADWAY/N BROADWAY					2								
US 25	4	3.222	3.625	0.40				Curbed			25	5.6%	076C08	13,426	2014	13,490
		S BROADWAY/N BROADWAY	ELLIPSE STREET					0 - 2								
US 25	5	3.625	3.810	0.19			18	Curbed				5.6%	076C56	14,859	2012	15,080
		ELLIPSE STREET	KY 21					0								
US 25	6	3.810	4.237	0.43			12-13	Curbed			25-35	5.6%	076C10	8,864	2013	8,950
		KY 21	KY 1016					0								
US 25	7	4.237	4.637	0.40			12-17	Paved w/ Bituminous Material / Curbed			35	0.0%	076C93	8,470	2014	8,510
		KY 1016	ELLIPSE STREET					0 - 2								
US 25	8	4.637	5.284	0.65			12	Combination			35-45	5.6%	076C20	13,820	2014	13,890
		ELLIPSE STREET	BOB O LINE DR/BAUGH STREET					4								
US 25	9	5.284	5.729	0.45				No Shoulder or Curb Exist / Paved w/ Bituminous Material	None - Flush	0-12	45-55	5.6%	076C38	7,818	2012	7,940
		BOB O LINE DR/BAUGH STREET						0 - 10								
US 25	10	5.729	5.980	0.25		4	12	No Shoulder or Curb Exist / Paved w/ Bituminous Material	Flush	12	55	5.6%	076C38	7,818	2012	7,940
								0 - 10								
US 25	11	5.980	8.032	2.05		2	12	No Shoulder or Curb Exist / Paved w/ Bituminous Material	None - Flush	0-12		5.6%	076C38	7,818	2012	7,940
			KY 1983					0 - 10								
US 25	12	8.032	11.670	3.64				Combination	None - Flush -	0-36		5.6%	076506	7,865	2013	7,940
		KY 1983						4								
US 25	13	11.670	11.773	0.10		3	12	Combination	Depressed	36		5.6%	076506	7,865	2013	7,940
								4								
US 25	14	11.773	12.027	0.25		4	12	Combination		36		5.6%	076506	7,865	2013	7,940
			US 421					4								
US 25	15	12.027	14.694	2.67		2	10	No Shoulder or Curb Exist / Paved w/ Bituminous Material	None	0	45-55	6.5%	076616	17,625	2014	17,710
		US 421						0 - 10								
US 25	16	14.694	14.883	0.19		3	12	Curbed			45	6.5%	076616	17,625	2014	17,710
								2								
US 25	17	14.883	15.199	0.32		4	12	Curbed				6.5%	076616	17,625	2014	17,710
			MARSHA KAY DRIVE					2								
US 25	18	15.199	15.442	0.24		5	12	Curbed	None - Raised	0-16		6.5%	076A46	20,500	2010	21,020
		MARSHA KAY DRIVE	KY 876					2								
US 25	19	15.442	16.199	0.76	Urban Principal Arterial	4	12	Paved w/ Bituminous Material	Raised Non	16		6.5%	076A57	24,499	2012	24,870
		KY 876	KY 52					10 - 11								
US 25	20	16.199	18.698	2.50				Paved w/ Bituminous Material	Depressed -	16-32	45-55	6.5%	076B07	22,623	2014	23,080
		KY 52	KY 1986					3 - 11								
US 25	21	18.698	19.874	1.18				Paved w/ Bituminous Material / Curbed	Depressed -	16-32	55	0.0%	076B08	21,734	2012	23,060
		KY 1986	US 25X - KY 2875					2 - 3								
US 25	22	19.874	20.312	0.44		5	12	Curbed	Raised Non	32		6.5%	076B01	8,870	2010	9,090
		US 25X - KY 2875						2								
US 25	23	20.312	20.573	0.26	Urban Minor Arterial Street	4	12	Curbed	None - Raised	0-16	45	6.5%	076B01	8,870	2010	9,090
								2								
US 25	24	20.573	20.964	0.39		2	12	Combination / Curbed	None	0		6.5%	076B01	8,870	2010	9,090
			KY 1156					1 - 8								
US 25	25	20.964	22.637	1.67	Rural Major Collector	2	11-12	Combination			45-55	5.9%	076780	5,653	2014	5,380
		KY 1156	NORTH OF KY 2878					4 - 8								

TABLE 3: ROADWAY CHARACTERISTICS SUMMARY (CONT'D)

Route #	Section	Begin Milepoint	End Milepoint	Section Length (miles)	Functional Class (Class Description)	Number of Lanes	Lane Width (feet)	Shoulder Type CL (feet)	Median Type	Median Width (feet)	Posted Speed Limit (MPH)	Truck Percentage	Count Station	Last Count ADT	Last Count Year	2015 ADT
US 25X	1	0.000	0.639	0.64	Urban Minor Arterial Street	2	11-16	Paved w/ Bituminous Material / Curbed	None - Raised	0-8	35-45	0.0%	076A40	11,115	2014	11,170
		US 25-KY 876	LOGAN AVENUE					0 - 8								
US 25X	2	0.639	1.027	0.39			16	Curbed	None	0	35	9.0%	076A71	11,778	2013	11,900
		LOGAN AVENUE	KY 52					0								
US 25X	3	1.027	1.634	0.61			13-16	Curbed			25-35	9.0%	076A28	14,496	2012	14,710
		KY 52	KY 388/SOUTH SECOND STREET					0								
US 25X	4	1.634	2.081	0.45			13-14	Curbed				0.0%	076A41	15,881	2014	15,960
		KY 388/SOUTH SECOND STREET	KY 169					0								
US 25X	5	2.081	2.612	0.53			13	Paved w/ Bituminous Material / Curbed			35	3.8%	076B10	9,886	2013	9,990
		KY 169						0 - 9								
US 25X	6	2.612	2.707	0.09		3	11	Paved w/ Bituminous Material / Curbed	Raised Mountab	4	35-45	3.8%	076B10	9,886	2013	9,990
								0 - 9								
US 25X	7	2.707	3.654	0.95		4	11	Paved w/ Bituminous Material	None - Raised	0-16	45-55	3.8%	076B10	9,886	2013	9,990
			US 25					10								
US 421	1	6.999	7.397	0.40	Rural Minor Arterial	2	10	Combination	None	0	55	7.3%	076255	3,071	2012	3,120
		SOUTH OF KY 1016	KY 1016					3								
US 421	2	7.397	9.941	2.54				Combination			45-55	4.2%	076254	5,131	2013	5,180
		KY 1016	KY 3376					3								
US 421	3	9.941	12.571	2.63	Urban Minor Arterial Street	2	10-12	Combination / Curbed	None - Raised	0-8		4.2%	076507	6,924	2012	7,030
		KY 3376	US 25					0 - 3								

2.3 EXISTING TRAFFIC VOLUMES

The 2015 average daily traffic (ADT) volumes are shown in **Figures 4** and **5**. ADT volumes in Richmond on state-maintained routes in the study area range from 40 vehicles per day (VPD) on KY 2879 to 30,770 VPD on KY 876. ADT volumes in Berea range from 60 on KY 2874 to 14,220 on KY 21. ADT volumes outside of the incorporated cities in Madison County range from 150 on KY 2881 to 17,710 on US 25.

Congestion is an indication of traffic demand and the adequacy of roadway segments to service the demand. It can be measured by comparing the road's ADT volumes to the road's theoretical capacity to provide a volume-to-capacity ratio (V/C). The V/C ratio represents the volume, or traffic demand during a specific time period, related to the capacity of the roadway to meet the demand. Existing ADT volumes from the database of KYTC's traffic count stations were refined using applied growth rates verified against results from the LAMPO travel demand model. The theoretical capacities of road segments were calculated using Highway Capacity Manual (HCM) procedures. In urban areas, a V/C greater than 1.0 indicates a congested road (i.e., operating above its design capacity). After performing a V/C analysis using Highway Capacity Manual (HCM) procedures, two segments of US 25 in the study area were found to have a V/C greater than 1.0, which indicates that mitigation measures (including additional lanes) may be warranted. Traffic analysis tables including V/C ratios are included in **Appendix A**.

Level of service (LOS) is a qualitative measure describing operating conditions of a roadway based on factors such as speed, travel time, delay, and safety. A rating scale (A-F) is used with the V/C ratio to provide additional information on the severity of congestion. LOS A represents a free flowing facility. With each subsequent LOS, congestion increases and the ability of a vehicle to move freely decreases until reaching LOS F, which represents a congested roadway with resulting lower travel speeds. In urban areas, LOS D or better is desirable while in rural areas, LOS C or better is desirable.

Figures 6 and **7** show the 2015 LOS results. Routes shown in green function with a low level of congestion. Routes identified as yellow are routes where the daily traffic demand is approaching the capacity of the roadway. Routes shown in red – US 25/US 421 between Richmond and Berea, and a section of US 25 immediately north of downtown Berea – receive more daily traffic than the capacity of the roadway.

In areas where the speed limit is less than 45 miles per hour (MPH), the HCM analysis is unable to compute a V/C analysis to identify the LOS. Those routes are identified with gray segments in the figures and gray columns in **Appendix A**.

FIGURE 4: 2015 ADT (RICHMOND)

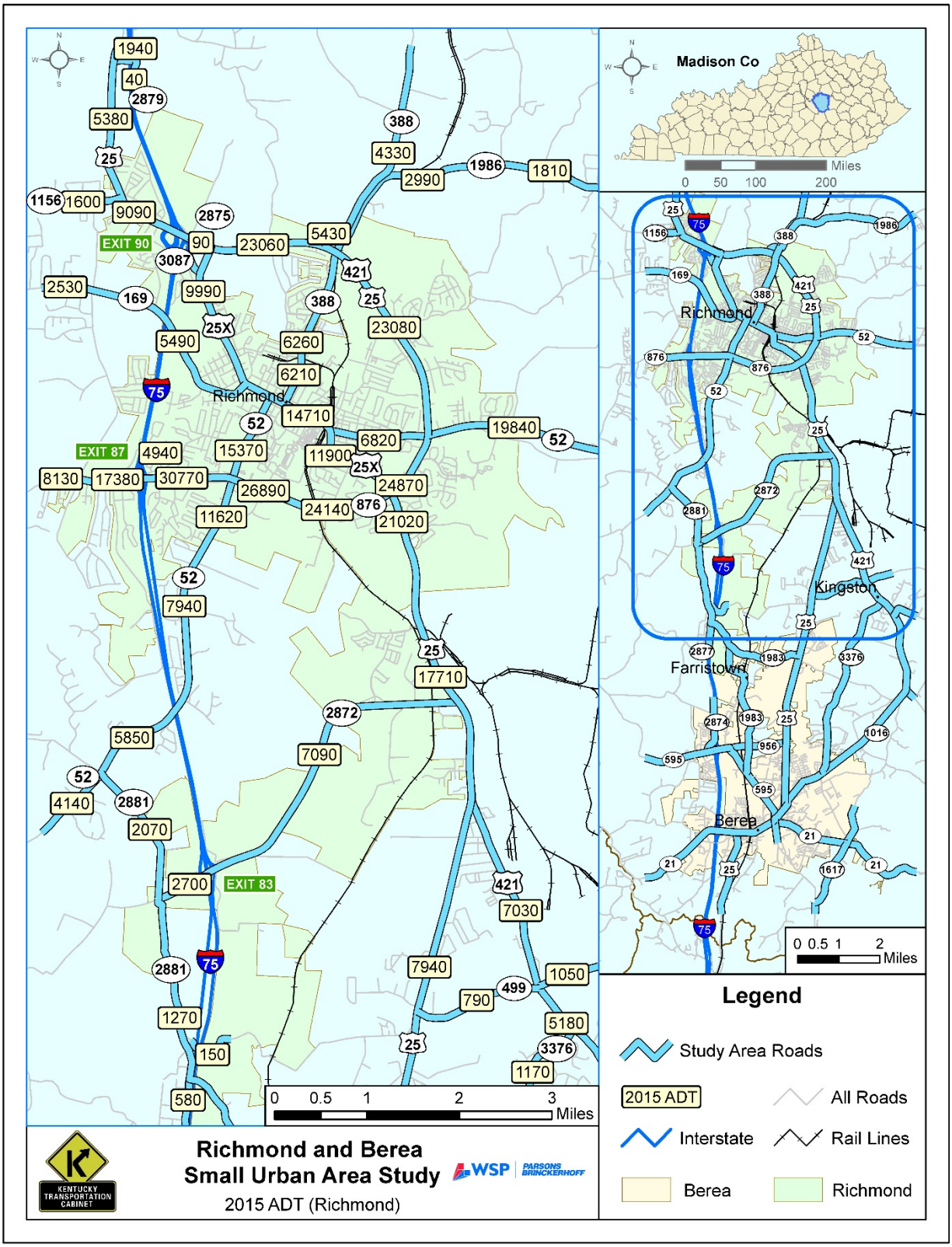


FIGURE 5: 2015 ADT (BEREA)

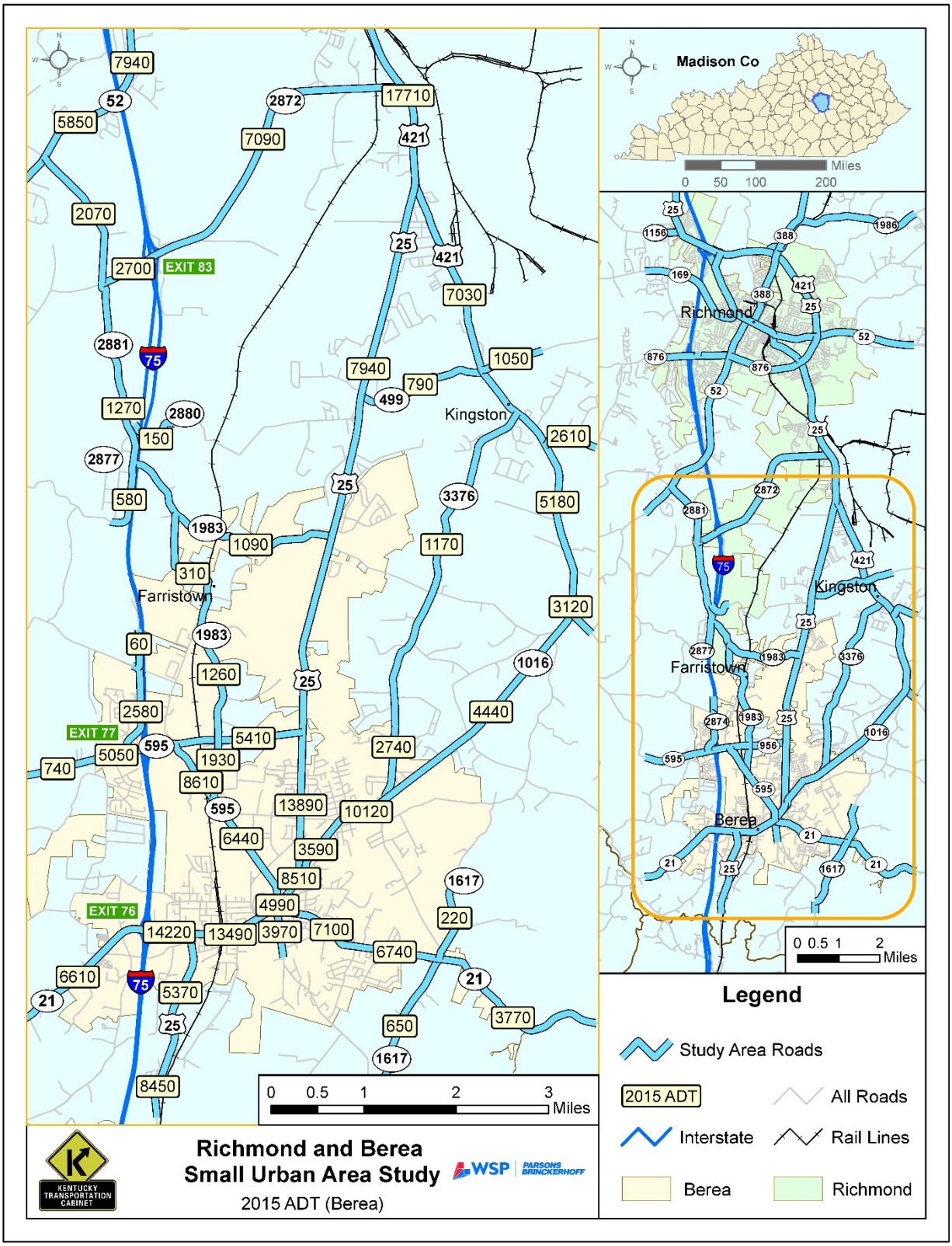


FIGURE 6: 2015 LEVEL OF SERVICE (RICHMOND)

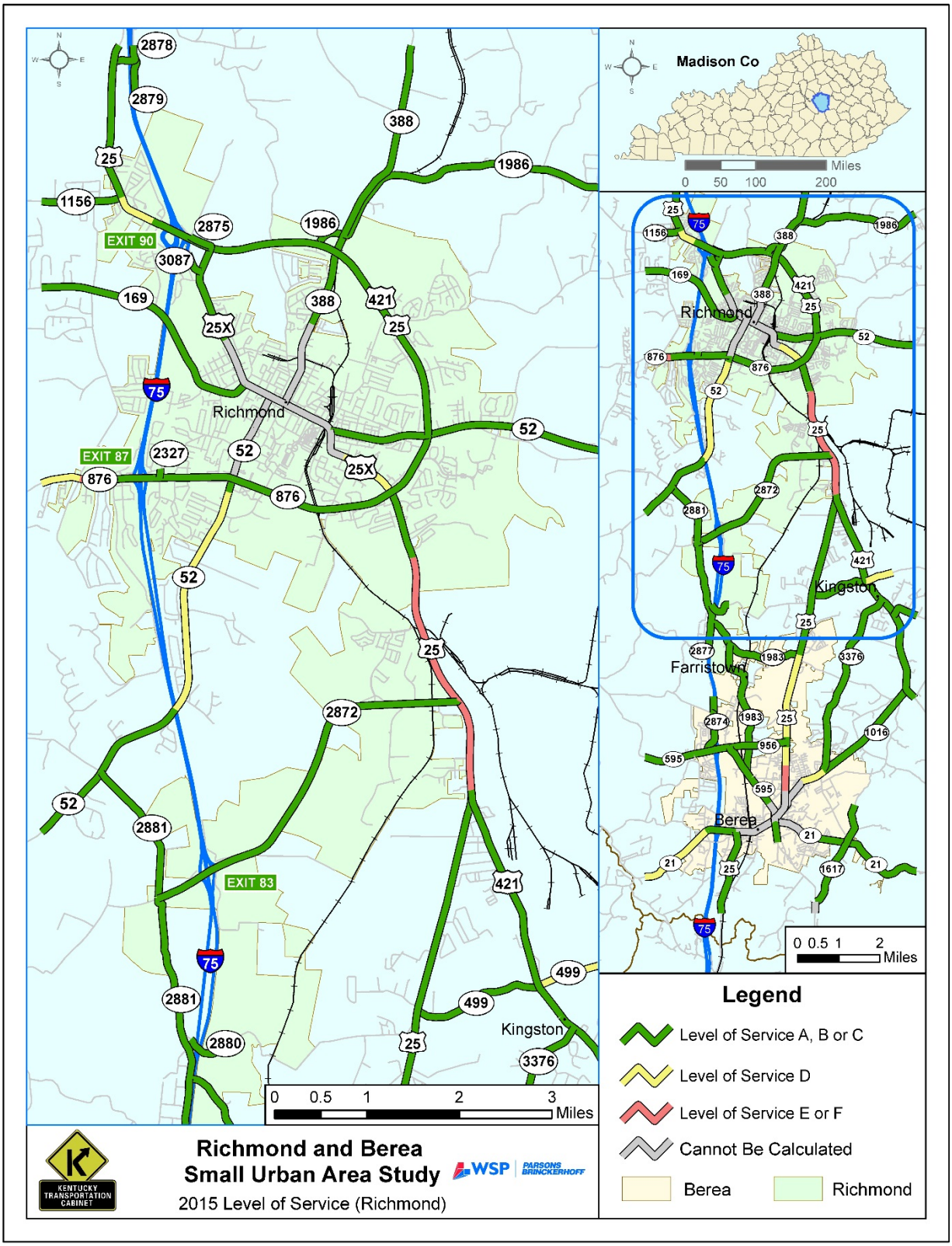
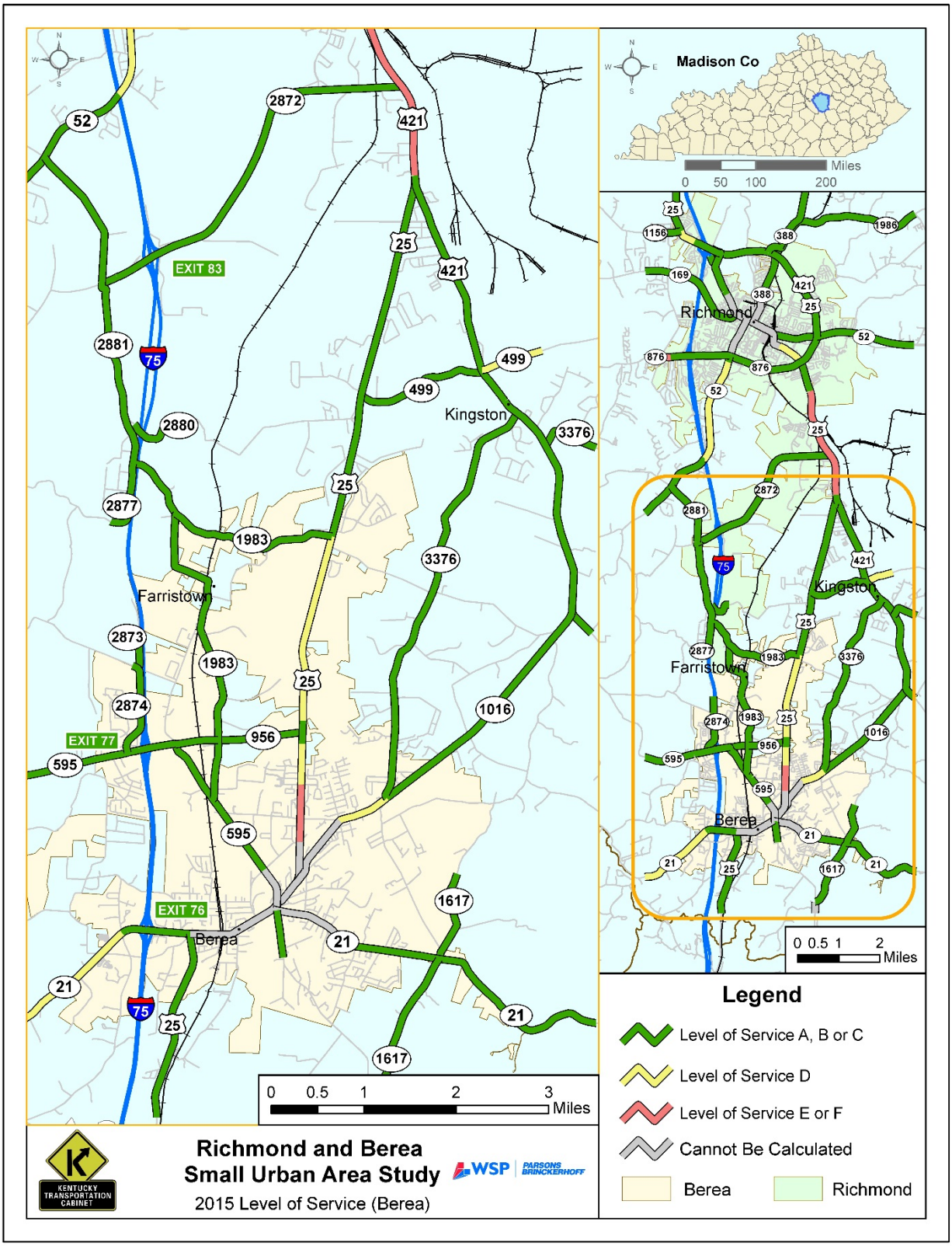


FIGURE 7: 2015 LEVEL OF SERVICE (BEREA)



2.4 CRASH ANALYSIS

Crash data were collected along existing roadways within the study area for a three-year period between January 1, 2012 and December 31, 2014. A total of 3,338 non-interstate crashes were reported within the study area, as shown in **Figures 8** and **9**. There were 14 fatal (<0.42%), 525 (15.7%) with injuries, and 2,799 (83.9%) crashes with property damage only. The most common crash type was rear end, with 1,513 (45%). Angle crashes were the next most common type with 654 (20%). The majority of crashes, 2,099 (63%) occurred during clear weather, and 2,501 (75%) during daylight hours. The crash records, locations, and analysis are included in **Appendix B**.

The locations of crashes within the study area were mapped and compared to statewide data to identify locations with a history of above-average crash rates. The Kentucky Transportation Center research report *Analysis of Traffic Crash Data in Kentucky (2010-2014)*[1] defines the crash analysis methodology. When analyzing crashes, two different lengths of roadway are evaluated: segments and spots.

Routes are divided into variable length segments where geometry or traffic volumes change. Each segment's number of crashes, lanes, traffic volumes, urban/rural designations, and segment length are analyzed to determine the critical crash rate factor (CCRF). The CCRF is a ratio of the crash rate of a segment compared to the critical crash rate for similar roadways statewide. A CCRF of 1.00 or greater may indicate that crashes are occurring due to non-random circumstances.

Crash rate analysis results are shown in **Figures 10** and **11**. Red highlighted segments identify locations where the CCRF exceeds 1.00. Yellow highlighted road segments identify CCRF lower than 1.00 but higher than the statewide average. Road segments highlighted in green have a lower crash rate than the statewide average rate.

Additional spot crash analysis was completed for individual locations where safety had been indicated as a concern and the CCRF was higher than 1.00 for the segment. Those CCRF calculations were completed similarly to the segment CCRF, but with a 0.3-mile segment length. Spot crash location results were included in individual recommended project sheets, and this analysis is included in **Appendix B**.

Crash analysis segments with higher than average crash rates and the areas of congestion determined through the LOS analysis in the previous section were mapped together to identify areas of interest. **Figure 12** highlights these areas of interest with high congestion and high crash rates within the study area.

[1] Green, E. R., et al. *Analysis of Traffic Crash Data in Kentucky*. KTC-15-21, September, 2015.

FIGURE 8: CRASH TYPE AND LOCATIONS (RICHMOND)

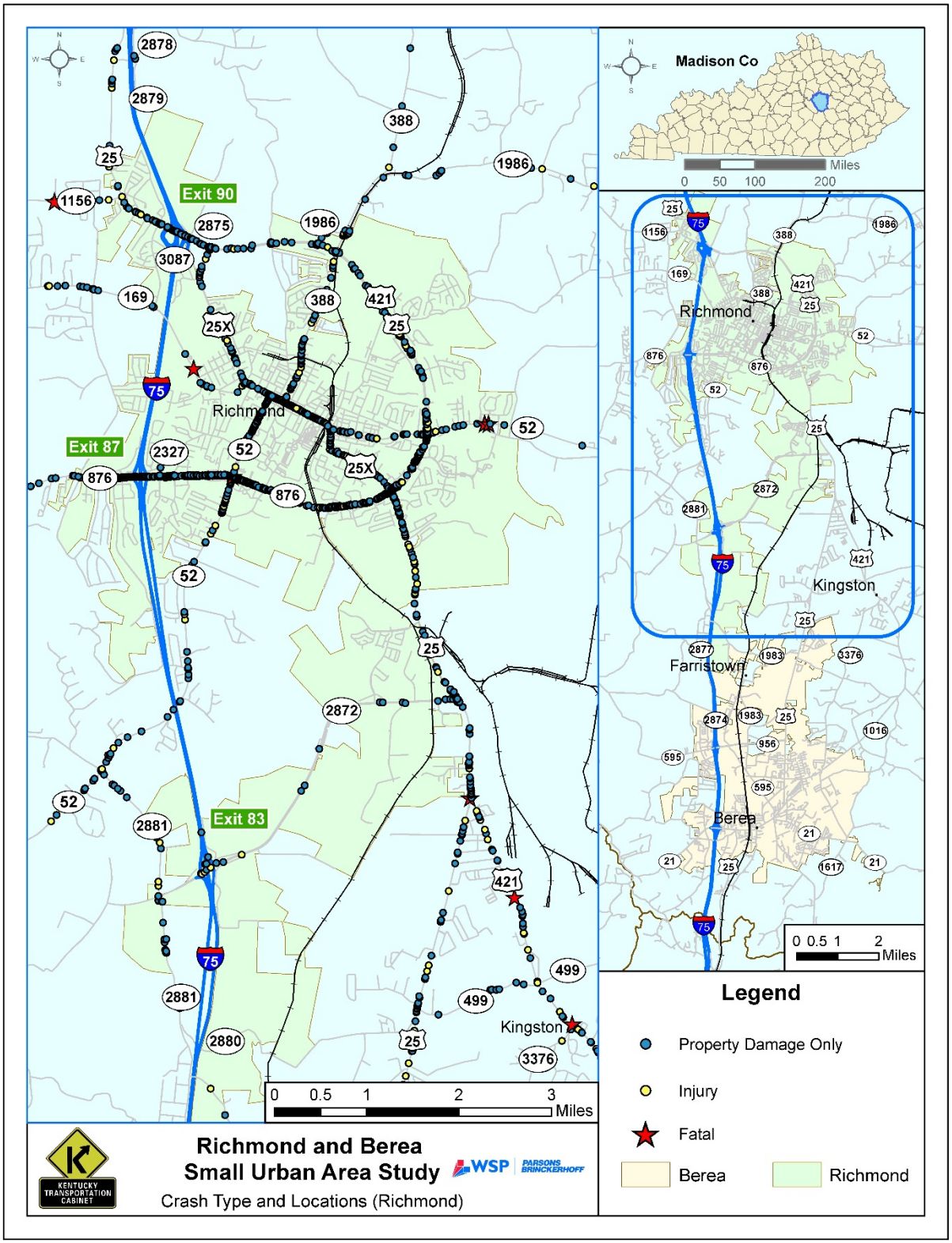


FIGURE 9: CRASH TYPE AND LOCATIONS (BEREA)

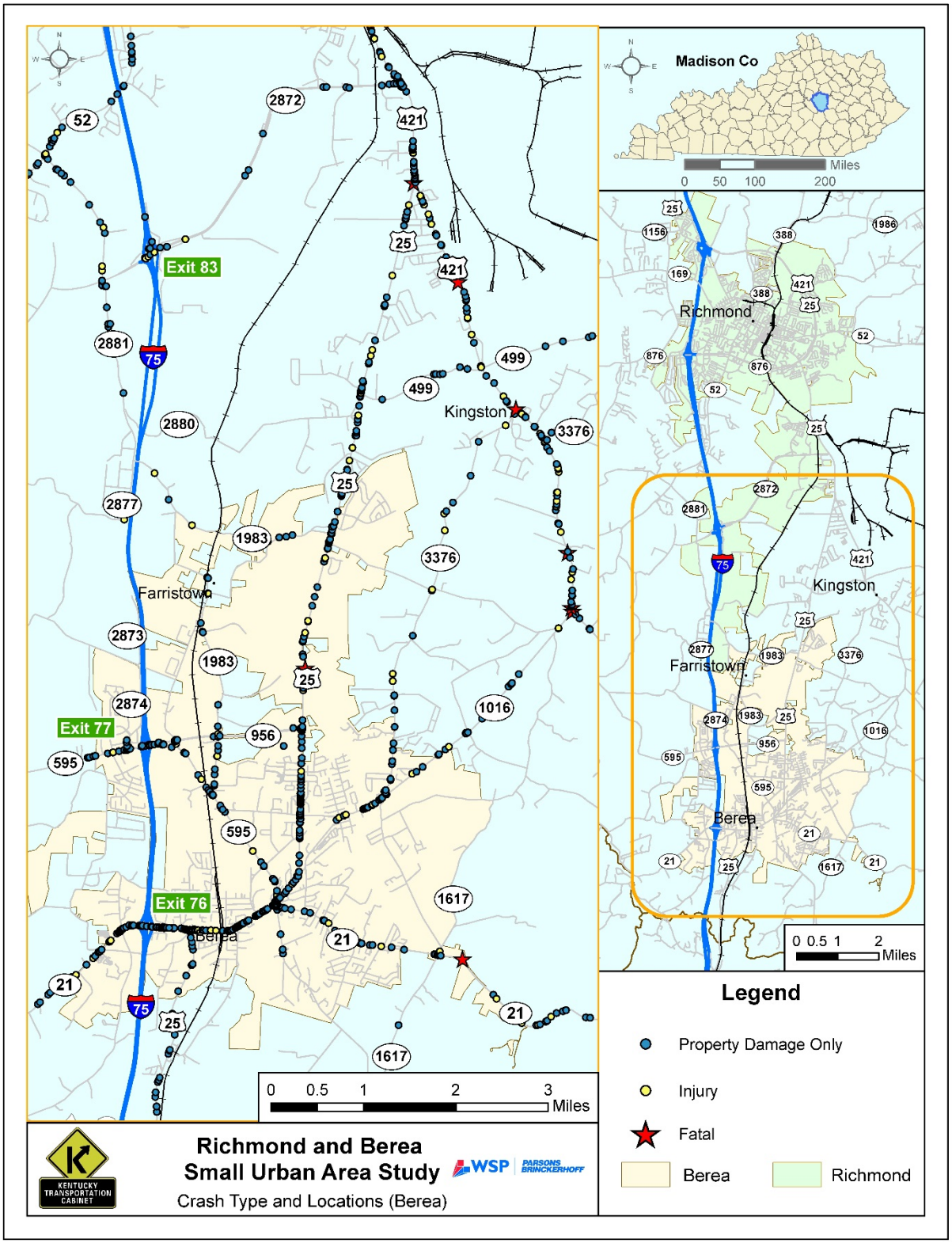


FIGURE 10: CRASH RATE ANALYSIS (RICHMOND)

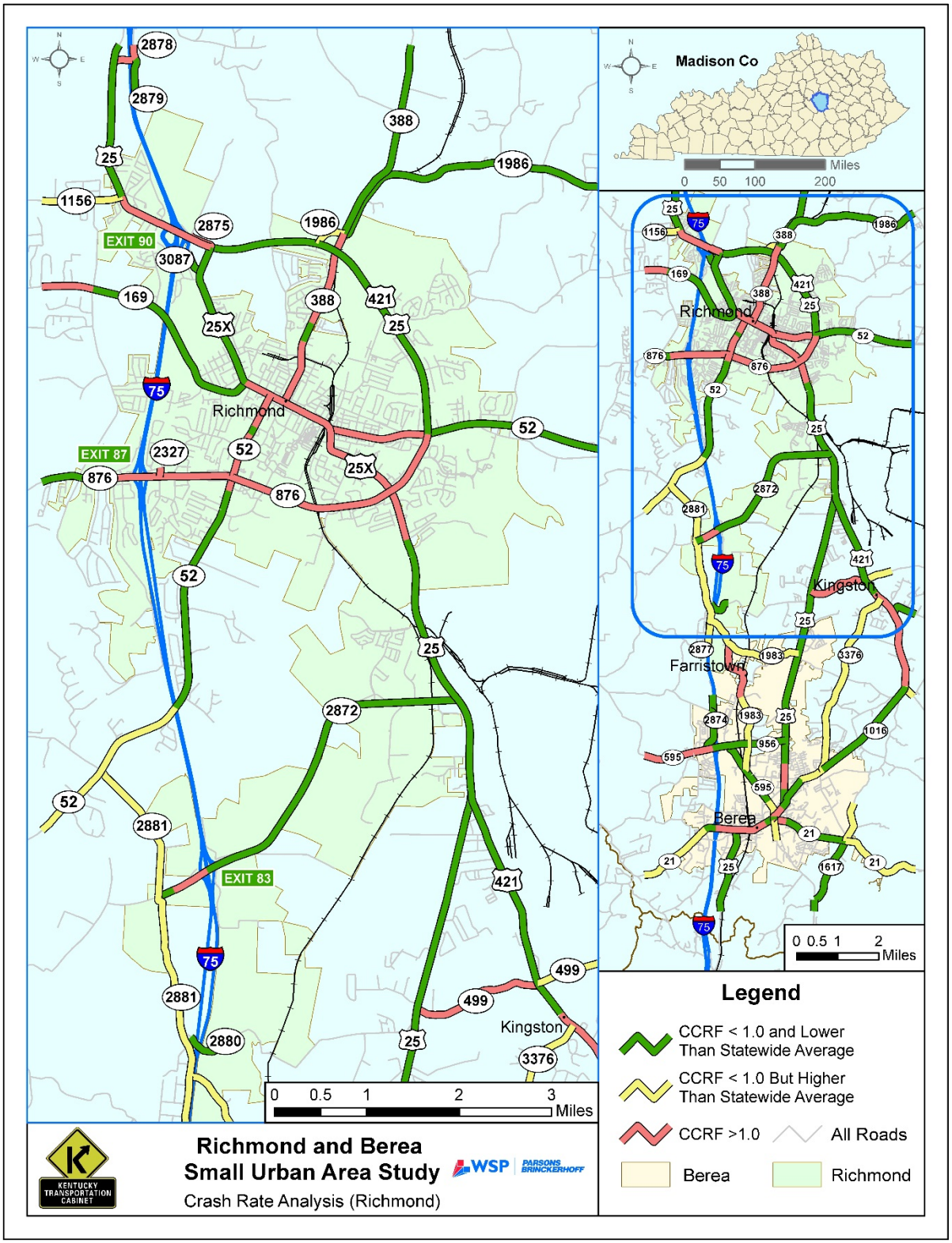


FIGURE 11: CRASH RATES ANALYSIS (BEREA)

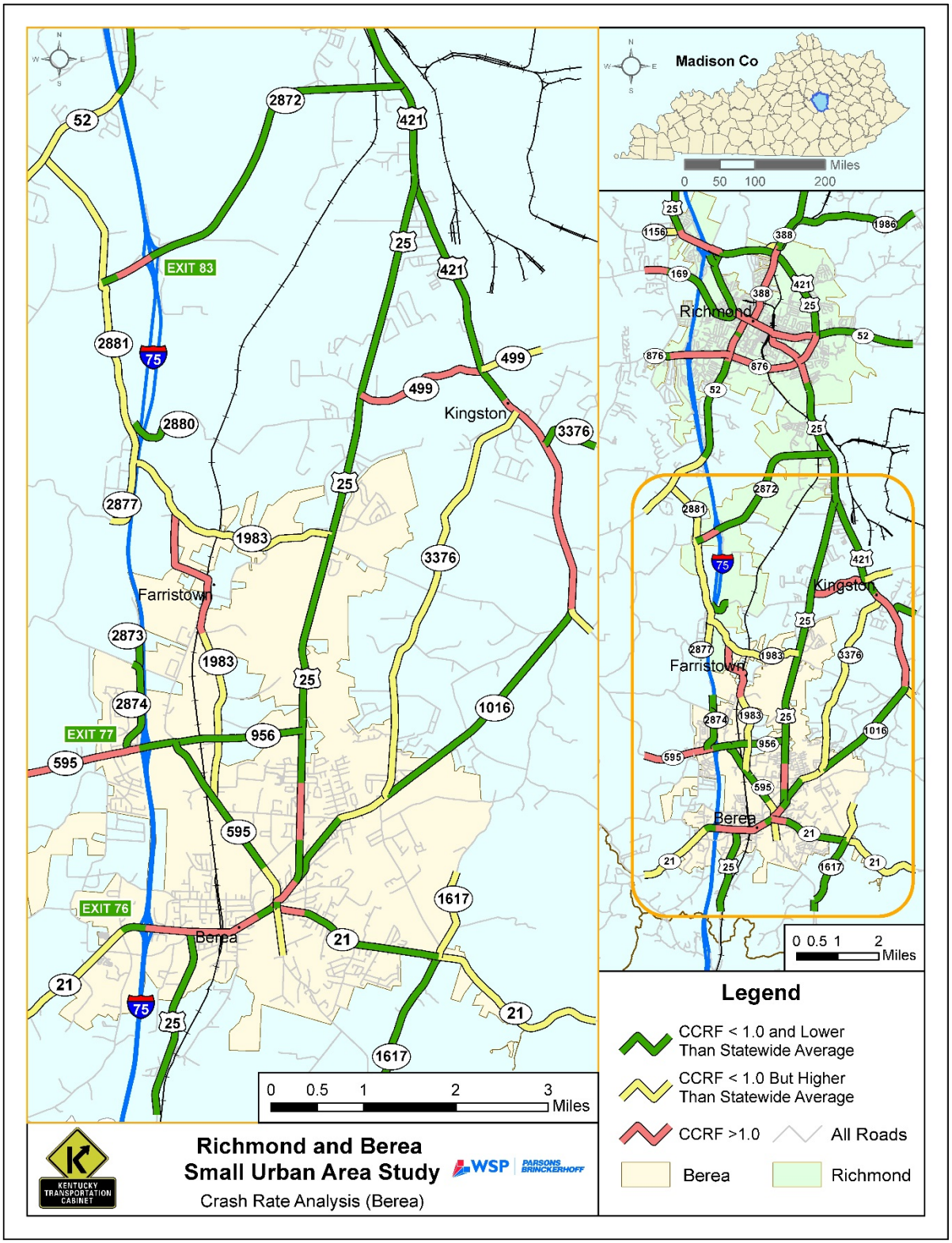
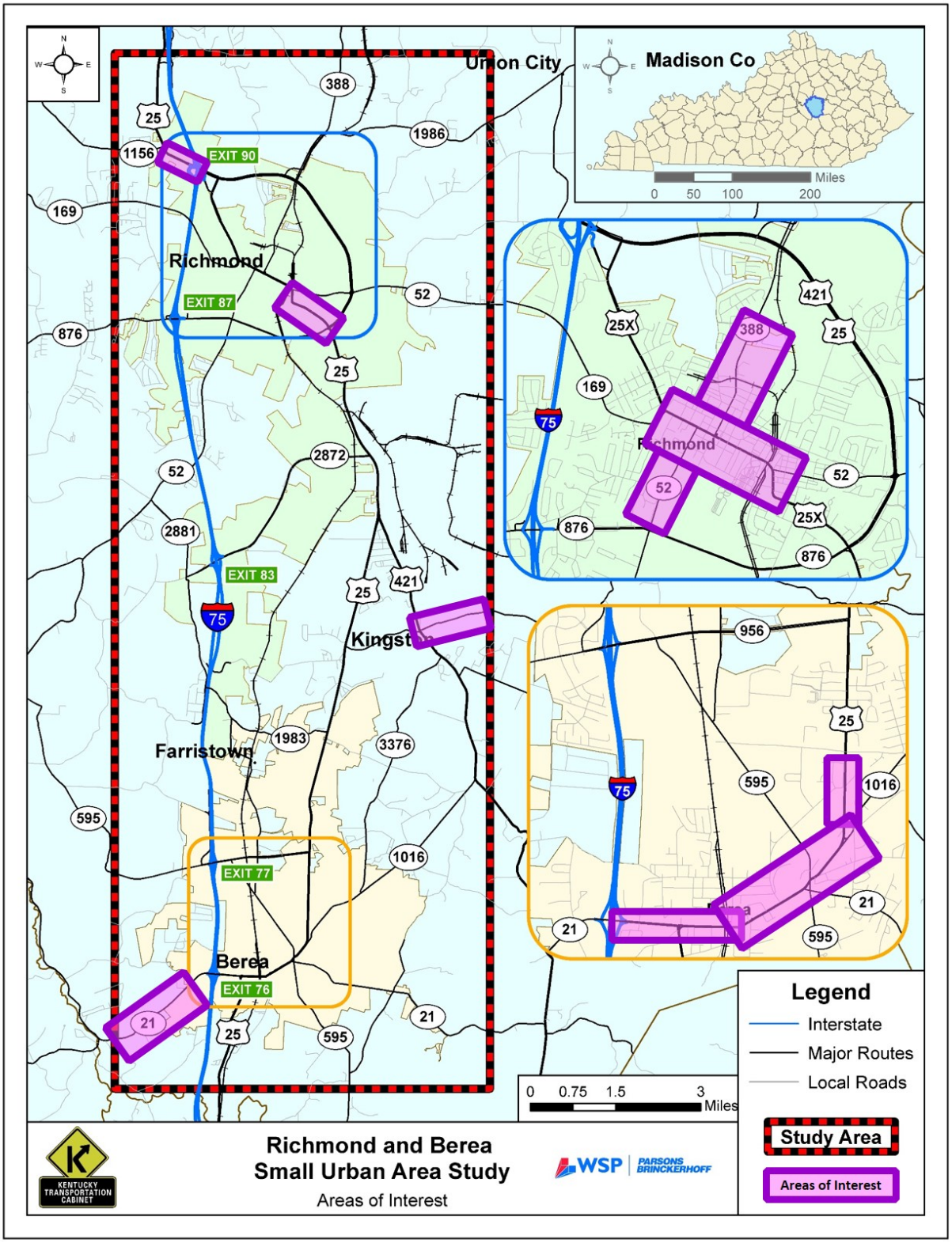


FIGURE 12: AREAS OF INTEREST WITH HIGH CONGESTION AND HIGH CRASH RATES



2.5 MULTIMODAL FACILITIES

2.5.1 Airport

The Central Kentucky Regional Airport (KRGA), also referred to as the Madison Airport, is a general aviation airport open to the public. It is located between the Cities of Richmond and Berea, southwest of I-75 at Exit 83.

Two 5,001 feet runways are available at the Madison Airport. Eastern Kentucky University is the airport's fixed base operator, offering professional flight instruction classes and serving as one of the primary flight schools supported through the general aviation program in Kentucky.

2.5.2 Bicycle Facilities

In 2015, the KYTC's Division of Planning, Modal Branch, compiled existing roadway characteristics and surveyed bicyclists in Madison County to develop a 2015 Bicycle Comfort Index. This index is an initial attempt to identify routes that may need additional bicycle accommodations. There were some data issues with this effort in not capturing stand-alone features such as parallel shared use paths, particularly in Berea along the TransAmerica Trail, and in Richmond near Eastern Kentucky University. However, the resource has been helpful to identify gaps in the bicycle network. **Figures 13** and **14** show the 2015 Bicycle Comfort Index for Richmond and Berea, respectively.

Richmond and Berea have both identified bicycle and pedestrian facilities in their comprehensive plans. Richmond's comprehensive plan can be found online at http://richmond.ky.us/index.php/planning-and-zoning. Richmond's highest priority sections for bicycle accommodations include shared use paths on major arterials US 25, US 421, and Duncannon Road. Minor arterials US 25X, Lancaster Road, and Goggins Lane are priority sections for either shared use paths or bicycle lanes.

Berea's comprehensive plan can be found online at http://bereaky.gov/government/city-departments/codes-planning/planning-zoning. Three established bicycle tour routes currently intersect through downtown Berea. The US Bike Route 76, known as the TransAmerica Trail, crosses the study area through the City of Berea from KY 21 in the east, through the Berea Triangle, an intersection of US 25, KY 21, and KY 595, and continues along KY 595 to the north and west. The Midland Kentucky Bike Tour follows Blue Lick Road from the east of Berea to KY 595, then travels north through the Berea Triangle, before turning left on to Chestnut Street and South Dogwood Drive. The Bluegrass Bike Tour begins on KY 595 south of Berea, travels north through the Berea Triangle, and continues on KY 1016 and then KY 3376. Berea has applied to be designated a Trail Town, with 11 existing trails (19.41 miles), and 7 proposed trails (11.17 miles) in project development currently pursuing funding and design. Eight future trails (15.04 miles) have been planned. Berea's trails are intended to serve as shared use paths, providing both bicycle and pedestrian connectivity.

2.5.3 Pedestrian Facilities

Richmond's rapid population growth in the past 40 years led to a similar expansion of development, with originally rural roadways connecting increasingly dense land uses. The typical section of a rural roadway does not generally include pedestrian features. As a result, there are

gaps in pedestrian connectivity throughout Richmond where new development following an urban typical section that includes pedestrian facilities like sidewalks, connects to original rural typical sections without pedestrian facilities. These gaps have been identified as high priorities in Richmond's comprehensive transportation plan. Richmond's highest priority sections for pedestrian connectivity are along US 25X and KY 52 within the US 25/KY 876 bypass.

Tourism is one of Berea's largest economic generators, from Berea's artisan support, to historical features. Many historical structures are centered within a reasonable walking distance, which has led Berea to focus on additional infrastructure ensuring pedestrian connectivity. The intersection of the three major bicycle trails has also increased pedestrian activity, resulting in significant local support prioritizing shared use paths along new routes, and ensuring pedestrian connectivity between historical, educational, governmental, recreational, and employment activities.

2.5.4 Rail Facilities

No passenger rail service exists in Madison County. Commercial freight rail services are provided by CSX Transportation with a rail line that travels north-south through the study area. The line continues through both Richmond and Berea city limits, and is roughly parallel to I-75.

2.5.5 Transit Service

Transit services in Madison County are provided by the Kentucky River Foothills Development Council (KRFDC). Several routes are offered within the study area including the Richmond Transit Service, Berea Bus Route, Madison County to Lexington Commuter Route, Richmond/Berea Connector, and EKU Transportation Services.

The Richmond Transit Service operates fixed route service Monday through Friday from 8:00 a.m. to 5:00 p.m. The Richmond bus route runs on a 90-minute loop through 28 stops. The Berea Bus Route runs fixed route service Monday through Friday from 9:00 a.m. to 5:00 p.m. The Berea bus route runs on a regular one-hour loop through 30 stops.

Bus fare for both Richmond and Berea intra-city transit services is $1.00, with an all-day bus pass offered for $1.00 per day. Wheelchair assisted door-to-door paratransit service is available with a 48 hour notice. Riders may request a stop in advance with a deviation up to 3/4 of a mile from the existing fixed route. The deviated-fixed route will deviate for the general public with and without disabilities.

The Richmond/Berea Connector Route, also known as the Madison Connector Route, operates Monday through Friday from 8:00 a.m. to 4:30 p.m. The cost of the trip is $2.00 for a round trip. A trip may be scheduled by providing a 48 hour notice.

The Madison County to Lexington Commuter Route provides commuter service to five locations in the Lexington area. In a partnership between KRFDC and the KYTC Office of Transportation Delivery, a preset route was established to provide transportation between employees and their workplaces. Riders pay $50 per month. This route operates Monday through Friday, from 6:30 a.m. to 5:15 p.m.

FIGURE 13: 2015 BICYCLE COMFORT INDEX (RICHMOND)

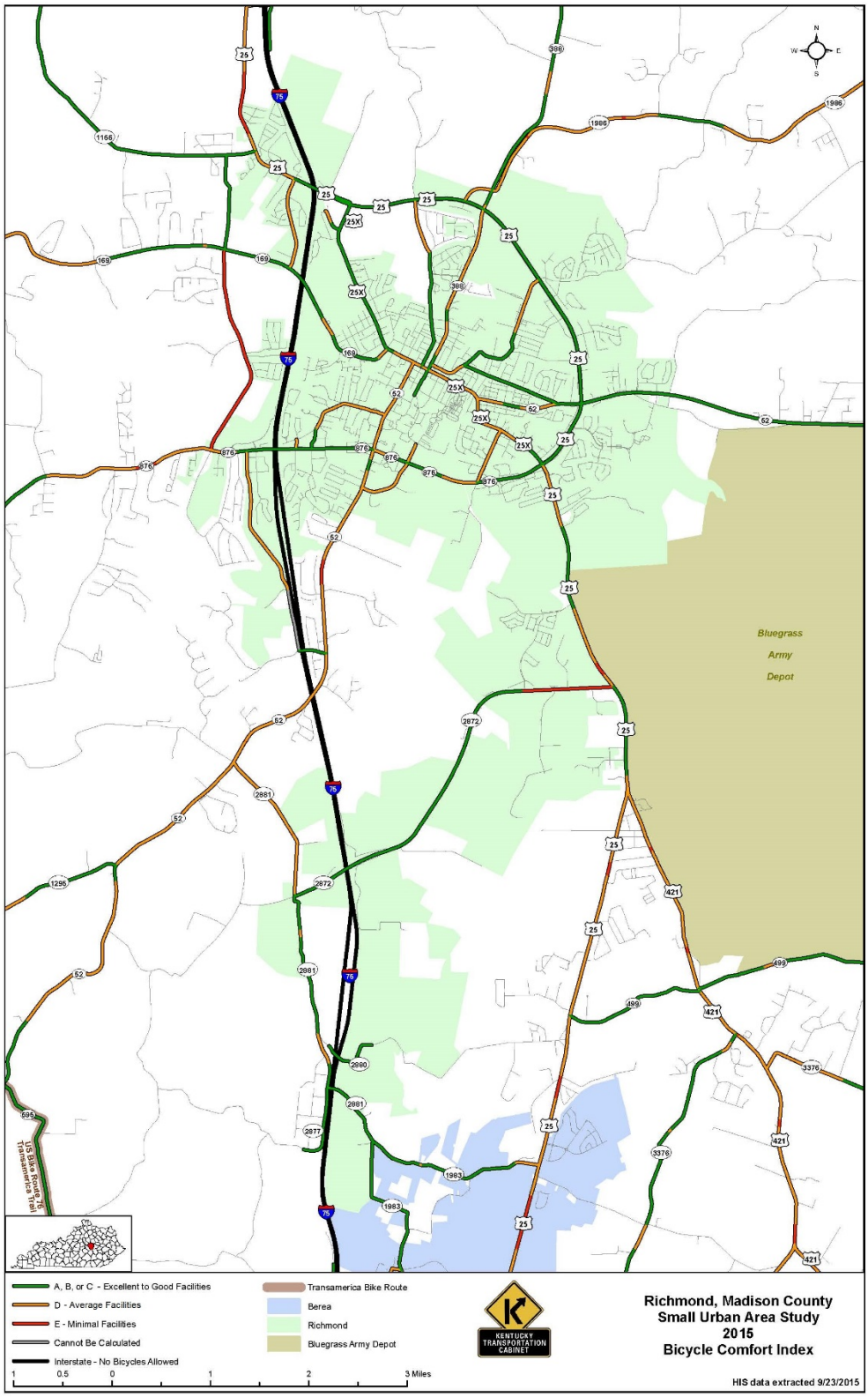
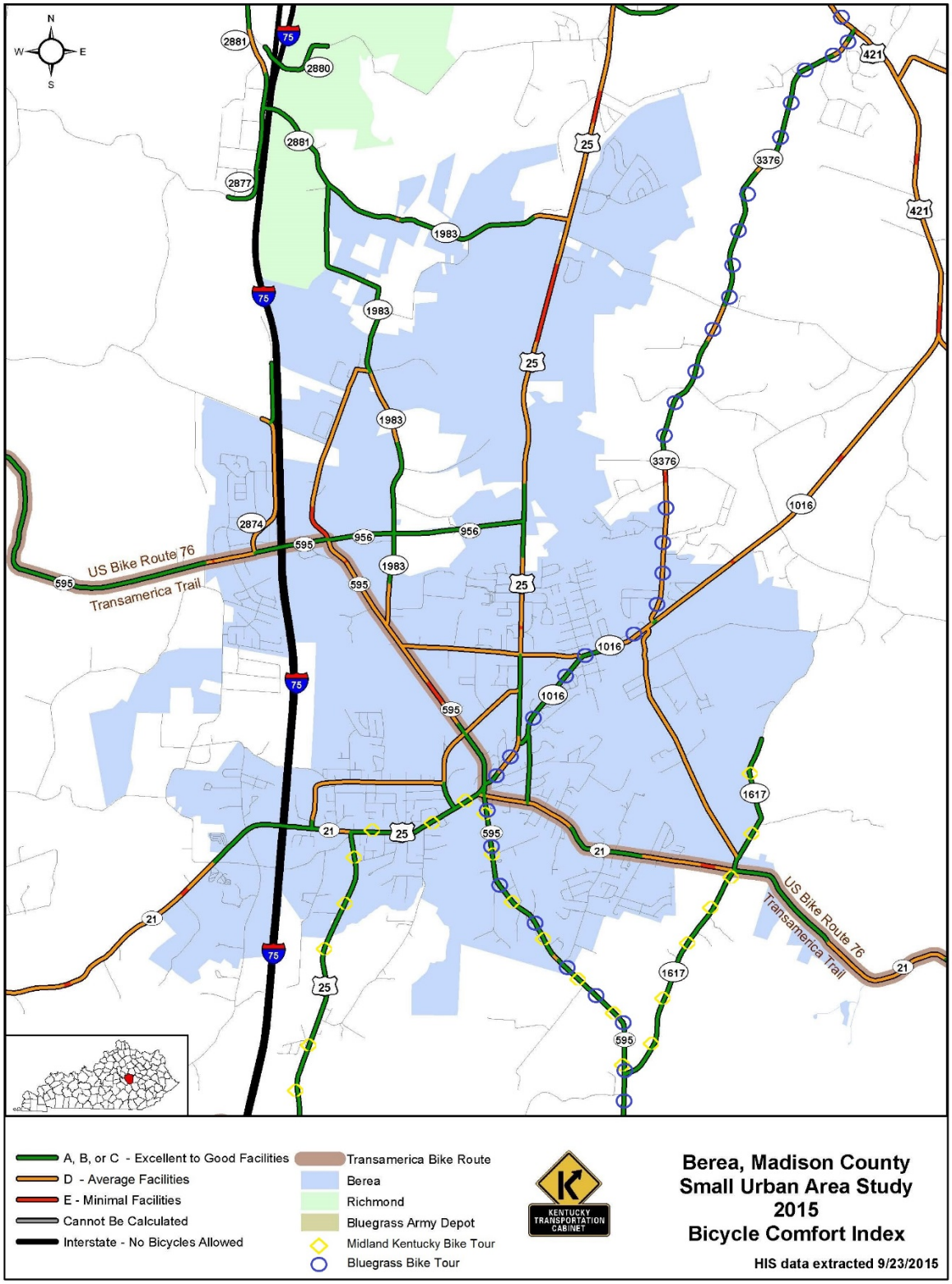


FIGURE 14: 2015 BICYCLE COMFORT INDEX (BEREA)



3.0 ENVIRONMENTAL OVERVIEW

An environmental overview identifies the existence of potential areas of concern regarding natural and human resources. Natural environmental resources include aquatic resources like streams, floodplains, and wetlands; land features such as the potential for karst topography and mineral deposits; and threatened, rare, and/or endangered species of plants and animals. Categories of human environmental concerns include socioeconomic characteristics, jurisdictional boundaries, air quality, traffic noise, historical structures or artifacts, and locations of underground storage tanks (USTs), hazardous waste sites, and landfills. The full environmental overview, other than archaeology information, can be found in **Appendix C**.

The National Environmental Policy Act (NEPA) requires the consideration of impacts to environmental resources during project development. The discovery of environmental resources early in the project development process allows for the avoidance, minimization, and/or mitigation of potential impacts to those resources. The environmental information identified in this broad study area overview may not be adequate for individual project NEPA requirements.

3.1 NATURAL ENVIRONMENT

3.1.1 Aquatic Resources

The Kentucky River flows along Madison County's northern border. Five tributary streams comprise the major watersheds within Madison County: 1) Silver Creek, 2) Otter Creek, 3) Muddy Creek, 4) Paint Lick Creek, and 5) Tates Creek. The study area primary drainages are Silver Creek, Otter Creek, and their tributaries. Periodic flooding occurs along the Kentucky River during heavy rain events. Numerous unnamed intermittent and perennial streams and ponds are located throughout the study area.

The primary water source for the City of Richmond is the Kentucky River. The City of Berea relies on the Berea Reservoir and a series of city-owned small lakes for its water source.

Lake Reba, located to the southeast of Richmond, and Wilgreen Lake, located south of Richmond to the west of I-75, function as water recreational areas.

The City of Richmond has developed a municipal separate storm sewer system (MS4) under the Phase II general permit for small urbanized areas. These storm sewer systems transport polluted stormwater runoff and discharge the runoff untreated into local water resources. MS4s are required to obtain National Pollutant Discharge Elimination System (NPDES) permit coverage for stormwater discharges. Each regulated MS4 is required to develop and implement a stormwater management program to reduce the contamination of stormwater runoff.

3.1.2 Wetlands

According to National Wetlands Inventory data, the wetlands in the study area consist primarily of freshwater ponds.

Hydric soils occur primarily in the eastern and southern portions of the study area, concentrated along the major stream valleys. Most of the ponds identified in the study area appear to be intermittent and do not hold water permanently.

3.1.3 Floodplains

Floodplains in the study area were identified from the Federal Emergency Management Agency (FEMA). 100-year floodplains exist throughout the study area, primarily adjacent to Silver Creek, Otter Creek, and tributaries to the Kentucky River.

3.1.4 Threatened, Endangered, and Rare Species

The Endangered Species Act of 1973 provided for the conservation of species and ecosystems. The term "endangered" is a classification provided to an animal or plant in danger of extinction within the foreseeable future throughout all or a significant portion of its range. The term "threatened" is a classification for animals or plants likely to become endangered within the foreseeable future throughout all or a significant portion of its range. Review of the US Fish and Wildlife Service (USFWS) Threatened and Endangered Species (T&E) list suggests the possibility that several listed species may be found in Madison County.

Three mammals, the Indiana bat (endangered), the gray bat (endangered), and the northern long-eared bat (threatened), have the potential to be found in Madison County. The gray bat habitat is exclusively restricted to caves throughout the year, with foraging occurring along streams. Forested landscapes along major stream corridors provide potential summer habitats for the Indiana bat and the northern long-eared bat, with hibernation in caves.

Two vascular plant species, running buffalo clover (endangered), and Short's bladderpod (endangered) may find potential habitats within the study area. Running buffalo clover habitat includes open areas with partial shade and period disturbances such as woodlots, mowed areas, and along streams and wildlife trails. Short's bladderpod habitat consists of steep, rocky wooded slopes near rivers and streams.

The Kentucky Department of Fish and Wildlife Resources (KDFWR) lists 41 additional (beyond the five species listed by the USFWS, above) State Threatened, Endangered, and Special Concern species as occurring recently in Madison County. These include:

- 14 state endangered species (one amphibian, ten birds, two insects, one vascular plant);
- Nine state threatened species (eight birds, one reptile); and
- 18 state special concern species (one amphibian, nine birds, four mammals, four vascular plants).

Additional information about the USFWS T&E and the KDFWR summaries can be found in **Appendix C**.

3.1.5 Air Quality

Madison County is currently in attainment status for National Ambient Air Quality Standards (NAAQS). Kentucky's Energy and Environment Cabinet, Department for Environmental Protection, Division for Air Quality monitors two locations in Madison County: Eastern Kentucky University and Mayfield Elementary School. Neither of the two monitoring locations have experienced an exceedance of air quality standards for the 2013-2015 averaging period.

3.1.6 Noise

The study area contains a mixture of noise sensitive land use areas including Activity Categories "A", "B", "C", "D", "E", "F", and "G". Predominant land use categories are "B" – residential neighborhoods; and "G" - undeveloped lands without noise sensitivity. Activity Categories "C" – parks, places of worship, sport areas; "D" – auditoriums, day care centers, medical facilities; "E" – hotels, restaurants; and "F" – manufacturing, industrial activities; are also present in the study area, primarily within the urbanized areas of Richmond and Berea.

3.1.7 Section 4(f)

Several public parks and community recreational facilities are located within the study area.

Richmond has seven city-owned parks. Dillingham Heights Park (0.38 acre) and Betty Miller Park (2.22 acres) are considered mini parks servicing high density housing in central Richmond. Two neighborhood parks, ones within walking distance to neighborhoods, are the E.C. Million Park (6.54 acres) in western Richmond and the Richmond Recreation Center (1.43 acres) downtown. Three community parks offering a wide range of recreation opportunities include the Ann L. Durham Lake Reba Recreational Complex (811.58 acres) located in eastern Richmond, Camp Catalpa (26.05 acres) near Lake Reba, and the Irvine McDowell Park (11.69 acres) in central Richmond.

Berea has four city-owned community park facilities. Berea City Park (38 acres) and the Berea City Park Expansion (30 acres) are located in central Berea. Memorial Park (2 acres) and Russel Acton Folk Center (0.5 acre) are located in northern Berea.

Madison County owns one park within the study area and operates Wilgreen Lake. Battlefield Park (60 acres) is located in the eastern section of the study area between Richmond and Berea. Wilgreen Lake (1469 acres) is located east of I-75 between Richmond and Berea.

3.1.8 Section 6(f)

Madison County has multiple Land and Water Conservation Fund (LWCF) properties, including twelve grants within the study area. Properties identified with grants include the Richmond City Park (Richmond Recreation Center), E.C. Million Park, Irvine McDowell Park for tennis courts, Camp Catalpa Park, Berea Memorial Park, and the Lake Reba Recreational Complex.

3.1.9 Geotechnical

A geotechnical overview for the study area was completed based on geologic research of maps, soil and terrain surveys, and past reports from previous geotechnical investigations. The geotechnical overview is intended to identify general terrain, soil, bedrock, and other pertinent geotechnical concerns associated with roadway construction within the study area. The complete geotechnical overview is included in **Appendix D.** In summary:

- Karst terrain, pyritic shale, nondurable shale, soft soils, and existing development in the study area will likely be the most detrimental factors to any new construction in the area. The study area exhibits karst potential ranging from non-karst in the far eastern and southern portions, to karst prone sections north of Berea and to the west of US 25. Karst features may include sinkholes, caves, and solution features in the bedrock. Much of the study area is developed, which can mask the existence of karst features such as

sinkholes and surface depressions. More than 130 sinkholes and numerous closed depressions were noted on the karst potential map within the study area.

- Geologic mapping indicates the study area is dissected by a series of faults that generally trend northwest to southeast in the northern part of the study area and southwest to northeast in the southern portion. Named faults in the study area include the Richmond Fault and the Tate Creek Fault.
- Subgrade soils are anticipated to have a design California Bearing Ratio (CBR) range from three to six. High plasticity clays that tend to shrink and swell with corresponding changes in moisture content may be encountered within the study area. Chemical treatment may be desired to effectively stabilize road subgrades.
- Any open sinkholes or solution cavities not used for drainage purposes should be filled and/or capped. Sinkholes used for drainage purposes should incorporate adequate measures to minimize siltation of open sinkholes.
- The New Albany Shale Formation is known to be present near the surface within the study area. This type of shale can produce acidic runoff when exposed to water, and adequate steps should be taken to minimize that potential.
- Several oil or gas wells, many abandoned, were identified within the study area, primarily south of Berea. Numerous water wells and springs have been found within the study area. All wells that are disturbed during construction require costly closing procedures.
- The soils and bedrock which underlie the study area are highly variable, with each formation presenting its own set of issues with regard to construction. Separate site specific studies and corresponding geotechnical investigations should be performed prior to construction of individual projects identified within the study area.

3.2 HUMAN ENVIRONMENT

Transportation impacts human environmental resources including who we are, where and how we live, and what came before us. Potentially sensitive resources are identified and summarized in the following sections with regard to socioeconomic characteristics, hazardous materials, cultural/historical, and archaeological characteristics.

3.2.1 Socioeconomic Study

The Bluegrass Area Development District (BGADD) completed a Socioeconomic Study in February 2016. Socioeconomic issues pertaining to five categories were evaluated: low income (persons living in poverty), minority, elderly population 65 and over, disabled, and limited English proficiency. The complete Socioeconomic Study in **Appendix E** includes maps of the categories within the study area.

Madison County has 9.7 percent minority, 19.9 percent low income, 4 percent 65 and over, 13.7 percent disabled, and 1.1 percent limited English proficiency.

There are 19 Census Tracts (CTs) and 45 Block Groups (BGs) within the study area. All CTs have at least one category with an elevated percentage. Two BGs have elevated percentages of all five categories that are above the threshold: CT 10200 BG 1 and CT 10300 BG 2.

3.2.2 Hazardous Materials

Several databases were reviewed and resources and records mapped to identify potentially hazardous materials. These locations are mapped in **Appendix C**.

Within the study area boundaries, 251 potential underground storage tanks (UST) and hazardous waste locations have been identified, primarily focused within the urbanized areas of Richmond and Berea and along US 25 between the cities in Madison County.

Five solid waste storage facilities, or landfills, were identified near the study area. Two solid waste facilities are located in Richmond. One is downtown, and the other is near Richmond's west boundary of I-75 between Exit 87 and Exit 90**.** Three solid waste facilities are in Madison County, one located northeast of Richmond, another between the Cities of Richmond and Berea east of US 25, and the final one west of Berea.

Evidence of 27 oil and gas wells were discovered within the study area, with the majority in a cluster along Slate Lick Road south of Berea.

3.2.3 Archaeology

A search of records maintained by the National Register of Historic Places (NRHP) and the Office of State Archaeology (OSA) was conducted to determine if the study area had been previously surveyed for archaeology resources, identify any previously recorded sites, provide information about the types of resources that may be expected within the study area, and provide a historical context for any resources recovered within the study area.

The NRHP records indicate two archaeological sites listed within the study area. Lincoln Hall, at Berea College, has been designated a National Historic Landmark. There are five NRHP historic districts within the study area. Within the historic districts, 33 individual NRHP properties are listed

with 13 potentially eligible NRHP properties pending consideration, and 348 previously surveyed properties with an undetermined status. All of the NRHP listed and eligible sites would require avoidance or mitigation efforts in future project development.

A review of OSA records within the study area identified 116 previous professional archaeological surveys, 15 phase II/III investigations, 316 recorded archaeological sites, and nine surveys pending inclusion in the OSA records. The nine surveys include documented sites in the records area that were not previously identified. Over 83 percent of the archaeological site types are open habitation without mounds (65 percent) and historic farms/residences (18 percent).

The highest concentration of historic structures are located in the southern portion of the study area, within and surrounding Berea.

3.2.4 Churches

There are 87 places of worship (church, mosque, synagogue, etc.) identified within the study area, primarily concentrated within the urbanized areas.

3.2.5 Schools

There are 35 school facilities identified in the study area, including Eastern Kentucky University in Richmond and Berea College in Berea. Madison County School Board and Berea Independent Community Schools are the two public school districts.

3.2.6 Cemeteries

A search of current and historical mapping resources identified 103 cemeteries within the study area, with the majority representing small private plots. According to Madison County Cemetery Records, there are 14 public cemeteries active and well-maintained within the study area.

3.2.7 Public Services

Multiple public service facilities are available within the study area from Madison County, Richmond, and Berea governments. Services include the following:

- Emergency Services: Madison County EMS, Berea Fire Department, Madison County Fire Department, Richmond Fire Department, Berea Police Department, Richmond Police Department, Madison County Sheriff, KY State Police Post 7, Madison County Jail, Madison County Rescue Squad;
- Community Services: Madison County Health Department – Berea and Richmond branches, Madison County Public Library – Berea and Richmond branches, Madison County Cooperative Extension; and
- United States Postal Service Offices – Berea and Richmond.

4.0 INITIAL PUBLIC INVOLVEMENT

Local officials and stakeholders were engaged in the study to provide public input on current transportation issues, challenges, and local priorities.

The first Local Officials / Stakeholders (LO/S) meeting, held on January 16, 2016, provided an opportunity for the following:

- Sharing of the study purpose and goals with local officials and stakeholders;
- Reviewing existing conditions;
- Identification of transportation needs within the study area; and
- Guidance in identifying improvements to address the transportation needs.

A survey to collect information about local transportation issues from the LO/S was developed under the guidance of the Project Team, composed of KYTC Central Office, KYTC District 7, BGADD, the Lexington Area MPO, and WSP | PB. A copy of the survey is shown in **Figures 15** and **16**.

The KYTC provided the purpose of the study and the identified needs:

> "The purpose of this project is to identify and examine transportation issues related to traffic, safety, congestion, and operations within the Cities of Richmond and Berea and their surrounding area, and to develop a list of projects to improve those conditions in the study area."

The two originally identified needs focused on safety and capacity. During the meeting, other needs such as connectivity, mobility, multimodal, and disadvantaged population public services were listed as possibilities to consider. This led to discussions of the type of community concerns that could be tied to transportation resources beyond safety and capacity. In Richmond, bicycle and pedestrian connectivity was a concern, with the lack of sidewalks and bicycle paths connecting areas of residential and commercial activity within disadvantaged communities. Berea officials indicated concerns with improving access to historic locations, connectivity, and lack of alternative routes. Madison County officials indicated drainage throughout the study area was of significant concern with multiple roadways flooding frequently with heavy rainfall.

Upon the return of the surveys, the project needs were refined to include safety, capacity, roadway deficiencies (drainage), and modal interrelationships (multi-modal).

The meeting ended with a request for information that could be used in the future year forecasting effort conducted by KYTC. Information requested included planned residential and commercial developments, anticipated future population and employment growth, planned college enrollments, locations of planned schools, and any planned local road or transportation projects.

Several LO/S members were unable to attend the first meeting, and additional stakeholders were identified after the meeting. Outreach was conducted by telephone and electronic mail to all the stakeholders to ensure a comprehensive response summarizing transportation needs had been identified for all portions of the study area. Further, another meeting was held on April 28,

2016, with City of Berea local officials and KYTC to provide information about the first LOIS meeting and to request input of local needs to the study. In addition, information about future developments was compiled for the future forecasting effort.

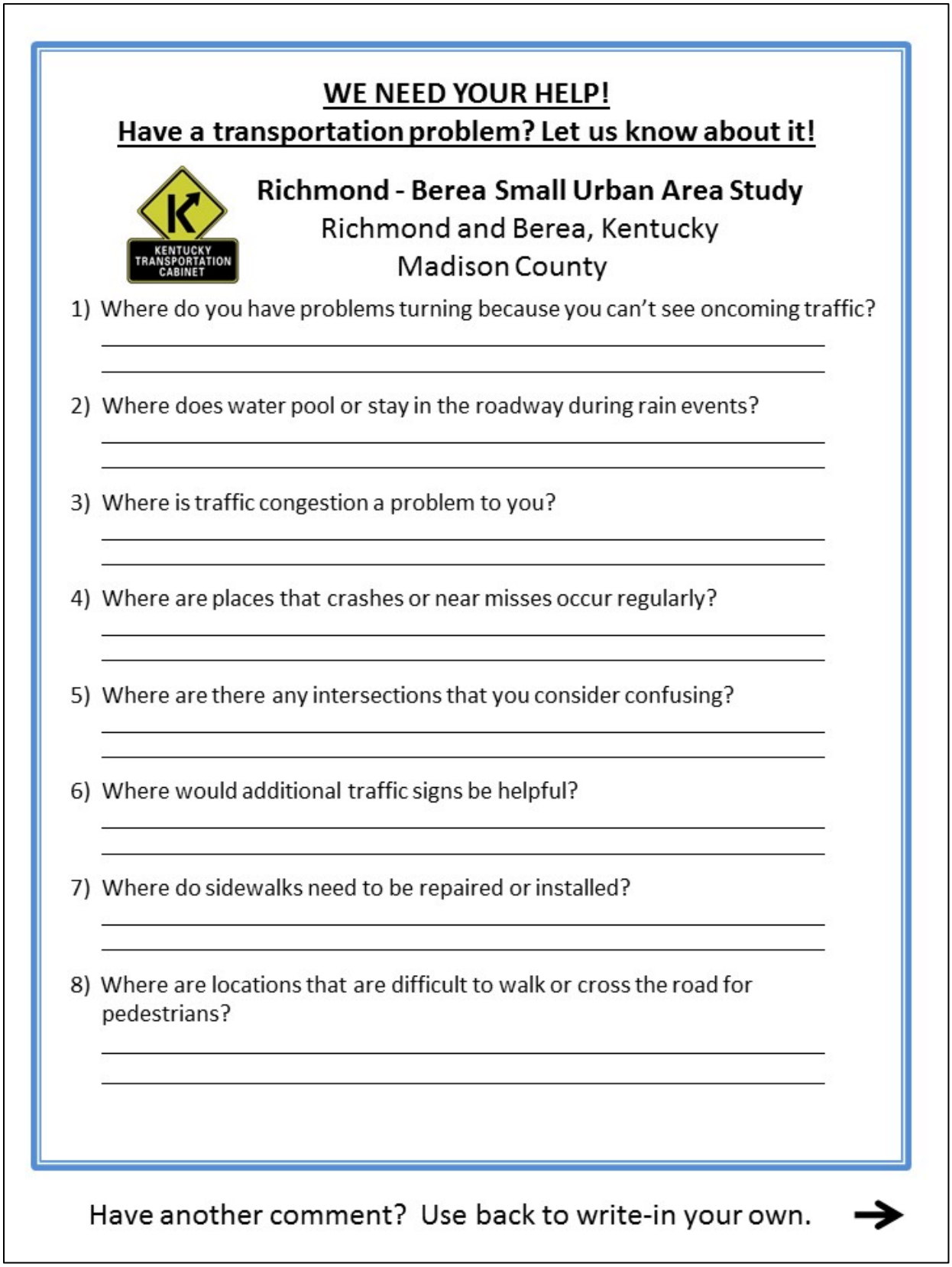
There were 141 identified locations with transportation issues from the 20 survey responses received. These locations served as a starting point for project alternatives development and evaluation.

Frequently mentioned locations within the study area included the following:

- Richmond - Intersection of KY 876 and KY 52;
- Richmond - KY 876 from Hager Drive to Wal-Mart;
- Richmond - Intersection of US 25 / US 421 and KY 52;
- Madison County - Intersection of US 25 / US 421;
- Berea – Intersection of US 25 and KY 21; and
- Berea – Intersection of US 25, KY 21, and US 25.

Meeting minutes for the first Local Officials / Stakeholders meeting are found in **Appendix F**.

FIGURE 15: RICHMOND – BEREA SMALL URBAN AREA STUDY SURVEY - FRONT



WE NEED YOUR HELP!

Have a transportation problem? Let us know about it!

KENTUCKY TRANSPORTATION CABINET

Richmond - Berea Small Urban Area Study

Richmond and Berea, Kentucky

Madison County

1) Where do you have problems turning because you can't see oncoming traffic?

2) Where does water pool or stay in the roadway during rain events?

3) Where is traffic congestion a problem to you?

4) Where are places that crashes or near misses occur regularly?

5) Where are there any intersections that you consider confusing?

6) Where would additional traffic signs be helpful?

7) Where do sidewalks need to be repaired or installed?

8) Where are locations that are difficult to walk or cross the road for pedestrians?

Have another comment? Use back to write-in your own. →

FIGURE 16: RICHMOND – BEREA SMALL URBAN AREA STUDY SURVEY – BACK

9) Do you ride a bicycle? If so, which routes do you take?

_____

_____

10) Please provide additional comments below or on the map provided.

_____

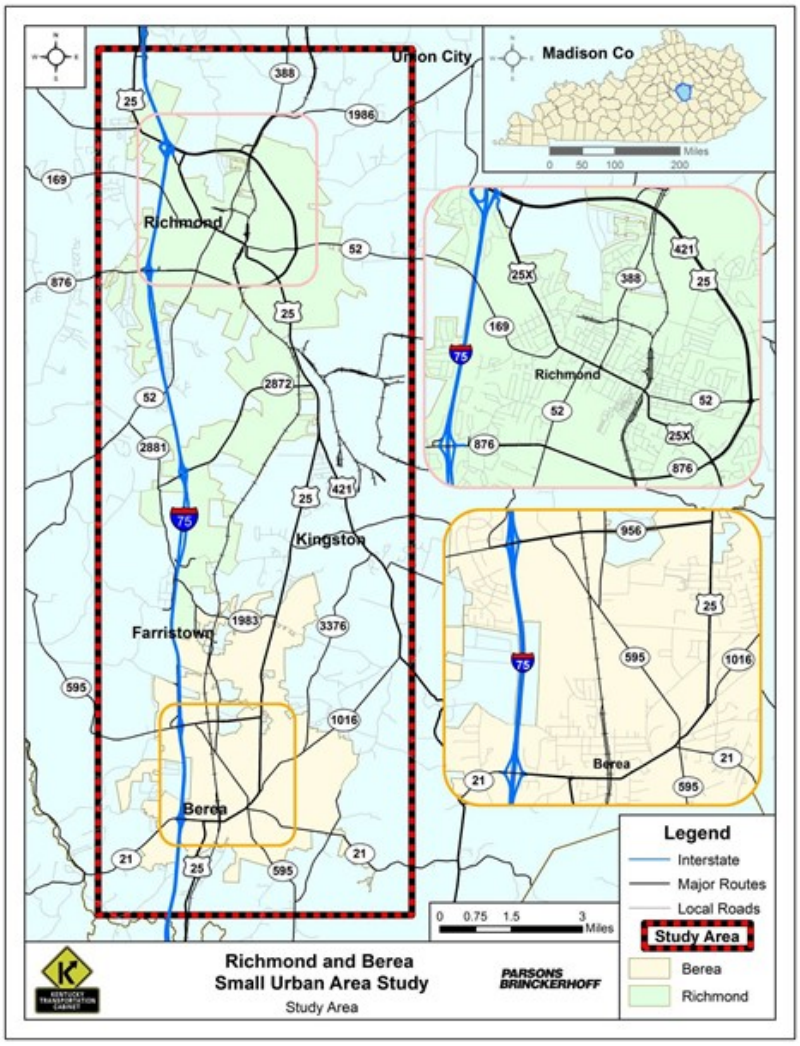
_____

_____

_____

_____

_____



THANK YOU FOR YOUR INPUT!!!

5.0 FUTURE YEAR TRAFFIC ANALYSIS

Once existing conditions and current transportation issues were identified, the next step in the study was the refinement of future conditions incorporating feedback from LO/S while utilizing information from the Kentucky State Data Center, local comprehensive, and land use plans. This analysis included forecasting future year traffic volumes and using the results to identify road segments with estimated capacity concerns.

5.1 2040 TRAFFIC FORECAST

Future year travel demand modeling was conducted by KYTC. The LAMPO's travel demand model was updated with forecasted population and employment data estimates from the Kentucky State Data Center. The 2040 transportation network was reviewed and edited to include current and committed projects.

Input was requested from the LO/S to estimate future growth and planned developments. The planning and zoning directors of Madison County, Richmond, and Berea provided input into future land use and developments anticipated by 2040, including the identification of future year urban boundaries. The public school systems, Eastern Kentucky University, Berea College, and other stakeholders were also contacted to identify planned and committed developments, along with future school locations and estimated student enrollment data. The public works departments from Richmond and Berea provided summary information about drainage issues and locations where further development may be discouraged due to conflicts with natural resources.

WSP | PB summarized the information gathered from the LO/S and provided KYTC with recommended locations to allocate future increases in population and employment by traffic analysis zone (TAZ) in the travel demand model. Study area TAZs were categorized as expecting either high, medium, or low growth. In addition, WSP | PB provided KYTC with a list of transportation network changes from the identified current and committed projects in the study area, along with future road characteristics expected for each project such as the functional classification, number of lanes, lane widths, and new connections to the network.

The current year and future year travel demand model traffic volumes were compared to develop growth rates for each road segment in the study area. Those growth rates were applied to the current year volumes to estimate the 2040 average daily traffic volumes (ADT) for each road segment identified in the study area. The Richmond and Berea 2040 traffic volumes are shown in **Figures 17** and **18**. Similar to the development of current year traffic information, the adequacy of the road segments was evaluated by comparing the 2040 traffic volumes to the road segment's theoretical capacity to determine the V/C ratio.

Figures 19 and **20** show the 2040 LOS results.

Routes shown in green function with a low level of congestion. Routes identified as yellow are routes where the daily traffic demand is approaching the capacity of the roadway. Routes shown in red receive higher daily traffic than the capacity of the roadway and may indicate that mitigation measures such as increasing the number of lanes may be warranted. In Richmond, future congested routes include portions of US 25 north of I-75 Exit 90, and KY 876

east of I-75 Exit 87. In the area of Madison County between Richmond and Berea, KY 52 between KY 876 and I-75, and US 25 from Punkin Run Road to the intersection of US 421 are estimated to be congested in 2040. In Berea, future congested routes include KY 2874 from KY 595 to KY 2274 parallel to I-75, KY 21 east of I-75, KY 3376 from KY 1016 to Hickory Lane, and US 25 from Ellipse Street to Glade Road near downtown Berea.

In areas where the speed limit is less than 45 miles per hour (MPH), the HCM analysis is unable to compute a V/C analysis to identify the LOS. Those routes are identified with gray segments in the figures, and as gray rows in the future traffic analysis found in **Appendix A**.

FIGURE 17: 2040 AVERAGE DAILY TRAFFIC (RICHMOND)

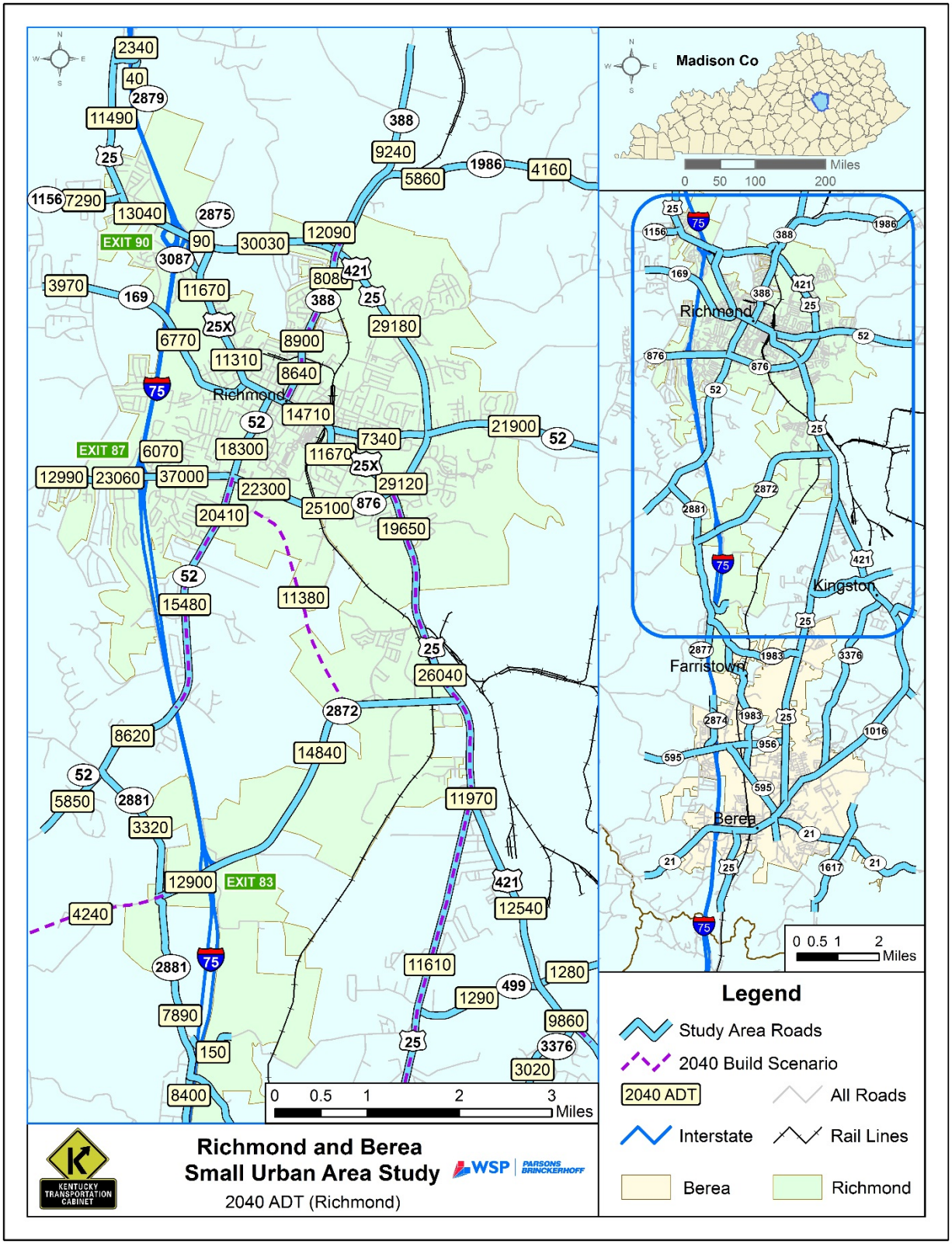


FIGURE 18: 2040 AVERAGE DAILY TRAFFIC (BEREA)

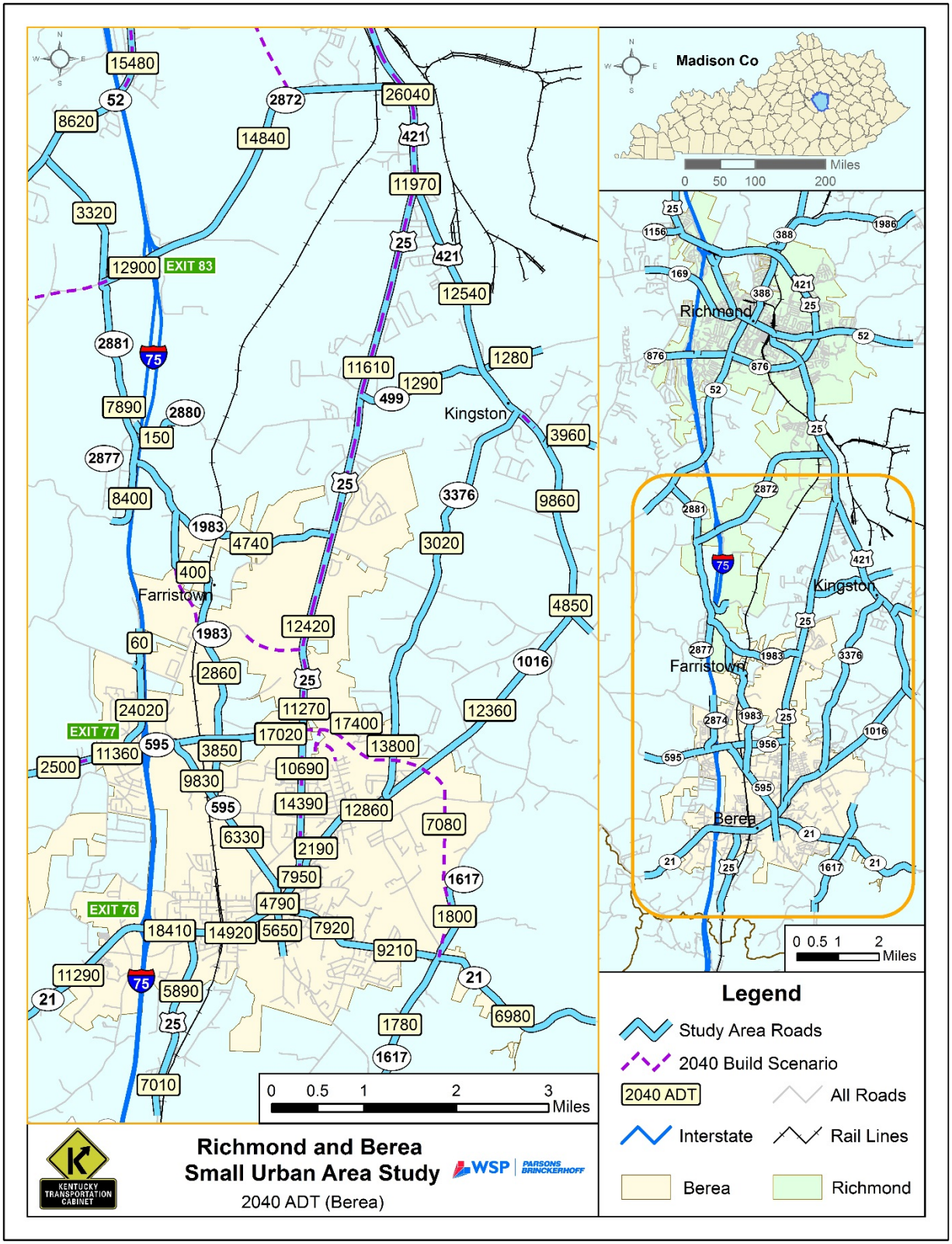


FIGURE 19: 2040 LEVEL OF SERVICE (RICHMOND)

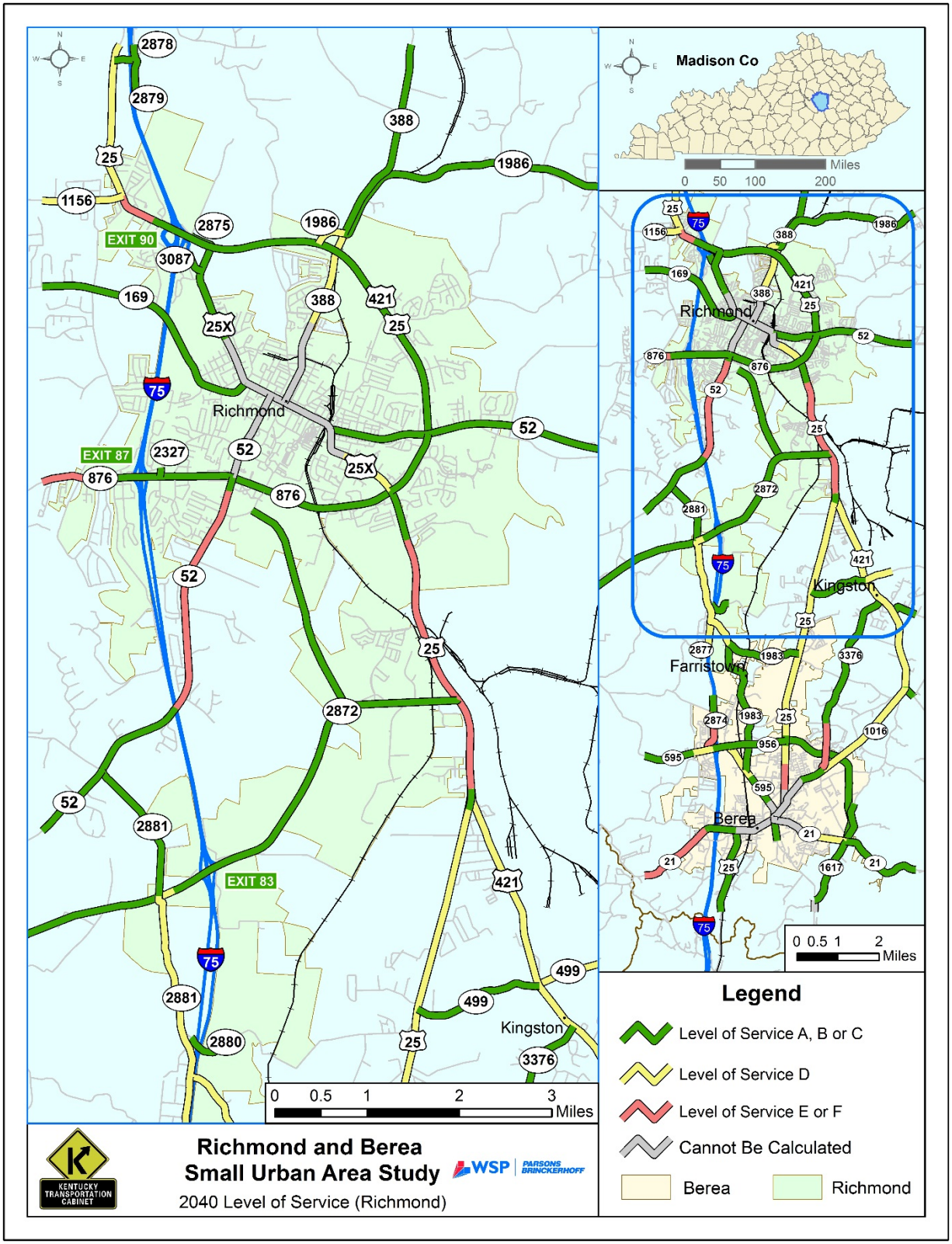
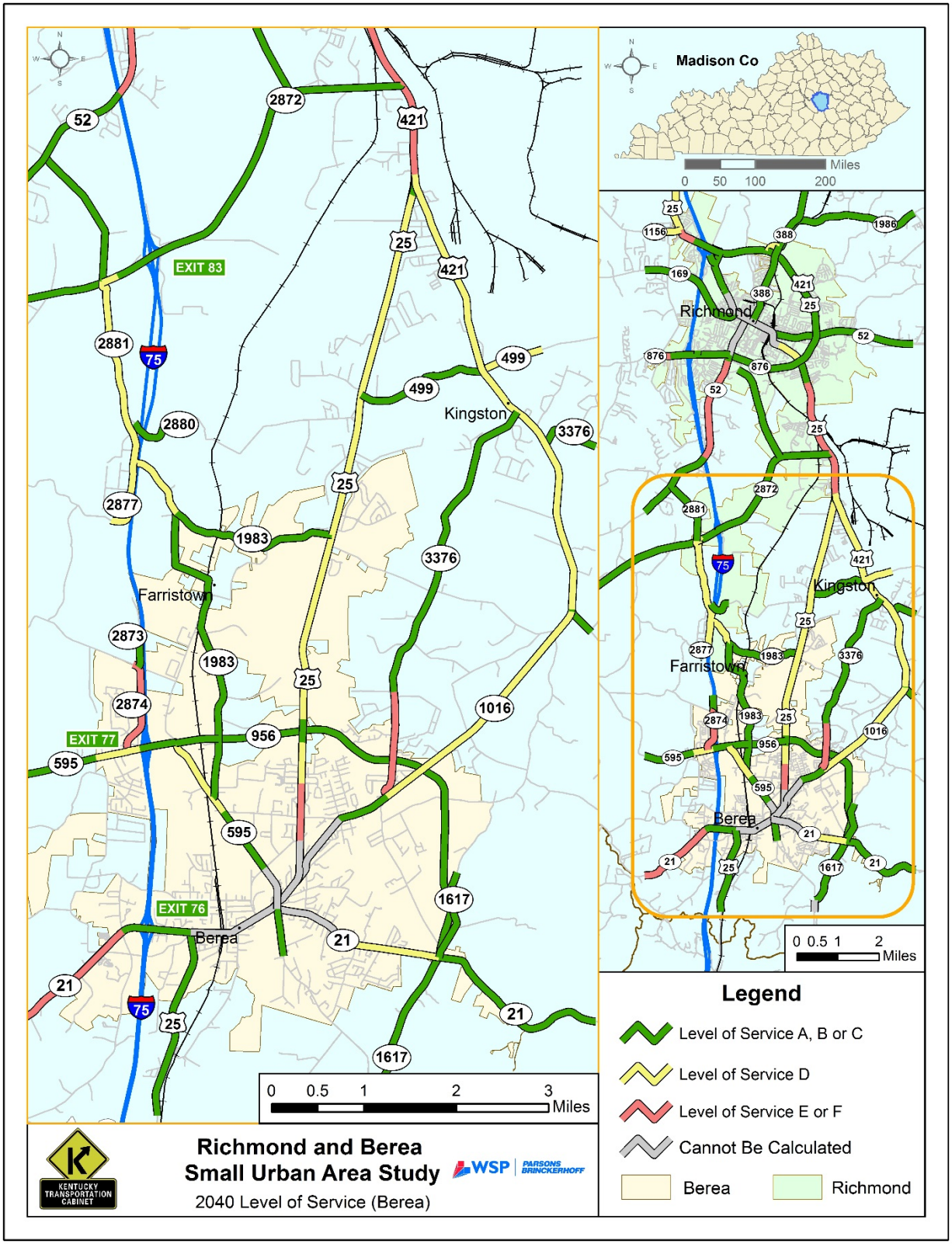


FIGURE 20: 2040 LEVEL OF SERVICE (BEREA)



6.0 PROJECT ALTERNATIVES DEVELOPMENT

The development of project alternatives was based on a combination of the results from the existing conditions analysis, input from the first LO/S meeting, future traffic projections, and field reviews. The project alternatives development process followed a framework that began with the identification of transportation issues, continued with the development and revisions of project alternatives, and ended with the scoring of projects to be prioritized.

Three meetings were conducted that assisted in the development and refinement of project alternatives. These include the following:

- Project Team Meeting #1 – January 19, 2016;
- LO/S Meeting #1 – January 19, 2016; and
- Field Review – March 15, 2016.

6.1 IDENTIFICATION OF ISSUES

The first step in the project development process was the identification of transportation issues. The analysis of existing conditions identified several locations where existing traffic congestion and crash data indicated further review was needed. The LO/S surveys identified over 141 issues to review and analyze. Future year traffic conditions were also reviewed for areas of potential congestion. These locations served as a starting point for project development and evaluation.

There were over 200 transportation issues compiled for this step of the project development process.

6.2 PROJECT DEVELOPMENT

Once identified, the transportation issues were sorted and combined into individual locations, removing duplicates. The remaining 91 locations were sorted into the study needs that had been identified from the first LO/S meeting: safety, capacity, roadway deficiencies (drainage), and modal interrelationships (multi-modal).

The safety category captured locations where a crash history identified possibilities for design improvements. The capacity category identified issues with traffic congestion, connectivity, and mobility on the road network. Roadway deficiencies primarily focused on drainage issues. The modal interrelationships category (multi-modal) captured concerns with transit, bicycle and pedestrians needs, access to tourism, and mobility and connectivity between travel modes.

Some locations had overlapping needs. A field visit of the 91 locations further clarified the project needs. Once engineering analysis had been conducted, 46 projects were developed to address the project needs. They were sorted into implementation categories as follows:

- **Local (L):** Projects not on the state-maintained system; would need to be funded by the Cities of Richmond and Berea, Madison County, quasi-public agencies, or developers.

- **Short-term (ST):** Projects typically easy to implement without further project development. These types of projects may use existing KYTC resources, or could be individually funded with safety, traffic, or maintenance funds.

- **Long-term (LT):** More complicated projects with a higher cost, and would require further project development. These projects could be considered for inclusion in the KYTC Highway Plan.

6.3 PROJECT REFINEMENT

During the second Project Team meeting held April 21, 2016, it was recommended to include a location identifier for the project alternatives to assist in locating the projects on the maps.

The projects were sorted by jurisdictional location. Projects within Richmond were identified with the letter "R". Projects within Berea were identified with the letter "B." Projects within Madison County were identified with the letter "M." Several projects were further modified with input from the KYTC Central Office, KYTC District 7, and local stakeholders.

Project costs were developed with WSP | PB providing design and construction phase costs, and KYTC District 7 providing costs for right-of-way and utility relocation phases. All cost estimates were developed using fiscal year 2016 dollars.

Additionally, fifteen new projects were added to the project alternatives list as a result of a separate meeting with Berea officials on April 28, 2016.

7.0 FINAL PUBLIC INVOLVEMENT

A second LO/S meeting was held on May 24, 2016. Because of the number of projects, information packets were submitted to the LO/S in advance of the meeting, including instructions on the organization of the packets. The information packets included a project sheet legend, five maps for project locations, and project sheets.

Project recommendations were differentiated with a project identification standard consisting of the project category, project location, and assigned project letter. Projects were categorized as short-term (**ST**), long-term (**LT**), or local (**L**). Next, a jurisdictional area identifier was added: Richmond (**R**), Madison County (**M**), or Berea (**B**). Every project within a jurisdictional area was further assigned a unique letter. An alphabetical lettering system was chosen to identify individual projects instead of a numerical listing that may indicate preferences or a hierarchy. As examples in the use of the project identification standard, the project identified as "**ST R-C**" refers to a short-term (**ST**) project in Richmond (**R**), and can be found as the third (**C**) project sheet of the short-term project listings for Richmond while the project identified as "**LT M-A**" refers to a long-term (**LT**) project in Madison County (**M**), and can be found as the first (**A**) project sheet in the long-term project listings for Madison County.

Example project sheets were reviewed to demonstrate the project sheet layout. Each section of the first example project sheet, LT M-A, the first listed long-term project in Madison County, was discussed, including location, identifier, background, location image(s), needs, alternative details, cost, and priority.

The process for scoring projects was explained. Each group of projects within a category and geographic area was allotted a set amount of points equal to the number of projects in that group. As an example, the long-term Madison County group had 14 projects, and was allotted 14 points to score among the listed projects.

Rules for scoring were discussed. In order to receive meaningful results, points would need to be allocated between at least two projects in each group. The greater number of points allocated to a project would indicate a preference from LO/S for the Project Team to rank the project highly during the prioritization process.

There was one exception to the described scoring process. The local Madison County grouping included only two projects. In order to identify which project ranked higher, three points were given for this group to use in scoring.

The scoring process was also separated by jurisdiction with officials from Richmond and Berea scoring their own projects to set local priorities. Scoring of another jurisdiction's projects was discouraged. Representatives of agencies and organizations that covered the entire study area could choose to rank projects in all of the scoring sheets. Everyone who scored projects had to provide their name and agency at the top of the scoring sheet in order to reconcile the results used in the scoring process.

Results from the scoring exercise identified a list of high, medium, and low ranked projects under consideration for further prioritization by the KYTC. After scoring, a review led to the determination that KYTC resources could address an additional project need.

A study of the Berea Triangle, the intersection of US 25, KY 21, and KY 595 in downtown Berea, had been conducted concurrently with this SUA study. The Berea Triangle study was scheduled to be completed by the summer of 2016, and it was expected this SUA study would reference the chosen alternative. The location had been identified as an area of interest, with identified needs of safety, capacity, and modal interrelationships. However, no project alternative for the Berea Triangle had been prepared for review. The Project Team decided to add a project sheet to document the identified needs and reference the alternatives being developed by the Berea Triangle study. While the project, LT B-E, was not scored by the full LO/S, local Berea officials indicated the intersection was a high priority. A final tally of 60 projects were identified for prioritization into study recommendations.

Summaries of the results of the scoring exercise, and minutes for the second Local Officials / Stakeholders meeting are found in **Appendix F**.

8.0 PRIORITIZATION AND PROJECT RECOMMENDATIONS

8.1 PRIORITIZATION

The final step of the process was to prioritize the 60 project alternatives. After additional refinements to the project sheets, each project was assigned an initial priority of high, medium, or low by WSP | PB based on scoring results from the LO/S and select Project Team individuals, field reviews, and engineering judgment. Ultimately, project priorities were concurred with or modified by KYTC with consensus that all projects within a designated priority rank equally. Local project priorities remained consistent with the LO/S scoring results.

8.2 PROJECT RECOMMENDATIONS

The Richmond – Berea Small Urban Area Study resulted in the development of 60 improvement projects for implementation or future project development. These projects are consistent with the purpose of the study to identify and examine transportation issues related to safety, operations, and congestion along state-maintained routes in the Cities of Richmond and Berea. A prioritized list of short- and long-term, and local projects have been established to be used for further project development decisions.

Final study recommendations include 24 short-term, 26 long-term, and 10 local projects. Project totals include 13 high, 23 medium, and 24 low priority projects. Recommended projects sorted by jurisdictional boundaries include 30 Richmond, 19 Madison County, and 11 Berea projects.

Projects identifying high, medium, and low priorities are listed in **Tables 4**, **5**, and **6,** respectively. Projects identifying short-term, long-term, and local category priorities are listed in **Tables 7, 8,** and **9,** respectively.

The project sheet legend, including descriptions of recommended project improvements and crash map insert figures, is found in **Figure 21**. The location of crashes in the crash map inserts suggests a level of precision for each crash that may not be accurate. Although the Kentucky State Police, Madison County Emergency Services, Madison County Sherriff, Richmond Police, and Berea Police have geographic position locators that are used to identify crash locations to a reasonably close general area, there may be some discrepancies in the precise location of impact from efforts to clear the roadway as quickly as possible.

Figures 22, 23, 24, 25, and **26** show the project locations with maps of recommended short-term projects, long-term Richmond projects, long-term Madison County projects, long-term Berea projects, and local projects, respectively. The project sheets follow the project maps and are listed in the following order: short-term projects (Richmond, Madison County, Berea), long-term projects (Richmond, Madison County, Berea), and local projects (Richmond, Madison County, Berea).

TABLE 4: RECOMMENDED HIGH PRIORITY PROJECTS

Project Priority	Project Type	Project ID	Project Description	Cost Estimate
High	Short-Term	ST M-B	US 25 at General Nelson Drive: Address reverse crown issue at low point to eliminate standing water	$66,000
		ST M-E	KY 2878 Corridor from I-75 Underpass to Northridge Way: Assess need for curve warning signs and high friction surface treatment	$46,000
		ST R-A	US 25 at Keeneland Dr Intersection: Consider phase change to allow flashing yellow arrow; Modify striping	$88,000
	Long-Term	LT M-A	US 421 at KY 1016 Intersection: Re-align intersection and reduce speeds	$1,034,000
		LT M-G	US 421 at US 25 Intersection: Re-align intersection and reduce speeds	$1,206,000
		LT B-E	US 25, KY 21, KY 595 Intersection: Ongoing Berea College study will provide recommendations for improvements	NA
		LT R-A	US 25 Corridor from Taco Bell Driveway to Michelle Dr: Improve cross-section - 2 12' lanes and center two-way left-turn lane	$2,273,000
		LT R-E	KY 388 Corridor from US 25X to KY 1986: Improve cross-section - 2 12' lanes and center two-way left-turn lane with sidewalks; Signal warrant analysis	$10,732,000
		LT R-G	KY 876 at Killarney Ln Intersection: Consider phase change for flashing yellow arrow; Install island for channelized right turns; Add ramps for pedestrian crossings; Limit access through gas station	$258,000
		LT R-M	US 25 at KY 52 (Irvine St) Intersection: Add capacity through lane additions and extended storage	$1,036,000
	Local	L B-B	New Corridor - Farristown to KY 1983: New connection from KY 1983 to Mayde Road	$4,860,000
		L M-B	Goggins Ln / KY 169 to KY 876 Corridor: Repair existing sidewalk and provide connection to Kit Carson Elementary	$500,000
		L R-A	Catalpa Loop Rd / Old Irvine Rd at KY 52: Realign intersection approach and improve drainage	$684,000

Note: Projects in each project type are not listed in order of preference.

TABLE 5: RECOMMENDED MEDIUM PRIORITY PROJECTS

Project Priority	Project Type	Project ID	Project Description	Cost Estimate
Medium	Short-Term	ST M-D	KY 1986 Corridor: Improve bridge and culvert capacity (cost per structure)	$175,000
		ST M-I	KY 21 Corridor near KY 1617 to Bear Mountain Rd: Assess need to increase culvert capacity (cost per structure) and prioritize corridor resurfacing schedule	$175,000
		ST R-C	KY 876 at Hampton Way Intersection: Add dedicated right turn lane to Hampton Way and make Hampton Way right-in/right-out	$7,000
		ST R-H	KY 876 at Kit Carson Dr Intersection: Consider phase change for flashing yellow arrow and removal of split phasing on side street; Extend KY 876 left turn lane storage; Add wayfinding signage	$142,000
		ST R-I	KY 876 at Walmart Intersection: Eliminate left turns from side streets	$118,000
		ST R-J	US 25 at Gibson Bay Dr Intersection: Consider phase change to eliminate split phasing; Provide dedicated left, through, and right turn lanes on to US 25; Extend sidewalk to north side of Gibson Bay Drive	$162,000
	Long-Term	LT M-C	KY 52 Corridor from Cavalier Ct to KY 2881: Improve cross-section - 2 12' lanes and center two-way left-turn lane	$1,388,000
		LT M-D	US 421 Corridor from KY 3376 (Old US 25) to KY 3376: Improve cross-section - 2 12' lanes and center two-way left-turn lane; Install sidewalk	$1,662,000
		LT M-H	US 421 at KY 499 Intersection: Paint stop bars and lane lines on KY 499; re-align intersection	$1,373,000
		LT B-A	KY 1016 and KY 3376 Corridors: Add left-turn lanes and provide pedestrian accomodations from school	$4,873,000
		LT B-C	KY 21 at US 25 Intersection: Re-align US 25 to connect with KY 21 at Estridge Court	$1,797,000
		LT R-B	US 25 / US 421 Corridor from KY 52 to US 25X: Multi-use path; Offset left turns; Signal warrant analysis	$2,118,000
		LT R-C	KY 876 Corridor from Hager Dr to KY 52 (Lancaster): Add sidewalks; pedestrian connectivity improvements	$3,160,000
		LT R-D	KY 876 Corridor from KY 52 (Lancaster) to US 25: Extend sidewalk	$1,234,000
		LT R-F	New Corridor from KY 876 (Via Kit Carson Dr) to KY 2872: New corridor from KY 876 via Kit Carson Drive to KY 2872; Extend Cycle Drive to connect with new corridor	$22,278,000
		LT R-H	KY 52 Corridor from Oakland Ave to US 25: Continue sidewalk along KY 52 to US 25 Bypass	$2,114,000
		LT R-I	KY 52 Corridor from Hycliff Dr to Barnes Mill Rd: Add turn lanes and extended storage through restriping existing pavement; Extend sidewalks along Barnes Mill Rd EB and KY 52 NB to Park Drive	$369,000
		LT R-J	KY 876 at KY 52 Intersection: Consider phase change for flashing yellow arrow; Add capacity through turn lanes and channelization; Install sidewalks	$873,000
		LT R-L	KY 876 at US 25 Intersection: Add right turn lanes; Make Commercial Drive right-in/right-out only	$394,000
	Local	L B-C	New Corridor - Farristown Industrial Dr to US 25: Provide a direct connection to Farristown Middle School and US 25	$5,600,000
		L R-B	Multiple Locations in Richmond: Improve drainage	NA
		L R-C	KY 52 at US 25 Pedestrian Access to Lake Reba: Install sidewalk from KY 52 to park	$949,000
		L M-A	Neighborhood off KY 2881 and KY 2877: Pavement treatment assessment and multi-modal connectivity	$33,000

Note: Projects in each project type are not listed in order of preference.

TABLE 6: RECOMMENDED LOW PRIORITY PROJECTS

Project Priority	Project Type	Project ID	Project Description	Cost Estimate
Low	Short-Term	ST M-A	KY 52 at Elliott Ford Rd Intersection: Cut back slope and trim trees	$70,000
		ST M-C	KY 2881 at KY 2877 Intersection: Evaluate control devices and apply new pavement markings	$10,000
		ST M-F	KY 169 Corridor from Goggins Ln to Cartier Dr: Enhanced driver awareness of signal ahead; maintenance to improve sight distance	$104,000
		ST M-G	KY 499 Corridor from US 25 to US 421: Curve warning signs; maintenance to improve sight distance	$104,000
		ST M-H	KY 1016 near Moonlight Dr Intersection to Barker Ln: Assess need to increase culvert capacity (cost per structure)	$175,000
		ST B-A	KY 21 from McKinney St to Knights Inn Entrance: Pedestrian connectivity	$149,000
		ST B-C	KY 595 at Glades Rd Intersection: Conduct traffic signal warrant analysis	$5,000
		ST R-B	KY 2881 at KY 2872 Intersection: Pavement treatment assessment	$58,000
		ST R-D	KY 876 at Amberly Way Intersection: Consider phase change to remove split phasing on side street; Extend WB left turn lanes on KY 876; Restripe Amberly Way NB left turn lane	$28,000
		ST R-E	US 25X Corridor from Collins St to 3rd St: Conduct study to eliminate left turns on US 25X utilizing parallel streets	$200,000
		ST R-F	KY 876 at Dwight Dr Intersection: Prohibit left turns from side streets; Add right turn pocket on KY 876	$98,000
		ST R-G	US 25X Corridor from US 25 / KY 876 to Collins St: Conduct study to assess need for access management strategy	$100,000
		ST R-K	KY 1986 at Caudill Dr Intersection: Improve curve radius for bus traffic entering Caudill Middle School	$39,000
		ST R-L	KY 876 Corridor from I-75 to KY 52: Conduct a study to evaluate frontage road solutions to improve traffic progression	$150,000
		ST R-M	Corridor Signal Retiming Bypass (KY 876, US 25 and Downtown): Reevaluate signal timing and coordination of traffic signals of three corridors	$175,000
		ST B-B	THIS PROJECT HAS BEEN REMOVED	
	Long-Term	LT M-B	US 25 Corridor from KY 499 to Pioneer Dr: Add two-way left-turn lane	$529,000
		LT M-E	US 421 at Bluegrass Army Depot Intersection: Conduct traffic signal warrant analysis; if warranted, re-align intersection	$642,000
		LT M-F	KY 595 Corridor from Guynn Rd to 1.099 miles west of Ogg Cemetery Rd: Move utility poles	$6,660,000
		LT B-B	KY 21 Corridor: Access management strategies and re-align Old KY 21 / entrance to Rite Aid intersection	$347,000
		LT B-D	KY 21 Corridor from west of Neely St to O'Donnell Ln: Construct 6' paved shoulders	$476,000
		LT R-K	KY 876 at Boggs Ln Intersection: Extend EB KY 876 left turn lane; Add or extend right turn lanes on all approaches	$406,000
	Local	L B-A	Baugh St at Oakwood Dr Intersection: Close Baugh Street at Oakwood Drive and create pedestrian access only to school	$22,000
		L R-D	KY 876 at Veterans Blvd Intersection: Add sidewalk along Veterans Boulevard	$17,300
		L B-D	Extension East of KY 956 at US 25 Intersection: Extend Pine Street and Kenway Street to access new KY 956 bypass	$1,780,000

Note: Projects in each project type are not listed in order of preference.

TABLE 7: RECOMMENDED SHORT-TERM PROJECTS

Project Type	Project Priority	Project ID	Project Description	Cost Estimate
Short-Term	High	ST M-B	US 25 at General Nelson Drive: Address reverse crown issue at low point to eliminate standing water	$66,000
		ST M-E	KY 2878 Corridor from I-75 Underpass to Northridge Way: Assess need for curve warning signs and high friction surface treatment	$46,000
		ST R-A	US 25 at Keeneland Dr Intersection: Consider phase change to allow flashing yellow arrow; Modify striping	$88,000
	Medium	ST M-D	KY 1986 Corridor: Improve bridge and culvert capacity (cost per structure)	$175,000
		ST M-I	KY 21 Corridor near KY 1617 to Bear Mountain Rd: Assess need to increase culvert capacity (cost per structure) and prioritize corridor resurfacing schedule	$175,000
		ST R-C	KY 876 at Hampton Way Intersection: Add dedicated right turn lane to Hampton Way and make Hampton Way right-in/right-out	$7,000
		ST R-H	KY 876 at Kit Carson Dr Intersection: Consider phase change for flashing yellow arrow and removal of split phasing on side street; Extend KY 876 left turn lane storage; Add wayfinding signage	$142,000
		ST R-I	KY 876 at Walmart Intersection: Eliminate left turns from side streets	$118,000
		ST R-J	US 25 at Gibson Bay Dr Intersection: Consider phase change to eliminate split phasing; Provide dedicated left, through, and right turn lanes on to US 25; Extend sidewalk to north side of Gibson Bay Drive	$162,000
	Low	ST M-A	KY 52 at Elliott Ford Rd Intersection: Cut back slope and trim trees	$70,000
		ST M-C	KY 2881 at KY 2877 Intersection: Evaluate control devices and apply new pavement markings	$10,000
		ST M-F	KY 169 Corridor from Goggins Ln to Cartier Dr: Enhanced driver awareness of signal ahead; maintenance to improve sight distance	$104,000
		ST M-G	KY 499 Corridor from US 25 to US 421: Curve warning signs; maintenance to improve sight distance	$104,000
		ST M-H	KY 1016 near Moonlight Dr Intersection to Barker Ln: Assess need to increase culvert capacity (cost per structure)	$175,000
		ST B-A	KY 21 from McKinney St to Knights Inn Entrance: Pedestrian connectivity	$149,000
		ST B-C	KY 595 at Glades Rd Intersection: Conduct traffic signal warrant analysis	$5,000
		ST R-B	KY 2881 at KY 2872 Intersection: Pavement treatment assessment	$58,000
		ST R-D	KY 876 at Amberly Way Intersection: Consider phase change to remove split phasing on side street; Extend WB left turn lanes on KY 876; Restripe Amberly Way NB left turn lane	$28,000
		ST R-E	US 25X Corridor from Collins St to 3rd St: Conduct study to eliminate left turns on US 25X utilizing parallel streets	$200,000
		ST R-F	KY 876 at Dwight Dr Intersection: Prohibit left turns from side streets; Add right turn pocket on KY 876	$98,000
		ST R-G	US 25X Corridor from US 25 / KY 876 to Collins St: Conduct study to assess need for access management strategy	$100,000
		ST R-K	KY 1986 at Caudill Dr Intersection: Improve curve radius for bus traffic entering Caudill Middle School	$39,000
		ST R-L	KY 876 Corridor from I-75 to KY 52: Conduct a study to evaluate frontage road solutions to improve traffic progression	$150,000
		ST R-M	Corridor Signal Retiming Bypass (KY 876, US 25 and Downtown): Reevaluate signal timing and coordination of traffic signals of three corridors	$175,000
		ST B-B	~~THIS PROJECT HAS BEEN REMOVED~~	

Note: Projects in each project type are not listed in order of preference.

TABLE 8: RECOMMENDED LONG-TERM PROJECTS

Project Type	Project Priority	Project ID	Project Description	Cost Estimate
Long-Term	High	LT M-A	US 421 at KY 1016 Intersection: Re-align intersection and reduce speeds	$1,034,000
		LT M-G	US 421 at US 25 Intersection: Re-align intersection and reduce speeds	$1,206,000
		LT B-E	US 25, KY 21, KY 595 Intersection: Ongoing Berea College study will provide recommendations for improvements	NA
		LT R-A	US 25 Corridor from Taco Bell Driveway to Michelle Dr: Improve cross-section - 2 12' lanes and center two-way left-turn lane	$2,273,000
		LT R-E	KY 388 Corridor from US 25X to KY 1986: Improve cross-section - 2 12' lanes and center two-way left-turn lane with sidewalks; Signal warrant analysis	$10,732,000
		LT R-G	KY 876 at Killarney Ln Intersection: Consider phase change for flashing yellow arrow; Install island for channelized right turns; Add ramps for pedestrian crossings; Limit access through gas station	$258,000
		LT R-M	US 25 at KY 52 (Irvine St) Intersection: Add capacity through lane additions and extended storage	$1,036,000
	Medium	LT M-C	KY 52 Corridor from Cavalier Ct to KY 2881: Improve cross-section - 2 12' lanes and center two-way left-turn lane	$1,388,000
		LT M-D	US 421 Corridor from KY 3376 (Old US 25) to KY 3376: Improve cross-section - 2 12' lanes and center two-way left-turn lane; Install sidewalk	$1,662,000
		LT M-H	US 421 at KY 499 Intersection: Paint stop bars and lane lines on KY 499; re-align intersection	$1,373,000
		LT B-A	KY 1016 and KY 3376 Corridors: Add left-turn lanes and provide pedestrian accomodations from school	$4,873,000
		LT B-C	KY 21 at US 25 Intersection: Re-align US 25 to connect with KY 21 at Estridge Court	$1,797,000
		LT R-B	US 25 / US 421 Corridor from KY 52 to US 25X: Multi-use path; Offset left turns; Signal warrant analysis	$2,118,000
		LT R-C	KY 876 Corridor from Hager Dr to KY 52 (Lancaster): Add sidewalks; pedestrian connectivity improvements	$3,160,000
		LT R-D	KY 876 Corridor from KY 52 (Lancaster) to US 25: Extend sidewalk	$1,234,000
		LT R-F	New Corridor from KY 876 (Via Kit Carson Dr) to KY 2872: New corridor from KY 876 via Kit Carson Drive to KY 2872; Extend Cycle Drive to connect with new corridor	$22,278,000
		LT R-H	KY 52 Corridor from Oakland Ave to US 25: Continue sidewalk along KY 52 to US 25 Bypass	$2,114,000
		LT R-I	KY 52 Corridor from Hycliff Dr to Barnes Mill Rd: Add turn lanes and extended storage through restriping existing pavement; Extend sidewalks along Barnes Mill Rd EB and KY 52 NB to Park Drive	$369,000
		LT R-J	KY 876 at KY 52 Intersection: Consider phase change for flashing yellow arrow; Add capacity through turn lanes and channelization; Install sidewalks	$873,000
		LT R-L	KY 876 at US 25 Intersection: Add right turn lanes; Make Commercial Drive right-in/right-out only	$394,000
	Low	LT M-B	US 25 Corridor from KY 499 to Pioneer Dr: Add two-way left-turn lane	$529,000
		LT M-E	US 421 at Bluegrass Army Depot Intersection: Conduct traffic signal warrant analysis; if warranted, re-align intersection	$642,000
		LT M-F	KY 595 Corridor from Guynn Rd to 1.099 miles west of Ogg Cemetery Rd: Move utility poles	$6,660,000
		LT B-B	KY 21 Corridor: Access management strategies and re-align Old KY 21 / entrance to Rite Aid intersection	$347,000
		LT B-D	KY 21 Corridor from west of Neely St to O'Donnell Ln: Construct 6' paved shoulders	$476,000
		LT R-K	KY 876 at Boggs Ln Intersection: Extend EB KY 876 left turn lane; Add or extend right turn lanes on all approaches	$406,000

Note: Projects in each project type are not listed in order of preference.

TABLE 9: RECOMMENDED LOCAL PROJECTS

Project Type	Project Priority	Project ID	Project Description	Cost Estimate
Local	High	L B-B	New Corridor - Farristown to KY 1983: New connection from KY 1983 to Mayde Road	$4,860,000
		L M-B	Goggins Ln / KY 169 to KY 876 Corridor: Repair existing sidewalk and provide connection to Kit Carson Elementary	$500,000
		L R-A	Catalpa Loop Rd / Old Irvine Rd at KY 52: Realign intersection approach and improve drainage	$684,000
	Medium	L B-C	New Corridor - Farristown Industrial Dr to US 25: Provide a direct connection to Farristown Middle School and US 25	$5,600,000
		L R-B	Multiple Locations in Richmond: Improve drainage	NA
		L R-C	KY 52 at US 25 Pedestrian Access to Lake Reba: Install sidewalk from KY 52 to park	$949,000
		L M-A	Neighborhood off KY 2881 and KY 2877: Pavement treatment assessment and multi-modal connectivity	$33,000
	Low	L B-A	Baugh St at Oakwood Dr Intersection: Close Baugh Street at Oakwood Drive and create pedestrian access only to school	$22,000
		L B-D	Extension East of KY 956 at US 25 Intersection: Extend Pine Street and Kenway Street to access new KY 956 bypass	$1,780,000
		L R-D	KY 876 at Veterans Blvd Intersection: Add sidewalk along Veterans Boulevard	$17,300

Note: Projects in each project type are not listed in order of preference.

FIGURE 21: PROJECT SHEET LEGEND

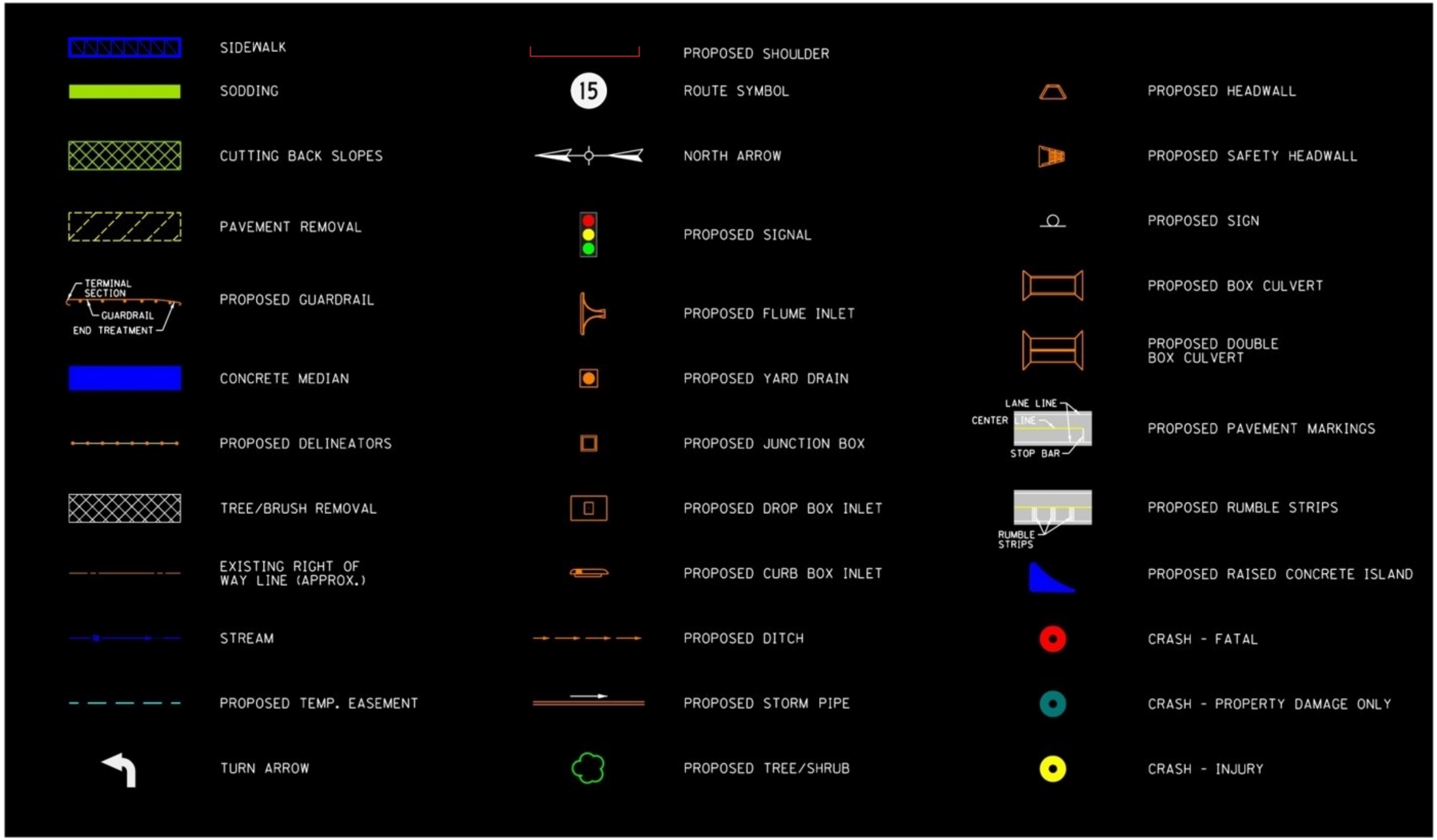


FIGURE 22: RECOMMENDED SHORT-TERM PROJECTS

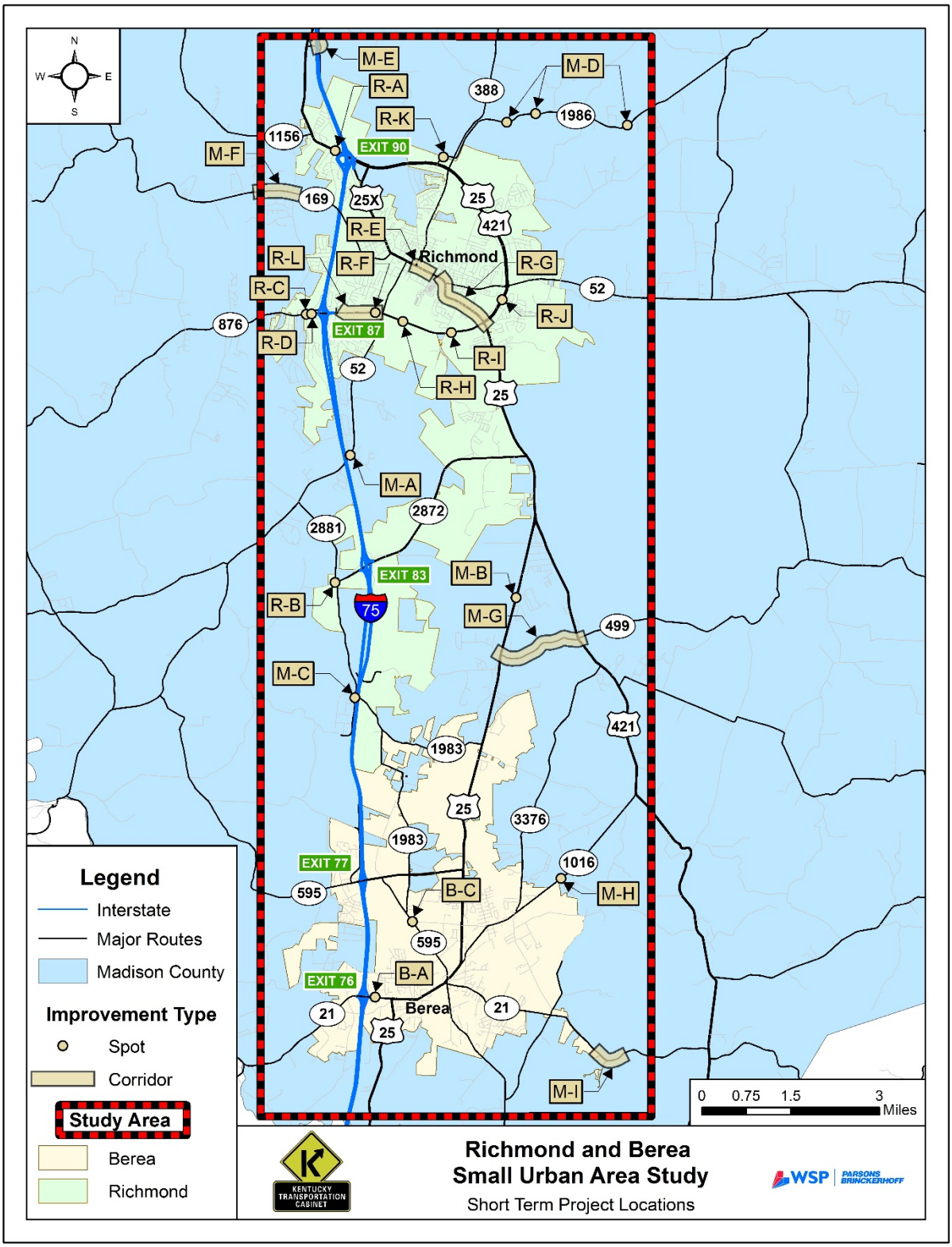


FIGURE 23: RECOMMENDED LONG-TERM PROJECTS IN RICHMOND

FIGURE 24: RECOMMENDED LONG-TERM PROJECTS IN MADISON COUNTY

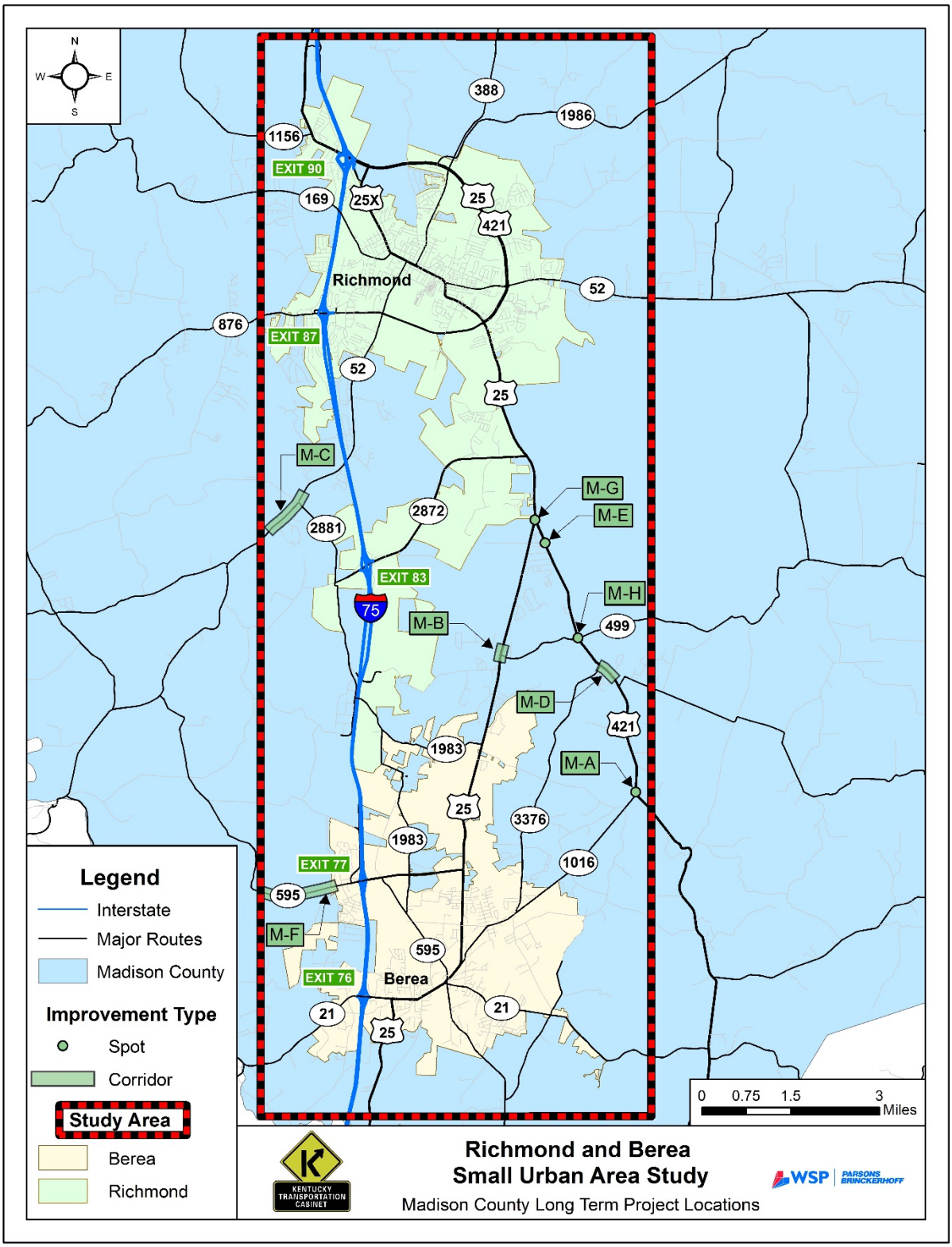
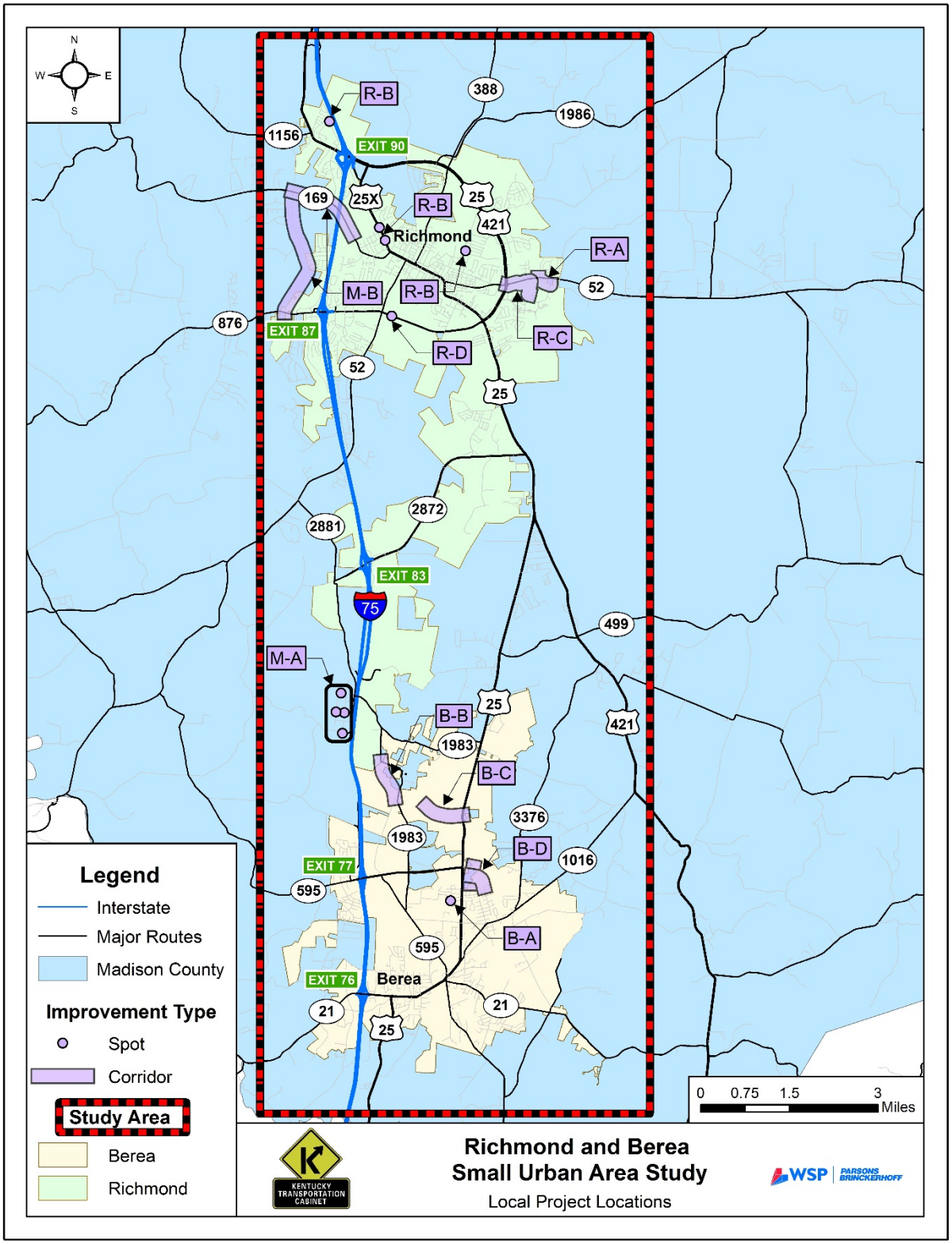


FIGURE 25: RECOMMENDED LONG-TERM PROJECTS IN BEREA

FIGURE 26: RECOMMENDED LOCAL PROJECTS



RICHMOND BEREA SUA	**Project Location:** US 25 (MP 20.490) at Keeneland Dr Intersection	**Project #:** ST R-A

PROBLEM

Project Background:

US 25 ADT = 9,090 / LOS = A / CCRF = 2.39

US 25 EB approach

Project Issues:

- *SAFETY*
- *CAPACITY (TRAFFIC)*
- Long queues during PM peak exceeding available storage.
- Majority of collisions are rear end and angle crashes.
- Traffic capacity is an issue due to congestion during peak hours.

US 25 WB approach from I-75

SOLUTION

Project Solution:

- Consider phase change for US 25 left turns onto Keeneland Drive to flashing yellow arrow.
- Modify striping for clear lane demarcation when approaching the intersection.

Refer to Project LT R-A for US 25 Corridor Improvements.

Project Cost Estimate (2016 Dollars):

Design	$15,000
Right-of-Way	$0
Utilities	$0
Construction	$73,000
Total	$88,000

Project Priority:
High

RICHMOND BEREA SUA	**Project Location:** KY 2881 (MP 2.780) at KY 2872 (MP 0.000) Intersection	**Project #:** ST R-B

PROBLEM

Project Background:

KY 2881 N ADT = 1,270 / LOS = A / CCRF = 0.97
KY 2881 S ADT = 2,070 / LOS = B / CCRF = 0.74
KY 2872 NB ADT = 2,700 / LOS = B / CCRF = 0.60

SYP 7-8853 includes this section of roadway.

KY 2872 WB approach at KY 2881

Project Issues:

- *SAFETY*
- Wet conditions were contributing factors to three of four crashes in the S curve.

KY 2881 SB approach at KY 2872

SOLUTION

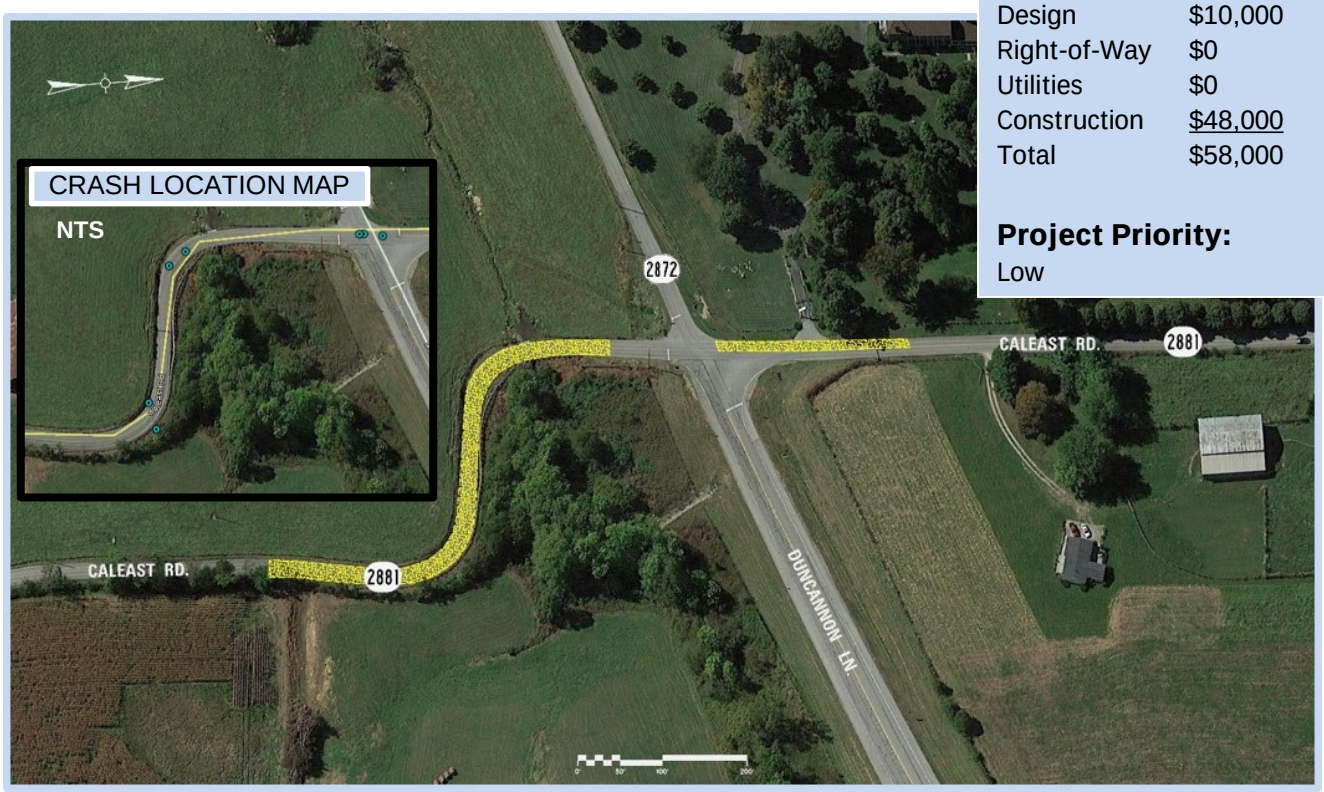
Project Solution:

- Assess pavement treatment on downhill approaches and through the curves on the KY 2881 NB approach to KY 2872 and determine appropriate action to counteract black ice resulting from water runoff.

Project Cost Estimate (2016 Dollars):

Design	$10,000
Right-of-Way	$0
Utilities	$0
Construction	$48,000
Total	$58,000

Project Priority:
Low



RICHMOND BEREA SUA	**Project Location:** KY 876 (MP 6.860) at Hampton Way Intersection	**Project #:** ST R-C

PROBLEM

Project Background:

KY 876 ADT = 17,380 / LOS = B / CCRF = 2.73

Traffic queues on KY 876 past Hampton Way as a result of peak period and weekend congestion. The left turn movement from Hampton Way to KY 876 experiences significant delay.

Hampton Way NB approach at KY 876

Project Issues:

- *SAFETY*
- *CAPACITY (TRAFFIC)*
- Majority of collisions are angle crashes.
- KY 876 EB shoulder is used as a right turn lane during peak hours.
- Traffic capacity is an issue due to congestion during peak hours.

View from Amberly Way Intersection looking west along KY 876

SOLUTION

Project Solution:

- Add a right turn lane by restriping shoulder on KY 876 at Hampton Way.
- Make Hampton Way a right-in/right-out intersection by installing a channelization island.

Refer to Project LT R-C for KY 876 Corridor Improvements.

Project Cost Estimate (2016 Dollars):

Design	$1,000
Right-of-Way	$0
Utilities	$0
Construction	$6,000
Total	$7,000

Project Priority:
Medium

RICHMOND BEREA SUA

Project Location:
KY 876 (MP 6.950) at Amberly Way Intersection

Project #:
ST R-D

PROBLEM

Project Background:

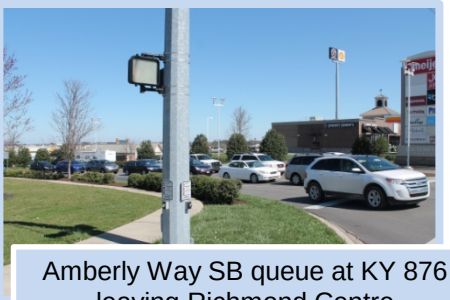
KY 876 ADT = 17,380 / LOS = B / CCRF = 2.73
0.1 spot crash rate at intersection CCRF = 13.24

Amberly Way is the main entrance to Richmond Centre and regularly queues in all directions during the peak period and on the weekends.

KY 876 EB left turn at Amberly Way into Richmond Centre

Project Issues:

- *SAFETY*
- *CAPACITY (TRAFFIC)*
- WB KY 876 left turn lane has a lack of storage.
- Majority of collisions are rear end and angle crashes.
- Traffic capacity is an issue due to congestion during peak hours.



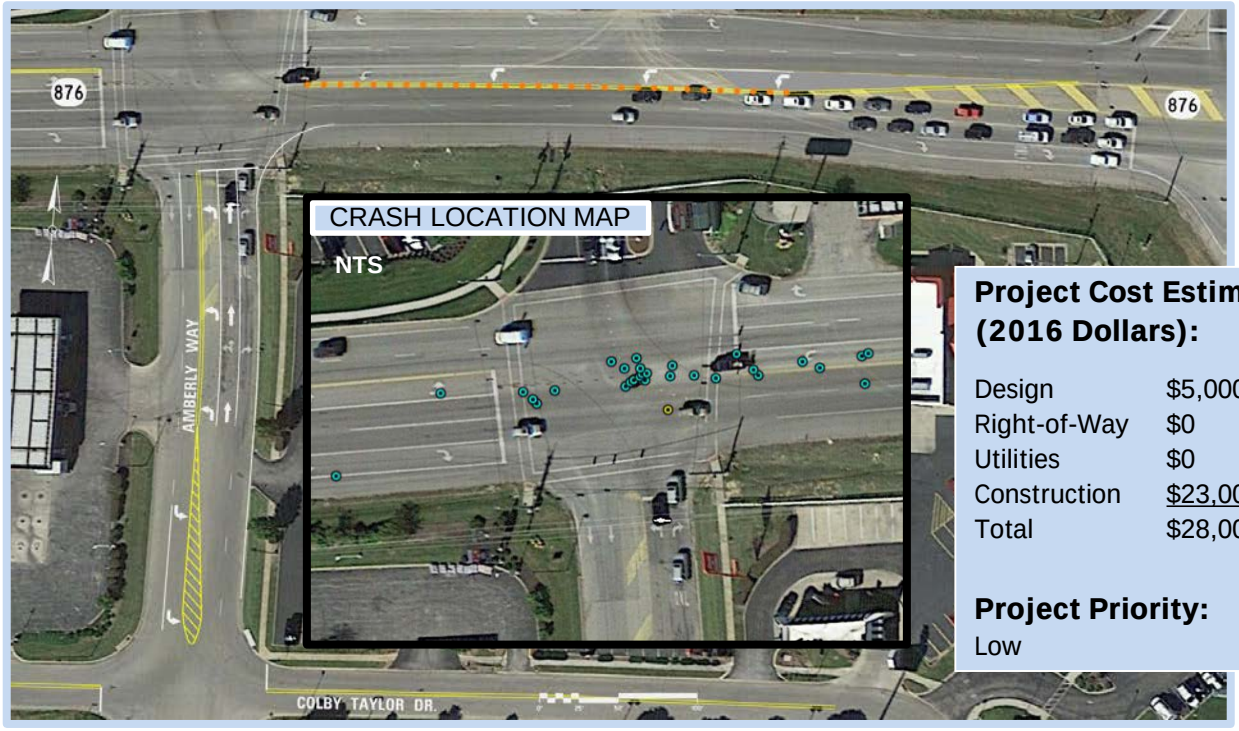
Amberly Way SB queue at KY 876 leaving Richmond Centre

SOLUTION

Project Solution:

- Consider phase change for Amberly Way's split phase signal timing.
- Extend WB left turn lane on KY 876.
- Restripe two Amberly Way NB lanes at KY 876 to three lanes to allow for exclusive left, through, and right turn movements.

Refer to Projects LT R-C and ST R-M for KY 876 Corridor Improvements.



Project Cost Estimate (2016 Dollars):

Design	$5,000
Right-of-Way	$0
Utilities	$0
Construction	$23,000
Total	$28,000

Project Priority:
Low

RICHMOND BEREA SUA

Project Location:
US 25X Corridor (MP 1.410 – 1.676) from Collins St to 3rd St

Project #:
ST R-E

PROBLEM

Project Background:

US 25X ADT = 14,710 – 15,960 / LOS = N/A / CCRF = 2.47

A road diet was completed a few years ago. Progression through downtown has been impacted due to road diet and left turn signal phases. Stakeholder comments include sight distance issues due to on-street parking.

US 25X approach at Collins Street

Project Issues:

- *SAFETY*
- *CAPACITY (TRAFFIC)*
- *MODAL INTER-RELATIONSHIPS (MULTI-MODAL)*

Project Cost Estimate (2016 Dollars):

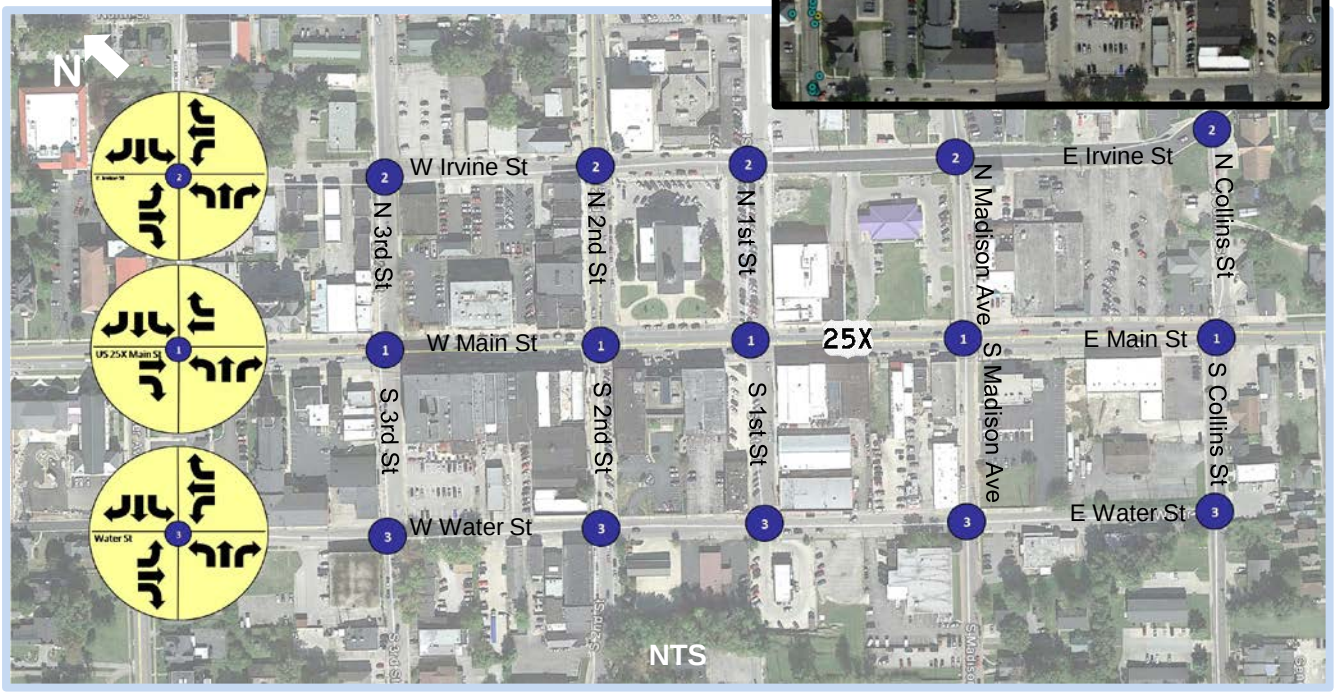
Design	$200,000 (Study Only)
Right-of-Way	$0
Utilities	$0
Construction	$0
Total	$200,000

Project Priority:
Low

SOLUTION

Project Solution:

- Conduct a study to assess the elimination of left turns on US 25X by using parallel Water and Irvine Streets in a grid pattern to provide access through right turns.



RICHMOND BEREA SUA

Project Location:
KY 876 (MP 8.021) at Dwight Dr Intersection

Project #:
ST R-F

PROBLEM

Project Background:

KY 876 ADT = 30,770 / LOS = B / CCRF = 2.20

PIF D0876 146.10 includes this section of roadway.

View from NW corner of intersection

Project Issues:

- *SAFETY*
- *CAPACITY (TRAFFIC)*
- Majority of collisions are rear end crashes.
- Traffic capacity is an issue due to congestion during peak hours.

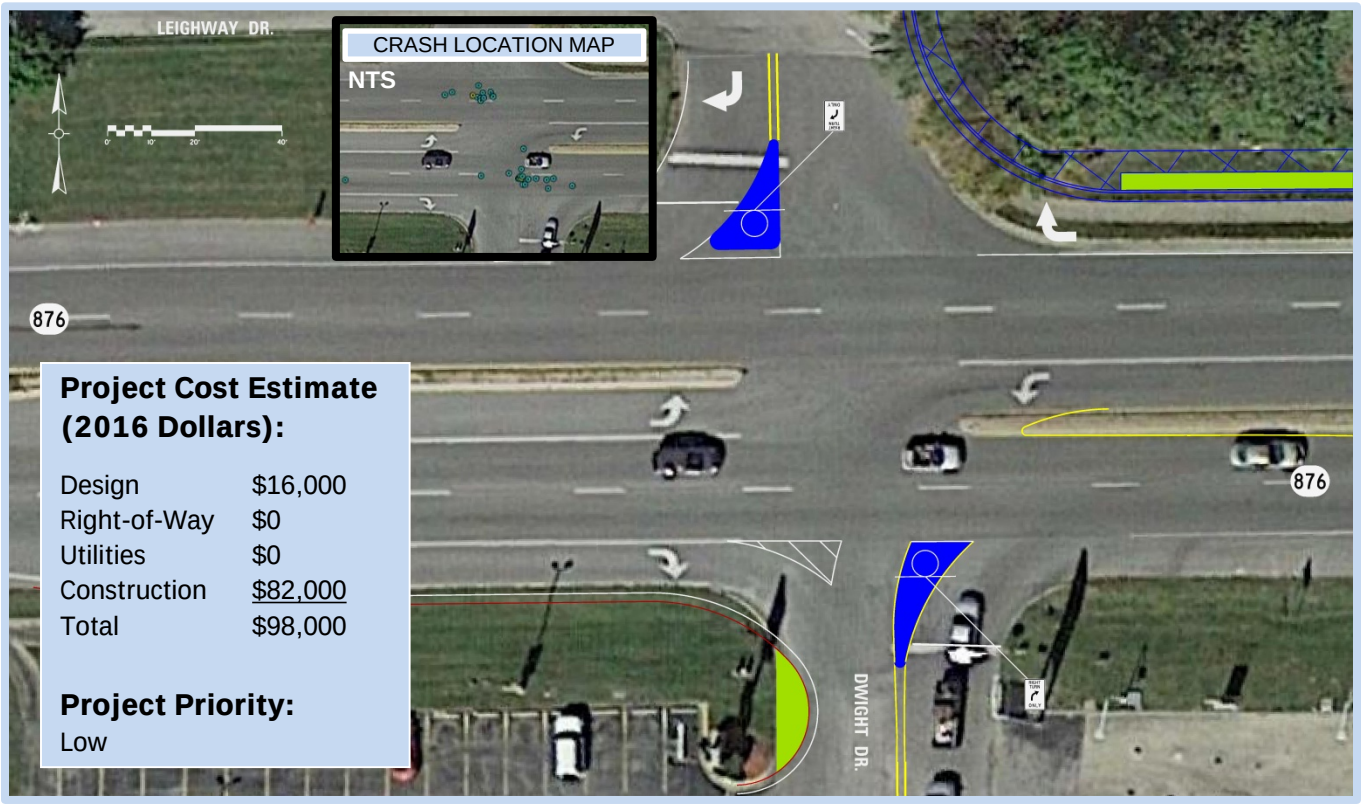
View from Dwight Drive stop bar at KY 876 looking west

SOLUTION

Project Solution:

- Prohibit left turns from Leighway Drive and Dwight Drive onto KY 876 by installing channelization island.
- Add a right turn lane on KY 876 WB at Leighway Drive.

Refer to Project ST R-L for KY 876 Corridor Improvements.



Project Cost Estimate (2016 Dollars):

Design	$16,000
Right-of-Way	$0
Utilities	$0
Construction	$82,000
Total	$98,000

Project Priority:
Low

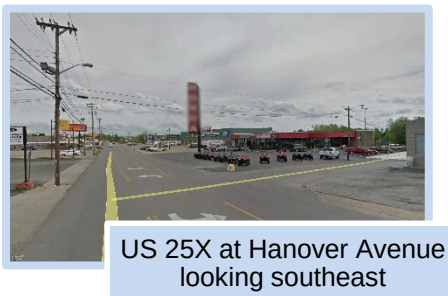
RICHMOND BEREA SUA	**Project Location:** **US 25X Corridor (MP 0.000 – 1.370) from US 25 / KY 876 to Collins St**	**Project #:** **ST R-G**

PROBLEM

Project Background:

US 25X ADT = 14,710 / LOS = N/A / CCRF = 2.47

Functions as a local street with full access at all entry points throughout this portion of the corridor.



US 25X at Hanover Avenue looking southeast

Project Issues:

- *SAFETY*

US 25X NB approach to KY 52

SOLUTION

Project Solution:

- Conduct a study to assess the need for an access management strategy along this route to reduce the number of conflict points and improve railroad crossing.

Project Cost Estimate (2016 Dollars):

Design (Study Only)	$100,000
Right-of-Way	$0
Utilities	$0
Construction	$0
Total	$100,000

Project Priority:
Low

RICHMOND BEREA SUA	**Project Location:** KY 876 (MP 8.520) at Kit Carson Dr Intersection	**Project #:** ST R-H

PROBLEM

Project Background:

KY 876 W ADT = 26,890 / LOS = B / CCRF = 2.55
KY 876 E ADT = 24,140 / LOS = B / CCRF = 1.37

PIF D0876 146.10 includes this section of roadway.

KY 876 EB queue at Kit Carson Drive

Project Issues:

- *SAFETY*
- *CAPACITY (TRAFFIC)*
- Majority of collisions are rear end crashes.
- Traffic capacity is an issue due to congestion during peak hours.

Kit Carson Drive NB approach at KY 876

SOLUTION

Project Solution:

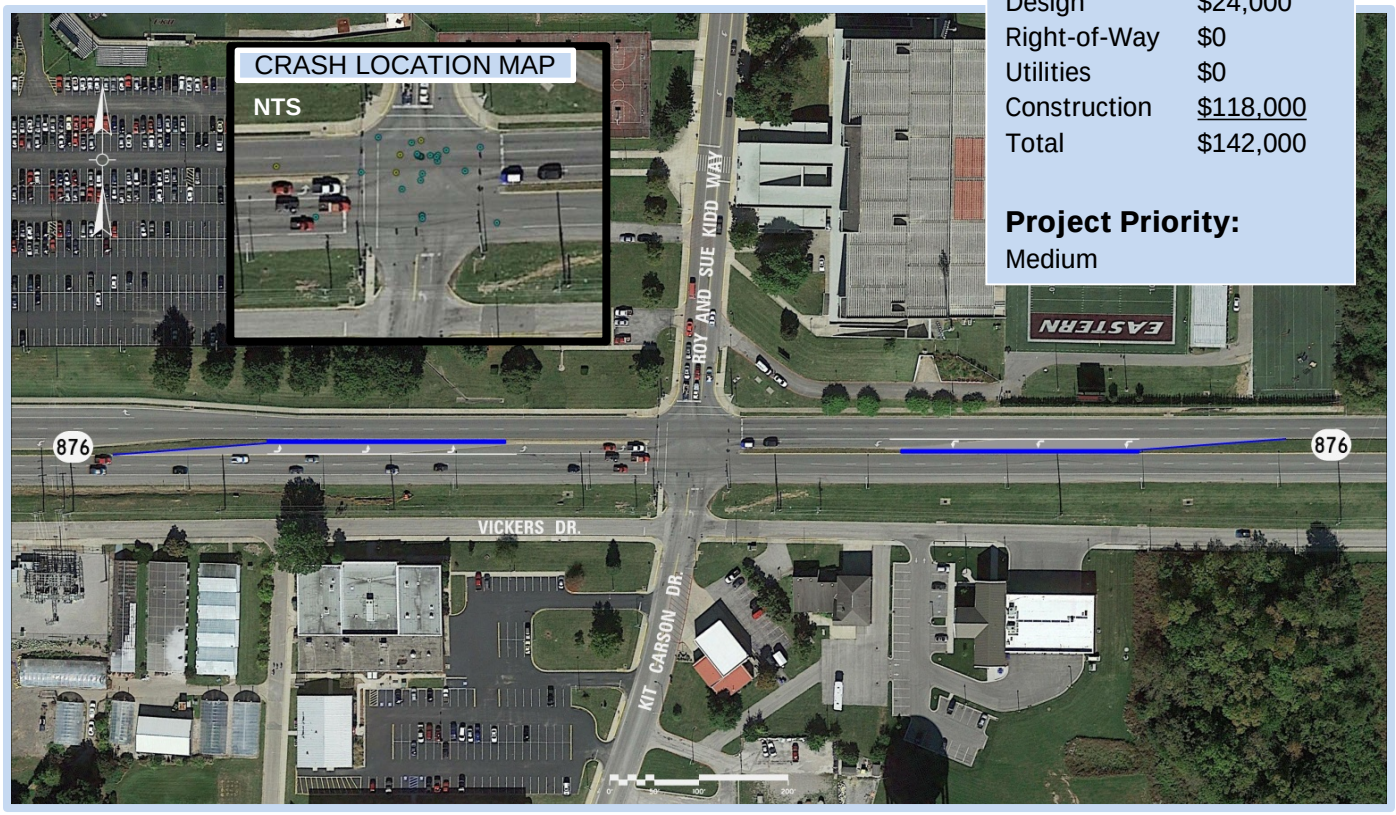
- Consider phase change for KY 876 left turns to flashing yellow arrow.
- Consider phase change removing split phasing on Kit Carson Drive.
- Extend KY 876 WB and EB left turn storage lanes.
- Add wayfinding signage for KY 52 via Kit Carson Drive.

Refer to Projects LT R-D and LT R-F for KY 876 Improvements.

Project Cost Estimate (2016 Dollars):

Design	$24,000
Right-of-Way	$0
Utilities	$0
Construction	$118,000
Total	$142,000

Project Priority:
Medium



RICHMOND BEREA SUA

Project Location:
KY 876 (MP 9.372) at Walmart Intersection

Project #:
ST R-I

PROBLEM

Project Background:

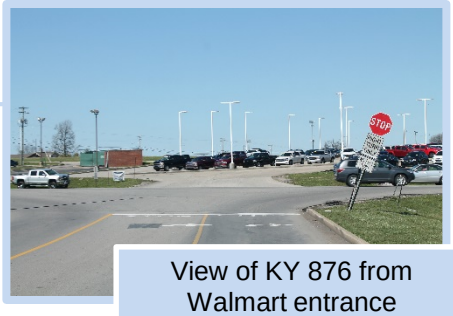
KY 876 ADT = 24,140 / LOS = B / CCRF = 1.37

PIF D0876 146.10 includes this section of roadway.

View of KY 876 in the distance from the SW corner of the intersection

Project Issues:

- *SAFETY*
- *CAPACITY (TRAFFIC)*
- Majority of collisions are rear end crashes.
- Traffic capacity is an issue due to congestion during peak hours.



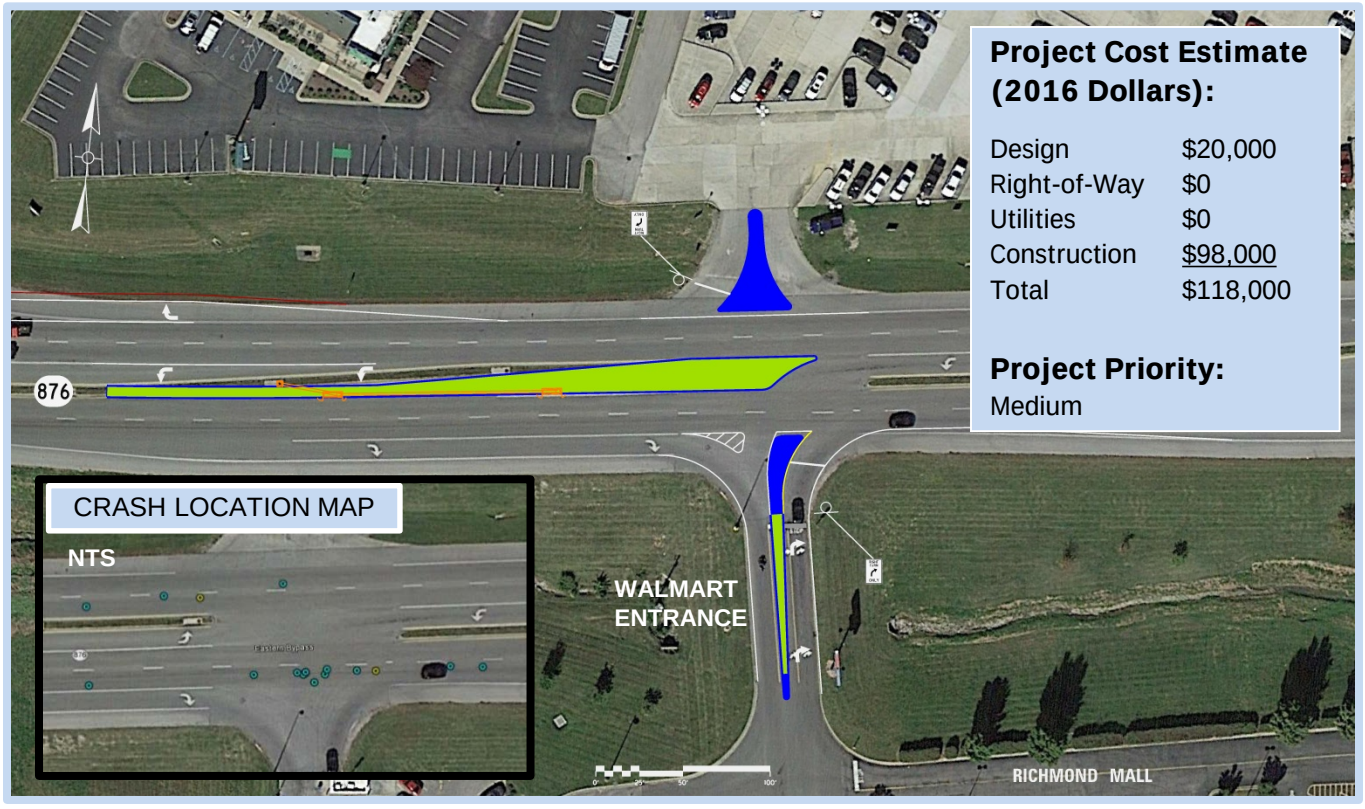
View of KY 876 from Walmart entrance

SOLUTION

Project Solution:

- Eliminate left turns from Walmart and Chevrolet dealership onto KY 876 by installing channelization islands and creating a right-in/right-out intersection.
- Eliminate KY 876 EB left turns into Chevrolet dealership by installing channelization island.

Refer to Project LT R-D for KY 876 Corridor Improvements.



Project Cost Estimate (2016 Dollars):

Design	$20,000
Right-of-Way	$0
Utilities	$0
Construction	$98,000
Total	$118,000

Project Priority:
Medium

RICHMOND BEREA SUA	**Project Location:** US 25 (MP 15.946) at Gibson Bay Dr Intersection	**Project #:** ST R-J

PROBLEM

Project Background:

US 25 ADT = 24,870 / LOS = B / CCRF = 1.75

PIF B0025 110.50 includes this section of roadway.

US 25 NB approach at Gibson Bay Drive

Project Issues:

- *SAFETY*
- *CAPACITY (TRAFFIC)*
- Majority of collisions are rear end and angle crashes.
- Traffic capacity is an issue due to congestion during peak hours.

SOLUTION

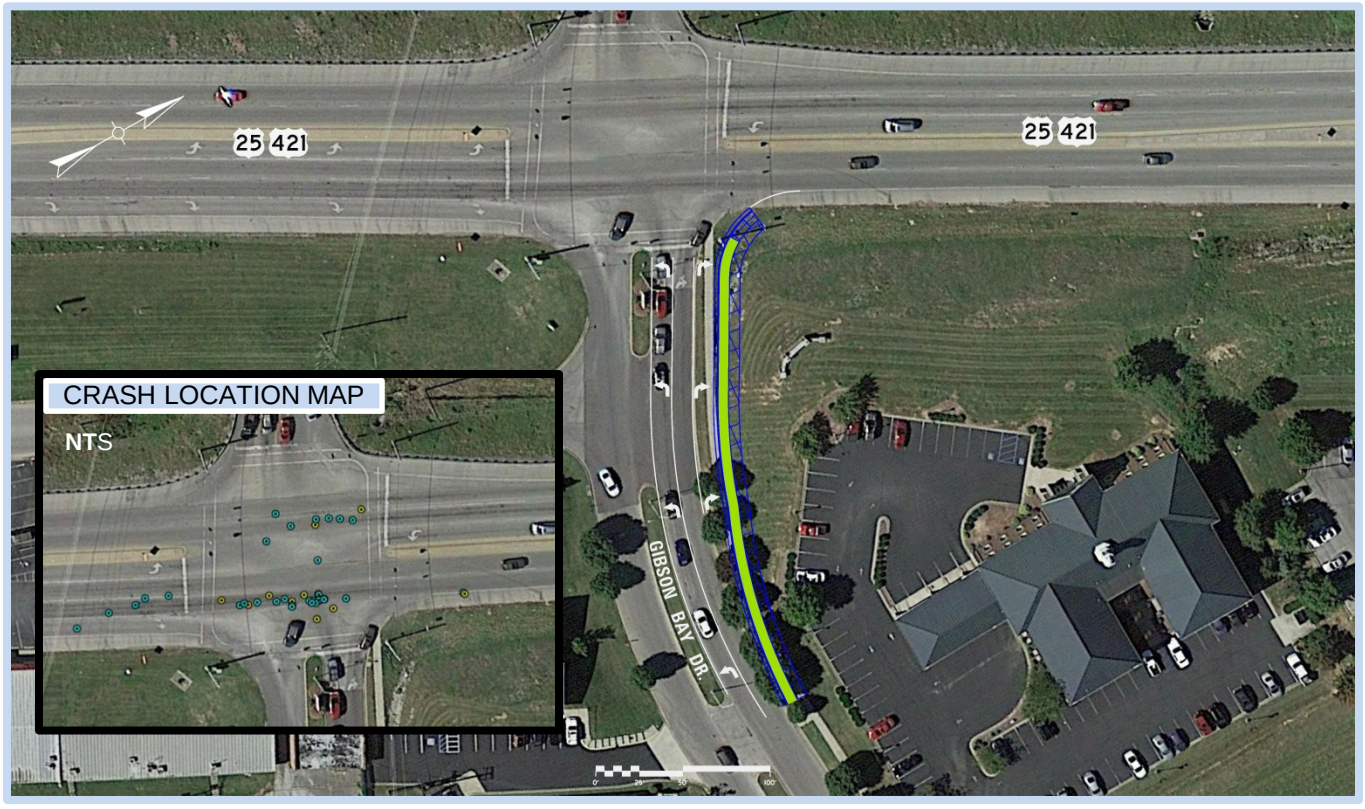
Project Solution:

- Consider phase change to eliminate split phase on Gibson Bay Drive.
- Extend sidewalk on north side of Gibson Bay Drive.
- Add lane to provide dedicated left, through, and right turn lanes from Gibson Bay Drive.

Project Cost Estimate (2016 Dollars):

Design	$23,000
Right-of-Way	$13,000
Utilities	$10,000
Construction	$116,000
Total	$162,000

Project Priority:
Medium



RICHMOND BEREA SUA	**Project Location:** KY 1986 (MP 0.150) at Caudill Dr Intersection	**Project #:** ST R-K

PROBLEM

Project Background:

KY 1986 ADT = 5,430 / LOS = C / CCRF = 0.76

Madison County Schools Transportation noted that it was difficult for buses entering school from the right turn lane on KY 1986.

View of KY1986 EB near Caudill Drive

Project Issues:

- *SAFETY*
- *CAPACITY (TRAFFIC)*
- Traffic capacity is an issue due to congestion during peak hours.

SOLUTION

Project Solution:

- Improve curve radius (shown in red) to help bus traffic entering Caudill Middle School and avoid entering the left turn lane exiting the school complex.

Project Cost Estimate (2016 Dollars):

Design	$11,000
Right-of-Way	$0
Utilities	$0
Construction	$28,000
Total	$39,000

Project Priority:
Low

RICHMOND BEREA SUA	**Project Location:** KY 876 Corridor (MP 7.210 – 8.146) from I-75 to KY 52	**Project #:** ST R-L

PROBLEM

Project Background:

KY 876 ADT = 30,770 / LOS = B / CCRF = 2.20

Project Issues:

- *SAFETY*
- *CAPACITY (TRAFFIC)*
- Majority of collisions are rear end crashes.
- Traffic capacity is an issue due to congestion during peak hours.

View of KY 876 EB at Dwight Drive

View of KY 876 WB at Leighway Drive

SOLUTION

Project Solution:

- Conduct study to assess viable frontage road solutions between I-75 and KY 52 (Lancaster Avenue) in order to eliminate side street split phasing and improve traffic progression on KY 876.

Refer to Projects LT R-C and ST R-F for additional KY 876 Corridor Improvements.

Project Cost Estimate (2016 Dollars):

Design	$150,000 (Study Only)
Right-of-Way	$0
Utilities	$0
Construction	$0
Total	$150,000

Project Priority:
Low

RICHMOND BEREA SUA

Project Location:
Corridor Signal Retiming Bypass (KY 876, US 25 and Downtown)

Project #:
ST R-M

PROBLEM

Richmond's past growth has increased traffic demand, with future estimates indicating additional growth is expected. Current signal timing does not allow for the efficient flow of traffic around and through the city.

PIFs B0025 110.00, B0025 110.50, and D0876 146.10 include these sections of roadway.

View EB on KY 876 at St. George Street

Project Issues:

- *CAPACITY (TRAFFIC)*
- Intersection capacity with long side street and left turn signal timing splits reduce mainline green time resulting in a lack of progression during peak hour traffic.
- Intersection and corridor improvements are needed to allow improved signal timing.

NB US 25 / US 421 queued up two intersections

SOLUTION

Project Solution:

- Reevaluate signal timing and the coordination of traffic signals of three corridors around the Robert R. Martin Bypass and through downtown after intersection capacity is improved:
  - KY 876 (Goggins Lane to US 25, Old Bypass)
  - US 25X (Collins Street to KY 169, Downtown)
  - US 25 / US 421 (US 25 to US 25X, New Bypass) – Future

Refer to Projects ST R-(A, C, D, E, F, G, H, I, J, L); and LT R-(A, B, F, G, H, I, J, K, L) for intersection capacity improvements.

Project Cost Estimate (2016 Dollars):

Design	$175,000
Right-of-Way	$0
Utilities	$0
Construction	$0
Total	$175,000

Project Priority:
Low

RICHMOND BEREA SUA	**Project Location:** KY 52 (MP 8.378) at Elliott Ford Rd Intersection	**Project #:** ST M-A

PROBLEM

Project Background:

KY 52 ADT = 7,940 / LOS = D / CCRF = 0.52

Elliott Ford Road is on a crest cutting through a hill to approach KY 52.

KY 52 SB approaching Elliott Ford Road

Project Issues:

- *CAPACITY (TRAFFIC)*
- Traffic capacity is an issue due to congestion during peak hours.
- No trend in crashes.

KY 52 NB approaching Elliott Ford Road

SOLUTION

Project Solution:

- Cut back slope along Elliott Ford Road and trim trees north of intersection on KY 52.

Project Cost Estimate (2016 Dollars):

Design	$4,000
Right-of-Way	$14,000
Utilities	$30,000
Construction	$22,000
Total	$70,000

Project Priority:
Low

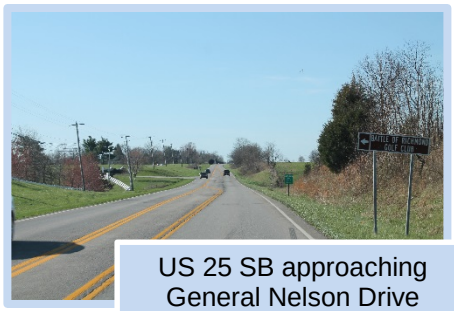
RICHMOND BEREA SUA	**Project Location:** US 25 (MP 10.900) at General Nelson Dr	**Project #:** ST M-B

PROBLEM

Project Background:

US 25 ADT = 7,940 / LOS = C / CCRF = 0.49

PIF B0025 109.00 includes this section of roadway.

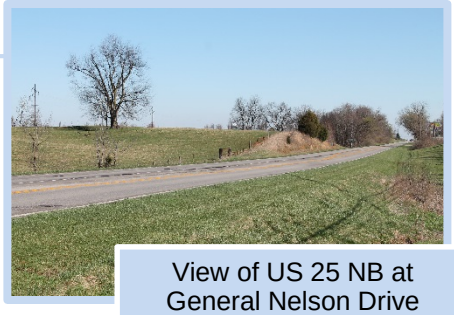


US 25 SB approaching General Nelson Drive

Project Issues:

- *ROADWAY DEFICIENCIES (DRAINAGE)*
- Majority of collisions are rear end crashes.

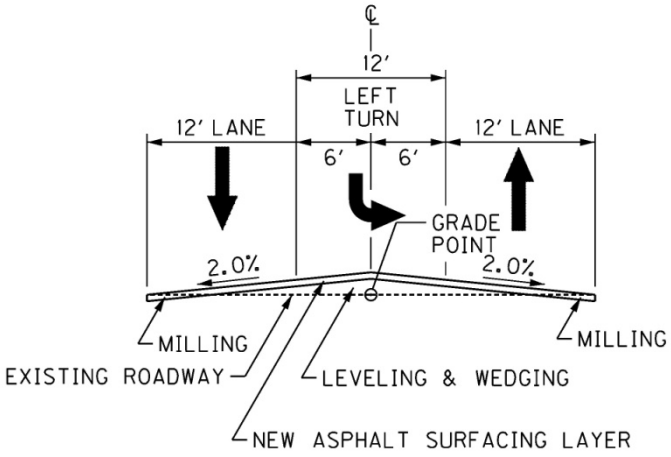
SOLUTION



View of US 25 NB at General Nelson Drive

Project Solution:

- Address reverse crown issue in low point to eliminate standing water.
- KYTC indicates that this section of roadway may be resurfaced as funding becomes available.



Proposed Typical Section

Project Cost Estimate (2016 Dollars):

Design	$11,000
Right-of-Way	$0
Utilities	$0
Construction	$55,000
Total	$66,000

Project Priority:
High

RICHMOND BEREA SUA	**Project Location:** **KY 2881 (MP 0.783) at KY 2877 (MP 0.806) Intersection**	**Project #:** **ST M-C**

PROBLEM

Project Background:

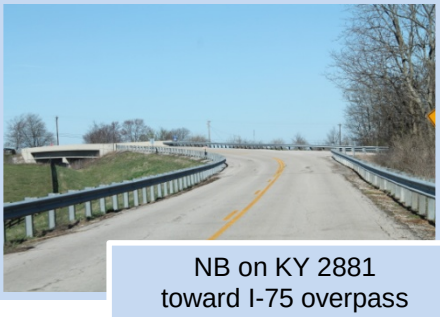
KY 2881 ADT = 1,270 / LOS = A / CCRF = 0.97
KY 2877 ADT = 580 / LOS = A / CCRF = 0.39

Madison County Schools Transportation noted difficulties navigating the intersection of KY 2881 SB at KY 2877.
No crashes at or around intersection.

WB KY 2881 approach at KY 2877

Project Issues:

- *SAFETY*



NB on KY 2881 toward I-75 overpass

SOLUTION

Project Solution:

- Evaluate intersection control devices for appropriate traffic control measures and apply devices and new pavement markings on all approaches as needed.

Project Cost Estimate (2016 Dollars):

Design	$3,000 (Evaluation)
Right-of-Way	$0
Utilities	$0
Construction	$7,000 (Installation)
Total	$10,000

Project Priority:
Low

RICHMOND BEREA SUA

Project Location:
KY 1986 Corridor (MP 0.340 – 4.200)

Project #:
ST M-D

PROBLEM

Project Background:

KY 1986 ADT = 1,810 – 2,990 / LOS = B / CCRF = 0.67

KY 1986 EB approaching Hoover Lane (MP 3.728)

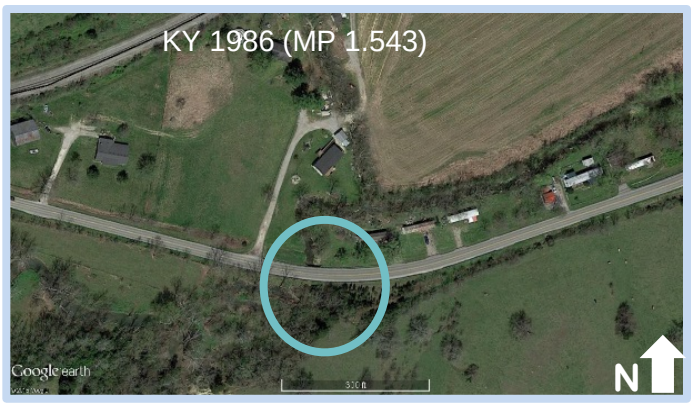
Project Issues:

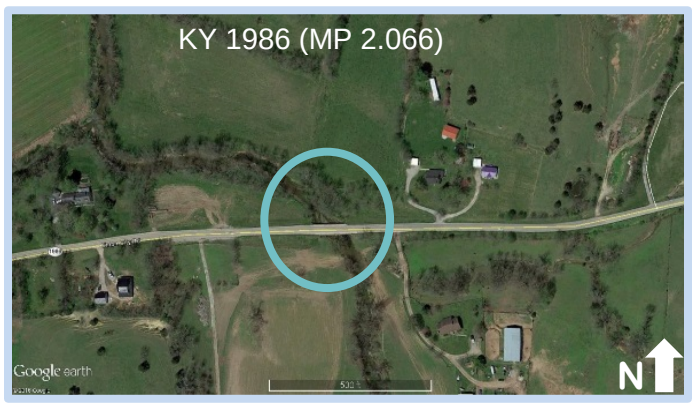
- *ROADWAY DEFICIENCIES (DRAINAGE)*
- Flash floods make road impassable with only a few inches of rain.

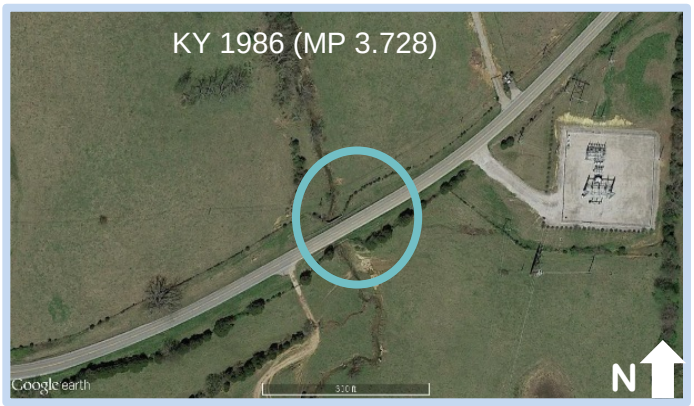
SOLUTION

Project Solution:

- Assess bridge and culvert capacity along KY 1986 to reduce occurrence of flood events. Priority sections identified at MP 1.543, MP 2.066, and MP 3.728.







Project Cost Estimate Per Structure (2016 Dollars):

Design	$25,000
Right-of-Way	$0
Utilities	$0
Construction	$150,000
Total	$175,000

Project Priority:
Medium

RICHMOND BEREA SUA	**Project Location:** **KY 2878 Corridor (MP 0.190 – 0.268) from I-75 Underpass to Northridge Way**	**Project #:** **ST M-E**

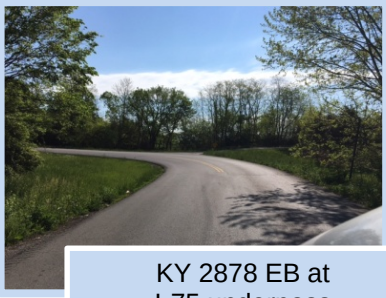
PROBLEM

Project Background:

KY 2878 ADT = 1,940 / LOS = B / CCRF = 1.18

Project Issues:

- *SAFETY*
- Majority of collisions are single vehicle.
- Speed from SB KY 2878 approach results in difficulty navigating curve.



KY 2878 EB at I-75 underpass

KY 2878 WB approaching KY 2879

SOLUTION

Project Solution:

- Assess the need for curve warning signs with solar powered flashers in advance of the location.
- Assess pavement condition for skid resistance and applicability of high friction surface treatment.

Project Cost Estimate (2016 Dollars):

Design	$6,000
Right-of-Way	$0
Utilities	$0
Construction	$40,000
Total	$46,000

Project Priority:
High

RICHMOND BEREA SUA	**Project Location:** **KY 169 Corridor (MP 2.215 – 2.782) from Goggins Ln to Cartier Dr**	**Project #:** **ST M-F**

PROBLEM

Project Background:

KY 169 ADT = 2,530 / LOS = A / CCRF = 1.38

High speed two lane road with no shoulder west of Goggins Lane. Higher than posted speeds may be contributing to angle collisions at the intersection of KY 169 and Goggins Lane. Trees can cause sight distance and clear zone issues approaching the traffic signal.

KY 169 Corridor

Project Issues:

- *SAFETY*

KY 169 EB approaching Goggins Lane

SOLUTION

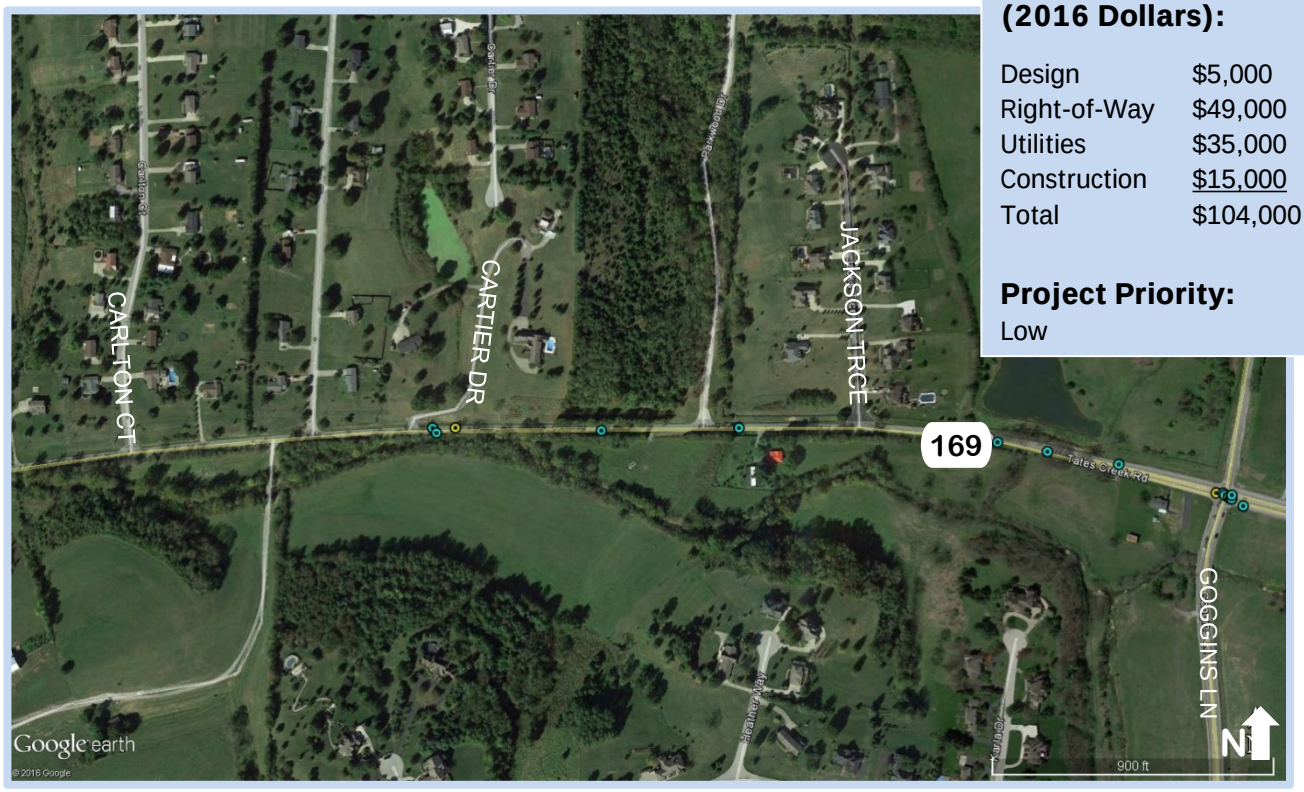
Project Solution:

- Installation of enhanced driver awareness warning of signalized intersection at KY 169 and Goggins Lane. (e.g. flashing sign)
- Maintenance to cut back limbs to increase sight distance along EB KY 169 to traffic signal at Goggins Lane. Review clear zone for obstacles.

Project Cost Estimate (2016 Dollars):

Design	$5,000
Right-of-Way	$49,000
Utilities	$35,000
Construction	$15,000
Total	$104,000

Project Priority:
Low



RICHMOND BEREA SUA

Project Location:
KY 499 Corridor (MP 0.000 – 1.449) from US 25 to US 421

Project #:
ST M-G

PROBLEM

Project Background:

KY 499 ADT = 790 / LOS = B / CCRF = 1.57

Two lane road with no shoulders.
Trees create sight distance and clear zone issues.

KY 499 Corridor

Project Issues:

- *SAFETY*

KY 499 Corridor

SOLUTION

Project Solution:

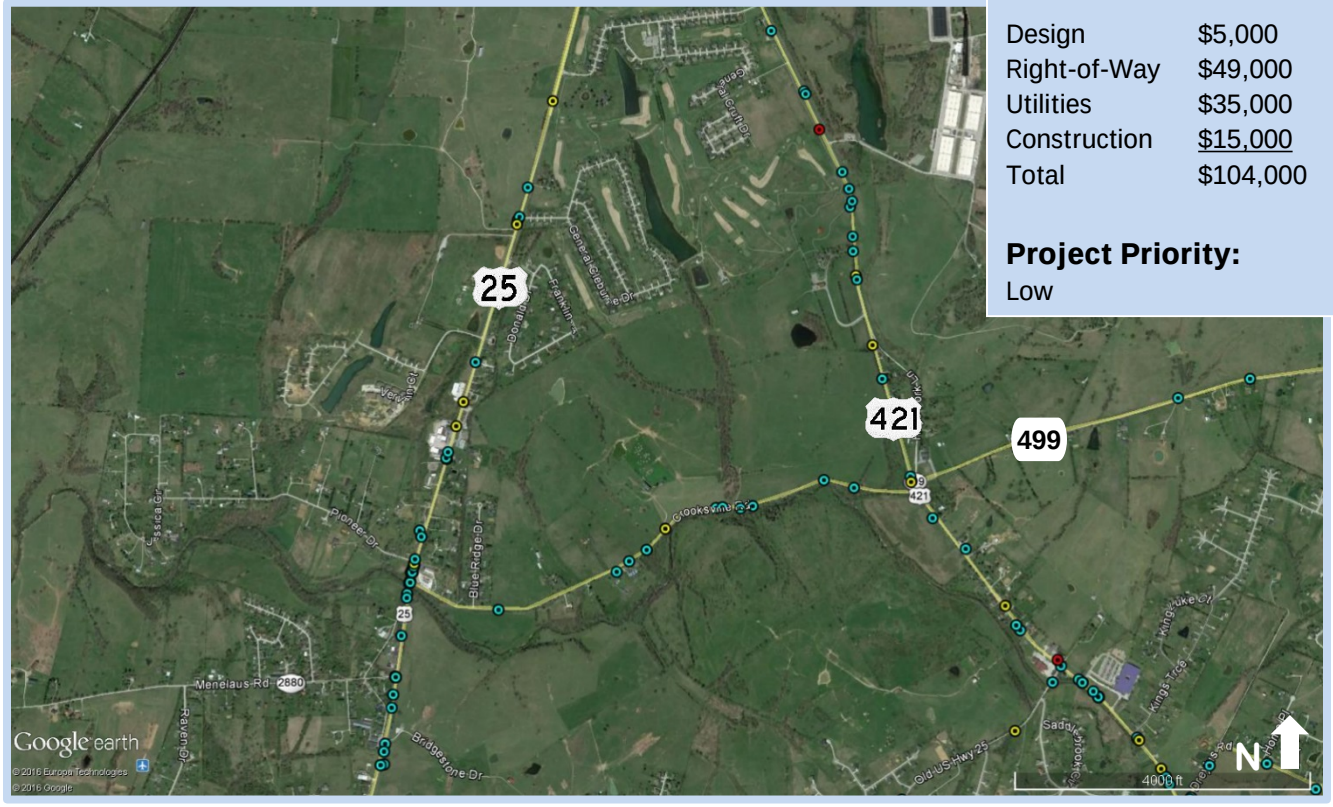
- Perform maintenance by trimming or removing trees to improve sight distance. Review clear zone for obstacles. Install curve warning ahead signs along KY 499.

Refer to Projects LT M-B and LT M-H for adjacent Corridor Improvements.

Project Cost Estimate (2016 Dollars):

Design	$5,000
Right-of-Way	$49,000
Utilities	$35,000
Construction	$15,000
Total	$104,000

Project Priority:
Low



RICHMOND BEREA SUA	**Project Location:** KY 1016 (MP 2.252) near Moonlight Dr Intersection to Barker Ln	**Project #:** ST M-H

PROBLEM

Project Background:

KY 1016 ADT = 1,600 / LOS = B / CCRF = 0.46

Driveways cross ditch and culverts are not properly sized creating flooding issues during rain events.

KY 1016 near Moonlight Drive SB

Project Issues:

- *ROADWAY DEFICIENCIES (DRAINAGE)*

SOLUTION

Project Solution:

- Assess the need to increase culvert capacity at multiple locations along KY 1016.

KY 1016 near Moonlight Drive Intersection NB

Project Cost Estimate Per Structure (2016 Dollars):

Design	$25,000
Right-of-Way	$0
Utilities	$0
Construction	$150,000
Total	$175,000

Project Priority:
Low

RICHMOND BEREA SUA	**Project Location:** **KY 21 Corridor (MP 11.090 – 12.296) near KY 1617 to Bear Mountain Rd**	**Project #:** **ST M-I**

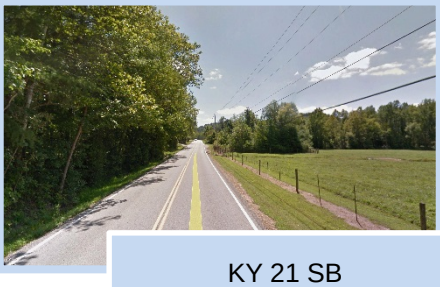
PROBLEM

Project Background:

KY 21 ADT = 1,600 / LOS = B / CCRF = 0.62

High speed two lane road with minimal shoulders and multiple culverts underneath the roadway which flood during major rain events. Aggregates used in pavement have demonstrated poor wear with high degrees of polishing. The lack of friction increases possibilities of vehicles sliding when the surface is wet.

KY 21 NB approaching KY 1617



KY 21 SB

Project Issues:

- *ROADWAY DEFICIENCIES (DRAINAGE)*

SOLUTION

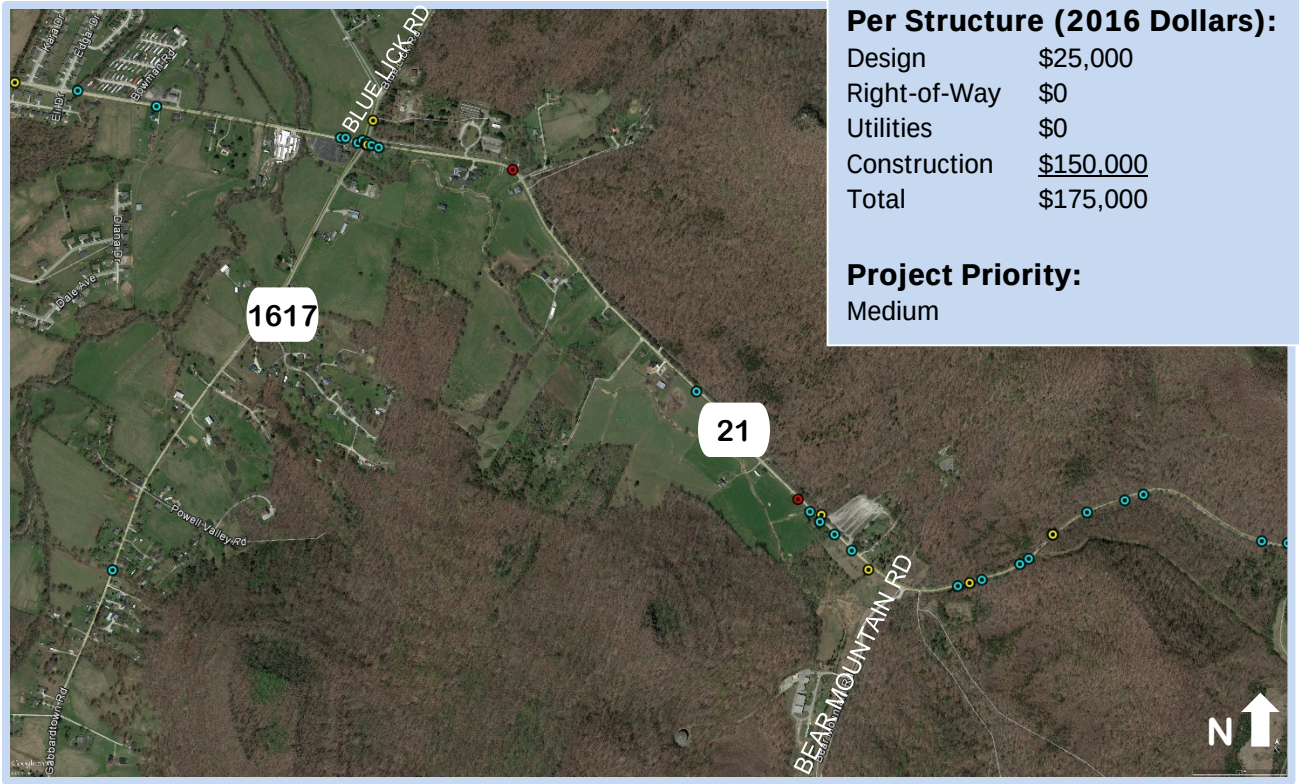
Project Solution:

- Assess the need to increase culvert capacity at locations along KY 21.
- Assess pavement condition for surface friction and increase KY 21 priority for normal resurfacing schedule.

Project Cost Estimate Per Structure (2016 Dollars):

Design	$25,000
Right-of-Way	$0
Utilities	$0
Construction	$150,000
Total	$175,000

Project Priority:
Medium



RICHMOND BEREA SUA

Project Location:
KY 21 (MP 8.820 – 9.012) from McKinney St to Knights Inn Entrance

Project #:
ST B-A

PROBLEM

Project Background:

KY 21 ADT = 14,220 / LOS = A / CCRF = 1.51

Project Issues:

- *SAFETY*
- *MODAL INTER-RELATIONSHIPS (MULTI-MODAL)*
- Traffic capacity is an issue due to congestion during peak hours.
- Majority of collisions are rear end crashes.

McKinney Street NB approaching KY 21

View across McKinney Street looking west at SE corner of intersection

SOLUTION

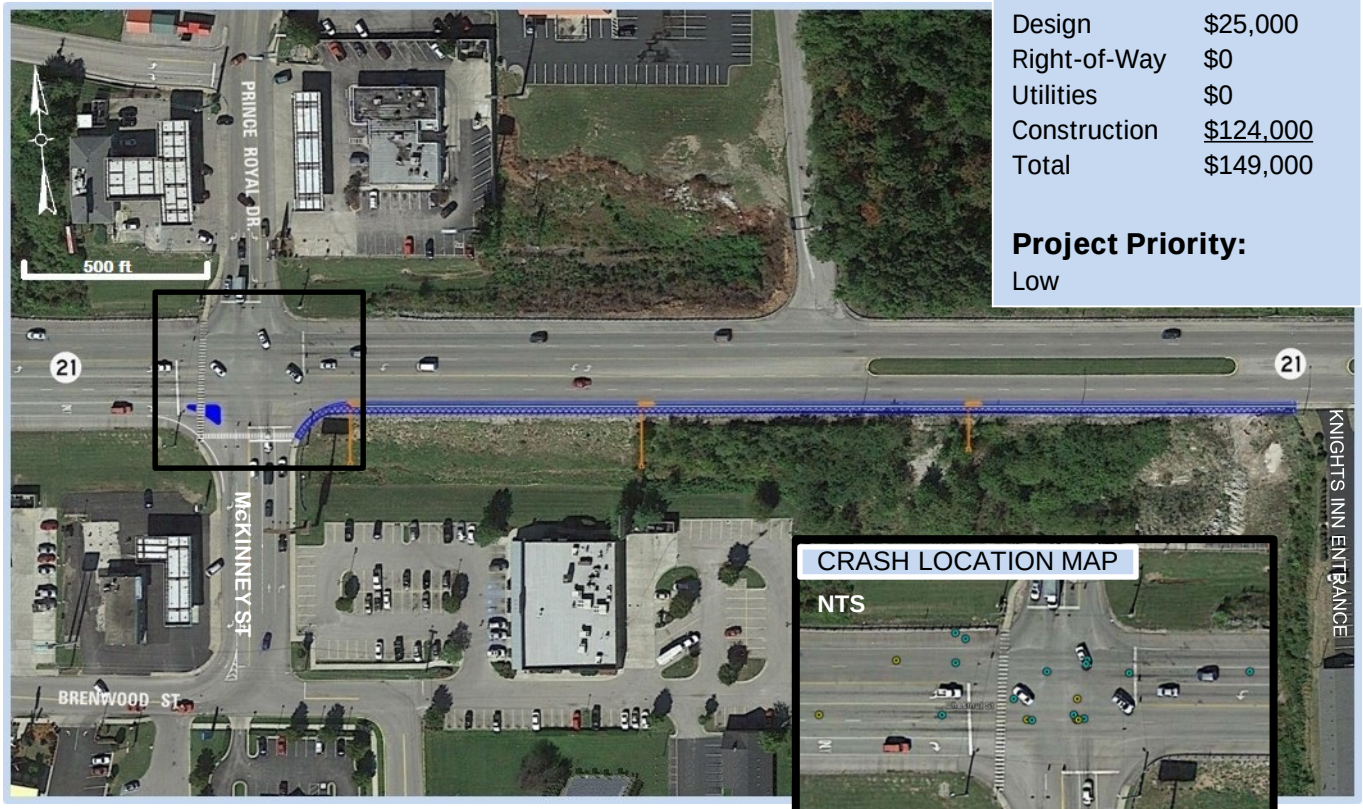
Project Solution:

- Add marked crosswalk across McKinney Street.
- Add island for pedestrians, channelize KY 21 EB right turn to reduce crossing distance.
- Extend KY 21 EB sidewalk from McKinney Street to existing sidewalks at the Knights Inn entrance.

Project Cost Estimate (2016 Dollars):

Design	$25,000
Right-of-Way	$0
Utilities	$0
Construction	$124,000
Total	$149,000

Project Priority:
Low



Note: Bicycle and pedestrian accommodations are suggested. Shared use facility maintenance is the responsibility of local governments.

RICHMOND BEREA SUA	**Project Location:**	**Project #:** ST B-B

PROBLEM

Project Background:

Project Issues:

SOLUTION

Project Solution:

THIS PROJECT HAS BEEN REMOVED

RICHMOND BEREA SUA	**Project Location:** **KY 595 (MP 3.558) at Glades Rd Intersection**	**Project #:** **ST B-C**

PROBLEM

Project Background:

KY 595 ADT = 8,610 / LOS = C / CCRF = 0.47

Madison County Schools Transportation noted that during peak hours, turning movements are difficult for buses.

Glades Road WB approach at KY 595

Project Issues:

- *CAPACITY (TRAFFIC)*
- Traffic capacity is an issue due to congestion during peak hours.

KY 595 SB approach at Glades Road

SOLUTION

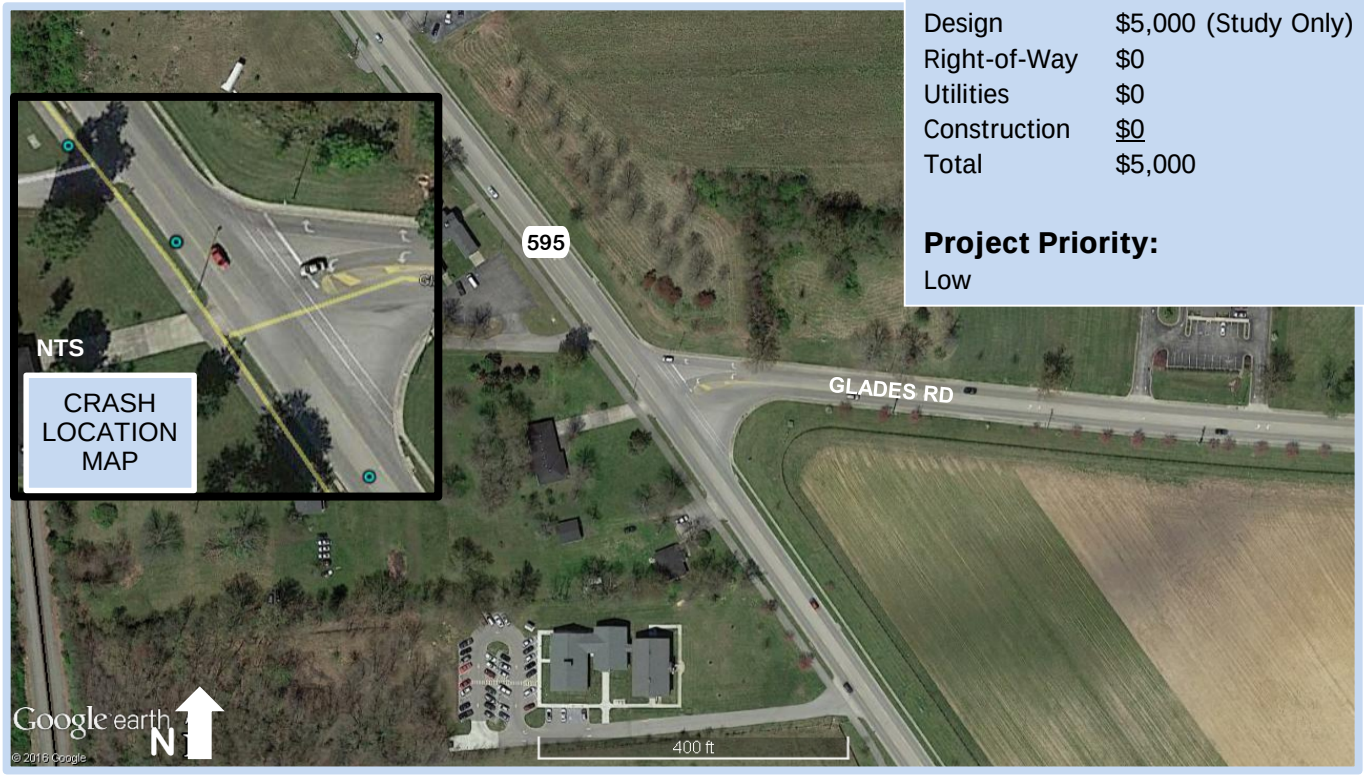
Project Solution:

- Conduct traffic signal warrant analysis to determine if this location is recommended to have a signal in operation.

Project Cost Estimate (2016 Dollars):

Design	$5,000 (Study Only)
Right-of-Way	$0
Utilities	$0
Construction	$0
Total	$5,000

Project Priority:
Low



RICHMOND BEREA SUA

Project Location:
US 25 Corridor (MP 20.681 – 20.937) from Taco Bell Driveway to Michelle Dr

Project #:
LT R-A

PROBLEM

Project Background:

US 25 ADT = 9,090 / LOS = D, A / CCRF = 1.10 – 2.63

Inconsistent cross-section through corridor.
Closely spaced access points to businesses along US 25.
Incidents focused at intersections.

US 25 NB approaching Taco Bell Driveway


US 25 NB approaching Michelle Drive

Project Issues:

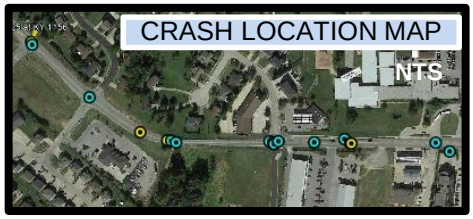
- *SAFETY*
- *CAPACITY (TRAFFIC)*
- Left turns into businesses block through traffic while waiting for a gap during PM peak.
- Traffic capacity is an issue due to congestion during peak hours.

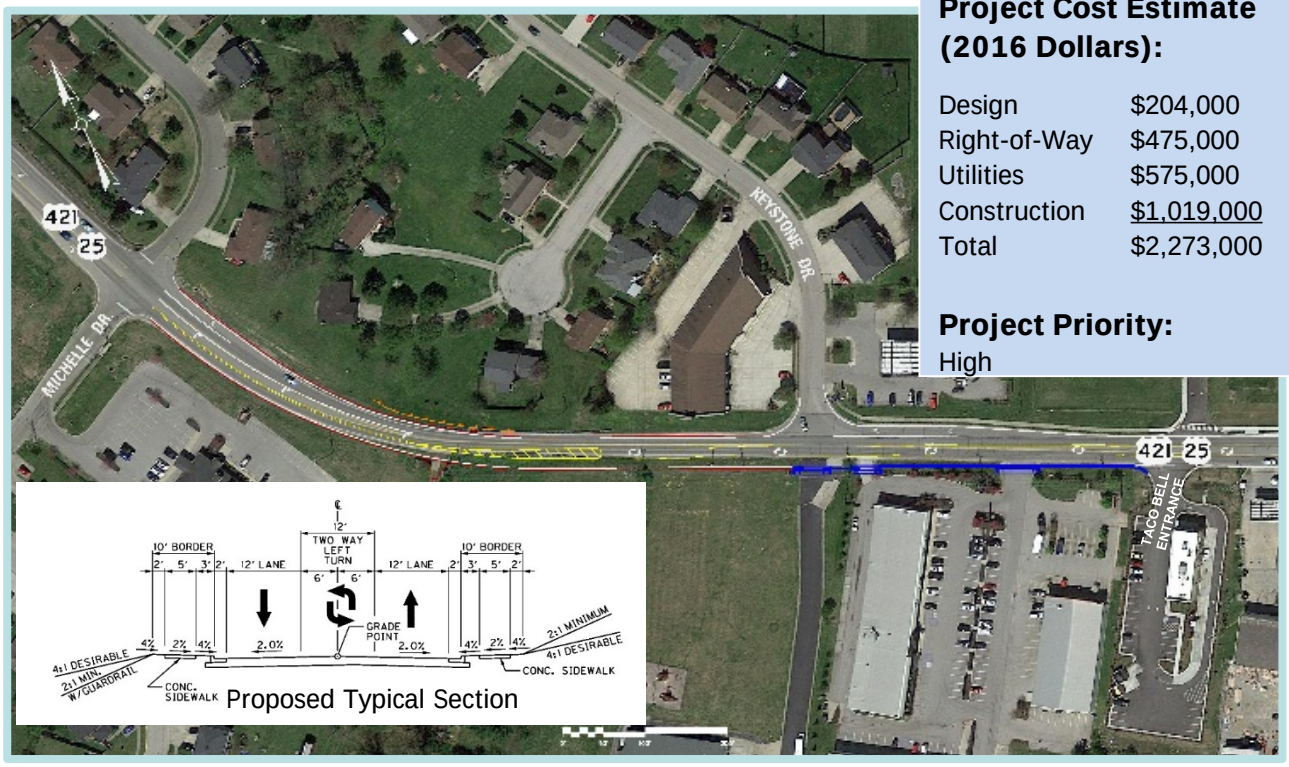
SOLUTION

Project Solution:

- Improve cross-section throughout corridor to provide efficient movement in and out of businesses while maintaining traffic flow on US 25.

Refer to Project ST R-A for specific intersection improvements.





Proposed Typical Section

Project Cost Estimate (2016 Dollars):

Design	$204,000
Right-of-Way	$475,000
Utilities	$575,000
Construction	$1,019,000
Total	$2,273,000

Project Priority:
High

Note: Bicycle and pedestrian accommodations are suggested. Shared use facility maintenance is the responsibility of local governments.

RICHMOND BEREA SUA

Project Location:
US 25 / US 421 Corridor (MP 16.199 – 19.874) from KY 52 (Irvine) to US 25X

Project #:
LT R-B

PROBLEM

Project Background:

NB US 25 / US 421 ADT = 23,060 / LOS = B / CCRF = 0.38
SB US 25 / US 421 ADT = 23,080 / LOS = B / CCRF = 0.76

Corridor typical section creates wide intersections resulting in large areas of unmarked pavement to traverse.

PIF B0025 111.00 includes this section of roadway.

US 25 NB approaching Four Mile Road

Project Issues:

- *SAFETY*
- *CAPACITY (TRAFFIC)*
- *MODAL INTER-RELATIONSHIPS (MULTI-MODAL)*
- Majority of collisions are rear end and angle crashes.
- Difficulty with left turns along the bypass.
- Traffic capacity is an issue due to congestion during peak hours.

Project Cost Estimate (2016 Dollars):

	Multi-Use Path	Offset Left
Design	$146,000	$44,000
Right-of-Way	$528,000	$0
Utilities	$450,000	$0
Construction	$731,000	$219,000
Total	$1,855,000	$263,000

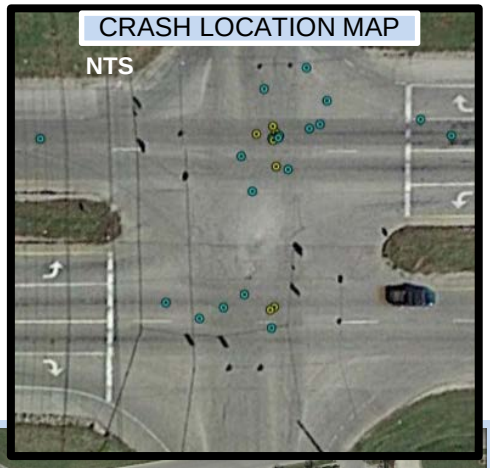
Project Priority:
Medium

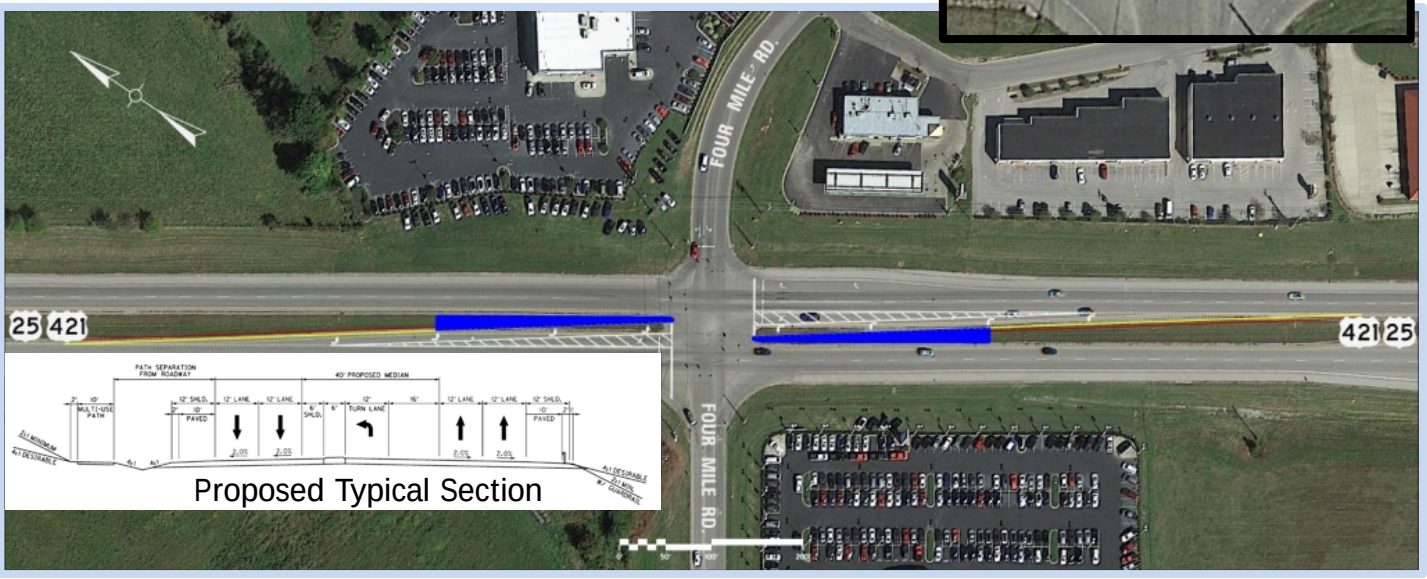
SOLUTION

Project Solution:

- Reconstruct all left turn movements from US 25 to side streets with offset left turn lanes.
- At locations where signals do not currently exist signal warrant analysis should be conducted.
- Update PIF B0025 111.00 to include multi-use path connection to KY 388 and school complexes (Caudill). Multi-use path is a low KYTC priority.

Refer to Project LT R-M for specific intersection improvements.





Note: Bicycle and pedestrian accommodations are suggested. Shared use facility maintenance is the responsibility of local governments.

RICHMOND BEREA SUA	**Project Location:** **KY 876 Corridor (MP 6.175 – 8.146) from Hager Dr to KY 52 (Lancaster)**	**Project #:** **LT R-C**

PROBLEM

Project Background:

KY 876 ADT = 8,130 – 30,770 / LOS = E, B /
CCRF = 0.41 – 2.73

Sidewalk is intermittent along this section of the bypass. Existing sidewalk sections are located north of KY 876.

PIF D0876 146.60 includes the eastern portion of this section from the I-75 interchange.

KY 876 WB approaching Hager Drive

KY 876 EB from Dwight Drive

Project Issues:

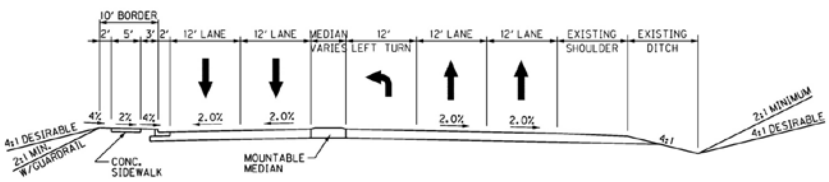
- *MODAL INTER-RELATIONSHIPS (MULTI-MODAL)*

SOLUTION

Project Solution:

- Provide sidewalks along the northern side of KY 876 to tie into existing facilities around Richmond Centre and at KY 52.
- Tie into existing ADA ramp locations and ensure that pedestrian push buttons are accessible.
- Update PIF D0876 146.60 to include pedestrian connectivity improvements.

Refer to Projects ST R-C, ST R-D, and LT R-G for specific intersection improvements. Refer to Project ST R-L for additional KY 876 Corridor Improvements.



Proposed Typical Section

Project Cost Estimate (2016 Dollars):

Design	$304,000
Right-of-Way	$721,000
Utilities	$613,000
Construction	$1,522,000
Total	$3,160,000

Project Priority:
Medium

Note: Bicycle and pedestrian accommodations are suggested. Shared use facility maintenance is the responsibility of local governments.

RICHMOND BEREA SUA

Project Location:
KY 876 Corridor (MP 8.146 – 9.959) from KY 52 (Lancaster) to US 25

Project #:
LT R-D

PROBLEM

Project Background:

KY 876 ADT = 24,140 - 26,890 / LOS = B /
CCRF = 1.37 - 2.55

Sidewalk exists along the EKU campus property east of the football stadium on the WB side of the road. Sidewalks are continuous from KY 52 to Baptist Health on the EB side of the roadway. No sidewalks exist east of the hospital due to geometric constraints with the CSX Railroad overpass.

PIF D0876 146.60 includes this section of roadway.

KY 876 WB approaching EKU Football Stadium


KY 876 EB approaching CSX Underpass

Project Issues:

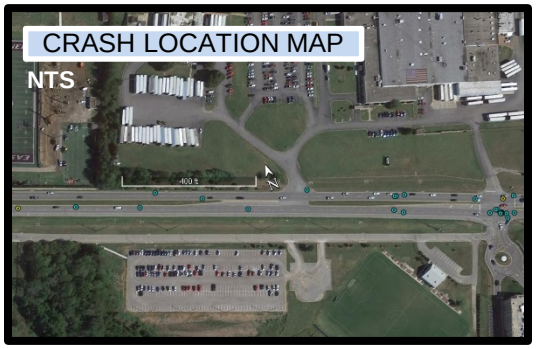
- *MODAL INTER-RELATIONSHIPS (MULTI-MODAL)*

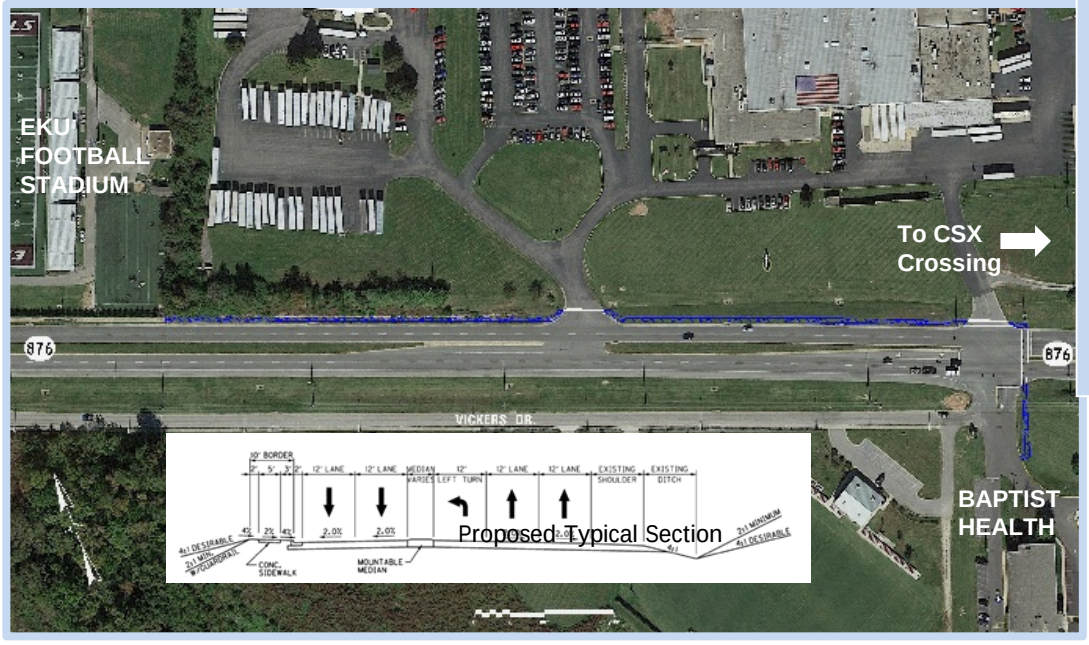
SOLUTION

Project Solution:

- Extend the sidewalk along KY 876 WB from the football stadium to the Baptist Health driveway.
- Coordinate with CSX Railroad about pedestrian crossing needs and update PIF D0876 146.60 to include the pedestrian connectivity improvements across the railroad on KY 876 EB to US 25.

Refer to Projects L R-D, ST R-H, ST R-I, LT R-J, LT R-K, and LT R-L for specific intersection improvements.





Project Cost Estimate (2016 Dollars):

Design	$17,000
Right-of-Way	$613,000
Utilities	$521,000
Construction	$83,000
Total	$1,234,000

Project Priority:
Medium

Note: Bicycle and pedestrian accommodations are suggested. Shared use facility maintenance is the responsibility of local governments.

RICHMOND BEREA SUA	**Project Location:** KY 388 Corridor (MP 0.000 – 1.967) from US 25X to KY 1986	**Project #:** LT R-E

PROBLEM

Project Background:

KY 388 ADT = 4,330 – 6,260 / LOS = C /
CCRF = 0.22 – 3.71

PIF D0388 1.00 includes this section of roadway.

KY 388 SB approaching Golfview Drive

Project Issues:

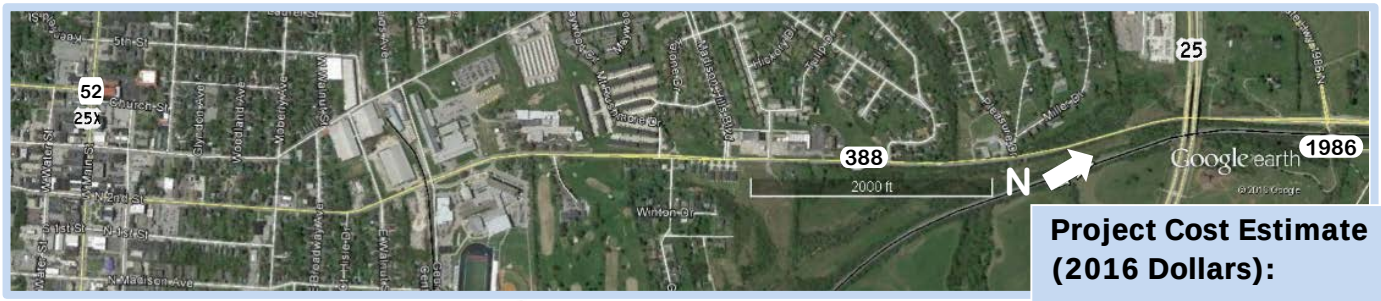
- *SAFETY*
- *CAPACITY (TRAFFIC)*
- *MODAL INTER-RELATIONSHIPS (MULTI-MODAL)*
- *ROADWAY DEFICIENCIES (DRAINAGE)*
- Traffic capacity is an issue due to congestion during peak hours.

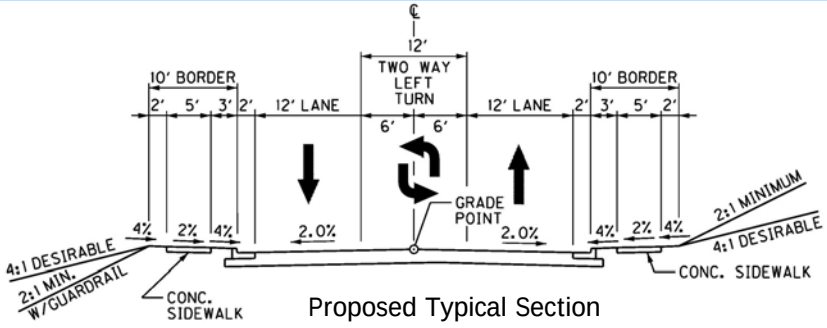
KY 1986 EB approaching KY 388 intersection

SOLUTION

Project Solution:

- Widen KY 388 to three lane typical section with sidewalks connecting residential area to schools and downtown.
- Conduct signal warrant analysis for KY 388 at KY 1986 intersection.





Proposed Typical Section

Project Cost Estimate (2016 Dollars):

Design	$1,089,000
Right-of-Way	$2,300,000
Utilities	$1,900,000
Construction	$5,443,000
Total	$10,732,000

Project Priority:
High

Note: Bicycle and pedestrian accommodations are suggested. Shared use facility maintenance is the responsibility of local governments.

RICHMOND BEREA SUA	**Project Location:** New Corridor from KY 876 (Via Kit Carson Dr) to KY 2872	**Project #:** LT R-F

PROBLEM

Project Background:

KY 876 is a highly traveled corridor with some sections serving more than 30,000 vehicles per day from Irvine, East Richmond, and EKU to I-75. Congestion along KY 876 has been present during peak hours and continues to worsen as the population increases in this section of Madison County. This also includes congestion related to the retail shopping (Lowe's) along Boggs Lane. The northern extension of US 25 helped alleviate congestion headed to Lexington. An alternative southern access to I-75 is needed.

Boggs Lane SB approaching the railroad crossing

Lowe's exit onto Boggs Lane NB approaching KY 876

Project Issues:

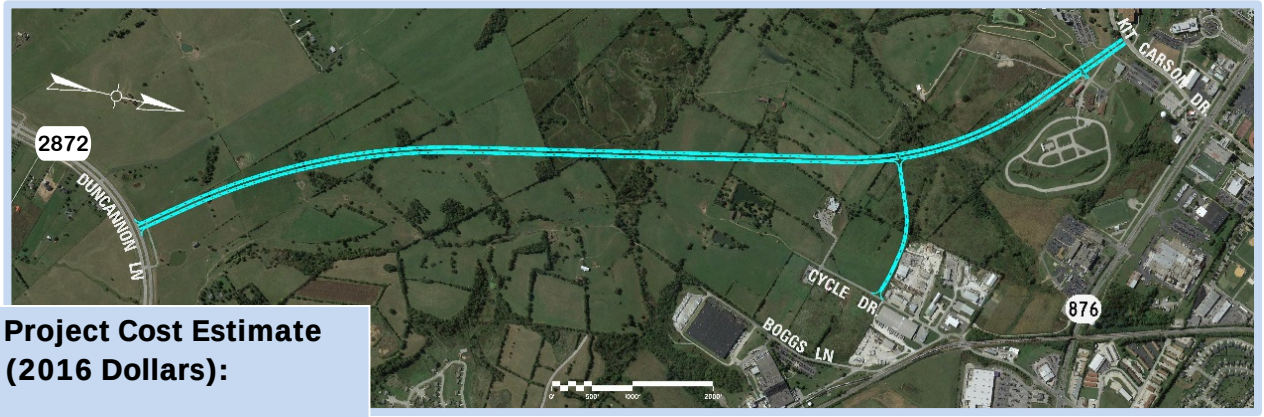
- *CAPACITY (TRAFFIC)*

SOLUTION

Project Solution:

- New corridor from KY 876 via Kit Carson Drive to KY 2872.
- Extend Cycle Drive to connect with new corridor to provide congestion relief for Boggs Lane.
- Extension will provide congestion relief to the KY 876 corridor with alternate access to I-75 as well as providing access to the Madison County airport.

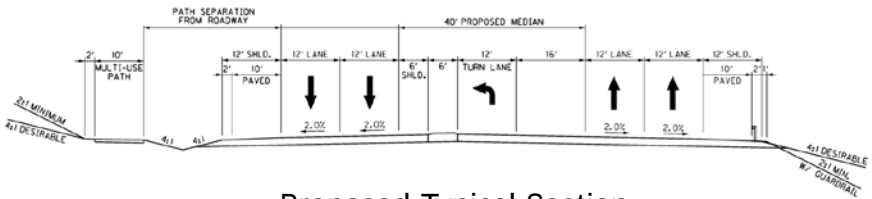
Refer to Project LT R-K for specific intersection improvements of KY 876 and Boggs Lane.



Project Cost Estimate (2016 Dollars):

Design	$2,096,000
Right-of-Way	$5,400,000
Utilities	$4,300,000
Construction	$10,482,000
Total	$22,278,000

Project Priority:
Medium



Proposed Typical Section

Note: Bicycle and pedestrian accommodations are suggested. Shared use facility maintenance is the responsibility of local governments.

RICHMOND BEREA SUA

Project Location:
KY 876 (7.345) at Killarney Ln Intersection

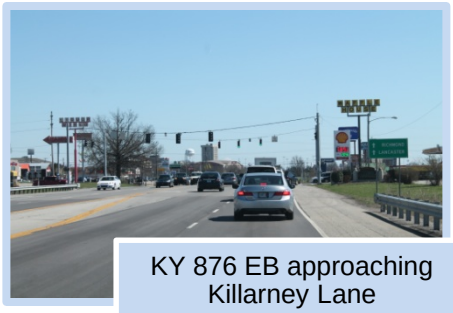
Project #:
LT R-G

PROBLEM

Project Background:

KY 876 ADT = 30,770 / LOS = B / CCRF = 2.20

PIF D0876 146.10 includes this section of roadway.



KY 876 EB approaching Killarney Lane

Project Issues:

- *SAFETY*
- *CAPACITY (TRAFFIC)*
- Frontage road not functional in current configuration.
- Majority of collisions are rear end and angle crashes.
- Traffic capacity is an issue due to congestion during peak hours.

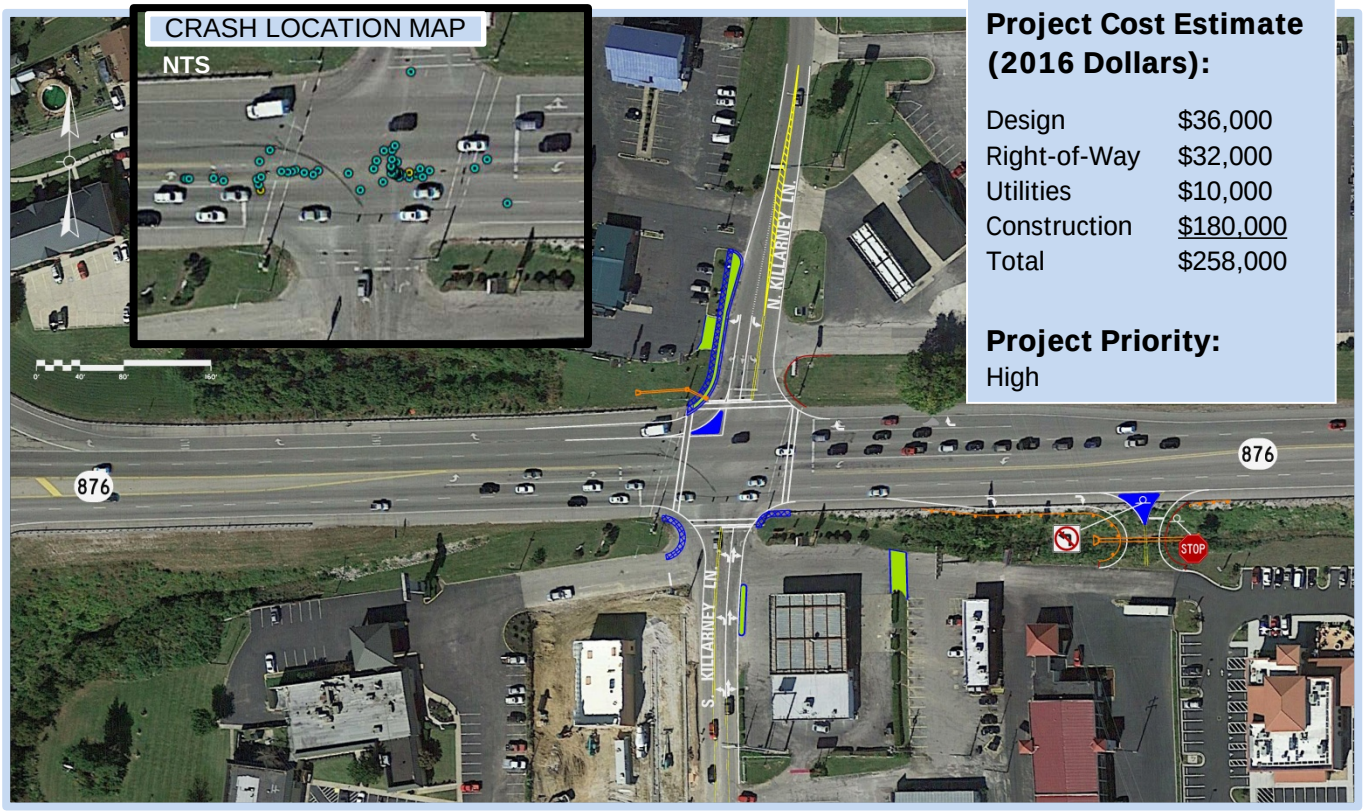
View of SB approach at Killarney Lane

SOLUTION

Project Solution:

- Consider phase change for KY 876 EB and WB left turns to flashing yellow arrow.
- Install island for Killarney Lane SB channelized right turns.
- Add ramps for pedestrian crossings.
- Limit access through gas station and create new right-in/right-out access point on KY 876.

Refer to Project LT R-C for KY 876 Corridor Improvements.



Project Cost Estimate (2016 Dollars):

Design	$36,000
Right-of-Way	$32,000
Utilities	$10,000
Construction	$180,000
Total	$258,000

Project Priority:
High

Note: Bicycle and pedestrian accommodations are suggested. Shared use facility maintenance is the responsibility of local governments.

RICHMOND BEREA SUA

Project Location:
KY 52 Corridor (MP 12.173 – 12.970) from Oakland Ave to US 25

Project #:
LT R-H

PROBLEM

Project Background:

KY 52 ADT = 6,820 / LOS = C / CCRF = 1.17

Sidewalks end at Oakland Avenue. Pedestrian access through worn grass path begins, heading east to US 25 Bypass.

Oakland Avenue SB approach at KY 52

Project Issues:

- *SAFETY*
- *MODAL INTER-RELATIONSHIPS (MULTI-MODAL)*

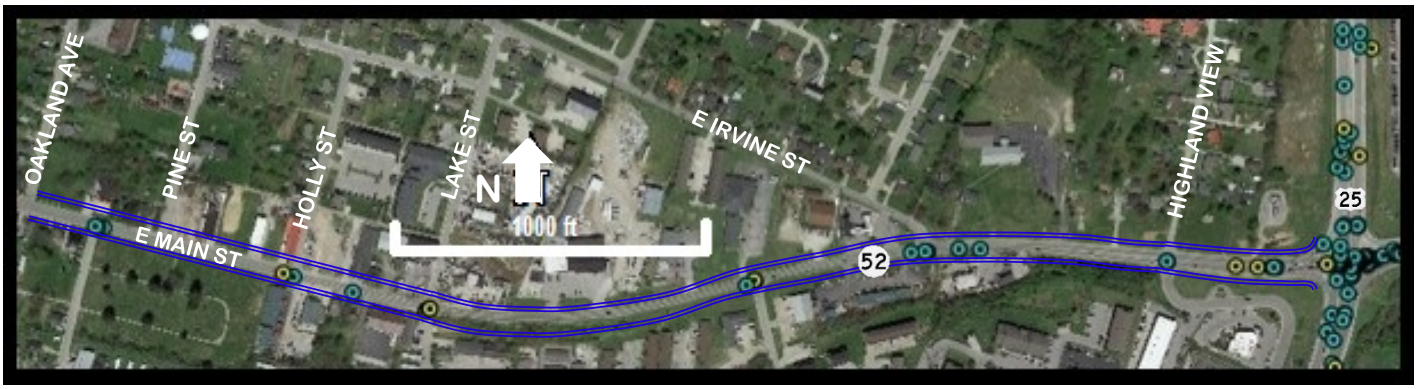
View at Oakland Avenue intersection looking along KY 52 WB

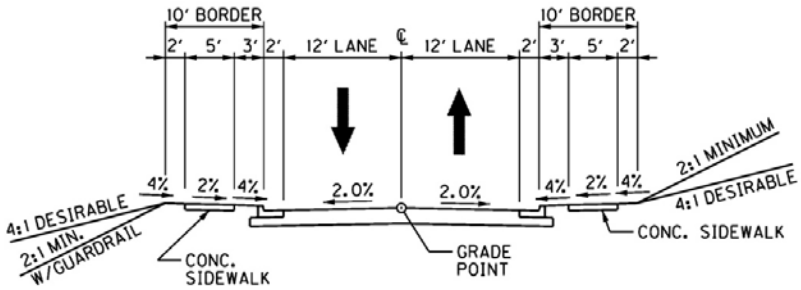
SOLUTION

Project Solution:

- Continue sidewalk along both sides of KY 52 to US 25 Bypass.

Refer to Project LT R-M for specific KY 52 at US 25 intersection improvements.





Proposed Typical Section

Note: Bicycle and pedestrian accommodations are suggested. Shared use facility maintenance is the responsibility of local governments.

Project Cost Estimate (2016 Dollars):

Design	$261,000
Right-of-Way	$300,000
Utilities	$250,000
Construction	$1,303,000
Total	$2,114,000

Project Priority:
Medium

RICHMOND BEREA SUA	**Project Location:** **KY 52 Corridor (MP 11.099 – 11.267) from Hycliff Dr to Barnes Mill Rd**	**Project #:** **LT R-I**

PROBLEM

Project Background:

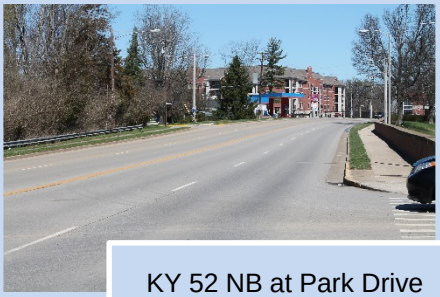
KY 52 ADT = 15,370 / LOS = N/A / CCRF = 2.26

EB approach on Barnes Mill Road

Project Issues:

- *SAFETY*
- *CAPACITY (TRAFFIC)*
- *MODAL INTER-RELATIONSHIPS (MULTI-MODAL)*
- Majority of collisions are rear end and angle crashes.

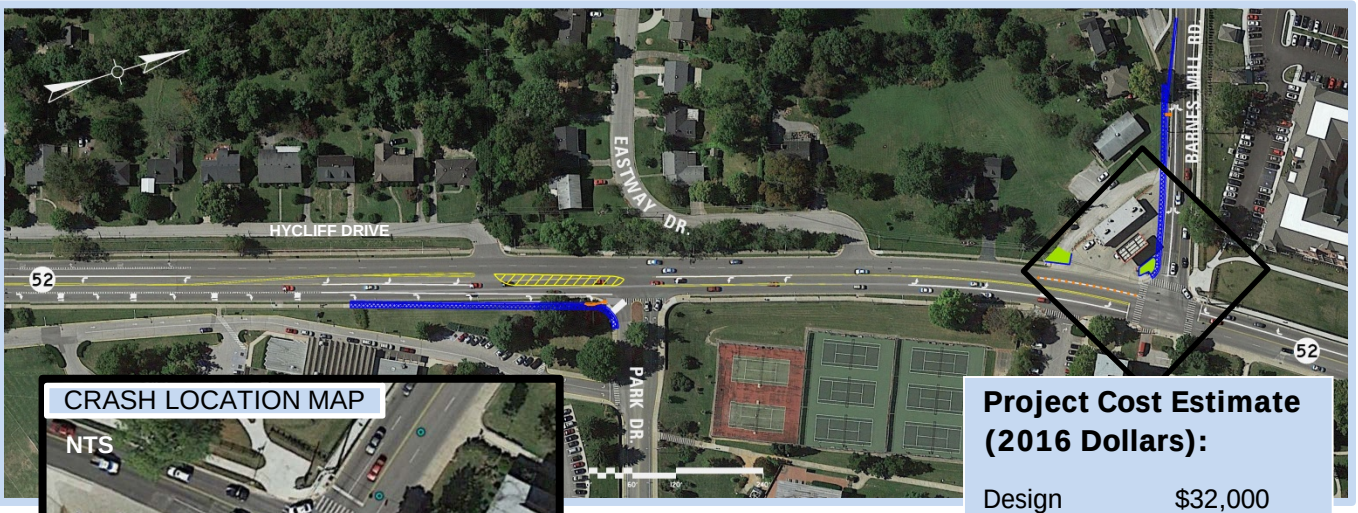
SOLUTION



KY 52 NB at Park Drive

Project Solution:

- On KY 52 NB provide left turn lanes onto Hycliff Drive, Eastway Drive, and Barnes Mill Road through restriping existing pavement. Also, provide right turn only lane at Park Drive.
- On KY 52 SB make outside lane right turn only at Barnes Mill Road and add left turn lane onto Park Drive through restriping.
- On Barnes Mill Road EB construct EB right turn lane.
- Extend sidewalks along Barnes Mill Road EB and KY 52 NB to Park Drive.



Project Cost Estimate (2016 Dollars):

Design	$32,000
Right-of-Way	$127,000
Utilities	$50,000
Construction	$160,000
Total	$369,000

Project Priority:
Medium

RICHMOND BEREA SUA	**Project Location:** KY 876 (MP 8.146) at KY 52 (MP 10.918) Intersection	**Project #:** LT R-J

PROBLEM

Project Background:

KY 876 W ADT = 30,770 / LOS = B / CCRF = 2.20
KY 876 E ADT = 26,890 / LOS = B / CCRF = 2.55
KY 52 N ADT = 15,370 / LOS = N/A / CCRF = 2.26
KY 52 S ADT = 11,620 / LOS = A / CCRF = 1.16

PIF D0876 146.10 includes this section of roadway

KY 876 EB queue approaching KY 52

Project Issues:

- *SAFETY*
- *CAPACITY (TRAFFIC)*
- Majority of collisions are rear end crashes.
- Available storage for KY 876 left turns is insufficient.
- KY 52 left turns are not provided enough green time.
- Traffic capacity is an issue due to congestion during peak hours.

KY 52 NB approaching KY 876

SOLUTION

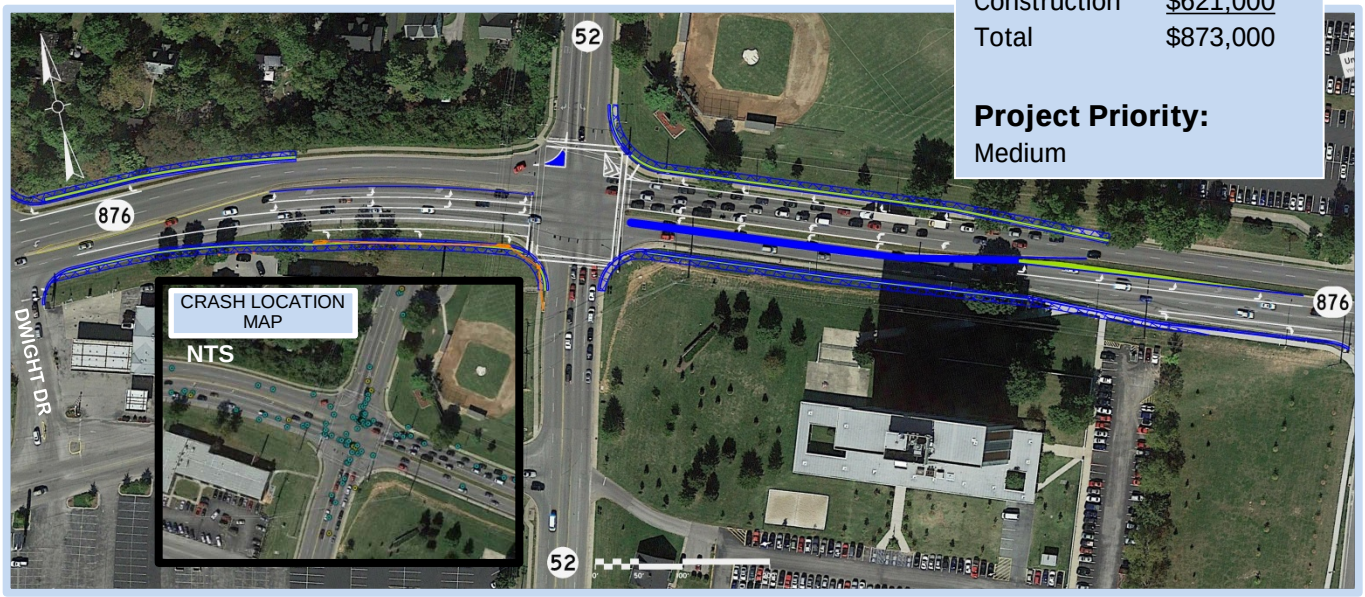
Project Solution:

- Consider phase change for KY 52 left turns to flashing yellow arrow.
- Provide dual lefts for KY 876 left turns.
- Install right turn island for KY 52 SB movement in NW corner of intersection.
- Install right turn lanes for KY 876 EB to and WB at KY 52.
- Install sidewalks along KY 876 EB from Dwight Drive to Veterans Boulevard.

Project Cost Estimate (2016 Dollars):

Design	$124,000
Right-of-Way	$53,000
Utilities	$75,000
Construction	$621,000
Total	$873,000

Project Priority:
Medium



Note: Bicycle and pedestrian accommodations are suggested. Shared use facility maintenance is the responsibility of local governments.

RICHMOND BEREA SUA	**Project Location:** KY 876 (MP 9.262) at Boggs Ln Intersection	**Project #:** LT R-K

PROBLEM

Project Background:

KY 876 ADT = 24,140 / LOS = B / CCRF = 1.37

PIF D0876 146.10 includes this section of roadway.

KY 876 EB approaching Boggs Lane

Project Issues:

- *SAFETY*
- *CAPACITY (TRAFFIC)*
- Majority of collisions are rear end crashes.
- Traffic capacity is an issue due to congestion during peak hours.

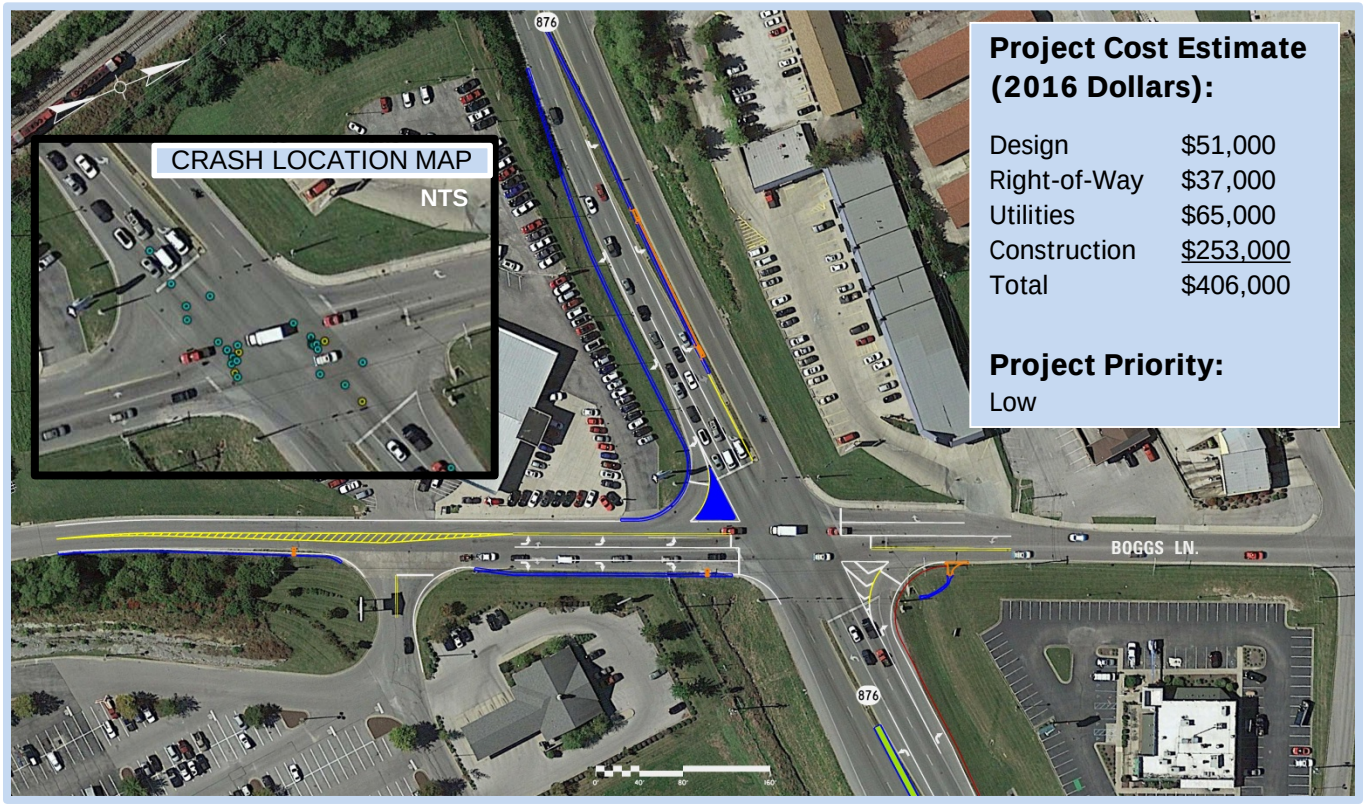
Boggs Lane NB queue approaching KY 876

SOLUTION

Project Solution:

- Extend EB KY 876 left turn lane storage.
- Add or extend dedicated right turn lanes on all approaches.

Refer to Project LT R-D for specific KY 876 Corridor Improvements and LT R-F for new Corridor to connect KY 876 to Duncannon Lane.



Project Cost Estimate (2016 Dollars):

Design	$51,000
Right-of-Way	$37,000
Utilities	$65,000
Construction	$253,000
Total	$406,000

Project Priority:
Low

RICHMOND BEREA SUA	**Project Location:** KY 876 (MP 9.959) at US 25 (MP 15.442) Intersection	**Project #:** LT R-L

PROBLEM

Project Background:

KY 876 ADT = 24,140 / LOS = B / CCRF = 1.37
US 25 S ADT = 21,020 / LOS = B / CCRF = 2.03
US 25 E ADT = 24,870 / LOS = B / CCRF = 1.75
US 25X ADT = 11,170 / LOS = D / CCRF = 1.21

PIF D0876 146.10 and B0025 110.50 include this section of roadway.

KY 876 EB approaching US 25

Project Issues:

- *SAFETY*
- *CAPACITY (TRAFFIC)*
- Majority of collisions are rear end crashes.
- Traffic capacity is an issue due to congestion during peak hours.

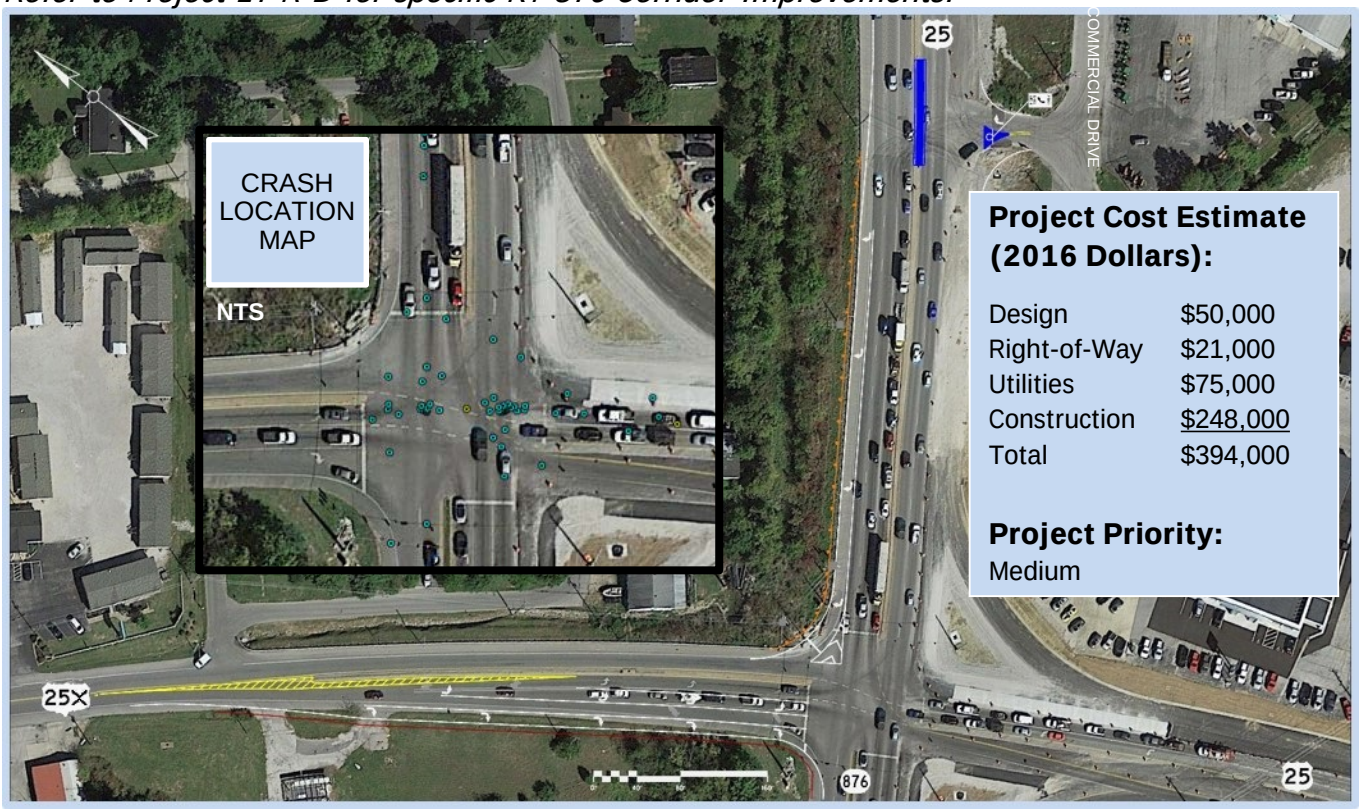
US 25 NB approaching KY 876

SOLUTION

Project Solution:

- Add right turn lanes at US 25X to KY 876 and WB US 25 to NB US 25X.
- Make Commercial Drive right-in/right-out only and close median opening on US 25.

Refer to Project LT R-D for specific KY 876 Corridor Improvements.



Project Cost Estimate (2016 Dollars):

Design	$50,000
Right-of-Way	$21,000
Utilities	$75,000
Construction	$248,000
Total	$394,000

Project Priority:
Medium

RICHMOND BEREA SUA	**Project Location:** US 25 (MP 16.199) at KY 52 (Irvine St) (MP 12.970) Intersection	**Project #:** LT R-M

PROBLEM

Project Background:

US 25 S ADT = 24,870 / LOS = B / CCRF = 1.75
US 25 N ADT = 23,080 / LOS = B / CCRF = 0.76
KY 52 W ADT = 6,820 / LOS = C / CCRF = 1.17
KY 52 E ADT = 19,840 / LOS = A / CCRF = 0.43

PIF B0025 110.50 and B0025 111.00 include this section of roadway.

KY 52 WB left turn queue at US 25

Project Issues:

- *SAFETY*
- *CAPACITY (TRAFFIC)*
- Majority of collisions are rear end and angle crashes.
- Traffic capacity is an issue due to congestion during peak hours. Most extensive congestion in Richmond per KYTC.

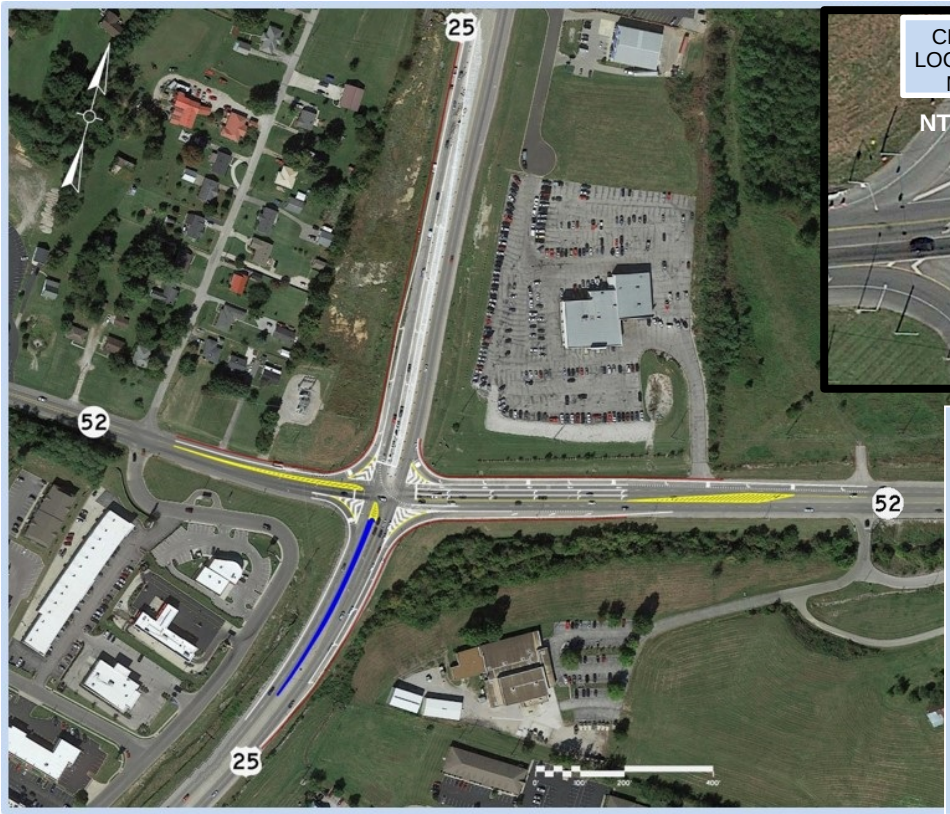
US 25 NB queue approaching KY 52

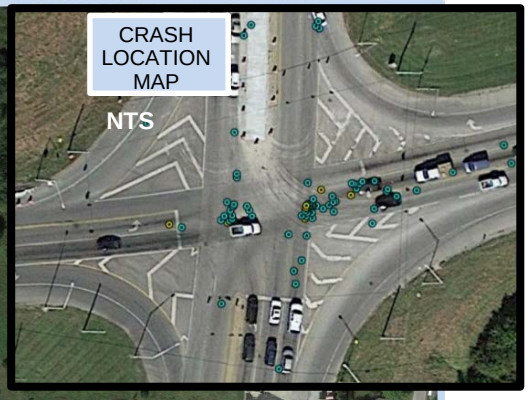
SOLUTION

Project Solution:

- Provide dual left turn lanes on KY 52 WB and US 25 SB.
- Extend dedicated right turn lane from US 25 SB to KY 52 WB.

Refer to Project LT R-B, LT R-H, and L R-C for specific KY 52 Corridor Improvements.





Project Cost Estimate (2016 Dollars):

Design	$156,000
Right-of-Way	$50,000
Utilities	$50,000
Construction	$780,000
Total	$1,036,000

Project Priority:
High

RICHMOND BEREA SUA

Project Location:
US 421 (MP 7.397) at KY 1016 (MP 4.246) Intersection

Project #:
LT M-A

PROBLEM

Project Background:

US 421 S ADT = 3,120 / LOS = B / CCRF = 0.83
US 421 N ADT = 5,180 / LOS = C / CCRF = 1.03
KY 1016 ADT = 4,440 / LOS = B / CCRF = 0.46

PIF D0421 1.00 includes this section of roadway.
Fatal Crash (2/18/2012 and 10/24/2012).

KY 1016 EB approach to US 421

Project Issues:

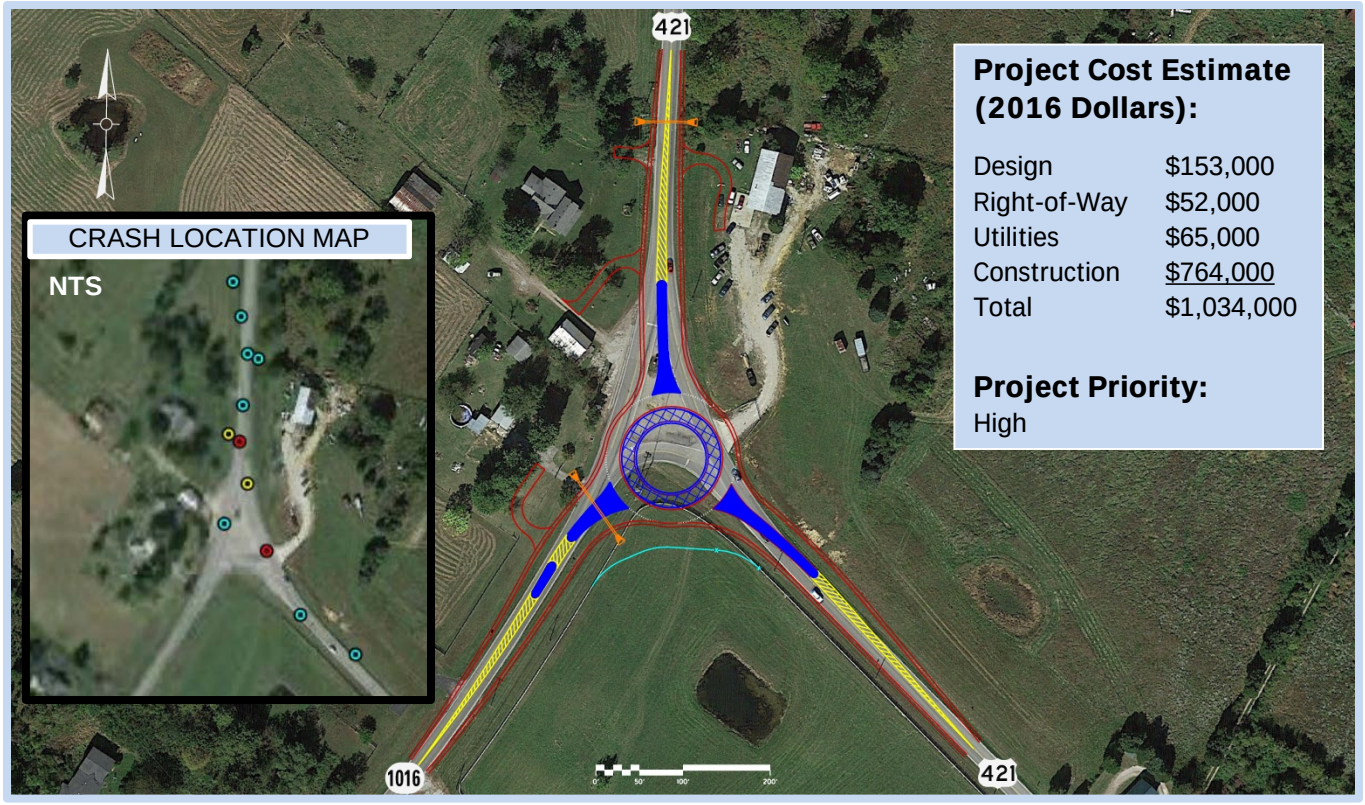
- *SAFETY*
- Majority of collisions are rear end crashes; raining.
- Two fatal collisions; weather dry and clear.

US 421 NB approach to KY 1016 intersection

SOLUTION

Project Solution:

- Evaluate the intersection for alternative traffic control design to realign access points and reduce speeds through the intersection. The roundabout shown is an example only. KYTC will specify solutions during the project's future design phase.



Project Cost Estimate (2016 Dollars):

Design	$153,000
Right-of-Way	$52,000
Utilities	$65,000
Construction	$764,000
Total	$1,034,000

Project Priority:
High

RICHMOND BEREA SUA	**Project Location:** US 25 Corridor (MP 9.570 – 9.617) from KY 499 to Pioneer Dr	**Project #:** LT M-B

PROBLEM

Project Background:

US 25 ADT = 7,940 / LOS = C / CCRF = 0.49
KY 499 ADT = 790 / LOS = B / CCRF = 1.57

PIF B0025 109.80 and PIF B0025 109.00 include this section of roadway.
Downhill approach in both directions with high speeds.

US 25 SB

Project Issues:

- *SAFETY*
- *CAPACITY (TRAFFIC)*
- Majority of collisions on US 25 are rear end crashes.
- Traffic capacity is an issue due to congestion during peak hours.

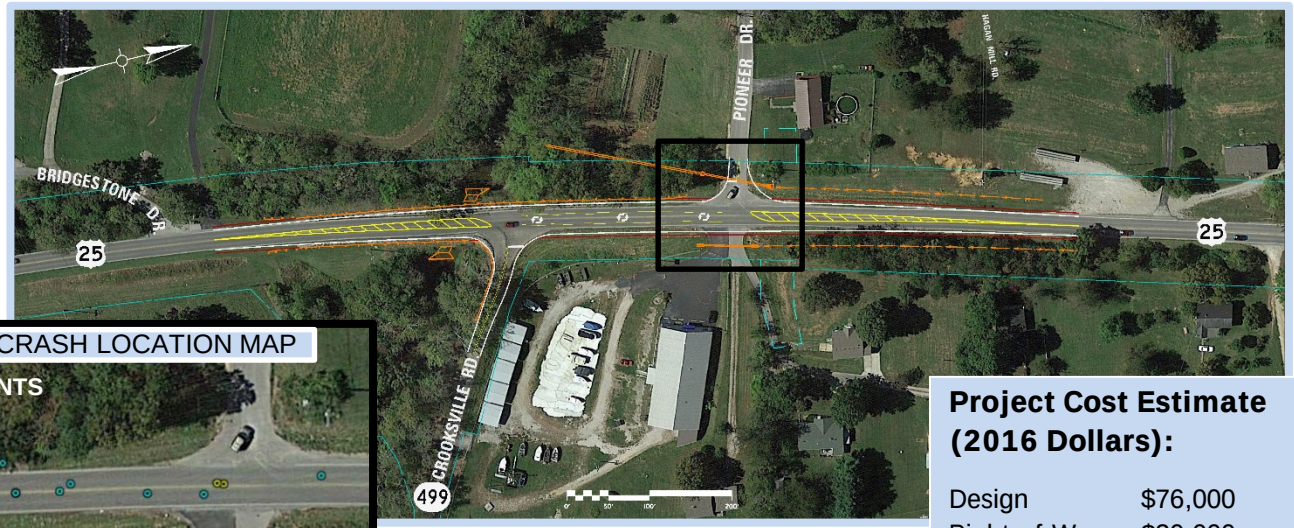
US 25 SB approaching KY 499

SOLUTION

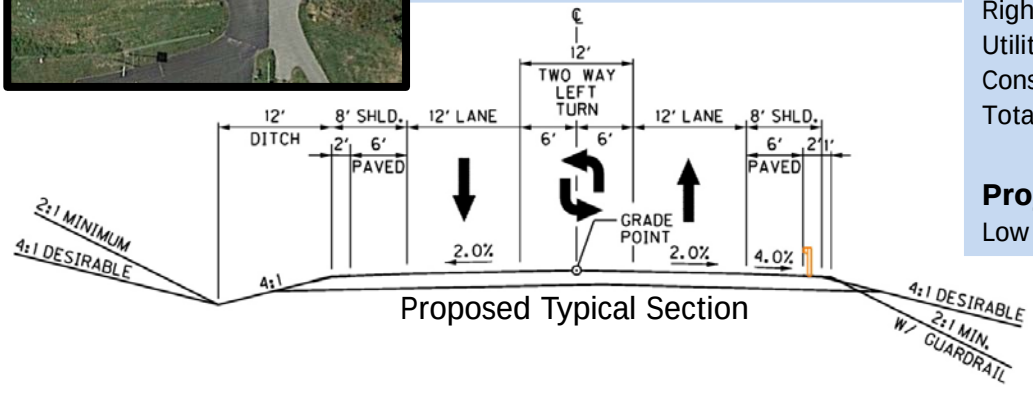
Project Solution:

- Add two-way left turn lane between KY 499 and Pioneer Drive.

Refer to Project ST M-G for adjacent Corridor Improvements.



CRASH LOCATION MAP
NTS



Proposed Typical Section

Project Cost Estimate (2016 Dollars):

Design	$76,000
Right-of-Way	$30,000
Utilities	$42,000
Construction	$381,000
Total	$529,000

Project Priority:
Low

RICHMOND BEREA SUA

Project Location:
KY 52 Corridor (MP 6.750 – 7.150) from Cavalier Ct to KY 2881

Project #:
LT M-C

PROBLEM

Project Background:

KY 52 W ADT = 4,140 / LOS = B / CCRF = 0.65
KY 52 E ADT = 5,850 / LOS = C / CCRF = 0.75
KY 2881 S ADT = 2,070 / LOS = B / CCRF = 0.74

KY 52 EB east of KY 2881

Project Issues:

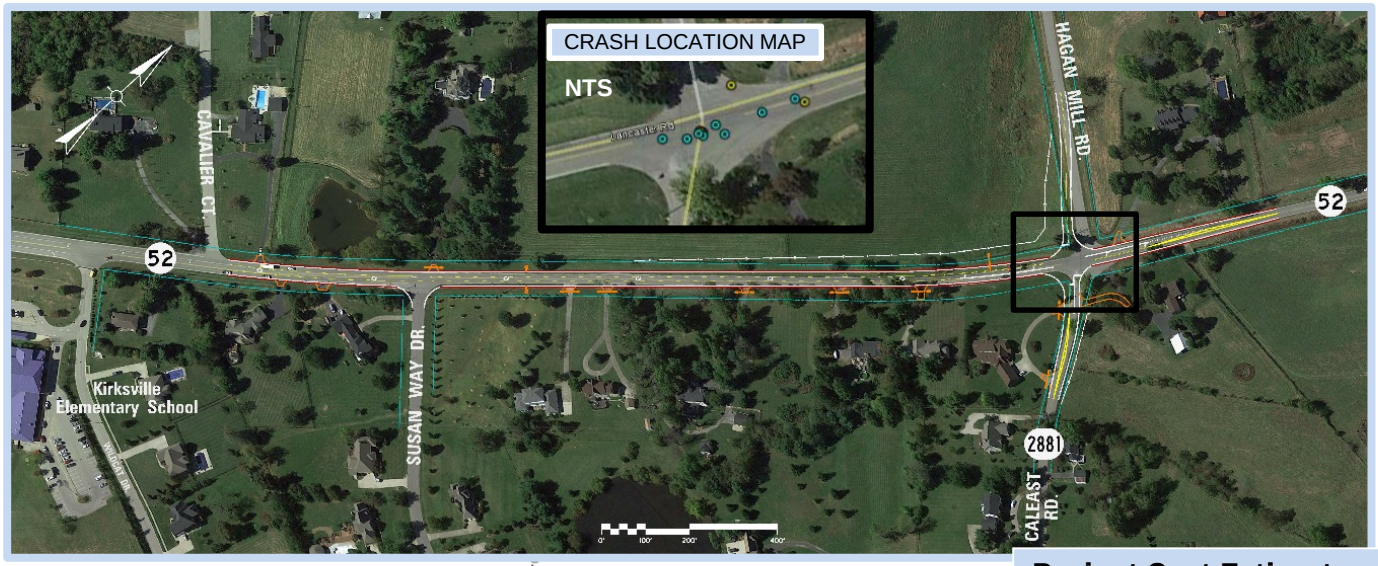
- *SAFETY*
- *ROADWAY DEFICIENCIES (DRAINAGE)*
- Majority of collisions are opposing left turn and angle crashes.

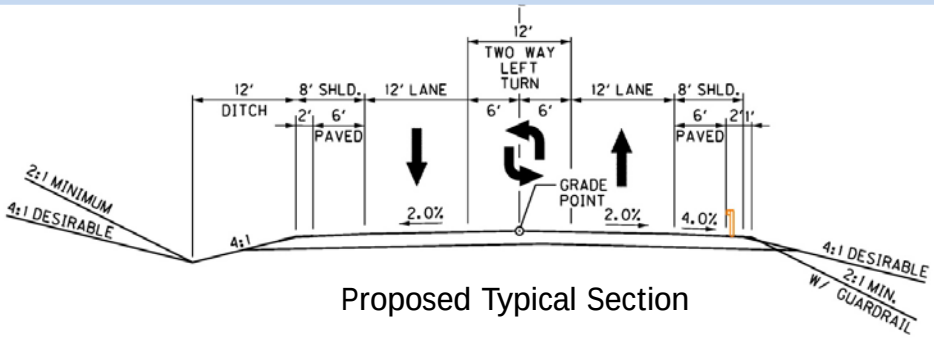
KY 2881 NB approaching KY 52

SOLUTION

Project Solution:

- Construct a three lane section between Kirksville Elementary School and KY 2881 with left turn lane on KY 52 WB approaching KY 2881.





Proposed Typical Section

Project Cost Estimate (2016 Dollars):

Design	$155,000
Right-of-Way	$110,000
Utilities	$350,000
Construction	$773,000
Total	$1,388,000

Project Priority:
Medium

RICHMOND BEREA SUA	**Project Location:** **US 421 Corridor (MP 9.250 – 9.741) from KY 3376 (Old US 25) to KY 3376**	**Project #:** **LT M-D**

PROBLEM

Project Background:

US 421 ADT = 5,180 / LOS = C / CCRF = 1.03

PIF B0421 2.00 includes this section of roadway.

US 421 NB at Kings Trace Drive intersection

Project Issues:

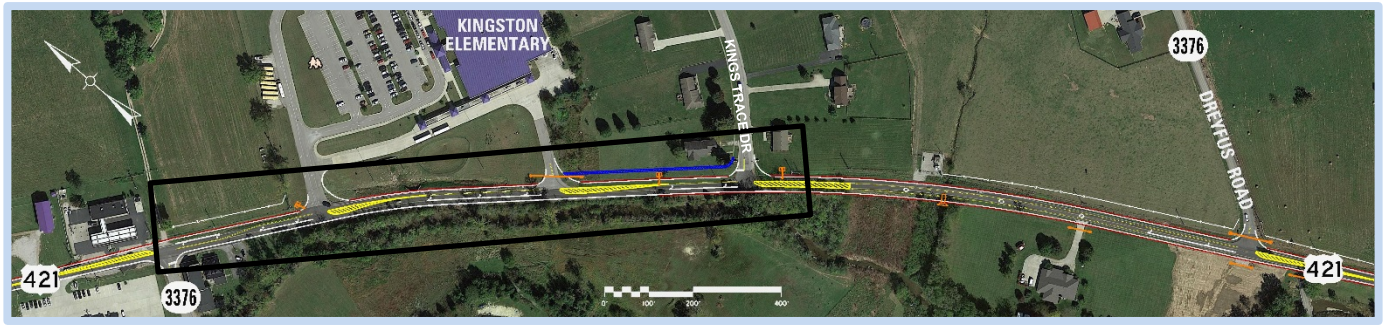
- *SAFETY*
- *MODAL INTER-RELATIONSHIPS (MULTI-MODAL)*

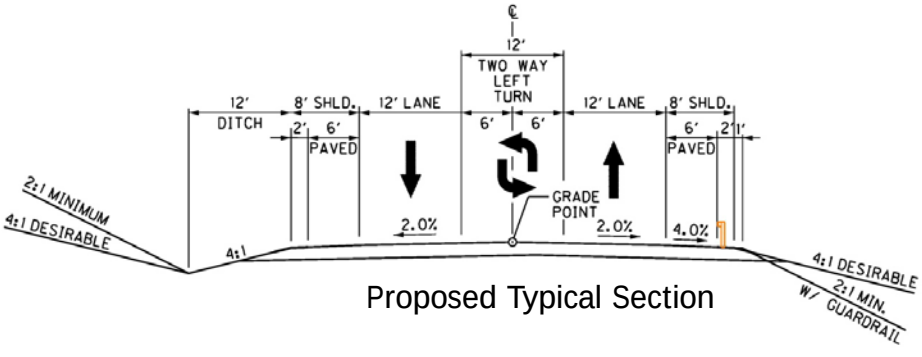
US 421 NB approaching northern KY 3376 intersection

SOLUTION

Project Solution:

- Widen US 421 to three lane typical section.
- Install sidewalk to provide connection between Kings Trace Drive and Kingston Elementary School.





Proposed Typical Section

Project Cost Estimate (2016 Dollars):

Design	$148,000
Right-of-Way	$400,000
Utilities	$375,000
Construction	$739,000
Total	$1,662,000

Project Priority:
Medium

Note: Bicycle and pedestrian accommodations are suggested. Shared use facility maintenance is the responsibility of local governments.

RICHMOND BEREA SUA

Project Location:
US 421 (MP 12.069) at Bluegrass Army Depot Intersection

Project #:
LT M-E

PROBLEM

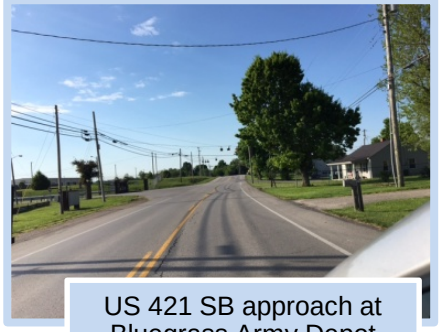
Project Background:

US 421 ADT = 7,030 / LOS = C / CCRF = 0.39

PIF D0421 1.00 includes this section of roadway.

Project Issues:

- *SAFETY*
- Difficult left turn movements onto US 421 for Bluegrass Army Depot heavy vehicles during peak hours.



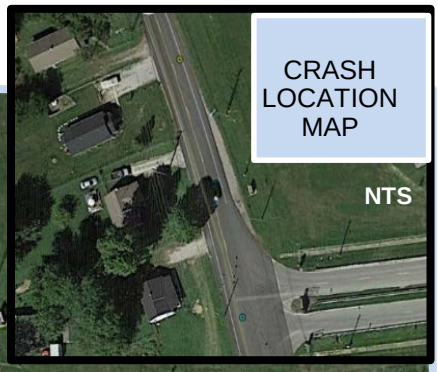
US 421 SB approach at Bluegrass Army Depot

View of sight distance issue for Rice Lane at US 421 intersection

SOLUTION

Project Solution:

- Conduct signal warrant analysis at intersection to determine if signal is recommended based on traffic counts.
- If so, realign Rice Lane to be fourth leg of intersection.



Project Cost Estimate (2016 Dollars):

Design	$49,000
Right-of-Way	$300,000
Utilities	$50,000
Construction	$243,000
Total	$642,000

Project Priority:
Low

RICHMOND BEREA SUA

Project Location:
KY 595 Corridor (MP 5.364 – 6.618) Guynn Rd to 1.097 miles west of Ogg Cemetery Rd

Project #:
LT M-F

PROBLEM

Project Background:

KY 595 ADT = 740 / LOS = B / CCRF = 1.36

West of Guynn Road, typical section is two lanes with no shoulder. Additionally utilities are located just off of the roadway inside the clear zone.

KY 595 NB at intersection with Guynn Road

KY 595 NB west of Guynn Road

Project Issues:

- *SAFETY*
- Majority of incidents are single vehicle.

SOLUTION

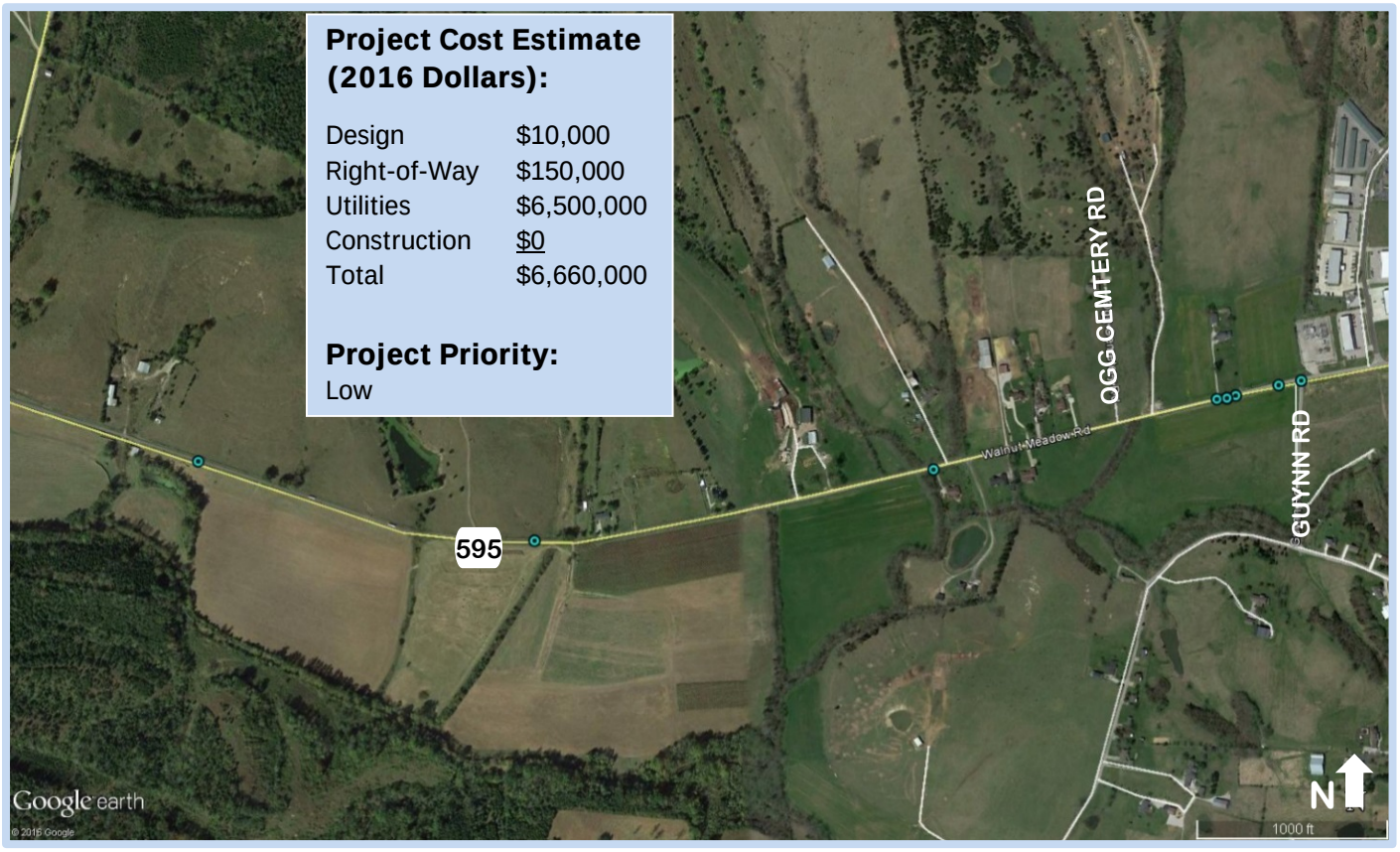
Project Solution:

- Move utility poles to provide adequate clear zone for roadway.

Project Cost Estimate (2016 Dollars):

Design	$10,000
Right-of-Way	$150,000
Utilities	$6,500,000
Construction	$0
Total	$6,660,000

Project Priority:
Low



RICHMOND BEREA SUA	**Project Location:** US 421 (MP 12.570) at US 25 (MP 12.030) Intersection	**Project #:** LT M-G

PROBLEM

Project Background:

US 421 S ADT = 7,030 / LOS = C / CCRF = 0.39
US 25 N ADT = 17,710 / LOS = E / CCRF = 0.46
US 25 S ADT = 7,940 / LOS = A / CCRF = 0.3
Spot Crash Rate on US 421 CCRF = 1.57

SYP 7-251 addresses US 25 north of intersection.
PIF B0025 109.00 includes this section of roadway.
PIF B0421 1.00 includes this section of roadway.

NB approach on US 421

Fatal Crash (1/19/2013)

Project Issues:

- *SAFETY*

SOLUTION

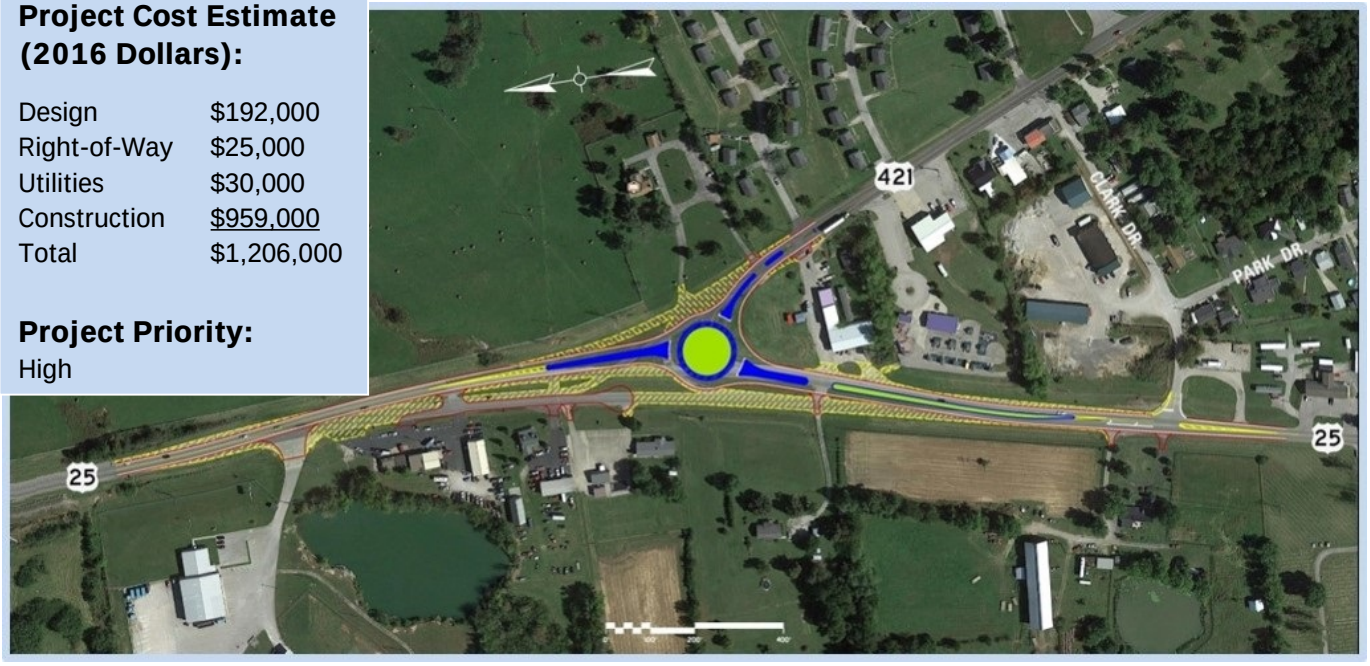
Project Solution:

- Evaluate the intersection for alternative traffic control design to realign access points and reduce speeds through the intersection. The Bluegrass Army Depot has changed traffic patterns which may affect previous design considerations. KYTC recommends a study.

Project Cost Estimate (2016 Dollars):

Design	$192,000
Right-of-Way	$25,000
Utilities	$30,000
Construction	$959,000
Total	$1,206,000

Project Priority:
High



RICHMOND BEREA SUA	**Project Location:** US 421 (MP 10.354) at KY 499 (MP 1.449) Intersection	**Project #:** LT M-H

PROBLEM

Project Background:

US 421 ADT = 7,030 / LOS = C / CCRF = 0.39
KY 499 W ADT = 790 / LOS = B / CCRF = 1.57
KY 499 E ADT = 1,050 / LOS = D / CCRF = 0.48

PIF B0421 2.00 includes this section of roadway.

View from KY 499 EB across US 421 of offset approaches at KY 499 and Hays Fork Lane

Project Issues:

- *SAFETY*
- *CAPACITY (TRAFFIC)*
- Majority of collisions are single vehicle crashes.
- Traffic capacity is an issue due to congestion during peak hours.

US 421 NB approaching KY 499

SOLUTION

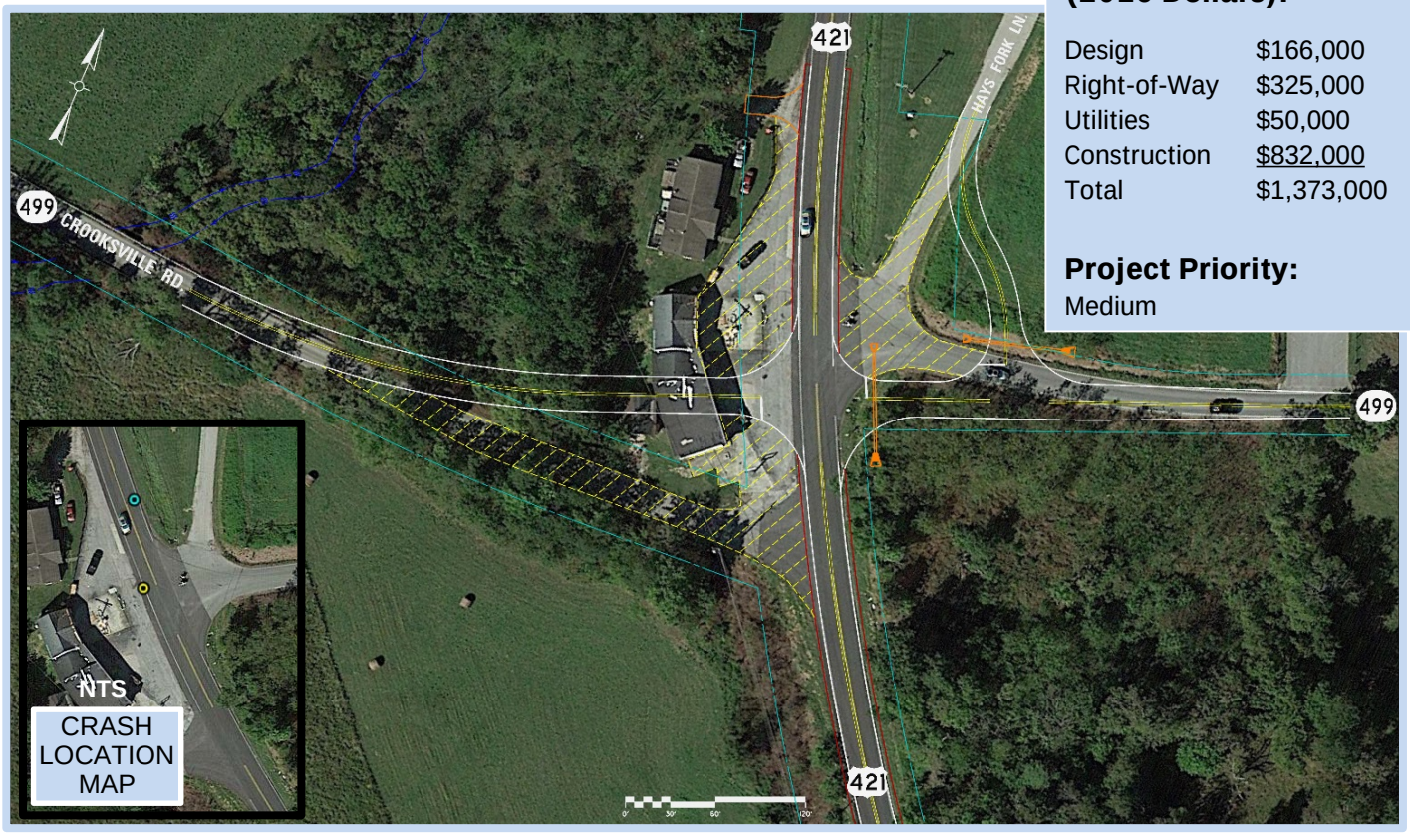
Project Solution:

- Paint stop bars and lane lines on KY 499.
- Re-align offset approaches to a single intersection.

Project Cost Estimate (2016 Dollars):

Design	$166,000
Right-of-Way	$325,000
Utilities	$50,000
Construction	$832,000
Total	$1,373,000

Project Priority:
Medium



RICHMOND BEREA SUA

Project Location:
KY 1016 (MP 0.801 – 1.366) and KY 3376 (MP 0.000 – 0.175) Corridors

Project #:
LT B-A

PROBLEM

Project Background:

KY 1016 ADT = 10,120 / LOS = D / CCRF = 0.67
KY 3376 ADT = 4,400 / LOS = B / CCRF = 0.46
Spot Crash Rate on KY 1016 CCRF = 2.26
Spot Crash Rate on KY 3376 CCRF = 1.62

KY 1016 EB approaching Short Line Pike

Project Issues:

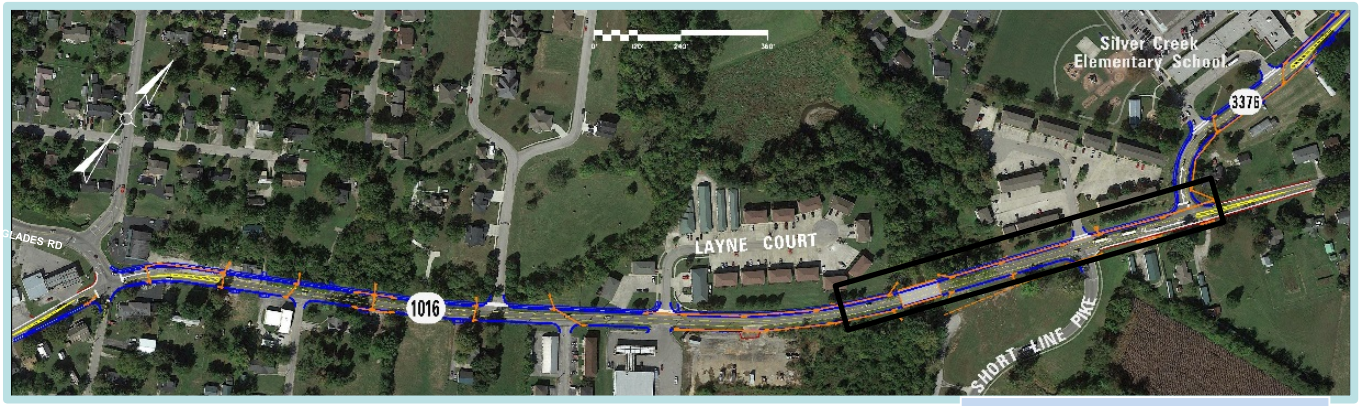
- *SAFETY*
- *CAPACITY (TRAFFIC)*
- *MODAL INTER-RELATIONSHIPS (MULTI-MODAL)*
- Majority of collisions are rear end crashes.
- Traffic capacity is an issue due to congestion during peak hours.

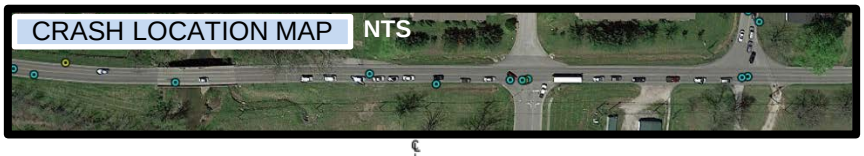
KY 1016 WB approaching Short Line Pike

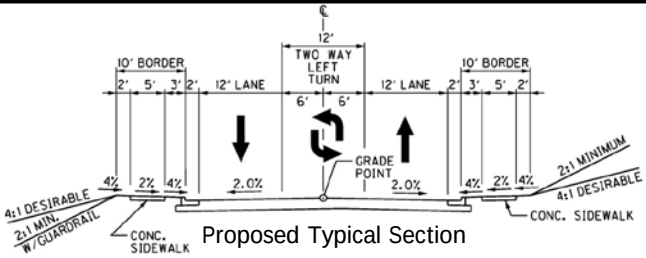
SOLUTION

Project Solution:

- Add two-way left turn lane on KY 1016 EB between Layne Court and KY 3376 (Old US 25) and KY 3376 from KY 1016 through Silver Creek Elementary entrances.
- Provide pedestrian accommodations from Silver Creek Elementary School to Glades Road.







Proposed Typical Section

Project Cost Estimate (2016 Dollars):

Design	$543,000
Right-of-Way	$715,000
Utilities	$900,000
Construction	$2,715,000
Total	$4,873,000

Project Priority:
Medium

Note: Bicycle and pedestrian accommodations are suggested. Shared use facility maintenance is the responsibility of local governments.

RICHMOND BEREA SUA

Project Location:
KY 21 Corridor (MP 6.450 – 8.360)

Project #:
LT B-B

PROBLEM

Project Background:

KY 21 ADT = 6,610 / LOS = D / CCRF = 0.74
Spot Crash Rate on KY 21 CCRF = 1.06

Two lane road west of Old Wallaceton Road (Old KY 21) with no shoulder.

KY 21 SB approaching Old KY 21

Project Issues:

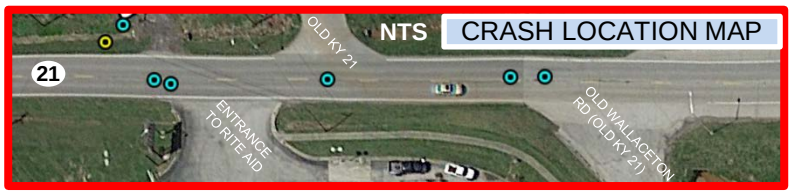
- *CAPACITY (TRAFFIC)*
- *SAFETY*
- Traffic capacity is an issue due to congestion during peak hours.

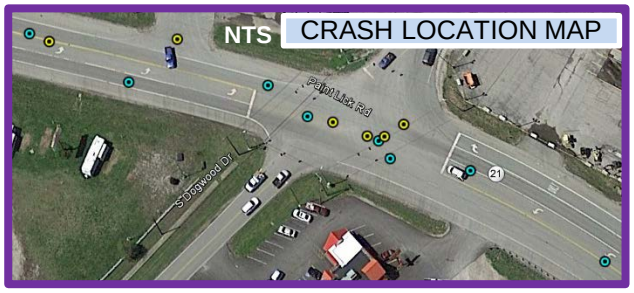
KY 21 SB approach at Dogwood Drive

SOLUTION

Project Solution:

- Access management strategies to reduce the number of access points adjacent to traffic signals and re-aligning the Old KY 21/entrance to Rite Aid intersection to a single location.





Project Cost Estimate (2016 Dollars):

Design	$58,000
Right-of-Way	$0
Utilities	$0
Construction	$289,000
Total	$347,000

Project Priority:
Low

RICHMOND BEREA SUA	**Project Location:** KY 21 (MP 9.120) at US 25 (2.863) Intersection	**Project #:** LT B-C

PROBLEM

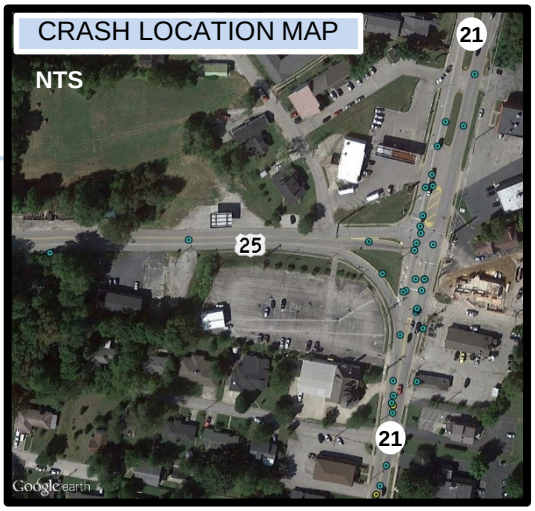
Project Background:

KY 21 ADT = 14,220 / LOS = A / CCRF = 1.51
US 25 ADT = 13,890 / LOS = N/A / CCRF = 1.28

KY 21 EB approaching US 25

Project Issues:

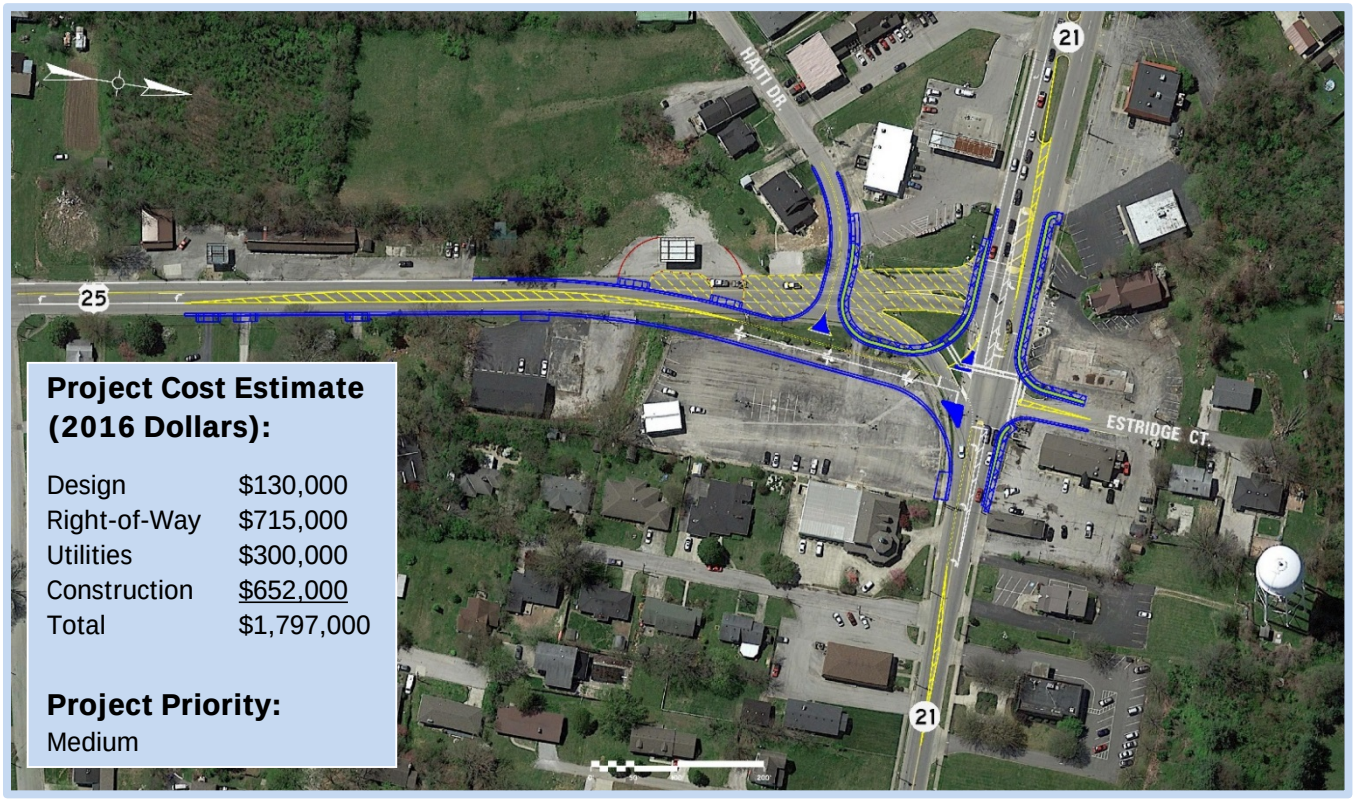
- *SAFETY*
- Sight distance issues.
- Offset intersection.



SOLUTION

Project Solution:

- Re-align US 25 to connect with KY 21 at Estridge Court to eliminate the offset intersection.



Project Cost Estimate (2016 Dollars):

Design	$130,000
Right-of-Way	$715,000
Utilities	$300,000
Construction	$652,000
Total	$1,797,000

Project Priority:
Medium

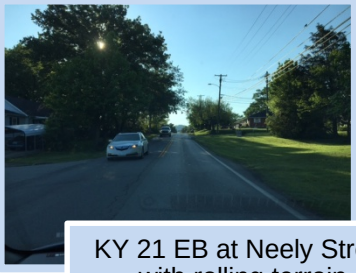
RICHMOND BEREA SUA	**Project Location:** KY 21 Corridor (MP 10.053 – 10.294) from west of Neely St to O'Donnell Ln	**Project #:** LT B-D

PROBLEM

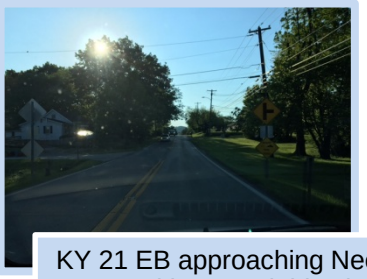
Project Background:

KY 21 ADT = 1,600 / LOS = B / CCRF = 0.62
Spot Crash Rate on KY 21 CCRF = 0.39

Two lane road with minimal shoulders and rolling terrain creates sight distance issues. Also, the national TransAmerica Bike Trail follows KY 21 through this section of the study area. Bicycle surveys have indicated a safety issue along this corridor with reports of many near miss crashes.



KY 21 EB at Neely Street with rolling terrain



KY 21 EB approaching Neely Street with unreadable signs

Project Issues:

- *SAFETY*
- *MODAL INTER-RELATIONSHIPS (MULTI-MODAL)*

SOLUTION

Project Solution:

- Construct 6' paved shoulders along route to improve vehicle recovery opportunity and bicycle accommodations.

Project Cost Estimate (2016 Dollars):

Design	$61,000
Right-of-Way	$60,000
Utilities	$50,000
Construction	$305,000
Total	$476,000

Project Priority:
Low

Note: Bicycle and pedestrian accommodations are suggested. Shared use facility maintenance is the responsibility of local governments.

RICHMOND BEREA SUA

Project Location:
US 25 (MP 3.810 – 3.894), KY 21 (MP 9.115 – 9.151), KY 595 (MP 2.321 – 2.397) Intersection

Project #:
LT B-E

PROBLEM

Project Background:

US 25 ADT =8,510 / KY 21 ADT = 7,100 / KY 595 ADT = 6,440

The intersection of US 25, KY 21, and KY 595, known as the Berea Triangle, has offset intersections, on-street parking, a public park area, and multiple pedestrian crossings serving the historic Boone Tavern and Berea College. The TransAmerica Bike Trail, a national bicycle route, passes through the intersection from north KY 595 to west KY 21.

US 25 southbound at KY 595 north of intersection

US 25 northbound at KY 21 southwest of intersection

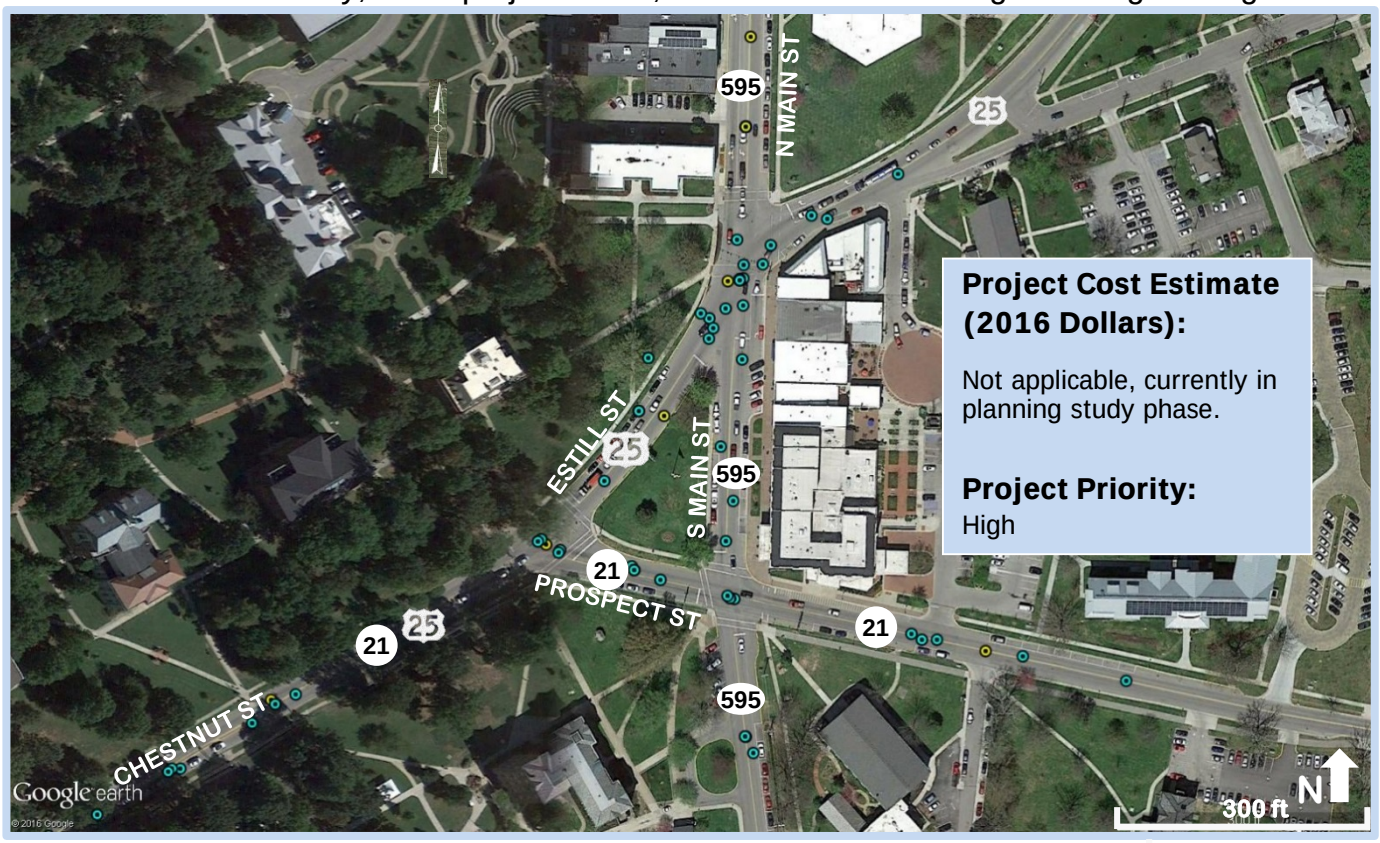
Project Issues:

- *SAFETY*
- *CAPACITY (TRAFFIC)*
- *MODAL INTER-RELATIONSHIPS (MULTI-MODAL)*

SOLUTION

Project Solution:

Berea College initiated a study in 2015 to evaluate and recommend solutions for transportation issues at the Berea Triangle intersection. Berea College, KYTC District 7, and local officials and stakeholders have been involved in the development of alternatives. Recommendations from the Berea College study are not currently available; however, project solutions advanced from the Berea College study are recommended for addressing issues at this location. The study, KYTC project 7-236, was contracted to Integrated Engineering.



Project Cost Estimate (2016 Dollars):

Not applicable, currently in planning study phase.

Project Priority:
High

RICHMOND BEREA SUA

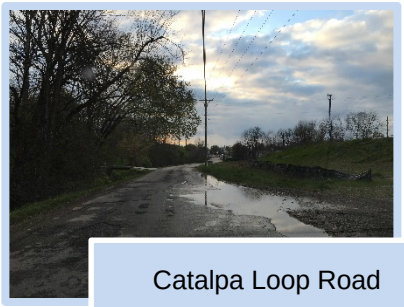
Project Location:
Catalpa Loop Rd / Old Irvine Rd at KY 52 (MP 13.511)

Project #:
L R-A

PROBLEM

Project Background:

This road serves as an alternative entrance to Lake Reba, with easier access to the pool, mini golf, and fishing activities due to its location on the north side of the complex.



Catalpa Loop Road

Project Issues:

- *SAFETY*
- *ROADWAY DEFICIENCIES (DRAINAGE)*
- Difficult intersection to navigate due to skewed angle.
- High speed on KY 52.

Project Cost Estimate (2016 Dollars):

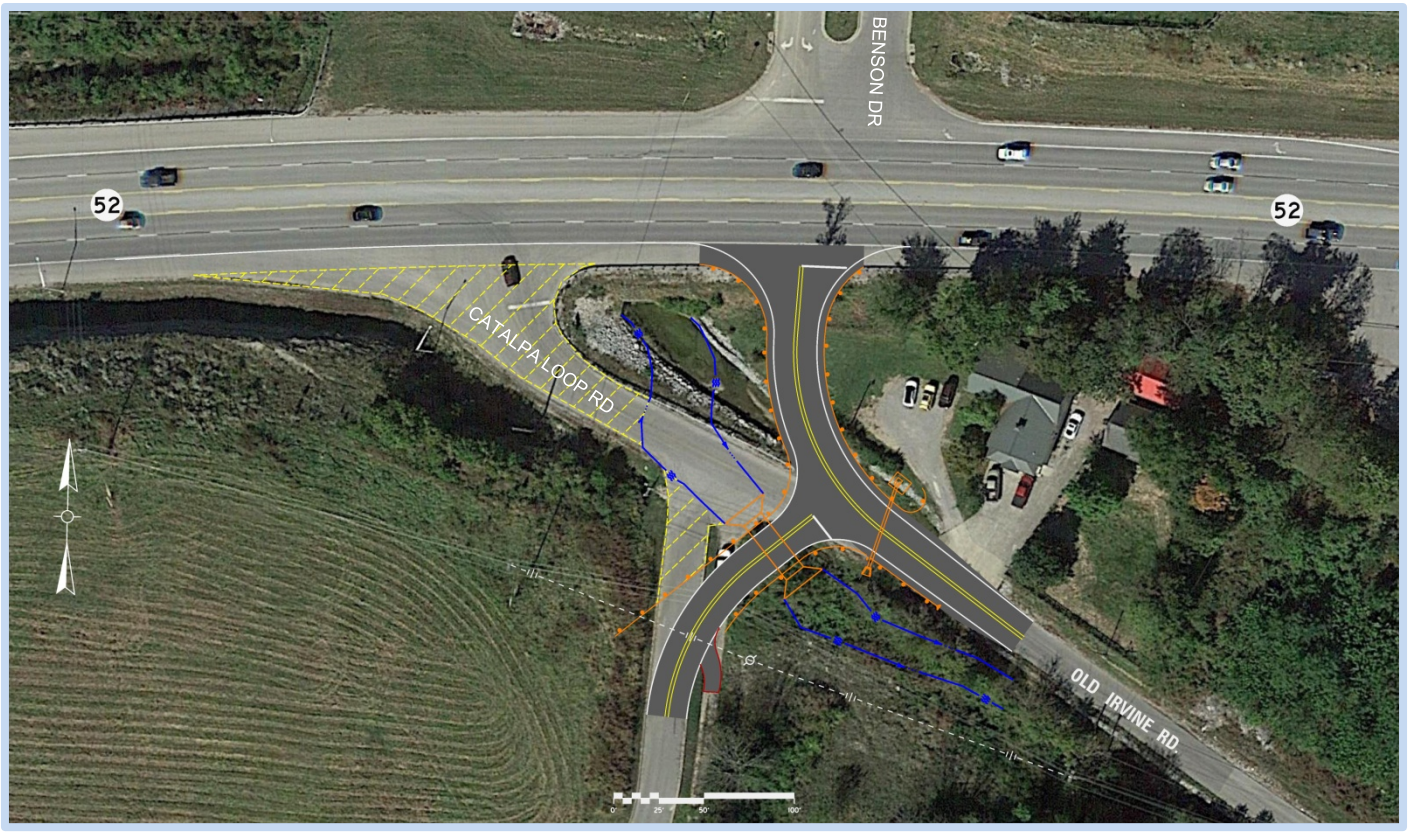
Design	$71,000
Right-of-Way	$225,000
Utilities	$35,000
Construction	$353,000
Total	$684,000

Project Priority:
High

SOLUTION

Project Solution:

- Improve drainage capacity to reduce flooding.
- Improve Catalpa Loop Road approach to KY 52, repaving to a two lane typical section.



RICHMOND BEREA SUA	**Project Location:** Multiple Locations in Richmond (US 25X, Four Mile Rd, and Keeneland Dr)	**Project #:** L R-B

PROBLEM

Project Background:

Improving the drainage infrastructure and addressing the storm water/sewer system serving Richmond has been a priority for the community. Recent completion of the Water Street project is an example of the infrastructure improvements being prioritized. As development continues to occur, large areas of natural surfaces that absorb water are being replaced with houses, roads, parking lots, and other structures that do not allow water to be absorbed, leading to increased runoff and impacts flooding of the road system. Monitoring storm water drainage capacity is critical to maintaining the transportation system, as normal levels of rainfall often lead to flooding conditions along certain corridors.

Project Issues:

- *ROADWAY DEFICIENCIES (DRAINAGE)*
- *SAFETY*
- Storm water runoff and clogged drainage structures.

Project Cost Estimate (2016 Dollars):

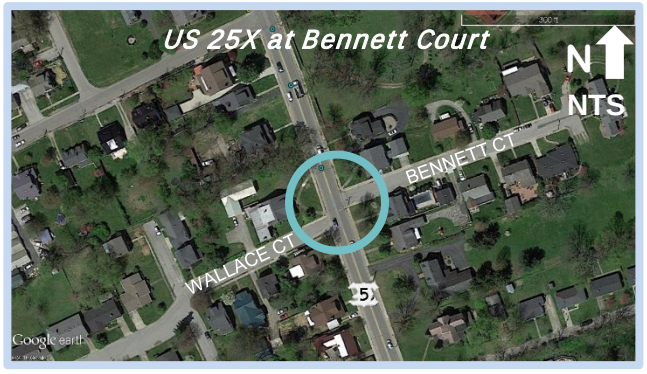
Project costs will depend on solutions identified, prioritized, and implemented.

Project Priority:
Medium

SOLUTION

Project Solution:

- Increase maintenance visits to ensure maximum drainage capacity remains available.
- Improve capacity of drainage systems.
- Consider geometric improvements to reduce flash flood events.



RICHMOND BEREA SUA

Project Location:
KY 52 at US 25 Pedestrian Access to Lake Reba

Project #:
L R-C

PROBLEM

Project Background:

Current facilities do not provide pedestrian access to Lake Reba from either KY 52 or US 25. Pedestrians must walk on the shoulder to access the pool and park.

US 25 right turn to KY 52 EB

Project Issues:

- *MODAL INTER-RELATIONSHIPS (MULTI-MODAL)*
- Lack of sidewalks.
- High speed on KY 52 and US 25.

Project Cost Estimate (2016 Dollars):

Design	$146,000
Right-of-Way	$0
Utilities	$73,000
Construction	$730,000
Total	$949,000

Project Priority:
Medium

SOLUTION

Project Solution:

- Install sidewalk from KY 52 to park.

Note: Bicycle and pedestrian accommodations are suggested. Shared use facility maintenance is the responsibility of local governments.

RICHMOND BEREA SUA

Project Location:
KY 876 (MP 8.327) at Veterans Blvd Intersection

Project #:
L R-D

PROBLEM

Project Background:

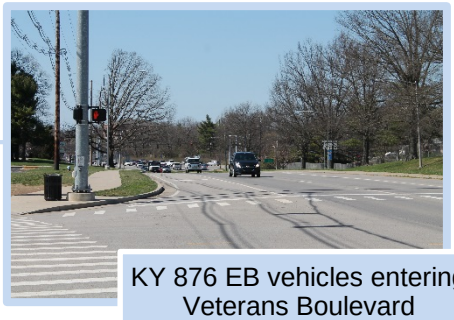
KY 876 ADT = 26,890 / LOS = B / CCRF = 2.55

PIF D0876 146.10 includes this section of roadway.

KY 876 EB approaching Veterans Boulevard

Project Issues:

- *MODAL INTER-RELATIONSHIPS (MULTI-MODAL)*
- Pedestrian connectivity is needed.



KY 876 EB vehicles entering Veterans Boulevard intersection

SOLUTION

Project Solution:

- Add sidewalk on NB approach of Veteran's Boulevard.

Refer to Project LT R-D for KY 876 Corridor Improvements.

Project Cost Estimate (2016 Dollars):

Design	$3,000
Right-of-Way	$0
Utilities	$1,300
Construction	$13,000
Total	$17,300

Project Priority:
Low

Note: Bicycle and pedestrian accommodations are suggested. Shared use facility maintenance is the responsibility of local governments.

RICHMOND BEREA SUA	**Project Location:** Neighborhood off KY 2881 and KY 2877	**Project #:** L M-A

PROBLEM

Project Background:

Madison County Schools Transportation noted that the following locations were identified as problems during the winter months for black ice development.

Project Issues:

- *SAFETY*
- *MODAL INTER-RELATIONSHIPS (MULTI-MODAL)*

Project Cost Estimate (2016 Dollars):

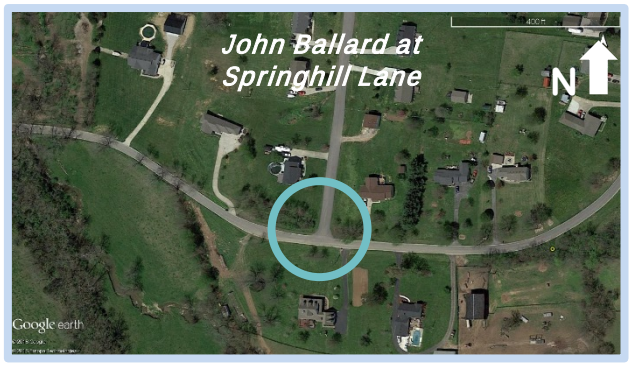
Design	$500
Right-of-Way	$0
Utilities	$0
Construction	$32,500
Total	$33,000

Project Priority:
Medium

SOLUTION

Project Solution:

- Assess pavement treatment on downhill approach and determine appropriate action to counteract black ice resulting from water runoff.
- Consider bicycle and pedestrian accommodations to improve neighborhood connectivity.



Note: Bicycle and pedestrian accommodations are suggested. Shared use facility maintenance is the responsibility of local governments.

RICHMOND BEREA SUA

Project Location:
Goggins Ln / KY 169 to KY 876 Corridor

Project #:
L M-B

PROBLEM

Project Background:

Goggins Lane is a three lane typical section with sidewalk that serves multiple neighborhoods. Sidewalks are in need of repair. Also, additional pedestrian connectivity to Kit Carson Elementary School on KY 169 is recommended.

KY 169 EB approach at Goggins Lane

Project Issues:

- *MODAL INTER-RELATIONSHIPS (MULTI-MODAL)*
- No pedestrian connection at KY 876 or KY 169.

SOLUTION

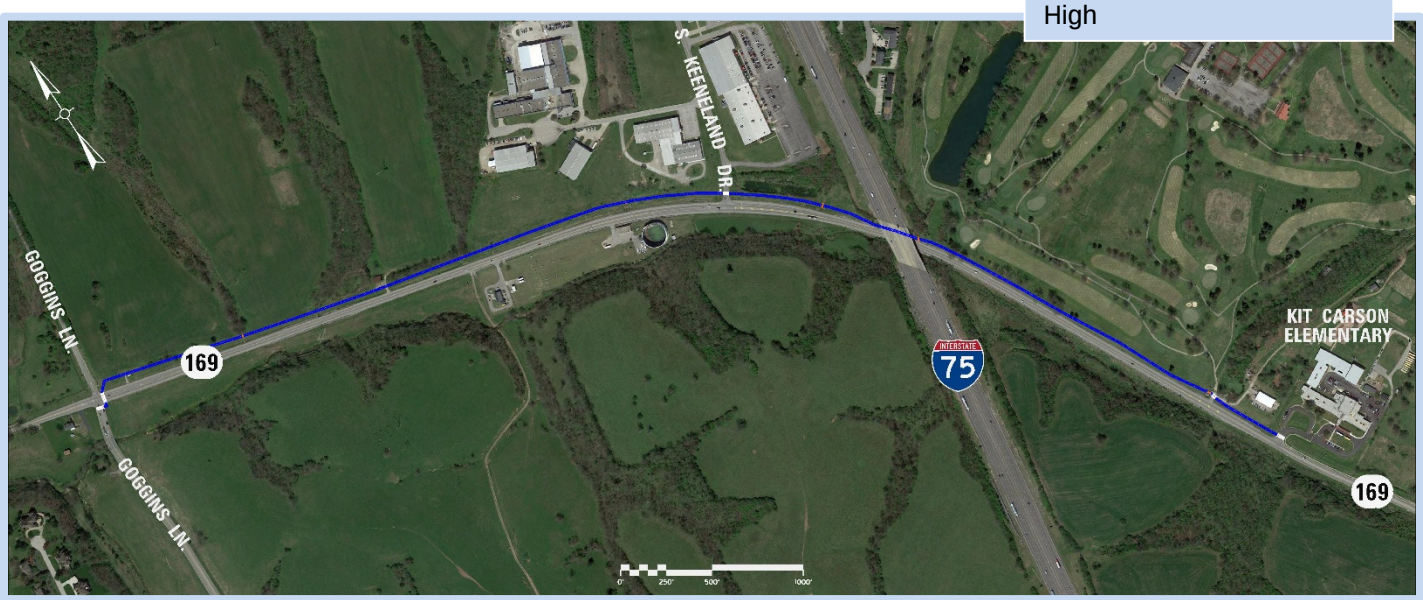
Project Solution:

- Repair existing sidewalk on Goggins Lane and provide sidewalk to Kit Carson Elementary School on KY 169.

Project Cost Estimate (2016 Dollars):

Design	$84,000
Right-of-Way	$0
Utilities	$0
Construction	$416,000
Total	$500,000

Project Priority:
High



Note: Bicycle and pedestrian accommodations are suggested. Shared use facility maintenance is the responsibility of local governments.

RICHMOND BEREA SUA

Project Location:
Baugh St at Oakwood Dr Intersection

Project #:
L B-A

PROBLEM

Project Background:

Baugh Street is currently an access point to Shannon Johnson Elementary. The street is difficult to navigate due to on-street parking from residents leaving one shared lane for both directions, and missing pavement markings.

Baugh Street EB from Shannon Johnson Elementary School

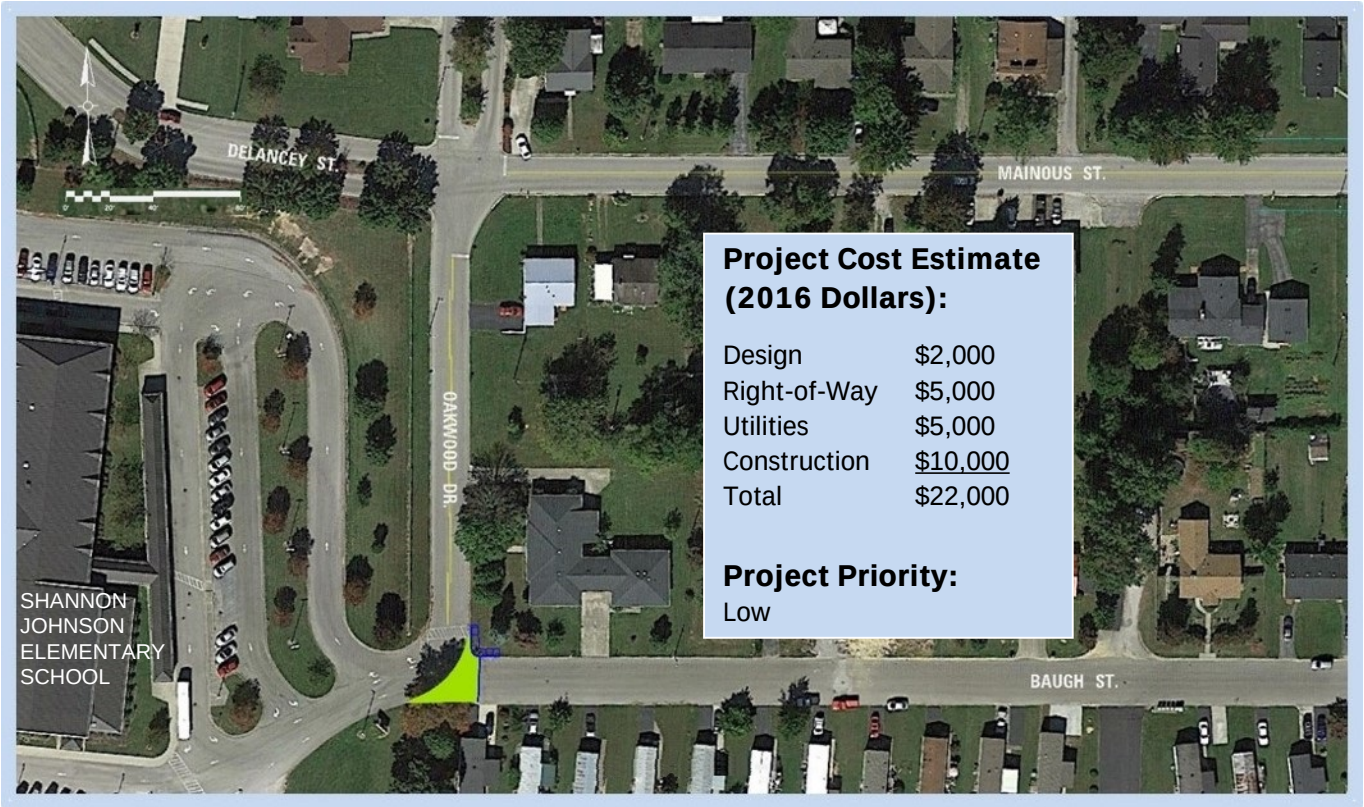
Project Issues:

- *SAFETY*
- *CAPACITY (TRAFFIC)*

SOLUTION

Project Solution:

- Close Baugh Street at Oakwood Drive.
- Eliminate through traffic for motor vehicles. Create bicycle and pedestrian only access from Baugh Street to Shannon Johnson Elementary School.



Project Cost Estimate (2016 Dollars):

Design	$2,000
Right-of-Way	$5,000
Utilities	$5,000
Construction	$10,000
Total	$22,000

Project Priority:
Low

Note: Bicycle and pedestrian accommodations are suggested. Shared use facility maintenance is the responsibility of local governments.

RICHMOND BEREA SUA

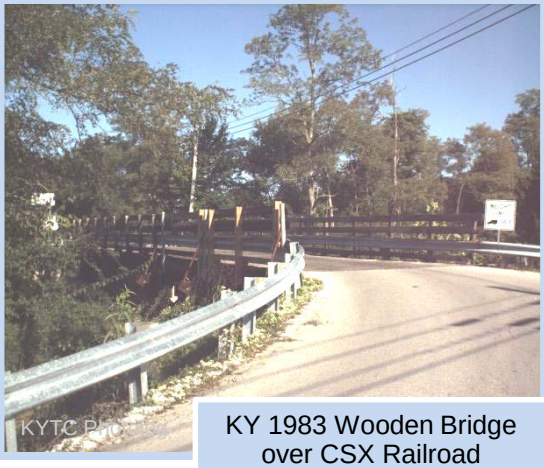
Project Location:
New Corridor – Farristown to KY 1983

Project #:
L B-B

PROBLEM

Project Background:

Industrial park access north along Mayde Road currently dead ends. Access to north of the industrial park is along KY 1983, a route that includes a wooden one-lane bridge over the CSX Railroad.



KY 1983 Wooden Bridge over CSX Railroad

Project Issues:

- *CAPACITY (TRAFFIC)*
- *SAFETY*

SOLUTION

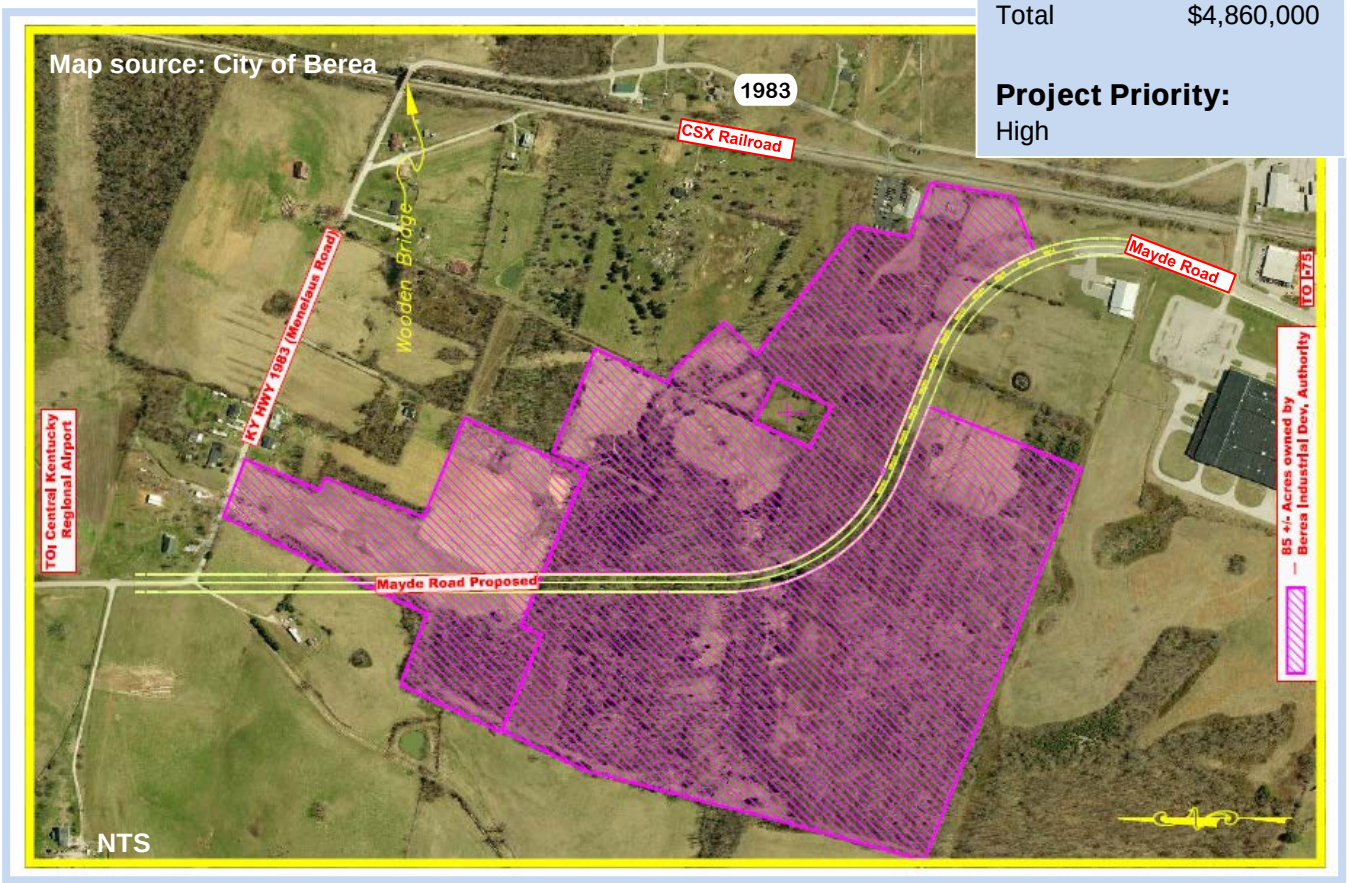
Project Solution:

- Improved connection to KY 1983, eliminates need to cross CSX Railroad on one lane weight limit bridge.
- Consider bicycle and pedestrian accommodations.

Project Cost Estimate (2016 Dollars):

Design	$900,000
Right-of-Way	$0
Utilities	$360,000
Construction	$3,600,000
Total	$4,860,000

Project Priority:
High



Note: Bicycle and pedestrian accommodations are suggested. Shared use facility maintenance is the responsibility of local governments.

RICHMOND BEREA SUA

Project Location:
New Corridor - Farristown Industrial Dr to US 25

Project #:
L B-C

PROBLEM

Project Background:

Currently, the Berea Industrial Park along Farristown Industrial Drive, and the Farristown Middle School are serviced by accessing KY 1983 south. KY 1983 north cannot accommodate large trucks or buses due to a wooden one-lane bridge over the CSX Railroad. This new corridor would provide a direct path to US 25.

US 25 NB connection point

Project Issues:

- *CAPACITY (TRAFFIC)*

Project Cost Estimate (2016 Dollars):

Design	$1,200,000
Right-of-Way	$0
Utilities	$400,000
Construction	$4,000,000
Total	$5,600,000

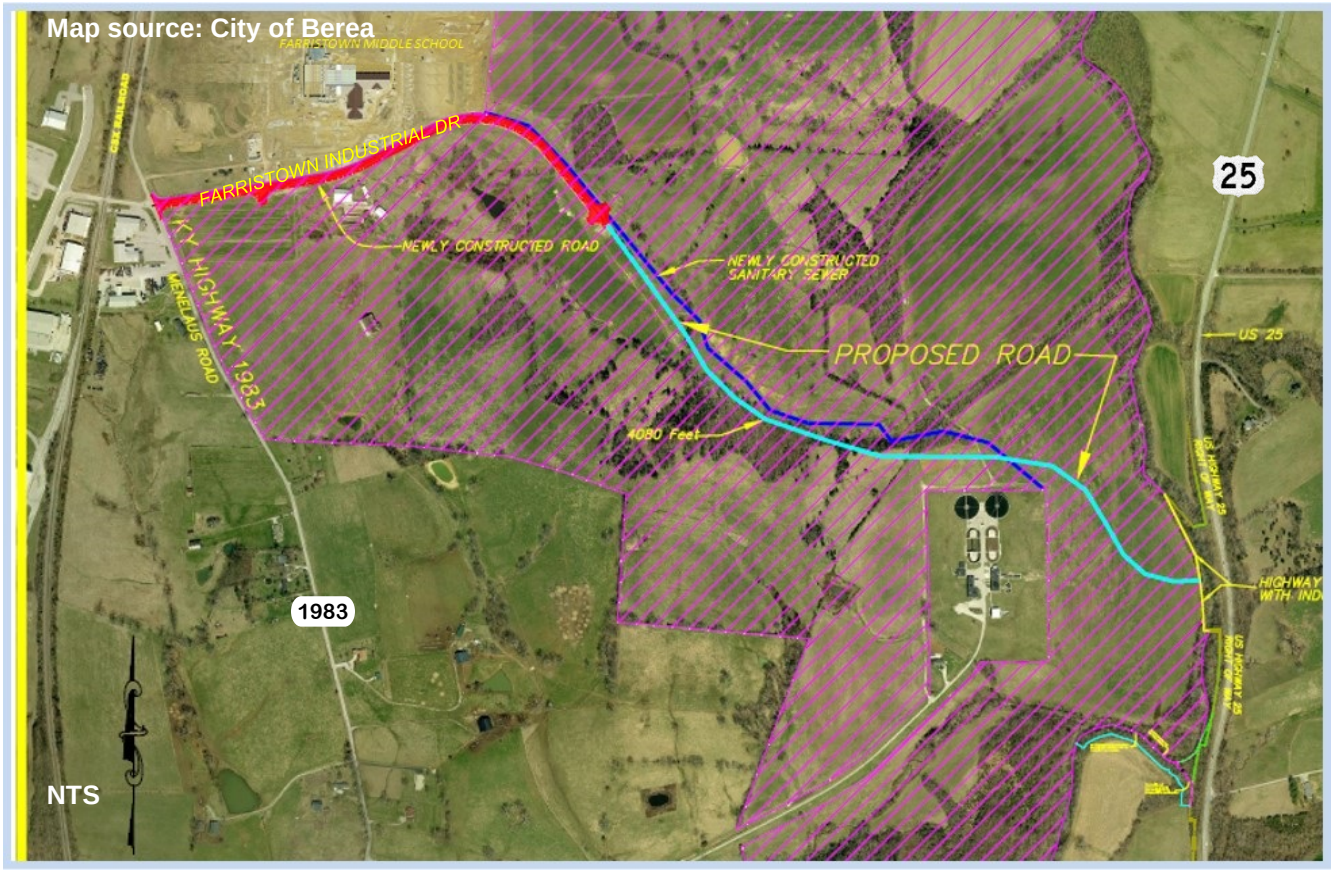
Project Priority:

Medium

SOLUTION

Project Solution:

- Extend Farristown Industrial Drive to US 25.
- Consider bicycle and pedestrian accommodations.



Note: Bicycle and pedestrian accommodations are suggested. Shared use facility maintenance is the responsibility of local governments.

RICHMOND BEREA SUA	**Project Location:** Extension East of KY 956 at US 25 Intersection	**Project #:** L B-D

PROBLEM

Project Background:

Currently, the developments on Pine Street and Kenway Street are not connected. Flooding occurs with moderate rainfall, closing the only access to the developments. Emergency access to the subdivision could be maintained with a connection to the KY 956 extension. Also, US 25 has high traffic volumes with limited gaps for turning out of the subdivision onto US 25.

Project Cost Estimate (2016 Dollars):

Design	$350,000
Right-of-Way	$0
Utilities	$130,000
Construction	$1,300,000
Total	$1,780,000

Project Priority:
Low

Project Issues:

- *CAPACITY (TRAFFIC)*
- *ROADWAY DEFICIENCIES (DRAINAGE)*

SOLUTION

Project Solution:

- Extend Pine Street and Kenway Street to access new KY 956 bypass. This new access will provide an alternative subdivision exit for residents and emergency services during flood events, and will relieve traffic from US 25.

9.0 NEXT STEPS

The next phase for any of the projects needing studies would be to conduct the study, although additional funding will be necessary.

Local projects identified in the SUA study may be funded by the respective city or county government, local agency, or private developer. Projects identified as short-term will be completed through KYTC resources, subject to available funding. The next phase for all other projects needing project development would be Phase 1 Design (Preliminary Engineering and Environmental Analysis). Further funding will be necessary to advance a project to the design phase.

10.0 CONTACTS/ADDITIONAL INFORMATION

Written requests for additional information should be sent to:

John Moore, Director,
KYTC Division of Planning
200 Mero Street
Frankfort, KY 40622

Additional information regarding this study can also be obtained from the KYTC District 7 project manager, J. R. Ham, at (859) 246-2355 or via email at James.Ham@ky.gov.