CAMPUS TO COMMONS TRAIL CONNECTIVITY STUDY

JUNE **2024**

LEXINGTON, KY

BACKGROUND

"People of all ages and abilities will have access to comfortable and convenient walking and biking routes, resulting in true mobility choice, improved economic opportunity, and healthier lifestyles."

- FROM THE LEXINGTON AREA BICYCLE AND PEDESTRIAN MASTER PLAN VISION STATEMENT

CAMPUS TO COMMONS TRAIL CONNECTIVITY STUDY

STUDY INTRODUCTION

The Campus to Commons corridor is a critical connection for Lexington's bicycle and pedestrian network. Running from the Meadowthorpe neighborhood to the University of Kentucky campus, much of the corridor lacks adequate sidewalks, protected bicycle facilities, and safe intersections. Creating a safer and more comfortable experience for pedestrians and bicyclists along Forbes Road, Red Mile Road, and Virginia Avenue requires thoughtful planning and innovative solutions. The Campus to Commons Trail Connectivity Study explores the best designs to achieve this goal and outlines a roadmap for implementing the solutions.

Goals | There are four goals for the Campus to Commons Trail Connectivity Study:

- **Trail Alignment:** Determine the preferred trail facilities and alignments to provide a safe and comfortable experience for people using the trail corridor.
- **Safety:** Develop preliminary design solutions to improve safety of all users at intersections.
- **Implementation:** Establish a project development plan with a phasing strategy based on cost estimates.
- **Outreach:** Incorporate inclusive public outreach into the study findings and implementation recommendations.

Action Steps | Here's how we met the goals of the study:

Listen	Survey #1	Neighborhood association meetings	Stakeholder Outreach
Assess	Evaluating existing conditions	Determining levels of protection for users	
Detail and Apply	Developing preferred bike facilities	Design possible layouts for the trail facilities	
Confirm	Survey #2 Feedback on layouts	Stakeholder Outreach	
Plan	Determining Costs	Create phased implementation plan	Build Momentum

This study builds on many previous studies and reference documents. Links to these documents can be found in the appendices.

Master plans from the University of Kentucky and the Lexington Area MPO identify the Campus to Commons corridor as a critical bike connection in the City's network.

Intersection and corridor studies, including the Imagine Nicholasville Road plan, present ideas for portions of the corridor, while the Red Mile Development Plan proposes a greenway along Red Mile Road.

LEXINGTON AREA Metropolitan Planning Organization

LEXINGTON

This project is a partnership with the City of Lexington and the University of Kentucky. A consultant team led by Clark Dietz was hired to perform the study.

ClarkDietz

WISER STRATEGIES

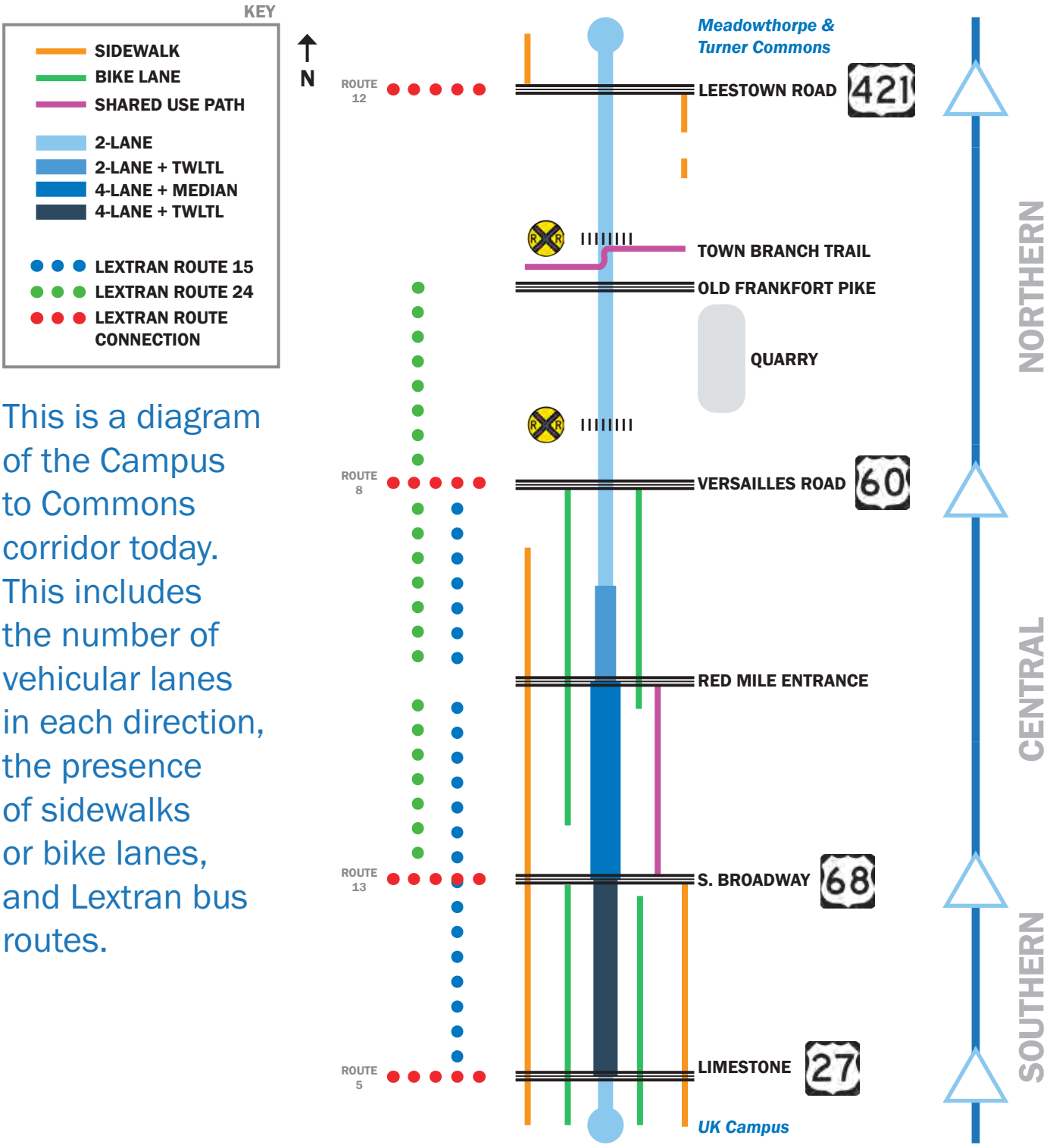
WSP

CORRIDOR OVERVIEW

The Campus to Commons corridor is approximately three miles long and is split into three unique areas. The Southern Area includes Virginia Avenue from Limestone to Broadway. The Central Area encompasses the Red Mile Road segment of the trail corridor and runs from Broadway to Versailles Road. The Northern Area is the longest of the three segments and encompasses Forbes Road from Versailles Road to Leestown Road; it also intersects the Town Branch Trail which serves as an important connection to downtown Lexington.

Southern Area | Central Area | Northern Area

It's clear there are gaps in bike and pedestrian connectivity along the corridor.

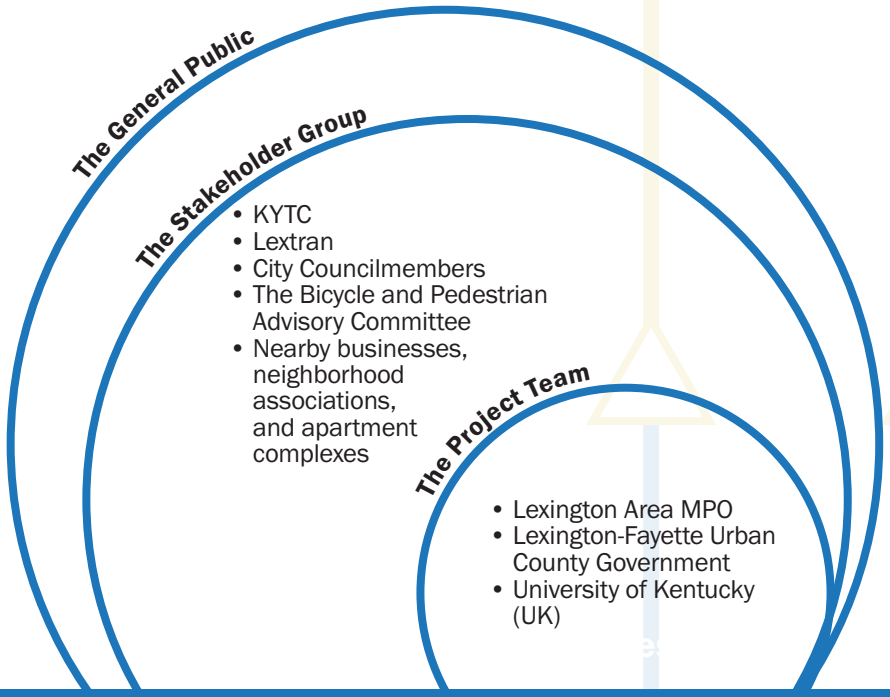


This is a diagram of the Campus to Commons corridor today. This includes the number of vehicular lanes in each direction, the presence of sidewalks or bike lanes, and Lextran bus routes.

PUBLIC OUTREACH PLAN

Listening to and learning from the public

Public outreach focused on gathering community feedback from both focused stakeholder groups and the broader public through various methods.



KEY ELEMENTS

- Two Stakeholder Meetings
- One Public Open House
- Two Surveys

Getting the word out:

- Project website
- Social media posts
- Digital ads
- Posters and door hangers
- Local and campus newspapers
- Press releases to local media

Total Reach: 433,000 views

SURVEY NO. 1

How do you use the corridor today?

500 Responses

20% walk, bike, or ride a scooter

Majority feel "somewhat" comfortable and safe on the corridor

SURVEY NO. 2

I would feel safer and more comfortable biking and walking with these improvements.

286 Responses

Corridor Improvements | 86.4% Agree *(average of all segments)*

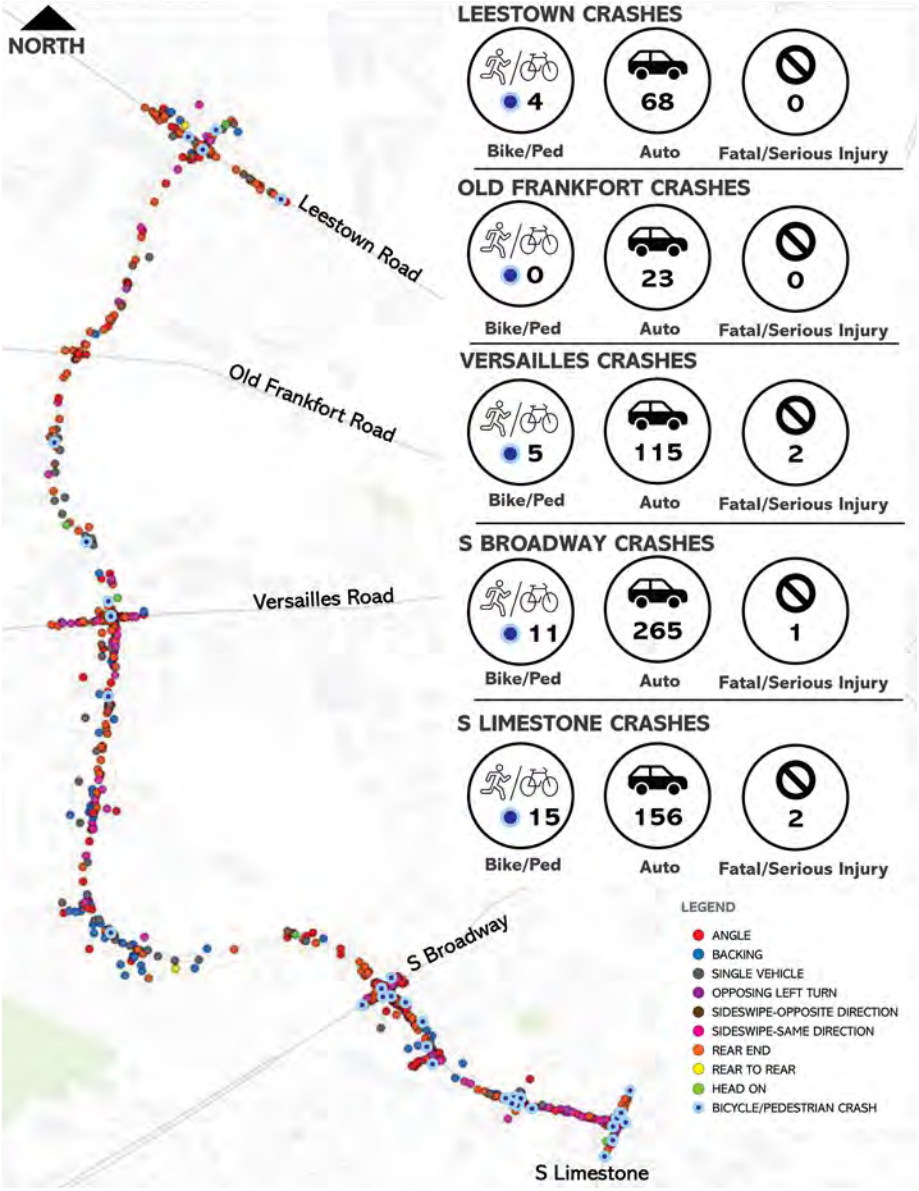
Intersection Improvements | 63.1% Agree *(average of all segments)*

Detailed survey results can be found in the appendices.

WHAT SHOULD BE IMPROVED?

- **Improve safety for biking**
- **Fix and/or add sidewalks**
- **Make intersections safer**

SAFETY AND TRAFFIC



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Vision Zero is a strategy to eliminate all traffic fatalities and severe injuries, while increasing safe, healthy, equitable mobility for all.

Safety Overview

Vision Zero and Complete Streets strategies were implemented for this study. These design strategies aim to put bicyclist and pedestrian safety at the forefront of corridor design by slowing vehicular speeds, increasing visibility, reducing collisions and conflict points, and providing safe and comfortable movement of people along our roadways.

Historical Safety

Five years (2018-2022) of crash data was analyzed from the Kentucky State Police. A concentration of crashes appears at the major intersections along the corridor with three serious injury crashes and 36 bicycle/pedestrian crashes within the timeframe. The figure to the left highlights crash locations and types by manner of collision and specifically calls out bicycle/pedestrian crashes.

Traffic Overview

Both vehicular and multimodal traffic have similar trends along the corridor. Activity is directional, with most people traveling southbound in the morning and northbound in the afternoon. Activity is highest along Virginia Avenue from Limestone to Broadway with approximately 5,000 bicyclists/pedestrians and 17,000 vehicles daily. Activity decreases near Versailles Road and Old Frankfort Pike and picks back up at the Leestown/Main Street intersection.

~200 crashes per year (3 serious injury)

~7 bicycle/pedestrian crashes/year

LexTran Route 24 along the corridor is one of the busiest routes in Lexington.

Over **5,000** bicyclists/pedestrians use the corridor daily

8,000-17,000 daily vehicles

COMPLETE STREETS TOOLBOX

INTERSECTIONS

Protected Intersection
Protected intersections have physical barriers that enhance safety and simplify bicycle traffic flows.

Pedestrian Scale Lighting
Pedestrian scale lighting is placed over bicycle and pedestrian infrastructure to improve pedestrian safety, security, and comfort.

Transit Stop Improvements
Transit stop improvements, such as sidewalks, shelters, and lighting, provide community placemaking, safety, and accessibility for all users.

High Friction Surface Treatment (HFST)
HFST enhances pavement friction and boosts safety, specifically on downhill grades, curves, and signal approaches.

Access Management
Access management reduces the number of conflict points by restricting turning movements or limiting excess driveways, enhancing safety and mobility.

Turn Lane Extension Lines
Turn lane extension lines act as a guide for turning vehicles in larger intersections, adding ease of driving and more awareness for multimodal users.

Cross Lane Rumble Strip
Cross lane rumble strips enhance driver awareness of a crossing or intersection where visibility may be limited.

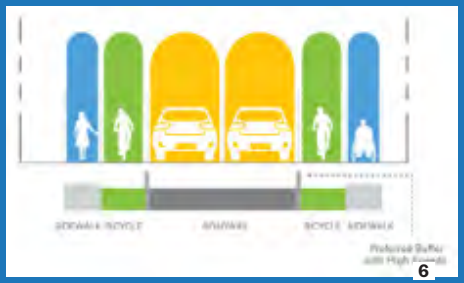
Enhanced Detection
Enhanced detection provides a reliable way of recognizing pedestrians, cyclists, and vehicles, reducing waiting times and impatience.

No Right Turn on Red
Allowing right turns during red lights is a dangerous movement impacting pedestrians and cyclists.

Photo Sources:
1 - Louisville Complete Streets Guide
2 - LFUCG
3 - Manual on Uniform Traffic Control Devices
4 - FHWA
5, 6 - KYTC Complete Streets, Roads, and Highways Manual
7 - Clark Dietz

CORRIDORS

Shared Use Path
Shared use paths provide a separated facility that is safe and convenient for pedestrians and cyclists.



Rightsizing
Rightsizing provides safe space for all users, rethinking how roadways are normally used and limiting the number of vehicular lanes where appropriate.

Protected Bike Lanes
Protected bicycle lanes provide a physical barrier that separates cyclists from vehicles and boosts multimodal safety.

COMPLETE STREETS TOOLBOX
TRANSIT AMENITIES

A Complete Streets approach requires consideration and inclusion of transit users and how they move through the corridor. Six Lextran routes interact with the corridor in some way, and one of Lextran's busiest routes operates on Virginia Avenue to serve the university community.

Transit Ridership May 2023 - April 2024
Average Boardings and Alightings each Weekday

Southern Area: 100

Central Area: 173

Northern Area: 20

Transit Stop Improvements
Transit stop improvements, such as sidewalks, shelters, and lighting, provide community placemaking, safety, and accessibility for all users. Many of the stops along the trail corridor have little to no amenities. The corridor improvements will create an opportunity to also improve transit stops.

Here's one possible design of a bus stop along the improved Virginia Avenue segment with a bike lane behind the bus stop.

Bus Stop and Bike Lane Interactions

There are a variety of best practice design solutions for protected bike lanes mixing with transit stops. This includes guidance from NACTO's Transit Street Design Guide and Urban Bikeway Design Guide. These solutions will be evaluated as part of the implementation plan in the next phase of the study.

Source: Green Lane Project

CORRIDOR IMPROVEMENTS

"This connection is so important. This corridor has a very high biking population, and has much stronger bus service than many corridors in Lexington. A strong trail would be an incredible multi-modal connection that would not only make non-car transportation easier -- it would encourage it!"

- OPEN RESPONSE FROM SURVEY #2

Following best practices for Complete Streets design, the following improvements are recommended for the Campus to Commons Trail. Conceptual layouts were designed using aerial imagery to evaluate the feasibility of the improvements. The design of the improvements may change during the next phase of engineering and design.

SOUTHERN AREA

LIMESTONE INTERSECTION

Existing Conditions

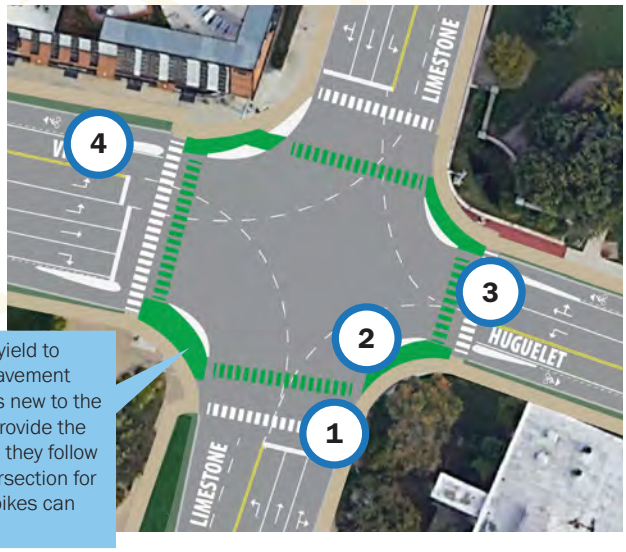
Located in the heart of the University of Kentucky campus, the S Limestone and Virginia Avenue/Huguelet Drive intersection experiences high volumes of vehicles, pedestrians, and bicyclists.

- Highest-volume Pedestrian/Bicyclist Intersection in Study Area
- Stone walls on campus and proximity of buildings limit room for geometric improvements
- Included in Imagine Nicholasville Road study and will include bus rapid transit
- **Daily Bicycle/Pedestrian Count: 4,851**

Short-Term Improvements

1. Shortened Crosswalk Distance
2. Improved Effective Curb Radius
3. Shared Thru/Right on Virginia Approach
4. Protected Bicycle Intersection + Bicycle Detection

- Pedestrian Scale Lighting
- No Right Turn on Red
- Turning Lane Extension Lines
- Reflective Backplates



In a protected intersection, vehicles yield to cyclists as if they are pedestrians. Pavement markings and signs will guide cyclists new to the intersection. Green paint markings provide the flow of traffic. For cyclists to turn left, they follow the counterclockwise flow of the intersection for safer movements. Alternatively, the bikes can use a vehicular lane and movement.

Long-Term Innovative Intersection Concept:
Bowtie Roundabouts

Bowtie Roundabouts were proposed for the intersection through the Imagine Nicholasville Road study. The Bowtie Roundabouts would be located at the hospital parking garage entrance along Huguelet Drive and the Press Avenue signal along Virginia Avenue. These roundabouts could safely accommodate bicyclists and pedestrians while slowing vehicular traffic to safer speeds.

Bowtie Roundabout on Huguelet Dr.

SOUTHERN AREA
VIRGINIA AVENUE & HUGUELET DRIVE SEGMENT

Existing Conditions

Virginia Avenue:

- High pedestrian and bicyclist activity
- Dense land use
- US Route 27 with KYTC jurisdiction
- Overbuilt five-lane roadway
- Unprotected bike lanes
- Moderate right-of-way

Lextran Routes

15

Huguelet Drive:

- University of Kentucky campus
- Narrow right-of-way
- Unprotected bike lanes
- University-owned street

Land Uses

Institutional // Commercial // Multifamily

SAFETY SCORECARD

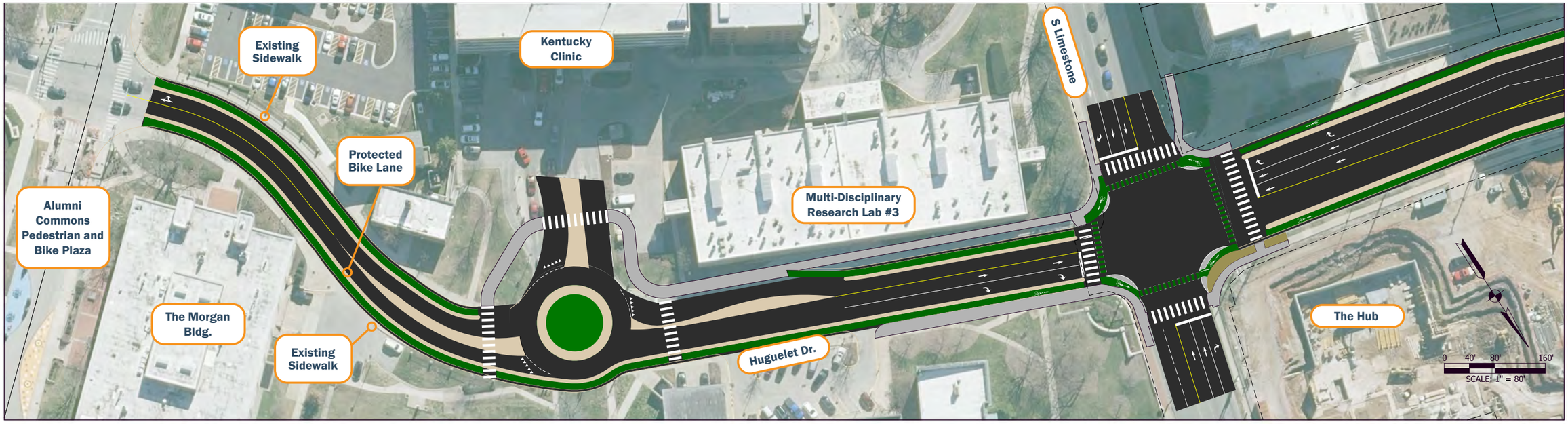
Bicycle/Pedestrian Crashes:	**9 (Poor)**
Fatal/Serious Injury Crashes:	**0 (Great)**
Segment Crashes:	**210 (Poor)**
Excess Expected Crashes:	**52.8 (Poor)**
Level of Safety Service:	**3 of 4 (Poor)**

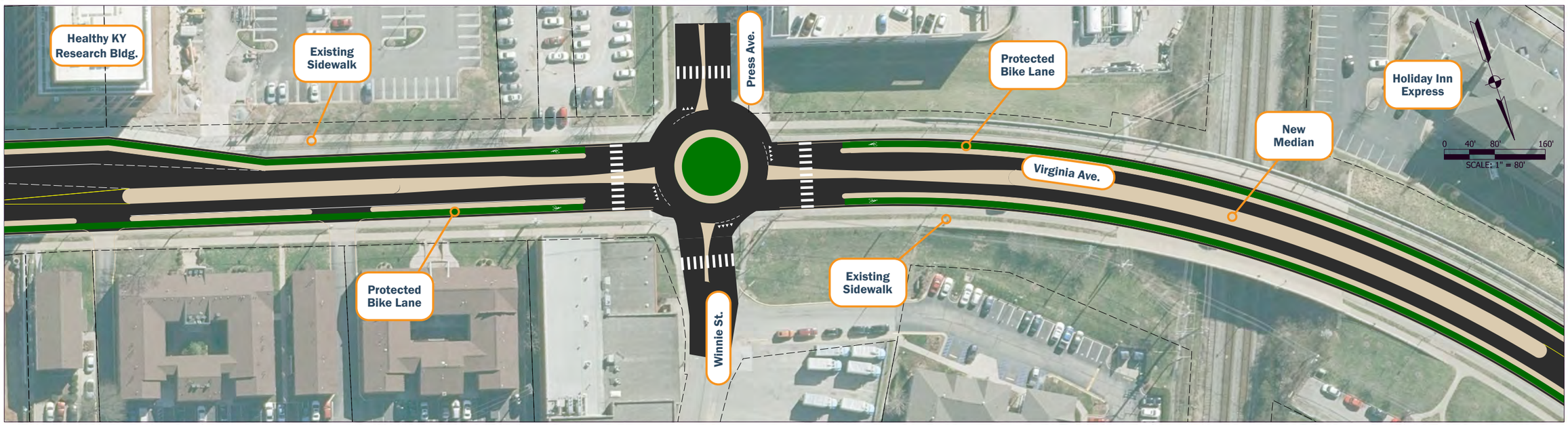
See appendices for more information.

Proposed Improvements

- Reconfigure vehicular lanes to right-size the street
- Add permanent vertical protection for bike lanes to encourage more cyclists
- Reduce number of driveways to increase pedestrian safety
- Remove unused turn lanes to slow vehicles
- Rebuild curb and gutter on one side of road to narrow street
- Widen sidewalks to eight feet for more comfortable pedestrian environment

SOUTHERN AREA
VIRGINIA AVENUE

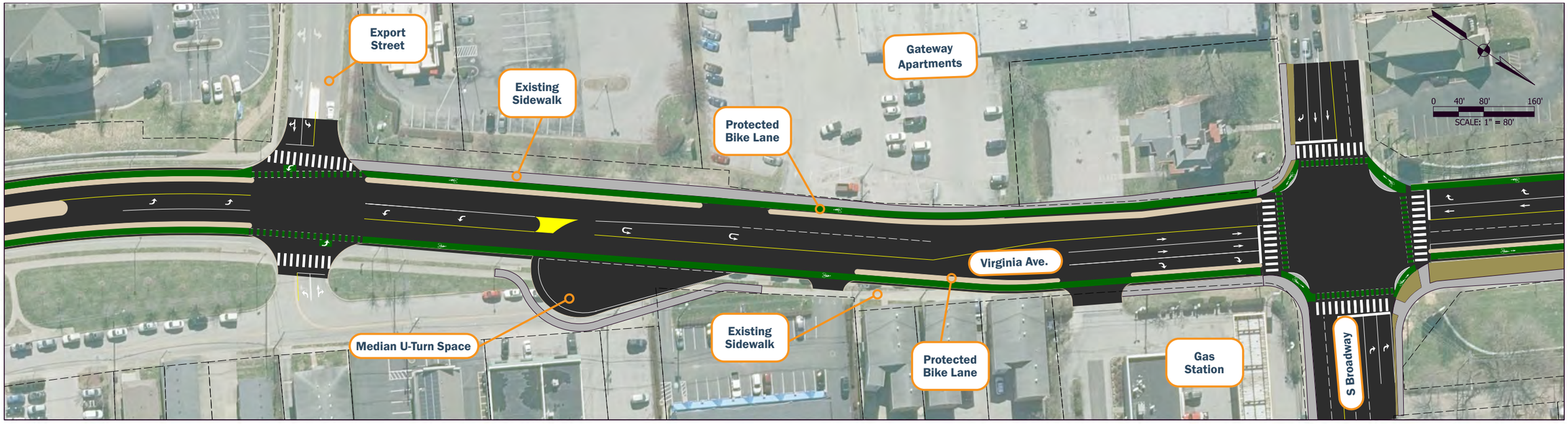




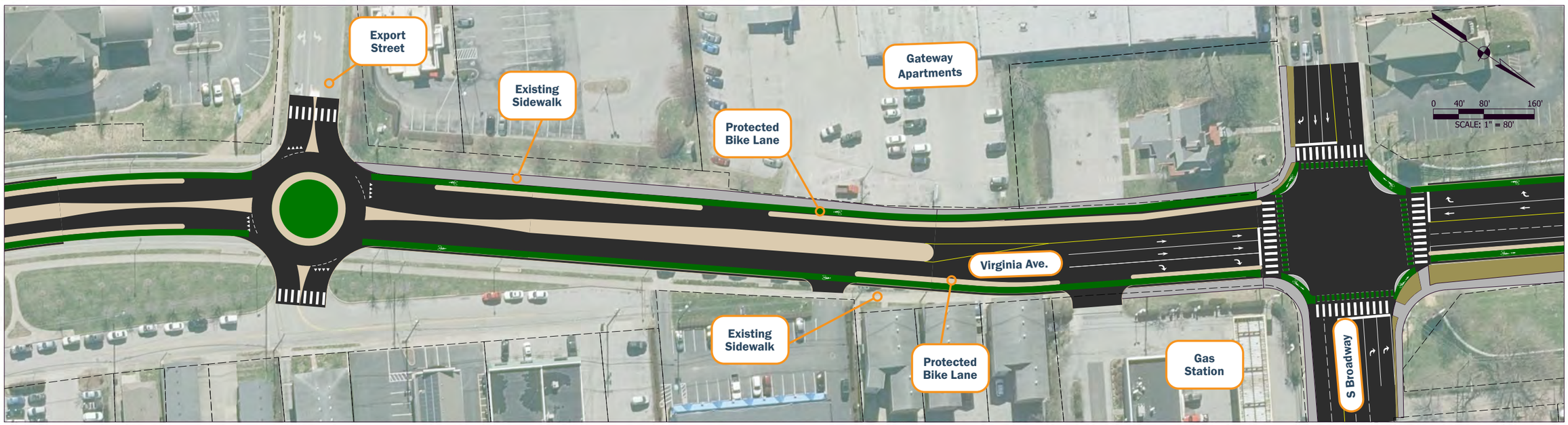
NORTHERN
CENTRAL
SOUTHERN

SOUTHERN AREA
VIRGINIA AVENUE

Alternative 1: Median U-Turns



Alternative 2: Bowtie Roundabouts



SOUTHERN AREA

S BROADWAY INTERSECTION

Existing Conditions

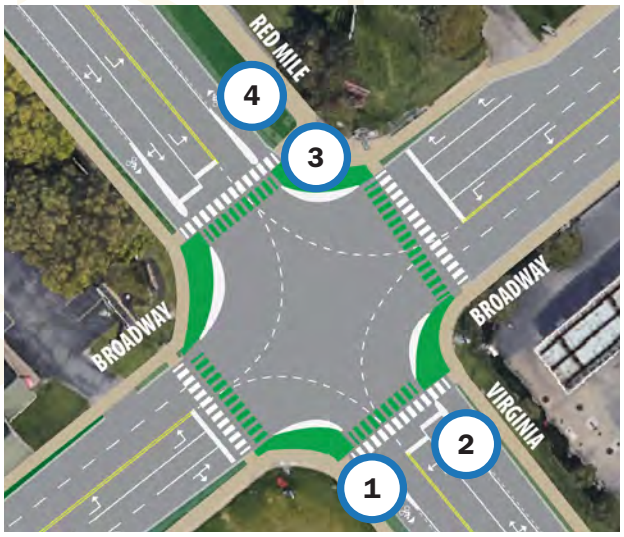
A critical connection between student housing and UK's campus, this intersection sees significant bicycle and pedestrian traffic in addition to high vehicular volumes. Traffic congestion causes slower vehicle speeds in the peak hours, but tight right-of-way keeps pedestrians dangerously exposed to the roadway.

- High volumes of pedestrians, bicyclists, and vehicles
- Large utility facilities create constraints
- Closely spaced driveways nearby
- **Daily Bicycle/Pedestrian County: 167**

Short-Term Improvements

1. Improved Effective Curb Radius
2. Shared Thru/Right on Virginia Approach
3. Protected Bicycle Intersection + Bicycle Detection
4. Pedestrian Scale Lighting

- Shortened Crosswalk Distance
- No Right Turn on Red
- Turning Lane Extension Lines
- Reflective Backplates



Long-Term Innovative Intersection Concept:
Median U-Turns

A Median U-Turn Intersection operates similarly to a Restricted Crossing U-Turn (RCUT) Intersection but with signals at the U-Turns. This intersection eliminates left turns from one major movement and allows vehicles to make a right turn plus a U-Turn to reduce conflict points in the intersection. This intersection could improve bicycle and pedestrian safety.

Virginia Ave. at Broadway

CENTRAL AREA
RED MILE ROAD SEGMENT

NORTHERN

CENTRAL

SOUTHERN

Existing Conditions

- Four-lane boulevard with median transitions to two lanes with partial curbs
- Large apartment complexes
- Adjacent to Red Mile Racetrack
- Golfview Estates neighborhood
- Two Lextran bus routes
- Wide right-of-way

Lextran Routes

15 24

Land Uses

Commercial // Multifamily

SAFETY SCORECARD

Bicycle/Pedestrian Crashes:	**2 (Not Great)**
Fatal/Serious Injury Crashes:	**0 (Great)**
Segment Crashes:	**215 (Poor)**
Excess Expected Crashes:	**10.6 (Poor)**
Level of Safety Service:	**4 of 4 (Poor)**

See appendices for more information.

Pedestrian Activity

MEDIUM

Bike Activity

MEDIUM

Proposed Improvements

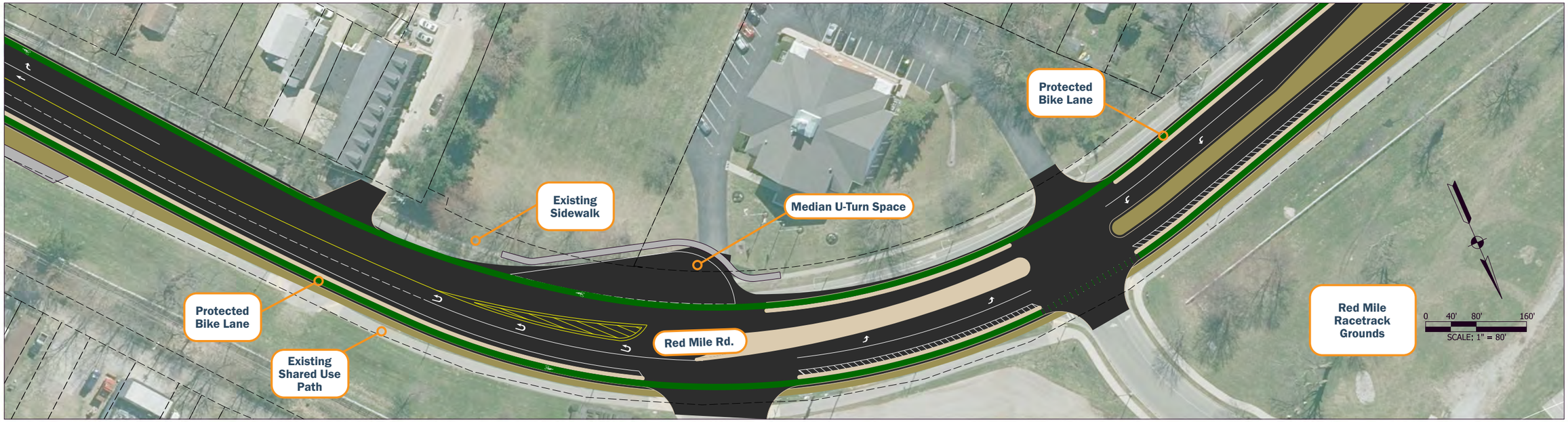
- Reconfigure vehicular lanes to right-size the street
- Add permanent vertical protection for bike lanes to encourage more cyclists
- Extend Red Mile sidewalk to Versailles Road to complete gap
- Widen sidewalks to six feet for more comfortable pedestrian environment
- Install street trees to increase drive awareness and to create a more comfortable pedestrian environment
- Install curb and gutter north of Red Mile Racetrack entrance to encourage slower speeds
- Add marked crosswalks across Red Mile Road for more pedestrian connection options
- Reduce speed limit to 30 MPH

Existing - Looking North

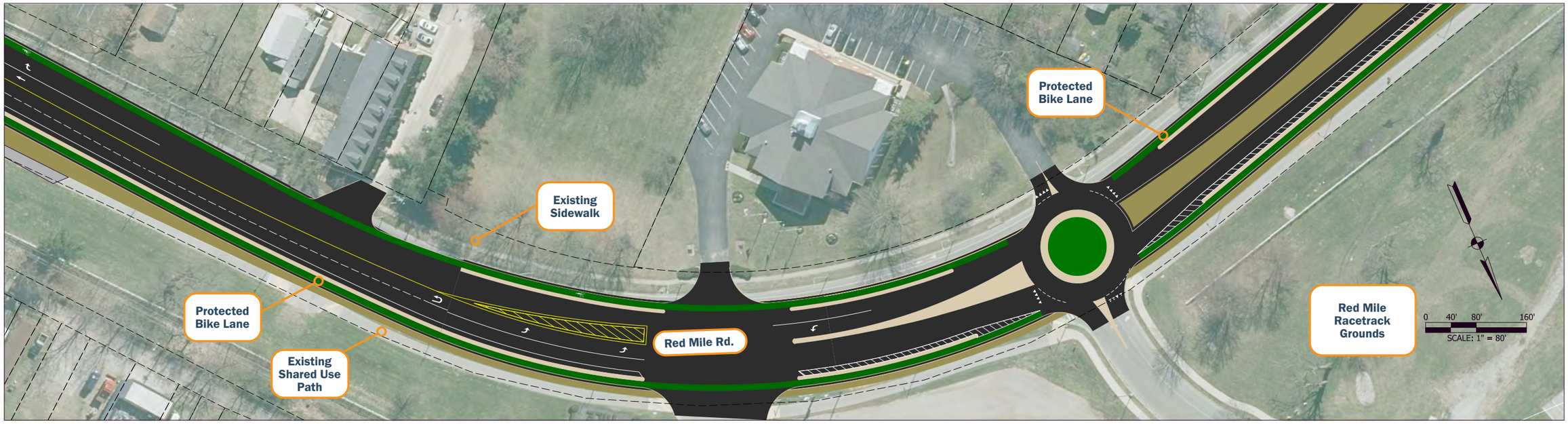
Proposed - Looking North

CENTRAL AREA
RED MILE ROAD SEGMENT

Alternative 1: Median U-Turns



Alternative 2: Bowtie Roundabouts



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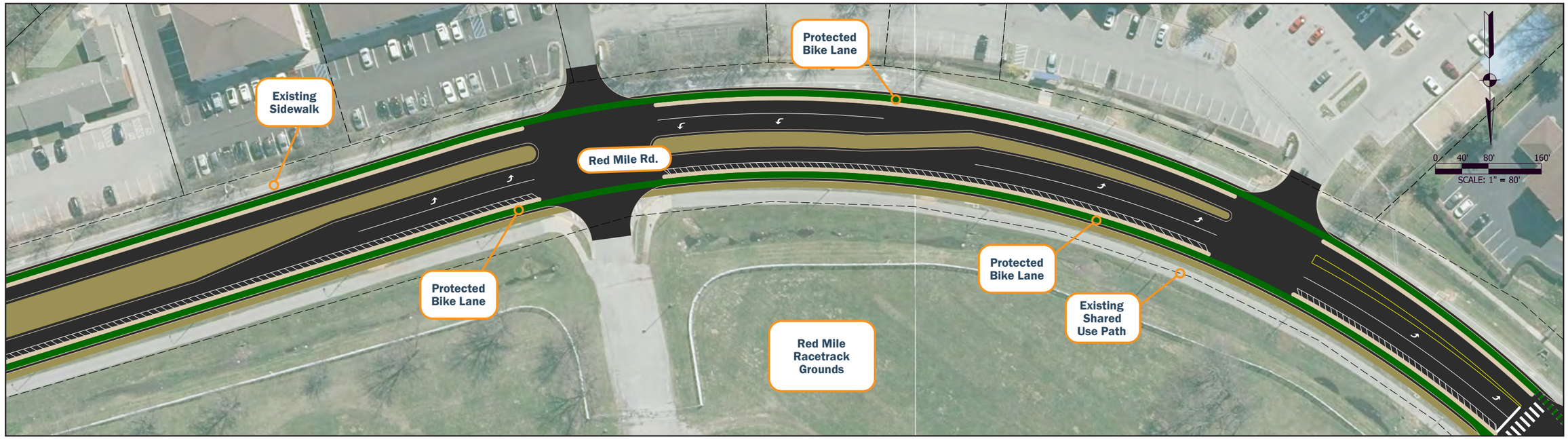
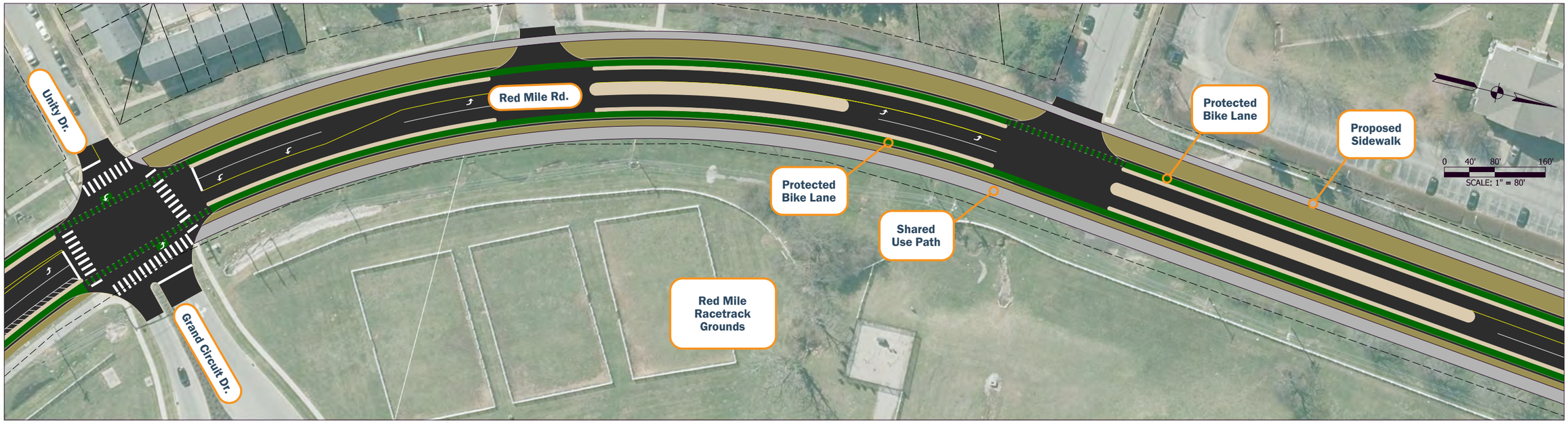
CENTRAL AREA

RED MILE ROAD SEGMENT





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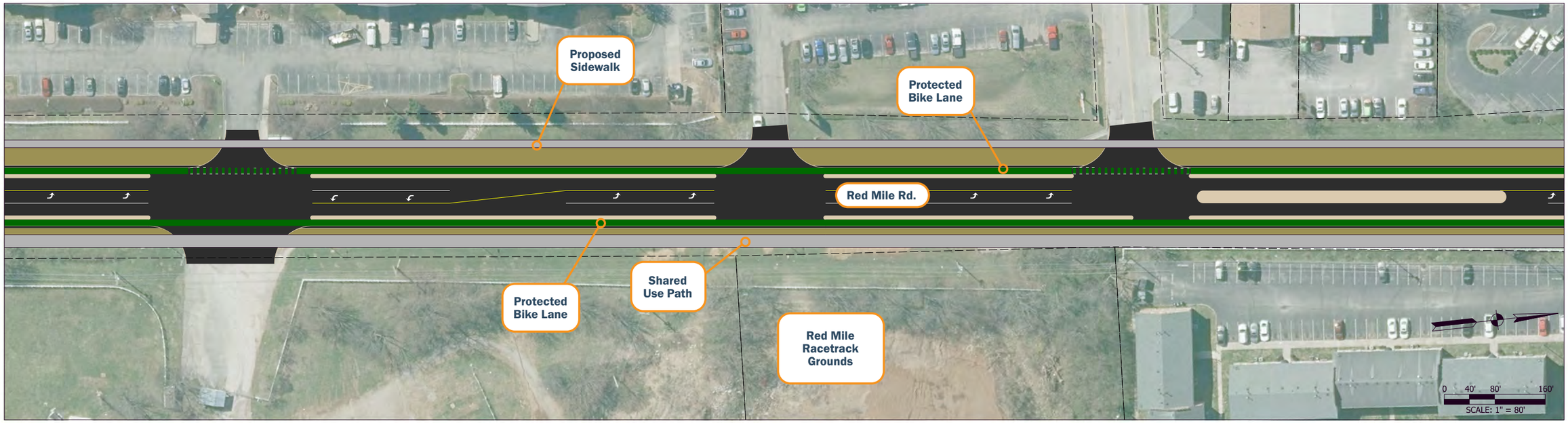
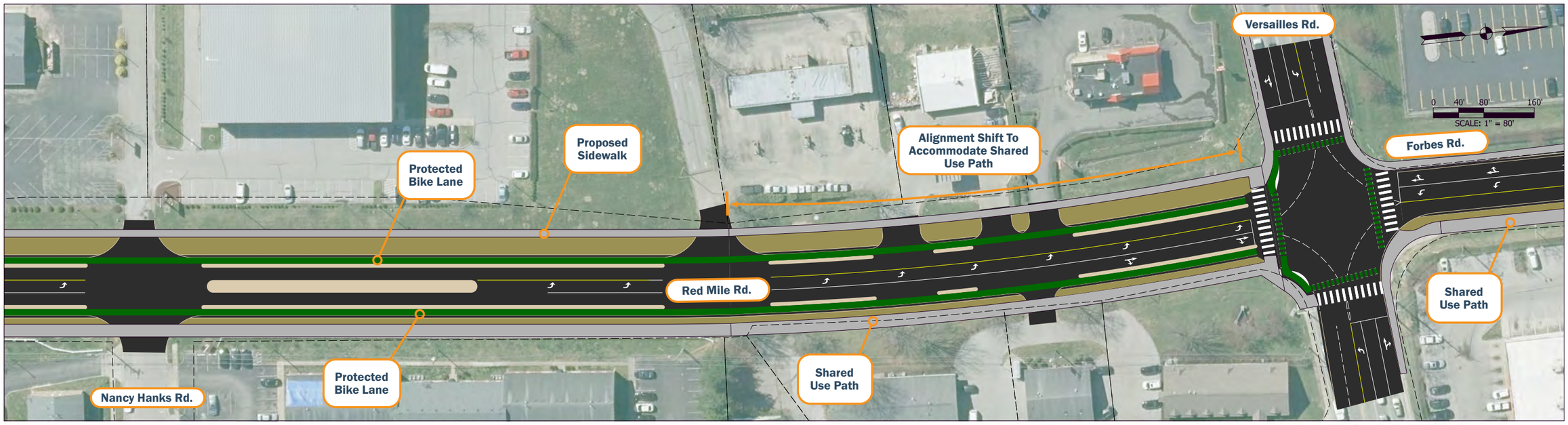
CENTRAL AREA
RED MILE ROAD SEGMENT





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CENTRAL AREA

VERSAILLES ROAD INTERSECTION

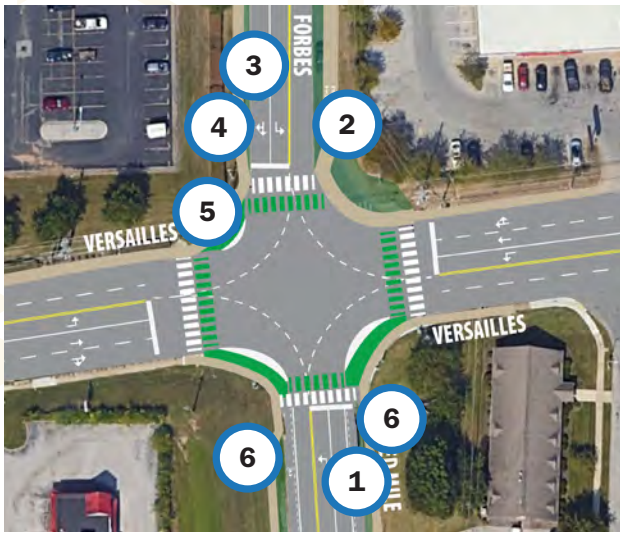
Existing Conditions

This highly developed commercial and industrial area generates significant pedestrian activity and includes Lextran and school district bus routes. US Highway 60 / Versailles Road is a high-volume roadway with vehicular speeds greater than 40 MPH. This intersection serves as a barrier for cyclists as the Red Mile approach is the only one with bicycle infrastructure.

- Large utility facilities create constraints
- Lextran bus stops at the intersection
- Restrictive grades on the north leg
- Large turning radii
- **Daily Bicycle/Pedestrian County: 20**

Short-Term Improvements

1. Protected Bicycle Intersection + Bicycle Detection
2. Shared Use Path Connection
3. Shared Thru/Right on Forbes Road Approach
4. Green Space Separation
5. Improved Effective Curb Radius
6. Transit Stop Improvements
- Access Management



Complete Streets Toolbox:
Protected Intersections

Protected intersections allocate more space to bicyclists and pedestrians, reduce vehicular speeds by decreasing radii sizes, and increase visibility of vulnerable road users. In a protected intersection, bicyclists cross the intersection at the same time as pedestrians in the crosswalk, unless there are dedicated bicycle signals.

Source: Toole Design Group

NORTHERN
CENTRAL
SOUTHERN

NORTHERN AREA

FORBES ROAD | VERSAILLES ROAD TO OLD FRANKFORT PIKE

Existing Conditions

- Longest segment of the corridor
- Connection to Town Branch Trail
- Narrow right-of-way
- No sidewalks or bike lanes
- Significant grade changes
- More trucks than other segments

Lextran Routes

24

Land Uses

Commercial // Industrial

SAFETY SCORECARD

Bicycle/Pedestrian Crashes:	**3 (Poor)**
Fatal/Serious Injury Crashes:	**0 (Great)**
Segment Crashes:	**98 (Not Great)**
Excess Expected Crashes:	**2.2 (Not Great)**
Level of Safety Service:	**3 of 4 (Poor)**

See appendices for more information.

Pedestrian Activity

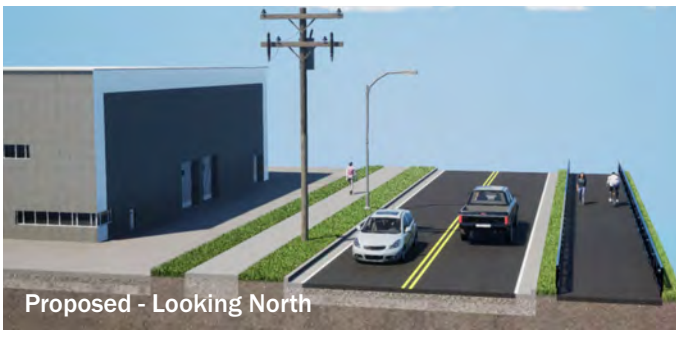
Bike Activity

Proposed Improvements

- Shared use path to create safe pedestrian corridor, provide an off-street protected option for cyclists, and maximize available right-of-way
- Install curb and gutter to increase protection of shared use path and encourage slower speeds
- Place trail alignment on east side of Forbes Road (between Versailles Road and Old Frankfort Pike) to minimize driveway conflicts

The shared use path along Forbes Road will be separated from the roadway by a minimum of 5 ft. in order to meet the guidance provided by the Guide for the Development of Bicycle Facilities (American Association of State Highway and Transportation Officials).


Existing - Looking North


Proposed - Looking North

NORTHERN
CENTRAL
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NORTHERN AREA

OLD FRANKFORT PIKE INTERSECTION

Existing Conditions

In addition to serving many local businesses with significant truck traffic, Old Frankfort Pike is an important east-west connection within the vehicular transportation network. The addition of the Town Branch Trail on this corridor also makes it the most important bicycle connection to downtown Lexington. Mixing of trucks and trail users here makes improving intersection safety a priority.

- Medium-to-low volume intersection with more truck traffic than other locations
- Town Branch Trail crossing
- Significant grade challenges on south leg
- Recent improvements to add turn lanes
- **Daily Bicycle/Pedestrian County: 5**

Short-Term Improvements

1. Add Shared Use Path and Sidewalks
2. Shorten Crosswalks
3. Improved Effective Curb Radius

- Pedestrian Scale Lighting
- Concrete or High Friction Surface Treatment (Northbound Approach)
- Thermoplastic Cross Lane Rumble Strips for Downhill Approaches
- Pedestrian Signals for New Crosswalks

Proposed Improvement Concept:

Single Lane Roundabout

Single lane roundabouts have numerous safety and mobility benefits by reducing conflict points and slowing vehicles down but not always forcing a stopping situation. Right-of-way would need to be acquired to fit a roundabout in the space, but the benefits would be important for traffic calming in the area with more bicyclists and pedestrians due to the confluence of two trails. The vehicular traffic volumes at this intersection meet the criteria for a single lane roundabout.

NORTHERN AREA

LEESTOWN ROAD INTERSECTION

Existing Conditions

Numerous driveways and a parking lot very close to this intersection create a dangerous environment for all users, especially pedestrians. A recent KYTC study found numerous rear end vehicular crashes at the intersection and angle crashes at access points within 200 feet of the intersection.

- Very poor sidewalk connectivity
- Numerous rear end and angle crashes
- Closely spaced driveways nearby
- East-west bicycle lanes on Leestown Road / Main Street
- **Daily Bicycle/Pedestrian County: 66**

Short-Term Improvements

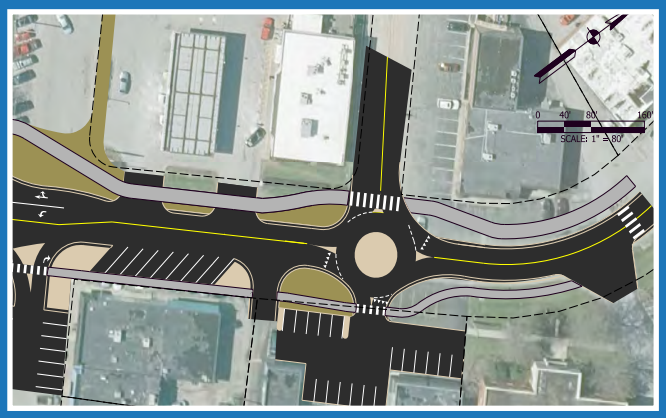
1. Improved Effective Curb Radius
2. Shared Thru/Right on Main St Approach
3. Access Management
4. Add Separated Bicycle and Pedestrian Facilities and Square the Crosswalks

- Pedestrian Scale Lighting
- Transit Stop Improvements

Proposed Improvement Concept:

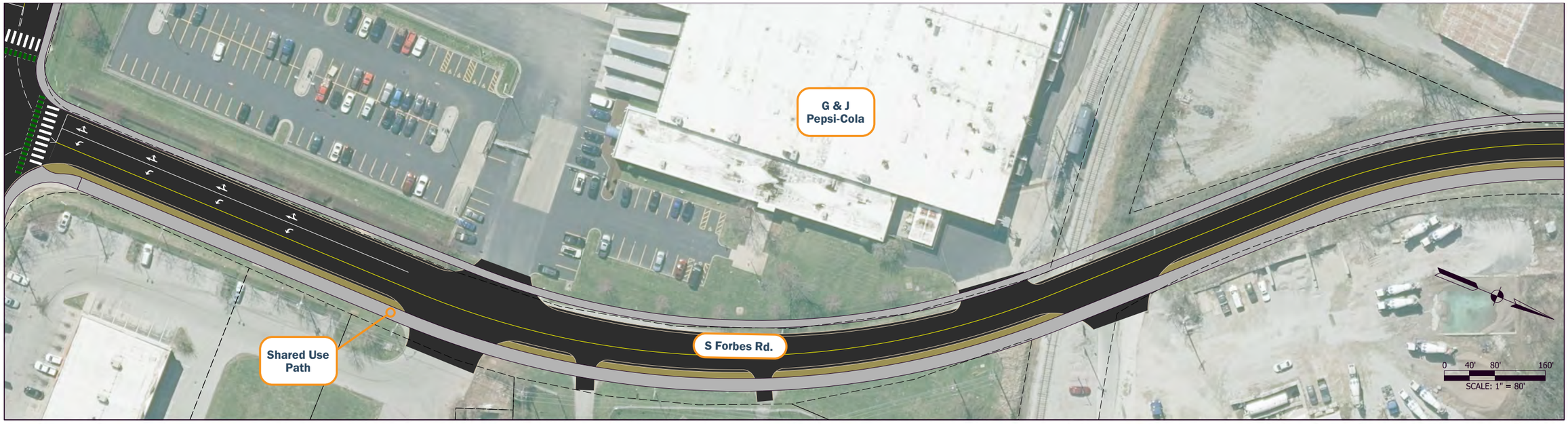
Single Lane Roundabout with Mini Roundabout at Antique Drive

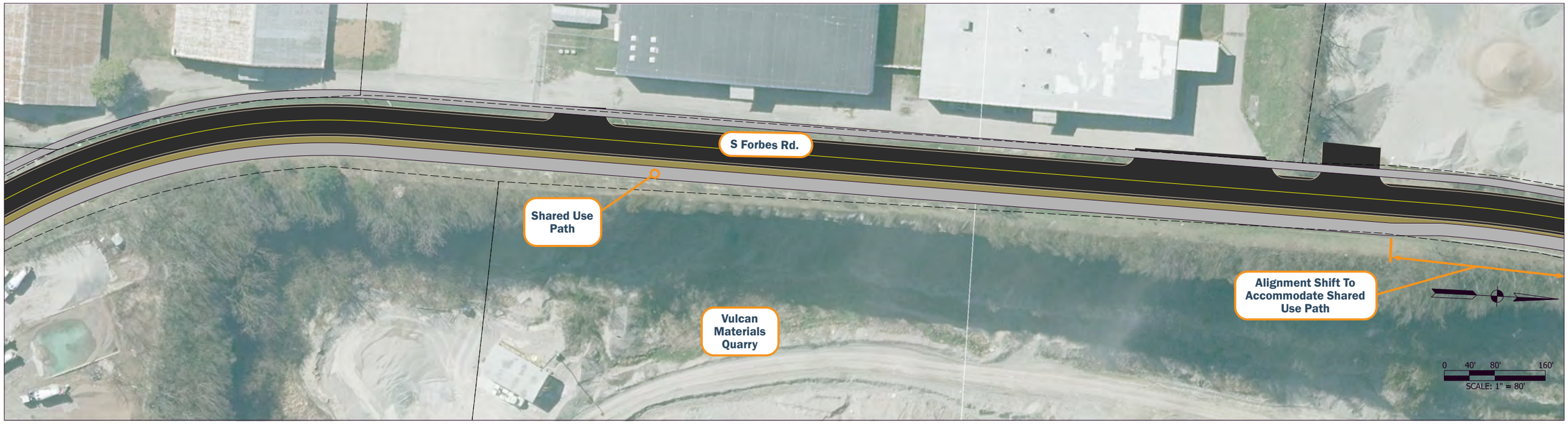
A single lane roundabout drastically reduces fatal and serious injury crashes while also boosting overall flow and bicycle/pedestrian safety. Single lane roundabouts can accommodate up to 20,000 vehicles per day and this intersection is close to the upper threshold. A mini roundabout at Antique Drive will improve flow of the area and limit conflict points.



Mini Roundabout, KYTC

NORTHERN AREA
FORBES ROAD SEGMENT



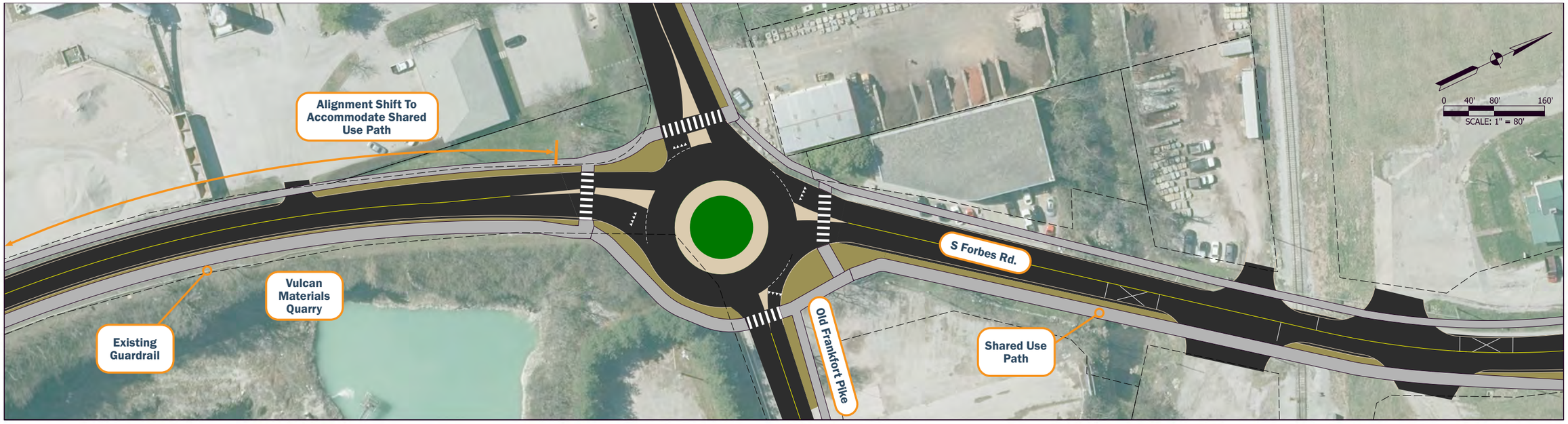


NORTHERN

CENTRAL

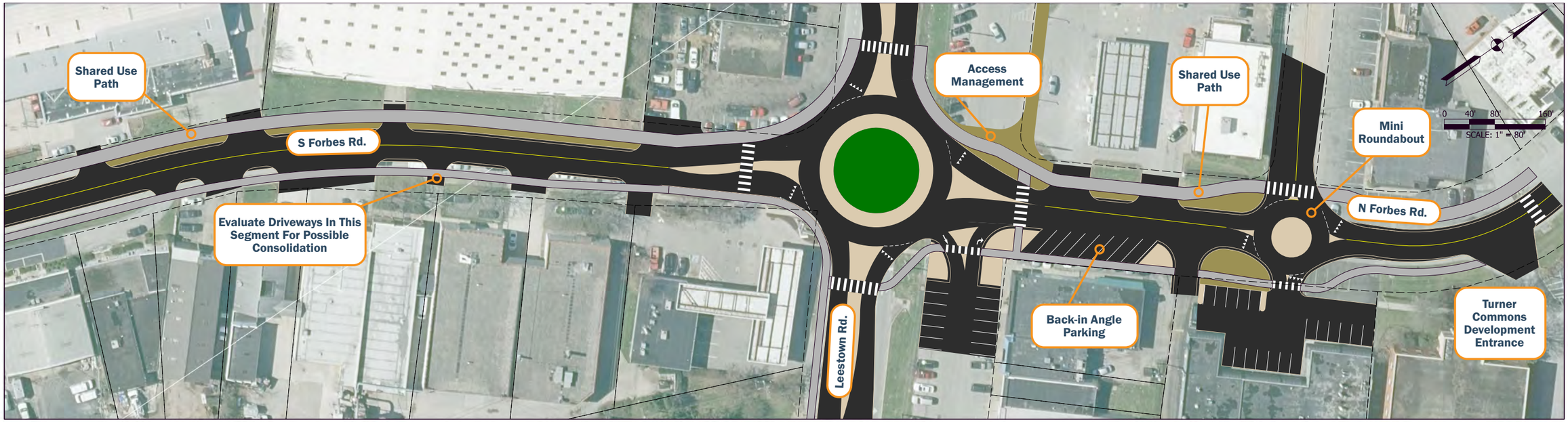
SOUTHERN

NORTHERN AREA
FORBES ROAD SEGMENT



NORTHERN
CENTRAL
SOUTHERN

NORTHERN AREA
FORBES ROAD SEGMENT



A roundabout at Leestown Road is a safe alternative to a traditional signalized intersection. See appendices for the alternative showing a traffic signal.

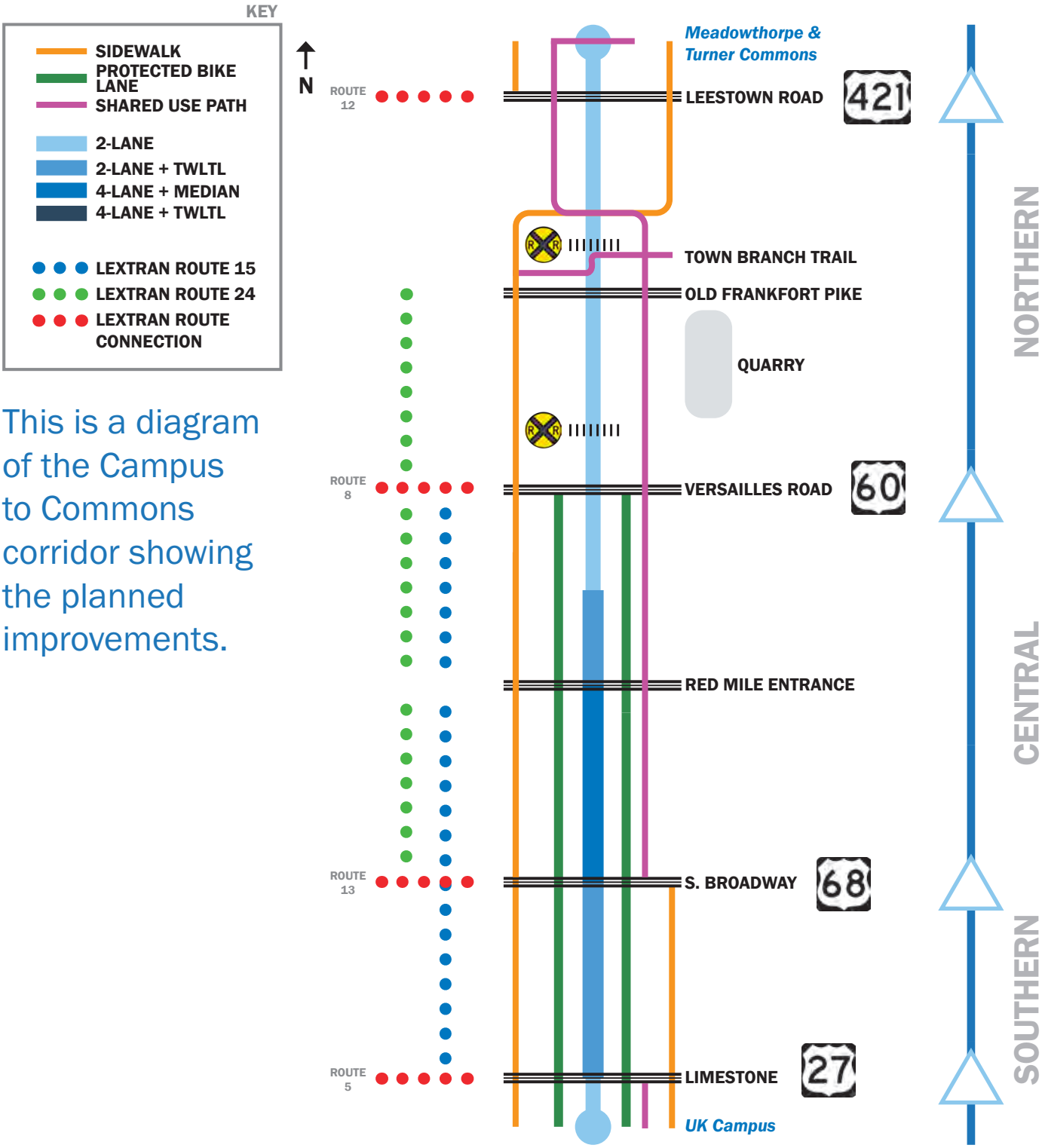
IMPLEMENTATION PLAN

"I bike this route several times a week and these improvements would make a huge difference in the quality of the commute."

- OPEN RESPONSE FROM SURVEY #2

Photo: An open house for the study was held at the Marksbury Family Branch Library.

The Campus to Commons Trail will fill many of the bicycle and pedestrian gaps in the corridor.



This is a diagram of the Campus to Commons corridor showing the planned improvements.

IMPLEMENTATION PLAN

ESTIMATED TOTAL COSTS

Phase 3

$29.2 million

Estimated Completion 2036

Phase 2

$14.8 million

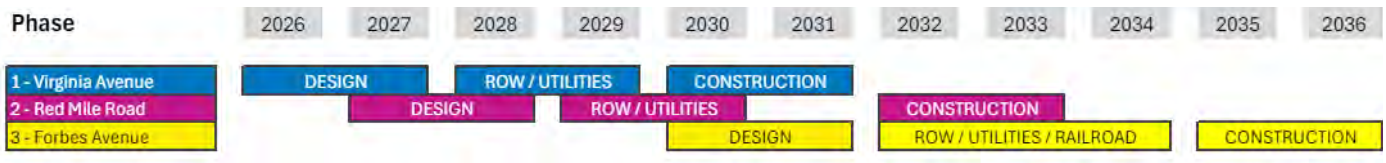
Estimated Completion 2033

Phase 1

$15.1 million

Estimated Completion 2031

PROJECT DEVELOPMENT TIMELINES



ROW = "Right of Way"

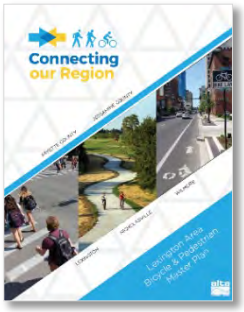
APPENDICES

CAMPUS TO COMMONS
TRAIL CONNECTIVITY STUDY

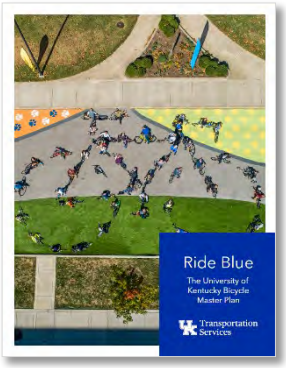
List of Appendices

Appendix 1 – Related Planning Studies and Documents

Lexington Area Bicycle & Pedestrian Master Plan



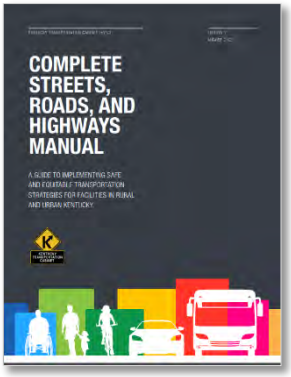
This planning study was completed by the Lexington Area Metropolitan Planning Organization to outline a vision and path to a more walkable and bicycle-friendly community. This includes corridors and intersections that are identified for priority investments. The Campus to Commons corridor is identified in the plan as a Major Bikeway.



Ride Blue – The University of Kentucky Bicycle Master Plan

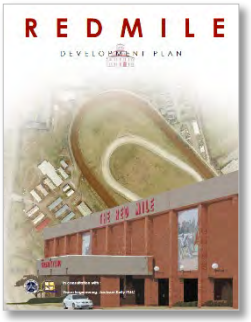
The University of Kentucky Bicycle Master Plan summarizes existing conditions analyses, extensive community outreach, and the development of priority bicycle infrastructure projects for the university campus and for adjacent City streets. In addition to recommended improvements for the Virginia Avenue corridor, the plan discusses proposed improvements along Huguelet Drive. These projects were assessed as part of the Campus to Commons study.

Kentucky Transportation Cabinet Complete Streets, Roads, and Highways Manual



The Kentucky Transportation Cabinet (KYTC) published the first edition of the Complete Streets, Roads, and Highways Manual in August 2022. The plan serves as a "guide to implementing safe and equitable transportation strategies for facilities in rural and urban Kentucky." It highlights important design elements and strategies for improving the safety of Kentucky roadways, particularly for vulnerable road users, or those users not protected by a motor vehicle.

Red Mile Development Plan



The Red Mile Development Plan is a detailed planning document that outlines planned development of the Red Mile Racetrack property, including re-zoning proposals for mixed-use development. A review of the local transportation system and vehicular traffic counts is included. Additionally, the plan shows the concept for a ten-foot shared use path along Red Mile Road referred to as the "Red Mile Greenway Trail", a portion of which has already been installed along the Campus to Commons corridor. Intersection and streetscape improvements are proposed as well.

KYTC D7 Intersection Studies: Leestown Road (US 421) at Forbes Road

In 2023, KYTC published an intersection study at one of the major intersections of the Campus to Commons trail corridor: Leestown Road and Forbes Road. This study analyzed the crash history of the intersection and evaluated if exclusive left turn lanes were warranted for Forbes Road. While left turn phases were not warranted for Forbes Road, smaller improvements to reduce rear end and angle collisions were proposed. These include property access management and improved pedestrian curb ramps.

Imagine Nicholasville Road

Imagine Nicholasville Road is a corridor study which presents a transformative vision for the Nicholasville Road corridor to enhance safety and efficiency for users of all transportation modes. This includes significant transit improvements to one of Lextran's busiest bus routes, dedicated bicycle and pedestrian facilities, and innovative intersections for better traffic safety and flow. The study also outlines proposed developments for underutilized land uses on the corridor. The recommendations from Imagine Nicholasville Road influenced the Campus to Commons Study's assessment of the Virginia Avenue/Huguelet Drive intersection.

Appendix 2 – Bikeway Selection Guide

Sections 4 and 5 of the Federal Highway Administration (FHWA) Bikeway Selection Process and Guide Outline were referenced to guide the trail alignment planning and selection of a preferred facility (see Figure A2.1). Identifying the preferred bikeway type includes an assessment of the context of the corridor with the intent of providing the safest and most comfortable route for bicyclists. This approach was expanded to encompass both bicycle and pedestrian facilities which in the case of shared use paths is one in the same. This process includes evaluation of each segment of the corridor to ensure that a safe, direct, intuitive and intentional design solution is presented increasing the bikability and walkability of the corridor.

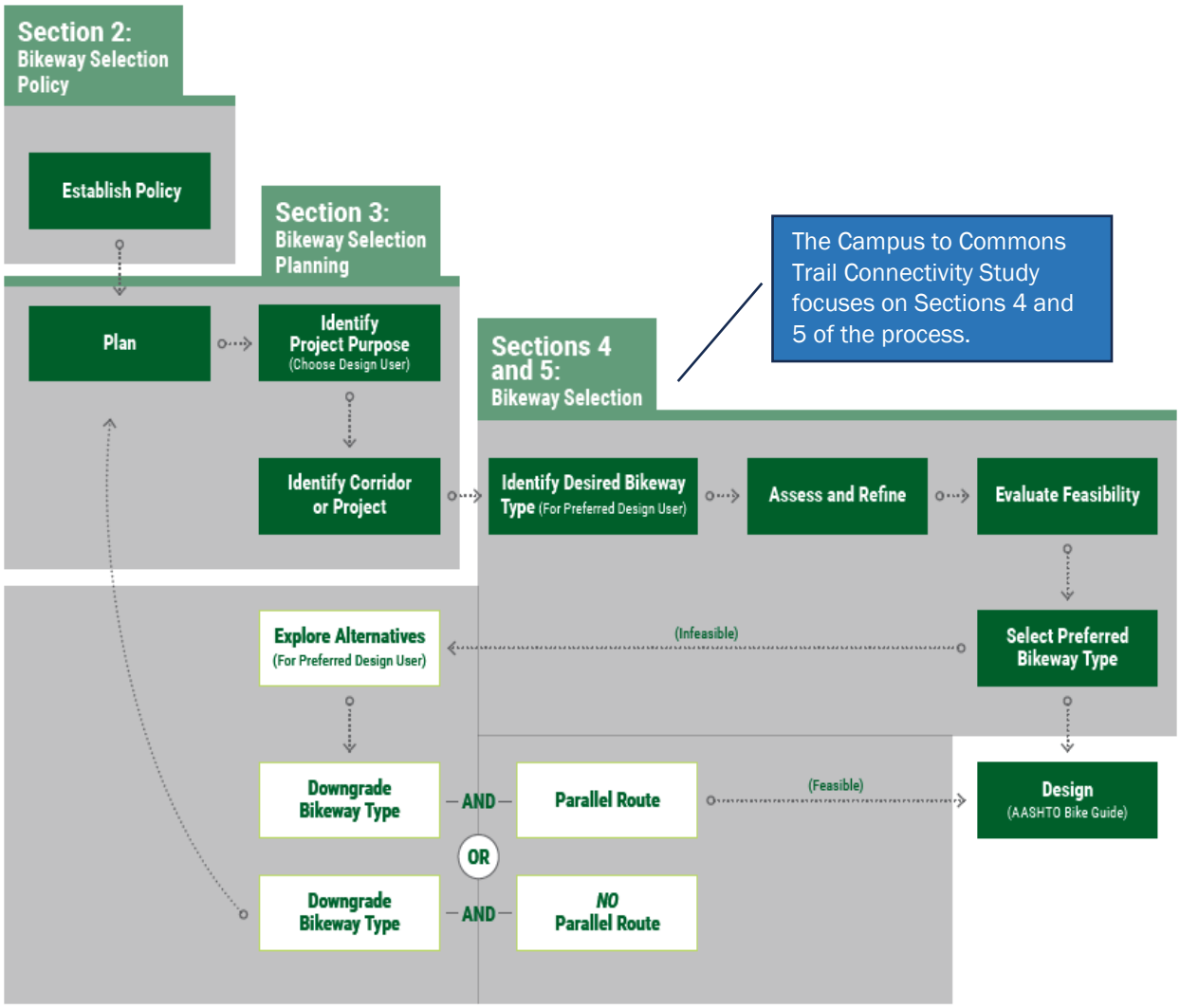


Figure A2.1 - FHWA bikeway selection process and guide outline (comment added)

Appendix 3 – Safety Data

Safety Analysis

The following table shows the frequency of rear end, angle, and sideswipe same direction crashes at the five main intersections of the study area from the five-year crash data (2018-2022) analyzed for this study. As per the table, S Broadway intersection is the worst area for these three crash types. S Limestone is vulnerable for sideswipe and rear end crashes. Versailles Road intersection is vulnerable for rear end crashes. A correlation was found where wet roadway condition crashes make up a higher-than-normal percentage of crashes, as shown in parenthesis in Table A3.1 below. Wet roadway crashes, often influenced by poor pavement quality or something similar, may change as some of the routes have been repaved recently or will be repaved soon as part of a traditional roadway repaving maintenance schedule.

Table A3.1 - Crash Data (2018-22) Count

Intersection Name	Rear End (Wet Crash)	Angle (Wet Crash)	Sideswipe Same Direction (Wet Crash)
S Limestone	75 (21)	11 (3)	40 (4)
S Broadway	88 (25)	69 (14)	54 (10)
Versailles Rd	48 (5)	28 (4)	13 (3)
Old Frankfort	11 (2)	8 (1)	2 (0)
Leestown Rd	34 (13)	20 (6)	5 (1)

The crash trends for the total study area are highlighted in the figures below. The crash trends show the weather condition, lighting condition, roadway condition, and the crashes by KABCO code (K is for fatal crash, A is for serious injury crash, B is for apparent injury crash, C is for possible injury crash, and O is for property damage only).

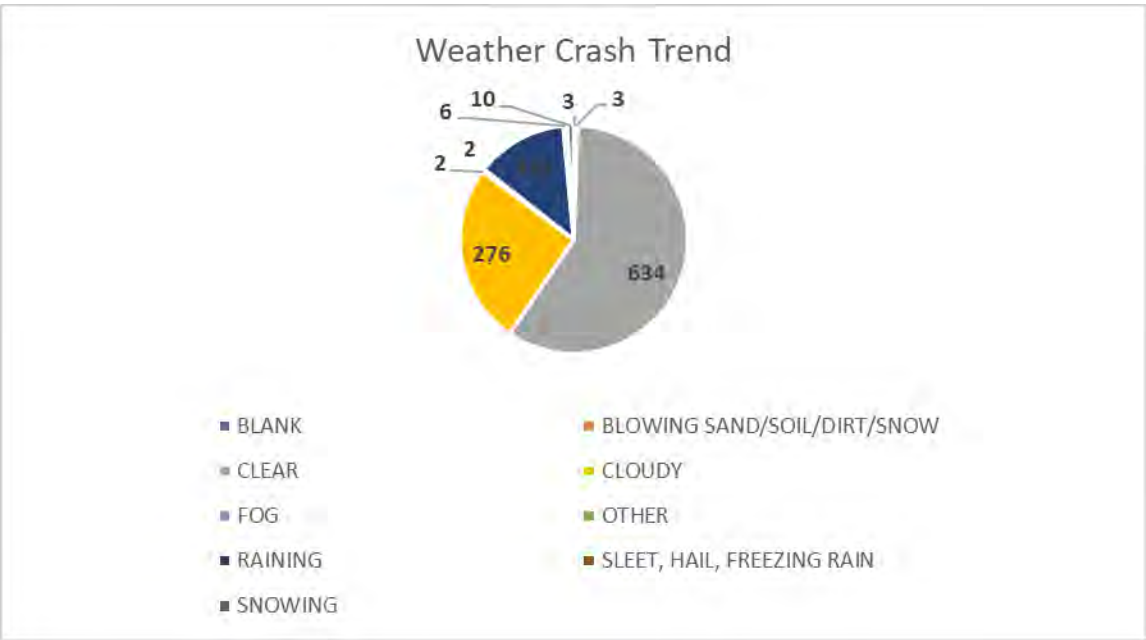


Figure A3.1 - Summary of five-year crash data by weather conditions.

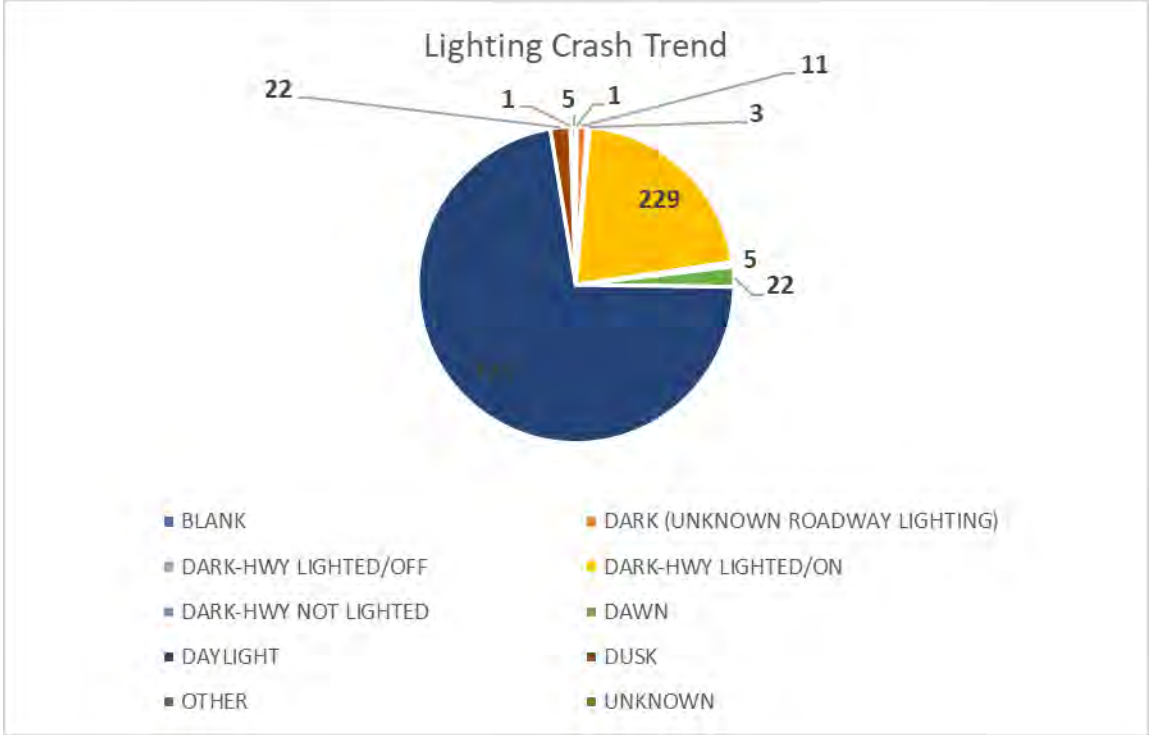


Figure A3.2 - Summary of five-year crash data by lighting conditions.

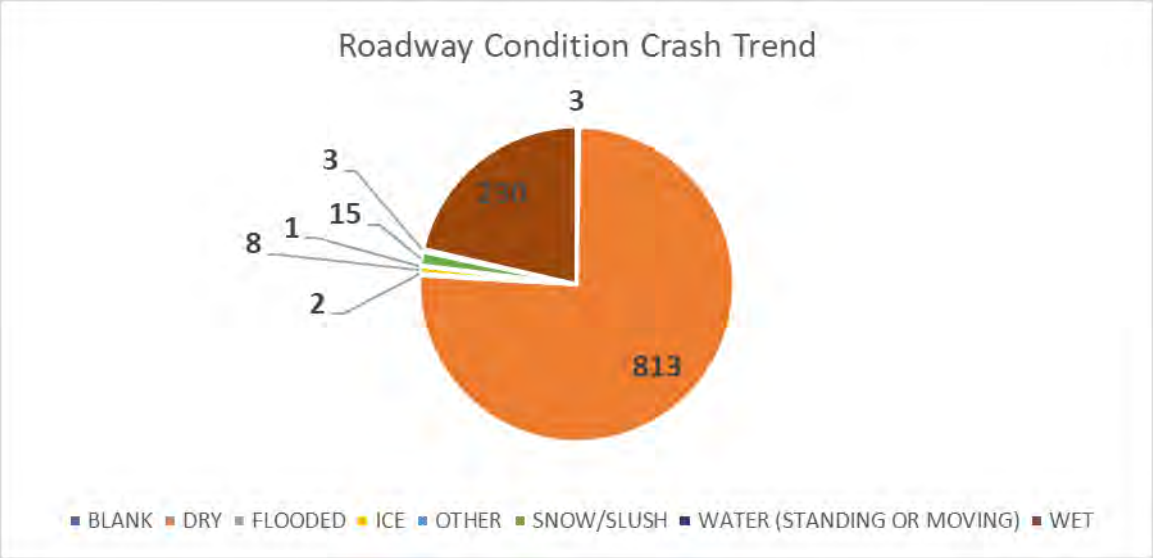


Figure A3.3 - Summary of the five-year crash data by roadway conditions.

Figure A3.4 - Summary of the five-year crash data by severity of injury.

K – Fatal

A – Incapacitating

B – Non-incapacitating

C – Possible injury

O – No injury detected

Excess Expected Crashes Analysis

Excess Expected Crashes (EECs) is a safety evaluation technique to compare a facility's safety performance compared to similar facilities across the state and weighing it through geometric and traffic factors. The corridor is broken into segments and the five major intersections to highlight where this facility is performing compared to similar corridors. Overall, the corridor is experiencing more crashes than similar corridors with an overall EEC of 124 over five years, or around 25 per year. The intersection of Limestone has the highest EEC along the corridor for intersections and the segment from Limestone to Broadway has the highest segment EEC. Table A3.2 and Figure A3.5. below show the EECs by intersection and segment throughout the corridor.

Table A3.2 - Excess Expected Crashes by Intersection and Segment

Type	Name	Excess Expected Crashes
Intersection	Limestone	35.196
Segment	Limestone to Broadway	52.8
Intersection	Broadway	19.204
Segment	Broadway to Versailles	10.6
Intersection	Versailles	13.446
Segment	Versailles to Old Frankfort	2.7
Intersection	Old Frankfort	-14.471
Segment	Old Frankfort to Leestown/Main	2.2
Intersection	Leestown/Main	2.45

Figure A3.5 - Excess Expected Crashes Along the Corridor

Appendix 4 – Traffic Data and Modeling

A detailed traffic study was conducted using the Synchro model, based on data from Streetlight and KYTC. The study focused on the five major intersections: South Limestone at Virginia Avenue/Huguelet Drive, South Broadway at Virginia Avenue/Red Mile Road, Versailles Road at Red Mile Road/South Forbes Road, Old Frankfort Pike at South Forbes Road, and West Main Street/Leestown Road at South Forbes Road.

A traffic analysis was conducted during the AM peak (7:15 AM to 8:15 AM) and PM peak (4:30 PM to 5:30 PM) hours. The intersection Level of Service (LOS) and Delay measures for both the AM and PM peaks are highlighted in Table A4.2. In urban environments, LOS D is considered acceptable for signalized intersections. LOS thresholds and subsequent descriptions of each grade for signalized intersections are listed in Table A4.1.

Table A4.1 – Level of Service Criteria for Signalized Intersections

Level of Service (LOS)	Average Delay (sec/veh)	Level of Service Description
A	≤ 10	Little or no delay
B	> 10 and < 20	Short traffic delays
C	> 20 and < 35	Average traffic delays
D	> 35 and < 55	Long traffic delays
E	> 55 and < 80	Very long traffic delays
F	> 80	Severe congestion

Table A4.2 - Existing Conditions – Intersection Delay/LOS Summary

Intersection	AM – Avg. Delay (sec/veh)	AM – LOS	PM – Avg. Delay (sec/veh)	PM – LOS
S Limestone at Virginia Avenue	50.6	D	55.9	E
S Broadway at Virginia Avenue	45.3	D	50.1	D
Versailles Road at Red Mile/S Forbes Road	39.1	D	45.5	D
Old Frankfort Pike at S Forbes Road	10.6	B	15.8	B
W Main Street at S Forbes Road	22.3	C	29.3	C

Base Model Intersection Analysis

South Limestone at Virginia Avenue / Huguelet Drive

At the intersection of South Limestone and Virginia Avenue/Huguelet Drive, left turn phases operate as protected only on mainline and side-streets during all times of day. The signal control type here is actuated-coordinated, with a cycle length established at 180 seconds during both peak hours. All four pedestrian phases include a walk time of seven seconds. The Flash Don't Walk time is 26 seconds for the northbound and southbound approaches and 22 seconds for the westbound and eastbound approaches.

The mainline street, S Limestone, operates at an acceptable LOS C during both peak periods, while the side-streets suffer from severe congestion/delays, currently experiencing LOS E and F during the AM and PM peaks, shown in Table A4.3. Though the eastbound approach operates at a failing LOS under existing conditions, the 95th percentile queue is calculated no further than 340' in either peak, while adequate storage exists up to 450'. For the westbound approach, this queue length extends to no more than 195' with an available storage up to 225'.

Table A4.3 - Existing Conditions – S Limestone at Virginia Avenue Approach Analysis

Approach	AM – Avg. Delay (sec/veh)	AM – LOS	PM – Avg. Delay (sec/veh)	PM – LOS
Northbound – S Limestone	38.6	D	32.9	C
Southbound – S Limestone	48.1	D	41.6	D
Eastbound – Virginia Avenue	73.8	E	84.0	F
Westbound – Huguelet Drive	64.4	E	91.5	F

South Broadway at Virginia Avenue / Red Mile Road

At the intersection of South Broadway and Virginia Avenue/Red Mile Road, left turn phases are permitted and protected at all times of day. Actuated-coordinated signal control is used here, and its cycle length is set at 180 seconds for both peak hours. The walk time for the intersection's pedestrian crossing signals is five seconds for north and southbound travel and seven seconds for east and westbound travel. Consequently, the Flash Don't Walk phase lasts 18 seconds for crossings in both directions (east and west) and 15 seconds for crossings in both directions (north and south).

The mainline street, S Broadway, operates at an acceptable LOS D during both peak periods, while the side-streets suffer from severe congestion/delays, currently experiencing LOS D, E and F during the AM and PM peaks, shown in Table A4.4.

Table A4.4 - Existing Conditions – S Broadway at Virginia Avenue Approach Analysis

Approach	AM – Avg. Delay (sec/veh)	AM – LOS	PM – Avg. Delay (sec/veh)	PM – LOS
Northbound – S Broadway	37.4	D	41.2	D
Southbound – S Broadway	31.0	C	36.9	D
Eastbound – Red Mile Road	94.1	F	75.1	E
Westbound – Virginia Avenue	52.6	D	76.7	E

Versailles Road at Red Mile Road / South Forbes Road

At all times of day, left turn phases at the intersection of Versailles Road and Red Mile Road/South Forbes Road are permitted and protected. During both peak hours, the cycle length of the actuated-coordinated signal control type is set at 180 seconds. The configuration of the pedestrian crossing signals is such that the walk time for eastbound and westbound directions is seven seconds, and for northbound and southbound directions it is six seconds. For east, south, and northbound routes, the Flash Don't Walk phase lasts 17 seconds; however, it lasts 25 seconds for westbound directions.

Table A4.5 illustrates that while southbound S Forbes Road and the side streets function at an acceptable LOS C during both peak periods, northbound Red Mile Road suffers from extreme congestion and delays, currently suffering LOS E and F during AM and PM peak periods, respectively.

Table A4.5: Existing Conditions – Versailles Road at Red Mile/S Forbes Road Approach Analysis

Approach	AM – Avg. Delay (sec/veh)	AM – LOS	PM – Avg. Delay (sec/veh)	PM – LOS
Northbound – Red Mile Road	67.5	E	84.2	F
Southbound – S Forbes Road	51.6	D	41.2	D
Eastbound – Versailles Road	31.8	C	34.6	C
Westbound – Versailles Road	24.6	C	36.7	D

Old Frankfort Pike at South Forbes Road

At the intersection of Old Frankfort Pike and South Forbes Road, left turn phases operate as permitted only on during all times of day. During both peak hours, the cycle length of the actuated-coordinated signal control type is set at 180 seconds. The westbound pedestrian crossing signals are set up with a seven-second walk period and an eighteen-second Flash Don't Walk phase. For the remaining approaches, there are no pedestrian walk signals available.

As shown in Table A4.6, the mainline and the side streets at the intersection of Old Frankfort Pike and South Forbes Road operate at acceptable LOS A, B, and C during both peak periods.

Table A4.6 - Existing Conditions – Old Frankfort Pike at S Forbes Road Approach Analysis

Approach	AM – Avg. Delay (sec/veh)	AM – LOS	PM – Avg. Delay (sec/veh)	PM – LOS
Northbound – S Forbes Road	11	B	21.4	C
Southbound – S Forbes Road	12.4	B	18.4	B
Eastbound – Old Frankfort Pike	8.9	A	9	A
Westbound – Old Frankfort Pike	9.5	A	11.6	B

West Main Street / Leestown Road at South Forbes Road

At the intersection of West Main Street/Leestown Road and South Forbes Road, left turn phases operate as permitted and protected on mainline and permitted on side-streets during all times of day. The signal control type here is actuated-coordinated, with a cycle length established at 180 seconds during both peak hours. Pedestrian walk phases are provided on Leestown Road on both sides of the road segment, each with a seven second duration. The Flash Don't Walk time is 12 seconds each for both the road segments.

The Northbound, S Forbes Road suffers from congestion and operates at an LOS E while the other road segments at the intersection works at an acceptable LOS B and D on Southbound, N Forbes Road and Leestown Road respectively as shown in Table A4.7.

Table A4.7: Existing Conditions – W Main Street/Leestown Road at S Forbes Road Approach Analysis

Approach	AM – Avg. Delay (sec/veh)	AM – LOS	PM – Avg. Delay (sec/veh)	PM – LOS
Northbound – S Forbes Road	59.9	E	64.9	E
Southbound – N Forbes Road	46.7	D	37.9	D
Eastbound – Leestown Road	13.4	B	18.7	B
Westbound – W Main Street	10.1	B	19.4	B

Intersection Models with Potential Improvement Concepts

In the potential improvement concepts (PICs) models, strategic modifications were implemented to improve traffic flow and safety at specific intersections, as compared to the base model which replicates the existing road network. At the intersection of South Limestone and Virginia Avenue/Huguelet Drive, the westbound right and through lanes were consolidated into a single lane. Additionally, this new combined lane was realigned to integrate with the adjacent segment on Virginia Avenue, enhancing the flow and safety at this junction. Similarly, at Versailles Road and Red Mile Road/South Forbes Road, a comparable approach was adopted. The westbound right and through lanes were merged into one lane. This combined lane was then aligned with the adjacent road segment on Red Mile Road, aiming to streamline traffic movement and reduce conflict points.

Appendix 5 – Innovative Intersections Analysis

Long-term potential improvement concepts utilize standard and innovative intersections to enhance safety and mobility. When paired with the short-term potential improvement concepts, these ensure bicyclists and pedestrians are safe and accommodated for. Below are the innovative intersection concepts recommended for consideration for each major intersection throughout the study area. These innovative intersections are shown as the best-case scenario for each intersection to provide a safer facility for all users. The Virginia Department of Transportation (VDOT) Junction Screening Tool (VJUST) was used to compare and evaluate the study intersections for the best possible intersection type. VJUST uses the following criteria:

- **Congestion**: The maximum volume/capacity (v/c) ratio represents the worst v/c of all zones that make up an intersection.
- **Pedestrian**: Compares the potential of each design to accommodate pedestrians based on safety, wayfinding, and delay. Potential is qualitatively defined as better (+), similar (blank cell), or worse (-) than a conventional intersection or traditional diamond interchange.
- **Safety**: Weighted Total = (2 x Crossing Conflicts) + Merging Conflicts + Diverging Conflicts.
- **Planning Level Costs:** Cost category estimates for each intersection/interchange alternative. Some alternatives have choices that affect the resulting cost category (e.g., requirement of a new bridge) that can be configured on the individual input worksheets.

Table A5.1 - Summary of Long-Term Potential Intersection Concepts

Intersection	Long Term Intersection Concepts
Virginia/Huguelet at Limestone	Bowtie Intersection
Virginia/Red Mile at Broadway	Median U-Turn (MUT)
Red Mile/Forbes at Versailles	Conventional Signal
Forbes at Old Frankfort Pike	Single Lane Roundabout
Forbes at Leestown/Main	Single Lane Roundabout with Mini-roundabout at Antique Drive

Virginia/Huguelet at Limestone

The Virginia/Huguelet at Limestone intersection has been studied throughout other studies, most recently the Imagine Nicholasville Road (INR) study that is now in the KYTC planning phase. The INR study suggests a bowtie roundabout be placed due to the potential for a center running bus rapid transit system that would eliminate the Limestone left turn lanes. If a center running bus rapid

transit system is not implemented, the short-term conventional signalized intersection would be the best option for the intersection. The bowtie roundabout intersection would utilize the parking garage entrance on Huguelet Drive and the Press Avenue intersection for the roundabouts, allowing vehicles wanting to turn left from Limestone to turn right and use the roundabout to make a U-turn and proceed as a through vehicle from side streets. Although this movement can seem tedious and inconvenient, the innovative intersection requires a reduction in phases and thus creates a more efficient and safer system. The bowtie is also a safer intersection improvement for bicyclists and pedestrians, as it has more time for crossing and less conflict points. Below is an example of a bowtie roundabout intersection.

Figure A5.1 - Bowtie Intersection Example from FHWA

Virginia/Red Mile at Broadway

The Virginia/Red Mile at Broadway intersection has some recent improvements underway, but the potential long term innovative intersection improvement would be a Median U-Turn (MUT) Intersection. A Median U-Turn Intersection operates similarly to a Restricted Crossing U-Turn Intersection but with signals at the U-Turns. This intersection eliminates left turns from one major movement and allows vehicles to make a right turn, U-Turn, and then through movement to eliminate conflict points (16 conflict points instead of 32). Similarly to the bowtie roundabout intersection, this intersection would reduce travel time and crashes, while also improving bicycle and pedestrian safety. Due to right-of-way impacts, the U-Turn movements would be on the Virginia and Red Mile legs. Below is an example of a MUT.

Figure A5.2 - Median U-Turn Example from FHWA

Red Mile/Forbes at Versailles

The Red Mile/Forbes at Versailles intersection was recently improved. The improvements addressed safety needs, but with a potential trail, bicycle and pedestrian improvements are required. The short-term improvements would provide the necessary long-term improvements for this intersection and a conventional signalized intersection is recommended to stay.

Forbes at Old Frankfort Pike

The Forbes at Old Frankfort Pike intersection was recently improved with an added turn lane. The improvements addressed safety needs, but with a potential trail, bicycle and pedestrian improvements are required. The potential long-term intersection concept is to construct a single lane roundabout. Single lane roundabouts have numerous safety and mobility benefits by reducing conflict points and slowing vehicles down, but not always forcing a stopping situation. Right-of-way would need to be acquired to fit the roundabout in the space, but the benefits would be important for traffic calming in the area with more bicyclists and pedestrians due to the confluence of two trails. The *NCHRP 672: Roundabouts: An Informational Guide* recommends roundabouts based on traffic volumes for four-leg roundabouts. A single-lane roundabout can accommodate up to 20,000 AADT or 1,400-2,400 VPH. This intersection meets both criteria for traffic volumes. Figure A5.3 below highlights an example of a single lane roundabout.

Forbes at Leestown/Main

The Forbes at Leestown/Main intersection was recently studied by KYTC District 7. The potential long-term intersection concept is to construct a single lane roundabout. Single lane roundabouts have numerous safety and mobility benefits by reducing conflict points and slowing vehicles down, but not always forcing a stopping situation. Right-of-way would need to be acquired to fit the roundabout in the space, but the benefits would be important for traffic calming in the area with more bicyclists and pedestrians due to the confluence of two trails. The *NCHRP 672: Roundabouts: An Informational Guide* recommends roundabouts based on traffic volumes for four-leg roundabouts. A single-lane roundabout can accommodate up to 20,000 AADT or 1,400-2,400 VPH. This

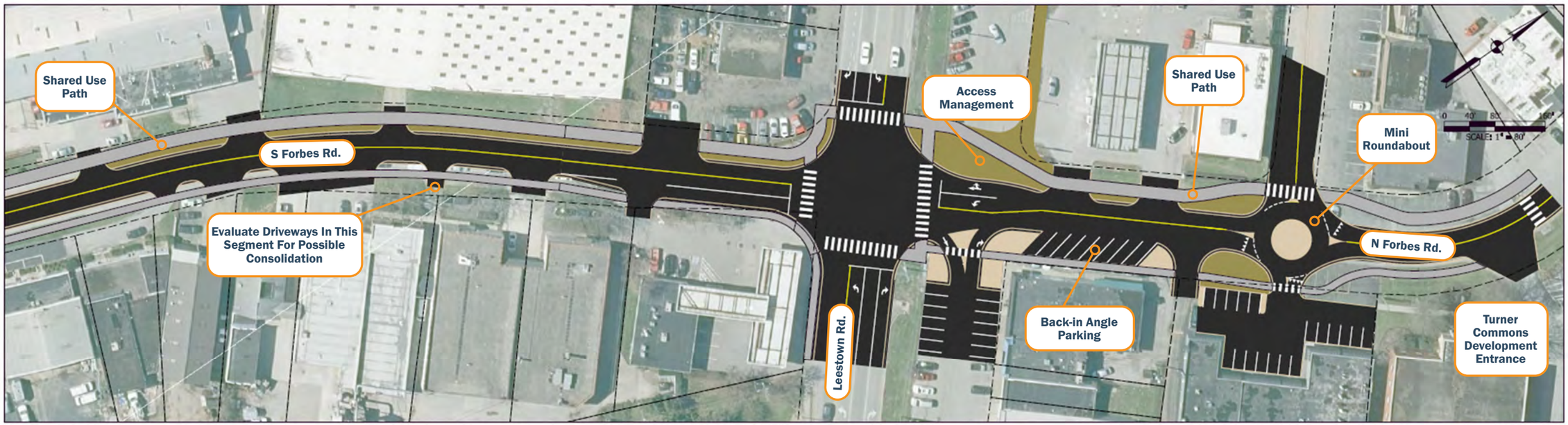
intersection is close to the upper threshold, but still meets both criteria based on current traffic volumes. The below above highlights an example of a single lane roundabout.

A mini roundabout would benefit this area if included at the Antique Drive intersection to improve flow at both the main and secondary intersections. Due to the space of the parking lot, access management paired with these improvements would help the flow of the area and overall safety.

Figure A5.3 - Single Lane Roundabout Example, FHWA

Appendix 6 – Leestown Road Alternative

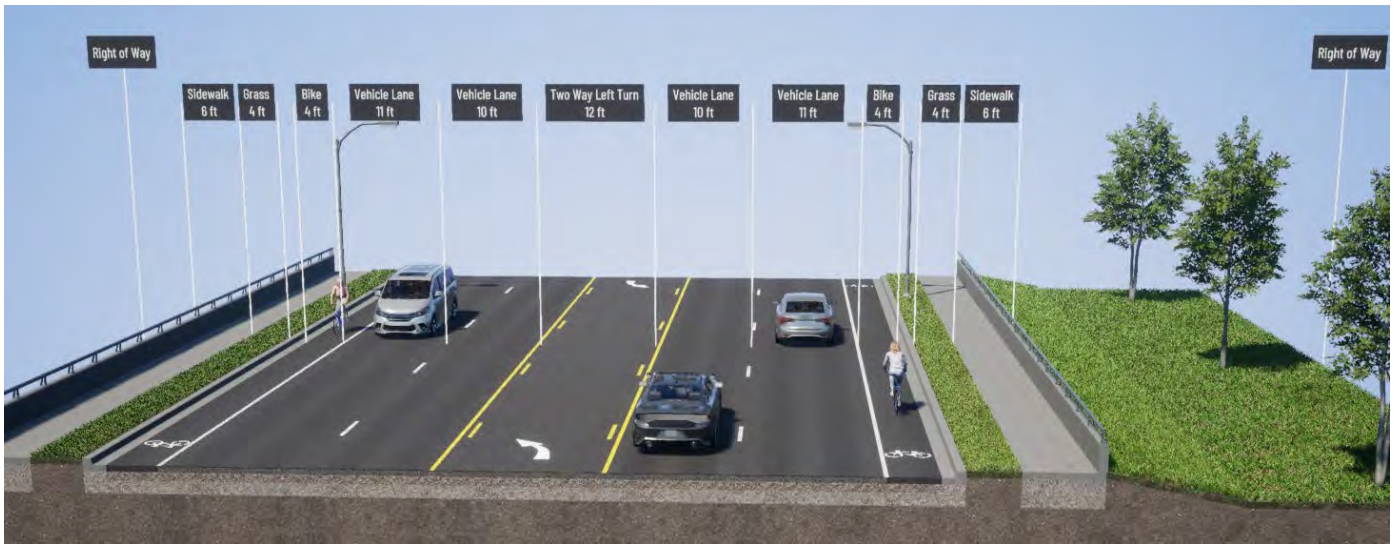
The Leestown Road intersection is shown with a proposed roundabout in the trail connectivity study. However, a signalized intersection with improved pedestrian and bicycle facilities is shown below as a feasible alternative.



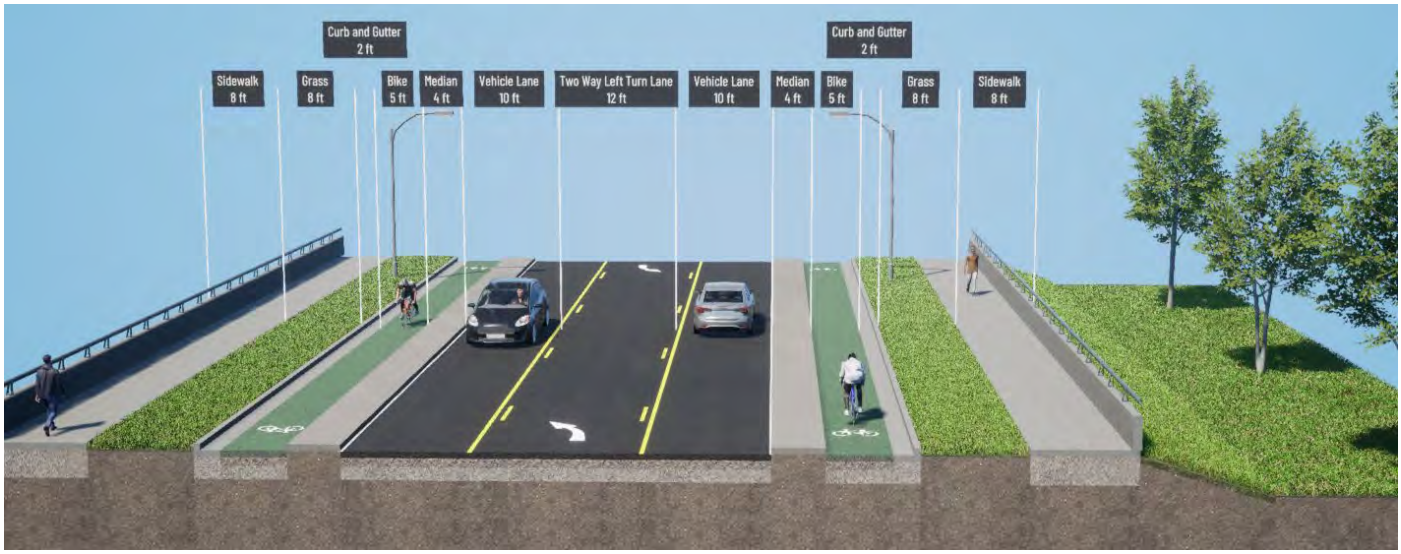
Appendix 7 – Typical Sections

Virginia Avenue

Existing

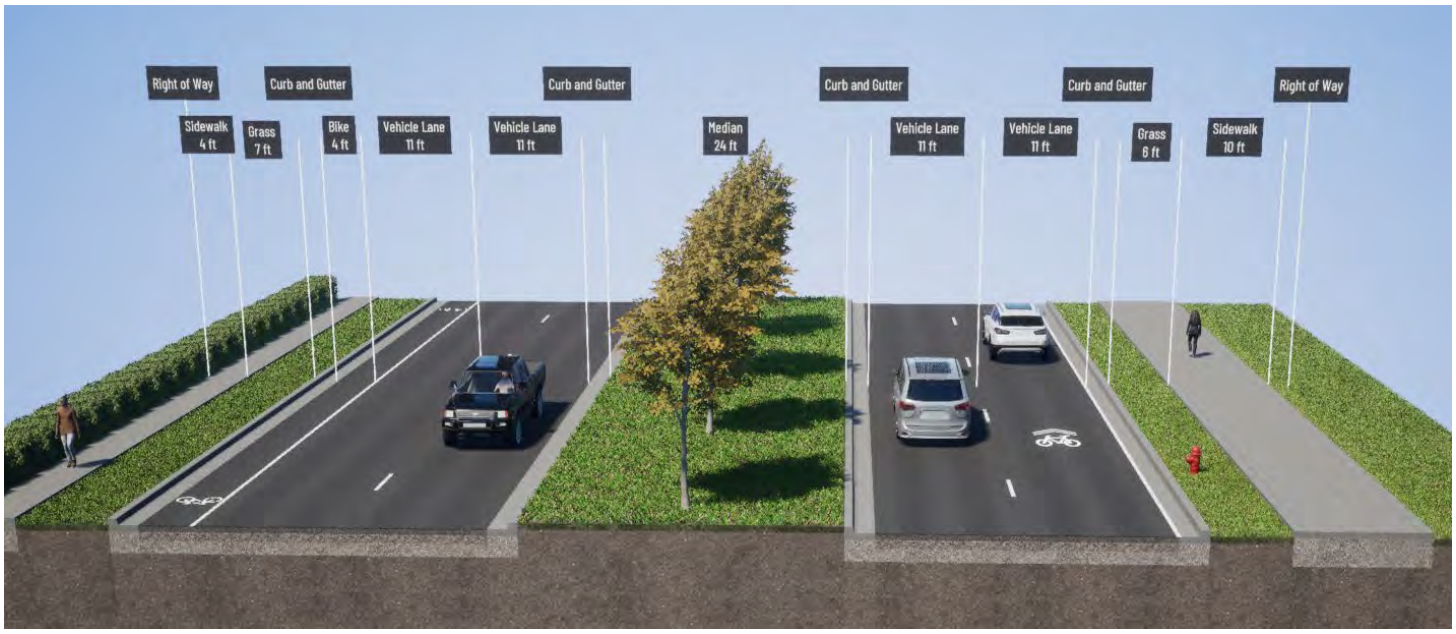


Proposed



Red Mile Road

Existing



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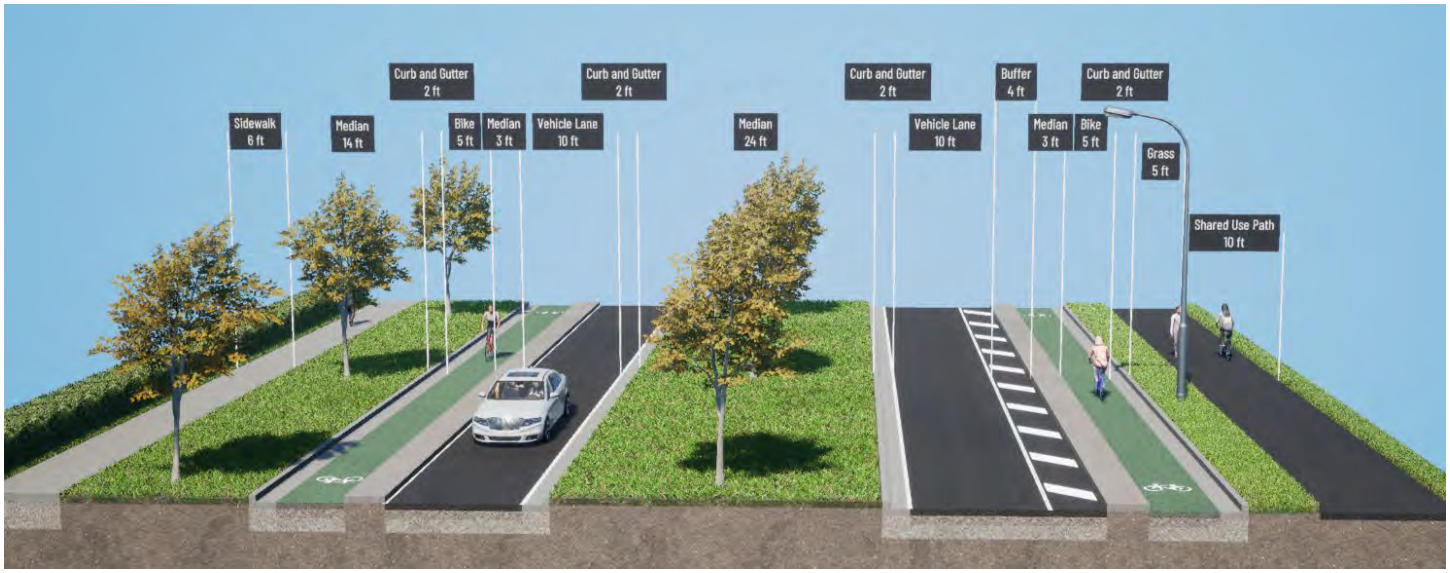
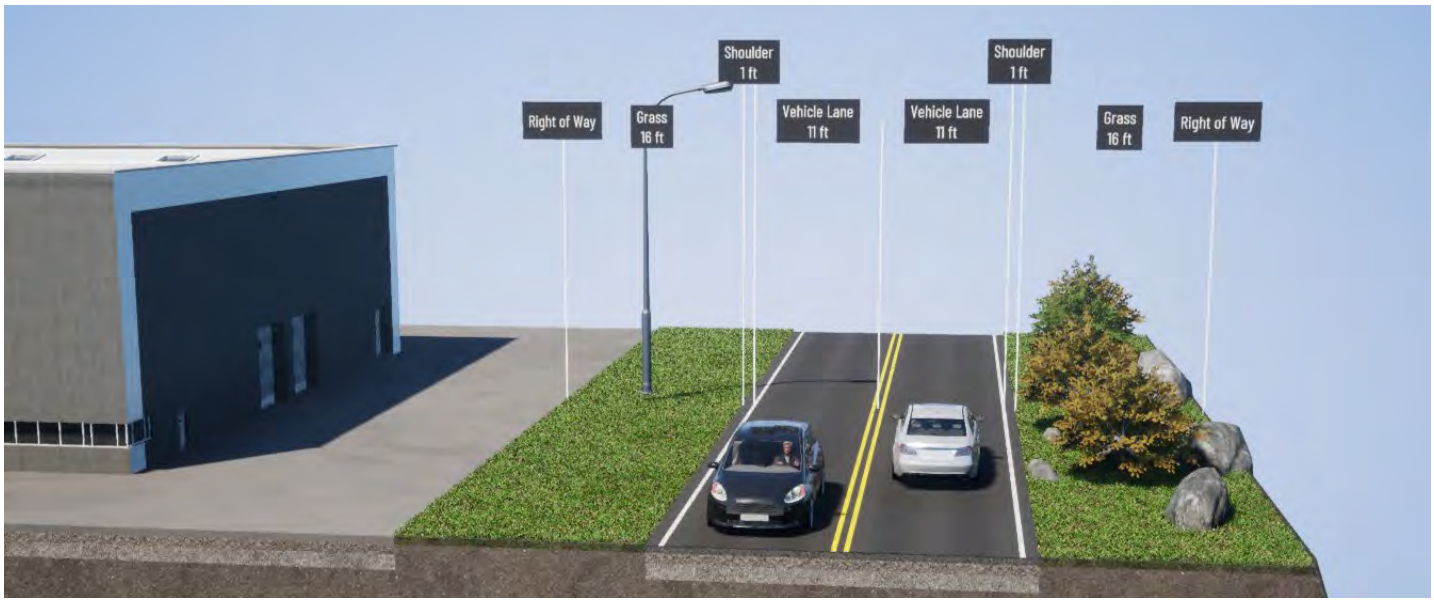
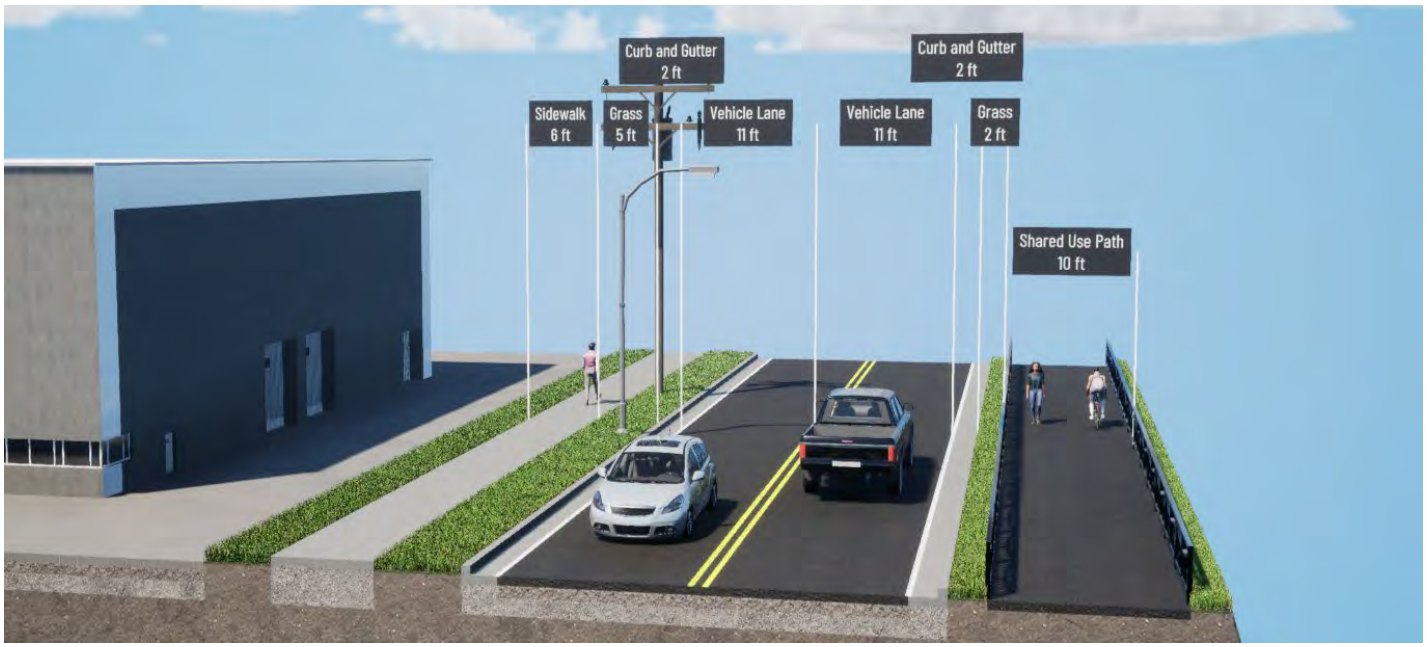


Forbes Road

Existing



Proposed



Appendix 8 – Design and Construction Cost Estimates

Construction Cost Estimates Breakdown

Construction Cost Estimates by Item in 2024 Dollars

Item	Unit	Unit Price	Segments						Intersections						
			Virginia	Red Mile 1	Red Mile 2	Forbes 1	Forbes 2	SUBTOTAL	Limestone	Broadway	Versailles	Old Frankfort Pike	Lisle Industrial - Liggett	Leestown	SUBTOTAL
			Press Avenue to Broadway	Broadway to Red Mile Entrance	Red Mile Entrance to Versailles Road	Versailles Road to Old Frankfort Pike	Old Frankfort Pike to Leestown		Including Huguelet Drive and Press Avenue					Including Antique Drive	
Pavement Reconstruction	SQYD	$ 104.00	$ 405,600	$ -	$ -	$ 145,600	$ -	$ 551,200	$ 1,395,197	$ 1,639,645	$ 355,141	$ 322,856	$ 394,345	$ 654,936	$ 4,762,119
Pavement Resurfacing	SQYD	$ 10.50	$ -	$ 125,400	$ 168,300	$ 72,600	$ 57,200	$ 423,500							
Shared Use Path	SQYD	$ 125.00	$ -	$ -	$ 475,000	$ 387,500	$ 250,000	$ 1,112,500							
Sidewalk	SQYD	$ 100.00	$ 180,000	$ 130,000	$ 180,000	$ 190,000	$ 120,000	$ 800,000	$ 29,125	$ 51,400	$ 37,000	$ 26,000	$ 17,000	$ 21,500	$ 182,025
Protected Bike Lane Curb	SQYD	$ 275.00	$ 244,750	$ 492,250	$ 951,500	$ -	$ -	$ 1,688,500							
Curb and Gutter	LF	$ 50.00	$ 75,450	$ 95,150	$ 174,700	$ 265,500	$ 167,900	$ 778,700	$ 225,000	$ 81,000	$ 54,000	$ 56,250	$ 49,500	$ 90,000	$ 555,750
Medians	SQYD	$ 150.00	$ 15,000	$ 45,000	$ 30,000	$ -	$ -	$ 90,000	$ 420,000	$ 336,000	$ 18,600	$ 76,000	$ 76,000	$ 224,000	$ 1,150,600
Driveways	SQYD	$ 150.00	$ 45,000	$ 45,000	$ 97,500	$ 75,000	$ 202,500	$ 465,000							
Drainage	LF	$ 250.00	$ -	$ -	$ 975,000	$ 1,475,000	$ 925,000	$ 3,375,000							
Pavement Markings	LF	$ 1.50	$ 22,500	$ 15,000	$ 30,600	$ 18,000	$ 27,000	$ 113,100							
Pavement Markings - Bike	EACH	$ 400.00	$ 7,200	$ 8,000	$ 9,600	$ -	$ -	$ 24,800							
Signage	SQFT	$ 50.00	$ 2,150	$ 6,250	$ 6,250	$ 8,500	$ 7,500	$ 30,650	$ 25,000	$ 25,000	$ 25,000	$ 25,000	$ 25,000	$ 25,000	$ 150,000
Stormwater Pollution Prevention	LS	2%	$ 32,000	$ 32,000	$ 85,000	$ 85,000	$ 62,000	$ 296,000							
Landscaping	LS	5%	$ 80,000	$ 80,000	$ 210,000	$ 210,000	$ 160,000	$ 740,000							
Lighting	LF	$ 200.00	$ 500,000	$ 500,000	$ 680,000	$ 600,000	$ 600,000	$ 2,880,000							
Railroad Crossing	EACH	$ 500,000	$ -	$ -	$ -	$ 500,000	$ 500,000	$ 1,000,000							
Pedestrian Railing	LF	$ 150.00	$ -	$ -	$ -	$ 112,500	$ -	$ 112,500							
Earthwork (Intersections)	CY	$ 40.00							$ 80,000	$ 80,000	$ 60,000	$ 80,000	$ 80,000	$ 80,000	$ 460,000
Miscellaneous (Intersections)	LS	10%							$ 247,432	$ 251,305	$ 84,974	$ 88,611	$ 94,185	$ 139,544	$ 906,049
Maintenance of Traffic	LS		$ 81,000	$ 79,000	$ 204,000	$ 208,000	$ 154,000	$ 726,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 1,800,000
Mobilization / Demobilization	LS		$ 81,000	$ 79,000	$ 204,000	$ 208,000	$ 154,000	$ 726,000	$ 122,479	$ 124,396	$ 42,062	$ 43,862	$ 46,621	$ 69,074	$ 448,494
Subtotal			$ 1,772,000	$ 1,733,000	$ 4,482,000	$ 4,562,000	$ 3,388,000	$ 15,937,000	$ 2,845,000	$ 2,889,000	$ 977,000	$ 1,019,000	$ 1,083,000	$ 1,605,000	$ 10,418,000
Contingency (30%)			$ 532,000	$ 520,000	$ 1,345,000	$ 1,369,000	$ 1,017,000	$ 4,783,000	$ 854,000	$ 867,000	$ 294,000	$ 306,000	$ 325,000	$ 482,000	$ 3,128,000
Construction Total (2024)			$ 2,304,000	$ 2,253,000	$ 5,827,000	$ 5,931,000	$ 4,405,000	$ 20,720,000	$ 3,699,000	$ 3,756,000	$ 1,271,000	$ 1,325,000	$ 1,408,000	$ 2,087,000	$ 13,546,000

Design, Right of Way, Utilities, and Construction Cost Estimates Breakdown and Annual Growth

2024 Base Year Totals

Phase 1	**Design**	**ROW**	**Utilities**	**Construction (2024)**
Virginia Avenue	$ 460,600	$ 26,000	$ 100,000	$ 2,303,000
Limestone Intersection	$ 739,800	$ 200,000	$ 300,000	$ 3,699,000
Broadway Intersection	$ 751,200	$ 200,000	$ 300,000	$ 3,756,000
Phase 1 Total (2024)	$ 1,951,600	$ 426,000	$ 700,000	$ 9,758,000

Phase 2	**Design**	**ROW**	**Utilities**	**Construction (2024)**
Red Mile Road	$ 1,615,600	45000	$ 200,000	$ 8,078,000
Versailles Road Intersection	$ 254,200	0	$ 300,000	$ 1,271,000
Phase 2 Total (2024)	$ 1,869,800	45000	$ 500,000	$ 9,349,000

Phase 3	**Design**	**ROW**	**Utilities**	**Construction (2024)**
Forbes Road	$ 2,066,600	$ 163,000	$ 2,000,000	$ 10,333,000
Old Frankfort Pike Intersection	$ 265,000	$ 300,000	$ 300,000	$ 1,325,000
Lisle - Liggett Intersection	$ 281,600	$ 400,000	$ 300,000	$ 1,408,000
Leestown Road Intersection	$ 417,400	$ 200,000	$ 300,000	$ 2,087,000
Phase 3 Total (2024)	$ 3,030,600	$ 1,063,000	$ 2,900,000	$ 15,153,000

Annualized Totals

Phase	**Design**	**ROW**	**Utilities**	**Construction**	**Total**	**Year**
Phase 1	$ 2,330,000	$ 426,000	$ 700,000	$ 11,652,000	$ 15,108,000	2030
Phase 2	$ 2,369,000	$ 45,000	$ 500,000	$ 11,844,000	$ 14,758,000	2032
Phase 3	$ 4,196,000	$ 1,063,000	$ 2,900,000	$ 20,978,000	$ 29,137,000	2035

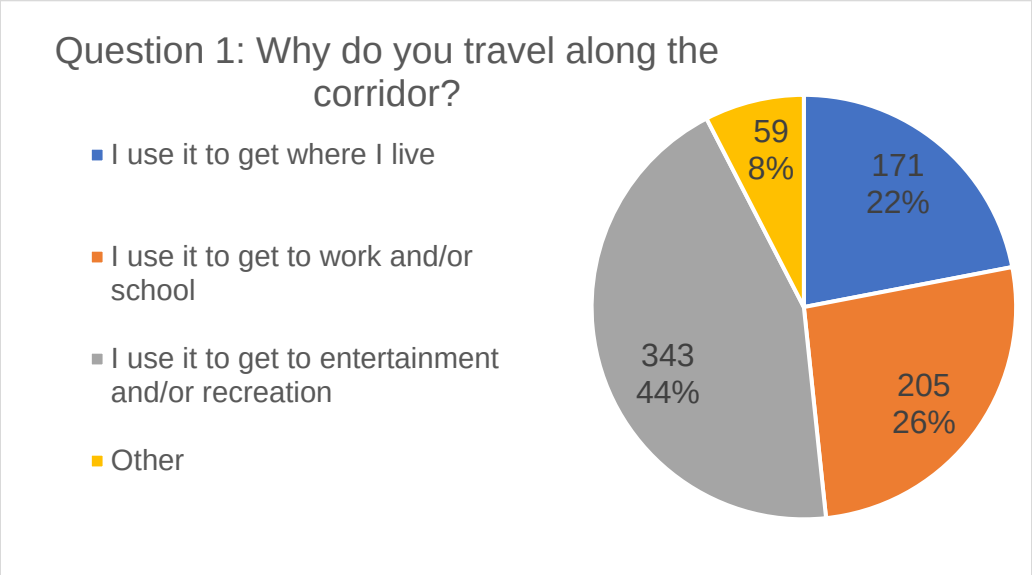
Year	Annual Growth
	Construction
2030	$ 2,750,000
	$ 4,417,000
	$ 4,485,000
	$ 11,652,000
	Construction
2032	$ 10,233,000
	$ 1,611,000
	$ 11,844,000
	Construction
2035	$ 14,304,000
	$ 1,835,000
	$ 1,950,000
	$ 2,889,000
	$ 20,978,000

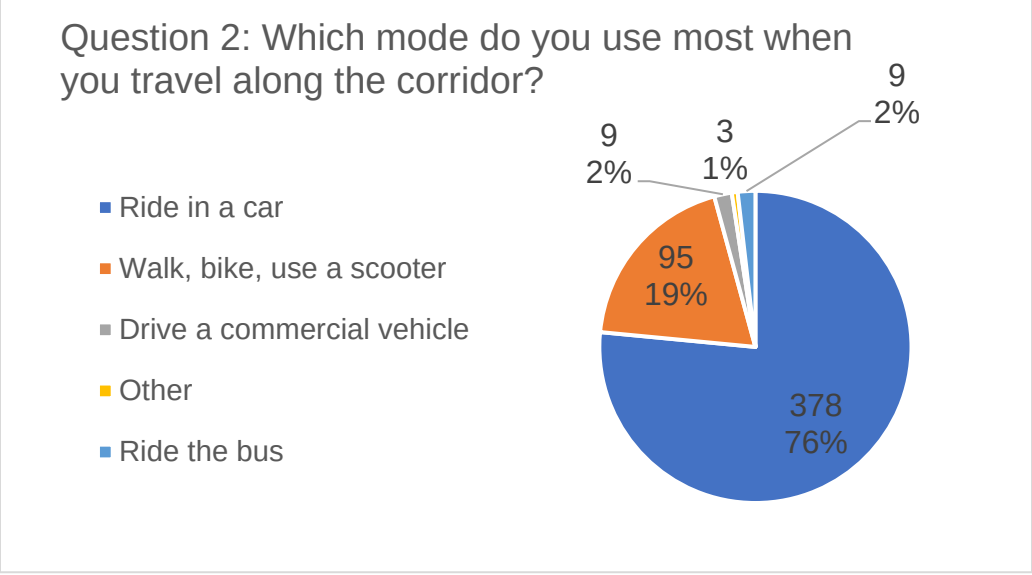
Base Year	2024
Inflation Rate	3%
Design	20%

Appendix 9 – Public Outreach Survey Results

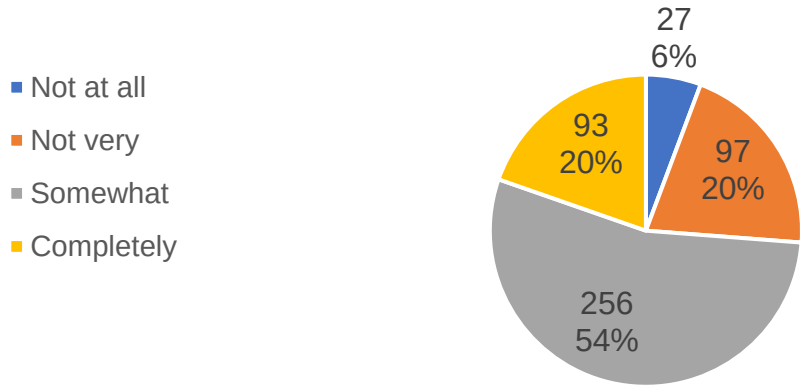
Survey #1 - Project Kickoff

499 Responses

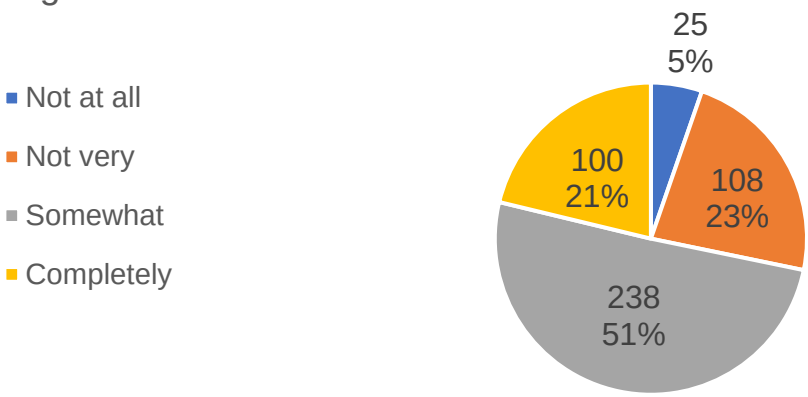




Question 3: How safe do you feel moving through the corridor?



Question 4: How comfortable do you feel moving through the corridor?



Question 6: People tend to walk, bike, and ride the bus more when they feel safe, comfortable, and the choices are convenient. Everything listed below can help make the road more walkable and bike-friendly. But for right now, we want to understand what's most important to you. Please rank the following (drag and drop 1-5) in order of their importance.

		Rank											
	Average	1		2		3		4		5		6	
Make intersections safer	2.84	64	15.1%	89	21.2%	112	27.2%	53	17.4%	34	12.4%	13	5.8%
Fix and/or add sidewalks	2.31	120	28.2%	123	29.3%	86	20.9%	44	14.5%	14	5.1%	7	3.1%
Add more lighting	3.55	32	7.5%	64	15.2%	65	15.8%	68	22.4%	74	26.9%	32	14.3%
Improve bus service	4.38	19	4.5%	21	5.0%	40	9.7%	48	15.8%	61	22.2%	92	41.1%
Improve safety for biking	2.26	170	40.0%	73	17.4%	62	15.0%	39	12.8%	27	9.8%	12	5.4%
Reduce vehicle speeds	3.98	20	4.7%	50	11.9%	47	11.4%	52	17.1%	65	23.6%	68	30.4%

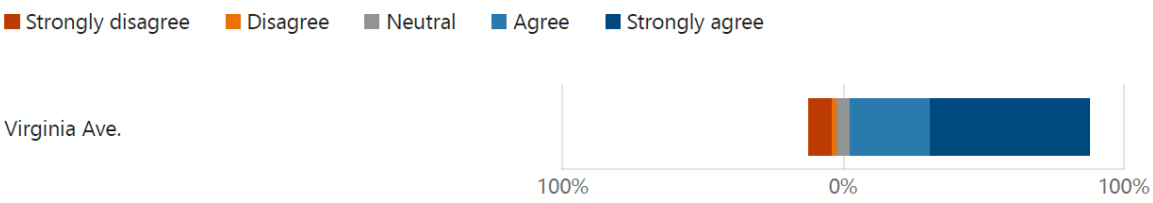
Survey #2 – Preliminary Draft Study

286 Responses

Here's what Virginia Avenue looks like today.

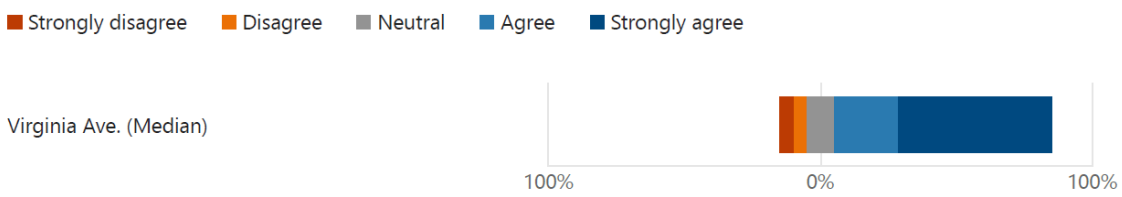
Here's what Virginia Avenue could look like in the future.

1. I would feel safer and more comfortable biking and walking on this street.



Here's what Virginia Avenue could look like in the future, except with a raised median.

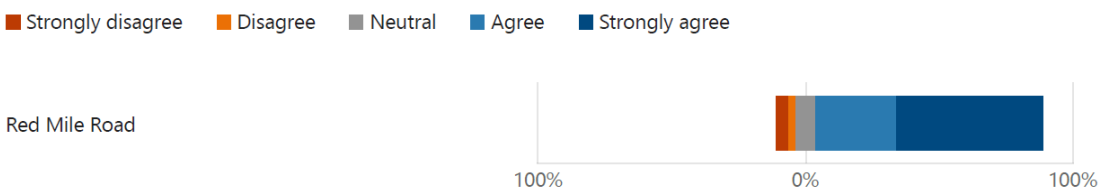
2. I would feel safer and more comfortable biking and walking on this street.



Here's what Red Mile Road looks like today.

Here's what Red Mile Road could look like in the future.

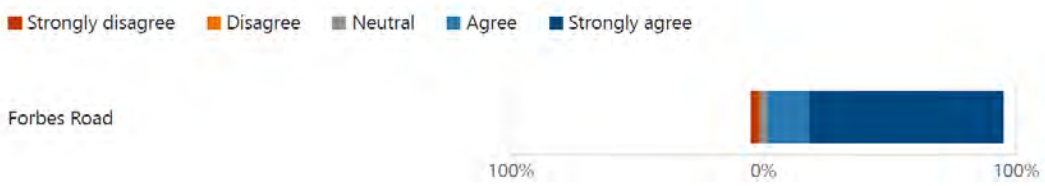
3. I would feel safer and more comfortable biking and walking on this street.

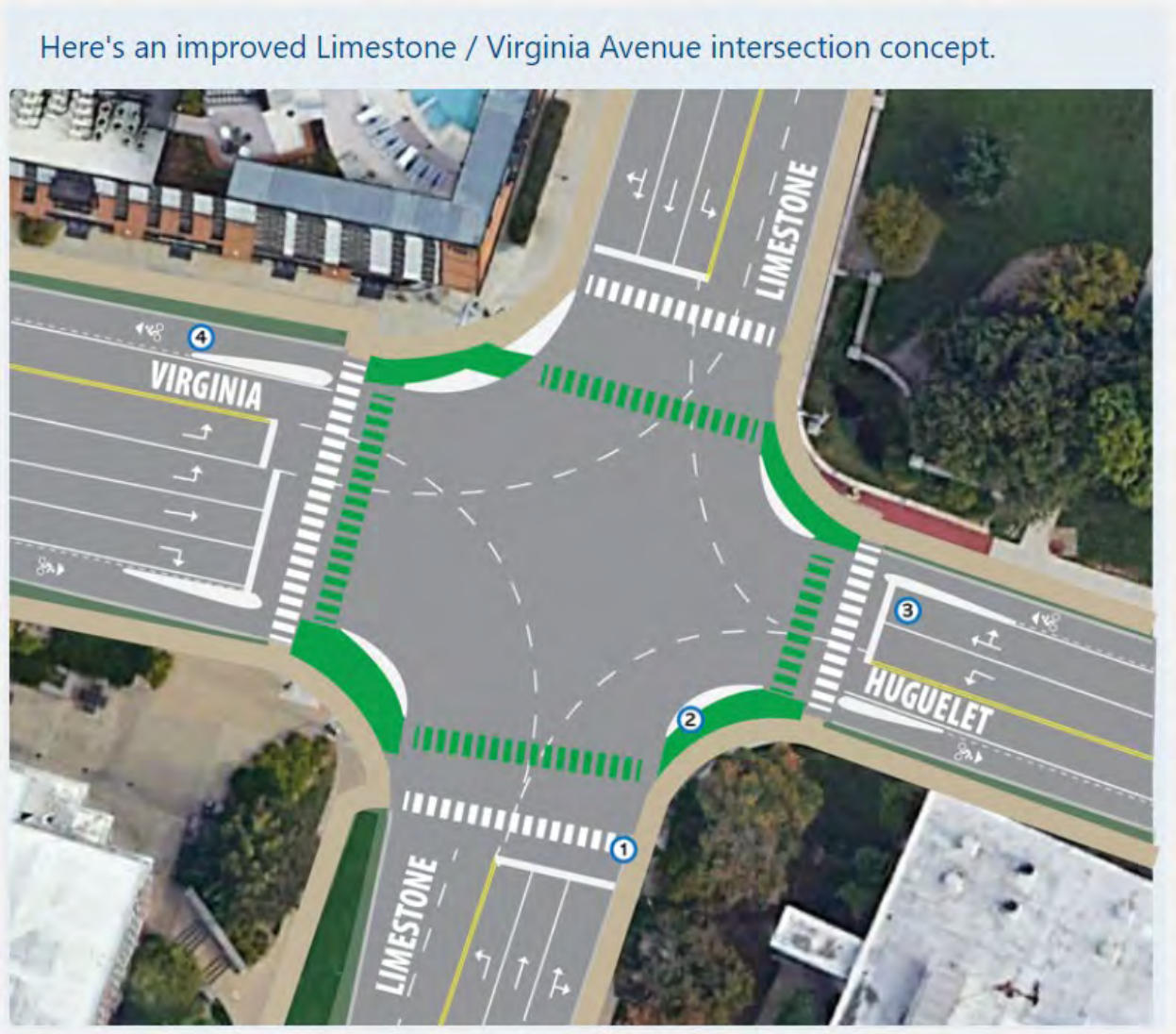


Here's what Forbes Road looks like today.

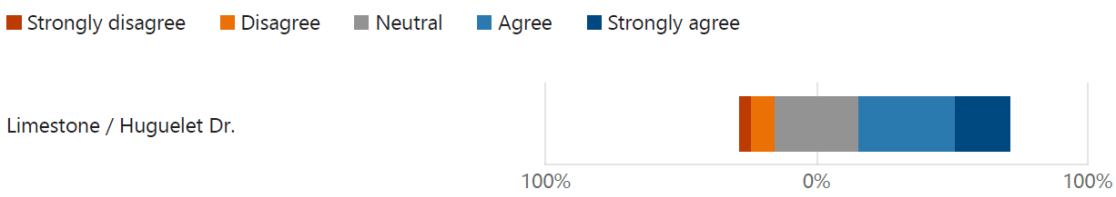
Here's what Forbes Road could look like in the future.

4. I would feel safer and more comfortable biking and walking on this street.



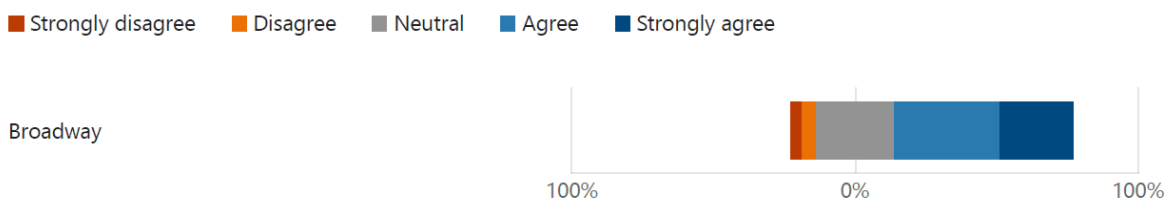


5. I would feel safer and more comfortable biking and walking at this intersection.



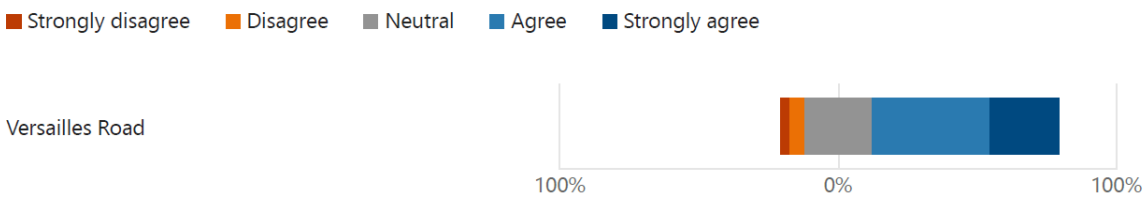
Here's an improved Broadway / Virginia Avenue intersection concept.

6. I would feel safer and more comfortable biking and walking at this intersection.

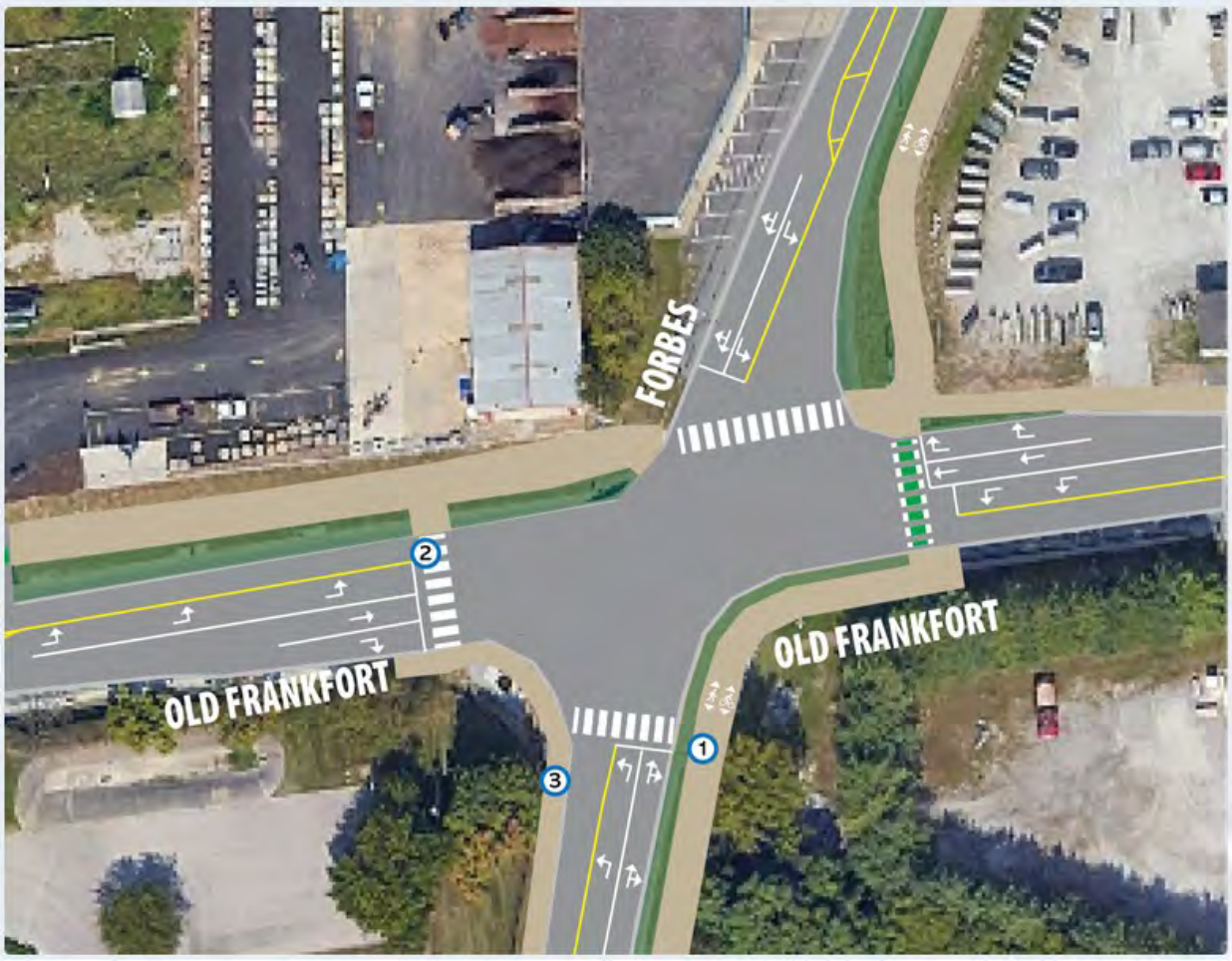


Here's an improved Versailles Road / Forbes Road / Red Mile Road intersection concept.

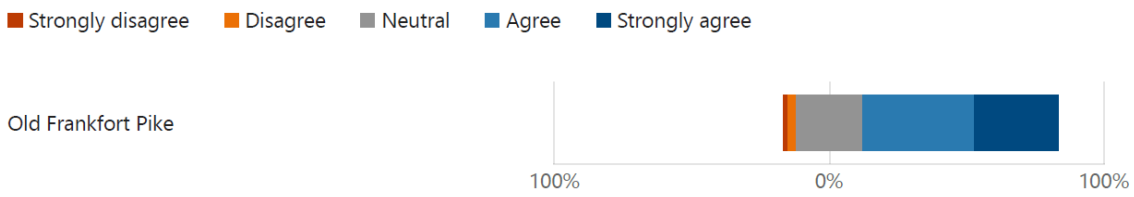
7. I would feel safer and more comfortable biking and walking at this intersection.



Here's an improved Old Frankfort Pike / Forbes Road intersection concept.

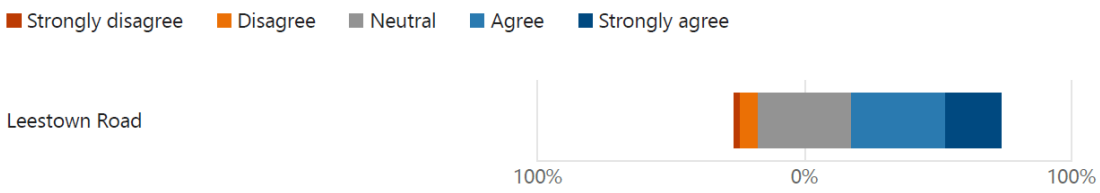


8. I would feel safer and more comfortable biking and walking at this intersection.

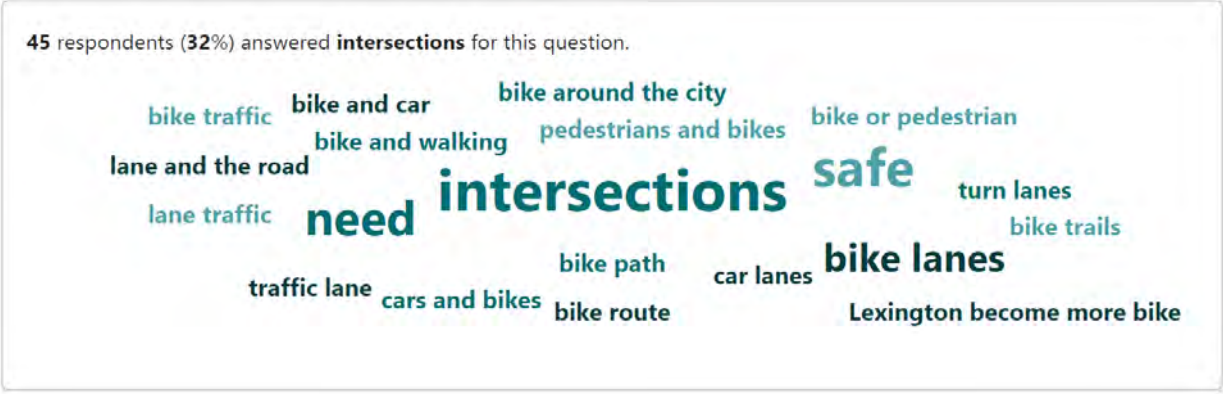


Here's an improved Leestown Road / Forbes Road intersection concept.

9. I would feel safer and more comfortable biking and walking at this intersection.



10. Please share any additional comments you have regarding the study here.



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