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Introduction

In 2012, the Thomas Jefferson Planning District Commission (TJPDC), also known as Region 10, started an initiative to study, promote and improve its portion of U.S. Bicycling Route 76 (BR 76). This report is the first step in this initiative, creating an inventory of existing conditions and highlighting recommendations for improving the safety and recreational value of the Route.



Figure 1: TJPDC's Bike Route 76 Initiative

Purpose and Audience

This report is a technical document, intended to highlight roadway deficiencies that diminish cycling safety along BR 76, in Region 10. As a technical document, the intended audience includes regional and state transportation planners, along with cycling advocates. This report is intended to document cycling compatibility, with a secondary goal of recording cycling amenities and tourist destinations.

This report may also serve as a guide to local officials, to aid in decision-making for transportation-related investments. Since BR 76 is also a recreational and tourist amenity, this report may also be helpful for identifying strategies for supporting tourism efforts.

Goals and Objectives

This report is intended to fulfill four main goals:

Goal A: Inventory Road Conditions

Inventory all roadway conditions along the Region 10 portion of BR 76.

Goal B: Safety Recommendations

Develop recommendations for improving overall cycling compatibility along the corridor.

Goal C: Recreational Value

Identify strategies for improving the recreational experience along BR 76.

Goal D: Data Collection

Collect data and develop maps that will assist with subsequent efforts to promote BR 76.

U.S. Bicycling Route 76

U.S. Bicycling Route 76 is an on-road Bike Route that spans the eastern half of the Country, from Missouri to eastern Virginia, in Yorktown. The concept for BR 76 originated with a large cycling event in 1976, which celebrated the Country's bicentennial. As part of the event, the Adventure



TransAmerica Trail - Courtesy Adventure Cycling Association

Cycling Association (at that time known as Bikecentennial) first mapped a cross-country bike route named the TransAmerican Bicycle Trail. That trail still exists today and stretches from Oregon to Virginia, spanning approximately 4,242 miles from coast to coast. While the Adventure Cycling Association acts as overseer to this trail, there were no official bike route designations until 1982.

In 1978, the American Association of State Highway and Transportation Officials (AASHTO) established the U.S. Bicycling Route System (USBRS), the cycling equivalent to the numbering system for highways and interstates. The purpose of these route numberings and markings is to facilitate recreational riding between states, by way of roadways that are reasonably suitable for bicycling. While U.S. Bike Routes include off-road paths, the vast majority of route mileage consists of on-road facilities (public highways).

In 1982, AASHTO designated the first two U.S. Bicycling Routes (Routes 1 and 76), both of which pass through Virginia. This made the Commonwealth one of the first states with a USBR and the first with two routes. In recent years, AASHTO approved additional Bike Routes and there are more under review. At this time, there are over 6,200 miles of approved Bike Routes, spanning 12 states.



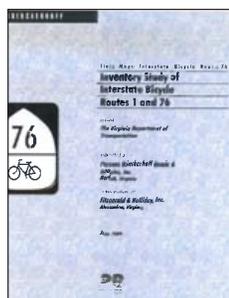
Route 76 and Route 1 Bike Routes in Virginia

There is common confusion between BR 76 and the Trans-American Trail. While the TransAmerican Trail spans the entire country, AASHTO officially designated only the eastern portion of that trail (Missouri to Virginia) as BR 76. While the USBR and TransAmerican Trail are related and overlap in most cases, there are areas where these routes diverge.

Bicycling Route 76 in Virginia

In Virginia, BR 76 accounts for 559 miles of roadways, from the Cumberland Plateau and Appalachian Mountains to the lowlands of Hampton Roads. Along its path, BR 76 traverses 23 counties, including: Dickenson, Buchanan, Russell, Washington, Smyth, Grayson, Wythe, Pulaski, Montgomery, Roanoke, Botetourt, Rockbridge, Augusta, Nelson, Albemarle, Fluvanna, Goochland, Louisa, Hanover (overlaps with U.S. Bicycling Route 1), Henrico, Charles City, James City, and York. The Bike Route also passes through four of Virginia's cities: Radford, Lexington, Charlottesville, and Williamsburg – before the eastern terminus at Yorktown.

Across the Commonwealth, there have been several studies and initiatives to improve BR 76. In 1999, VDOT completed the Inventory Study of Interstate Bicycle Routes 1 and 76. This study provided a general snapshot of existing conditions along the entire length of both bike routes in Virginia. In 2012, the Department of Conservation and Recreation (DCR) and Virginia Department of Transportation (VDOT) released the Official State Bicycle Map: Bicycling in Virginia, which featured BR 76. The map included information on public destinations along the Route, along with road profiles that illustrated changes in topography.



Project Study Area

The study area of this report includes all sections of BR 76 in Region 10, including small portions in Augusta and Goochland Counties. Within the TJPDC boundaries, BR 76 accounts for over 135 miles of roadway that include:

Nelson County

Route 48: Blue Ridge Parkway
Route 250: Rockfish Gap Turnpike
Route 6: Afton Mountain Road
Route 750: Old Turnpike Road
(See Map 2)

Western Albemarle County

Route 750: Old Turnpike Road
Route 250: Rockfish Gap Turnpike
Route 796: Brooksville Road
Route 690: Newtown Road
Route 691: Greenwood Road
Route 691: Jarmans Gap Road
Route 684: Lanetown Road
Route 788: Railroad Avenue
Route 789: Buck Road
Route 810: White Hall Road
Route 614: Garth Road
Route 676: Garth Road
Route 601: Garth Road
Route 601: Old Garth Road
Route 601: Old Ivy Road
(See Map 3)

Charlottesville

Route 250: Ivy Road
Route 250: University Avenue
Route 250: West Main Street
Route 652: Water Street
Route 3413: Second Street SE
Route 620: Garrett Street

Route 20: Avon Street
Route 20: Monticello Avenue

Eastern Albemarle County

Route 20: Scottsville Road
Route 53: Thomas Jefferson Parkway
Route 795: James Monroe Parkway
Route 620: Rolling Road
Route 619: Ruritan Lake Road
(See Map 4)

Fluvanna

Route 619: Ruritan Lake Road
Route 660: Ruritan Lake Road
Route 53: Thomas Jefferson Parkway
Route 15: James Madison Highway
Route 601: Courthouse House
Route 608: Wilmington Road
Route 601: Venable Road
Route 603: Tabscott Road
Enter Goochland County
(See Map 5)

Louisa

Enter Goochland County
Route 605: Shannon Hill Road
Route 605: Willis Proffitt Road
Route 522: Pendleton Road
Route 522: Mineral Avenue
Route 522: East 1st Street
Route 618: East 1st Street
Route 618: Fredericks Hall Road
Route 700: Johnson Road
Route 652: Kentucky Springs Road
Route 650: Pottiesville Road
Route 618: Fredericks Hall Road
Route 618: Belsches Road
(See Map 6)

Since AASHTO established BR 76 in 1982, traffic conditions along these roadways have changed significant. In the past 33 years, traffic counts have continued to increase, while roadway dimensions remained unchanged in many areas. Consequently, there are several dangerous corridors in this Region as seen throughout this report.

Process

In 2012, the TJPDC proposed an initiative to study, promote and improve its portion of BR 76. This work fell under the TJPDC's Transportation Programs, which are funded annually by VDOT. Since most of the study area is within the region's rural boundaries, TJPDC staff designated its Rural Technical Advisory Committee (RTAC) as the Project Steering Committee for this report. The Committee's first meeting on the corridor study took place in November of 2013, with follow-up meetings every other month. The Committee reviewed draft documents and provided guidance on subsequent phases of the overall BR 76 initiative.

At the beginning of 2014, the TJPDC established an online presence for the project. Staff developed a project website that included drafts of deliverables, agendas and minutes from the Steering Committee. The site also provided op-

portunities for public comment. In March, staff created a Facebook® page for the study, as another tool for collecting feedback and distributing information. By the end of March, the TJPDC began an outreach effort to engage local bicycle shops, clubs and advocates from across the region. Staff conducted several one-on-one interviews with those in the local cycling community. In April, staff developed an online survey that helped gather detailed input from riders, which included questions on how to improve cycling safety. TJPDC staff worked with bike clubs to distribute the online survey to the cycling community.

TJPDC staff attended additional cycling meetings to discuss the Corridor Study and collect feedback. In May of 2014, staff made a presentation to the Charlottesville/Albemarle Bicycle Advisory Committee and held a lengthy discussion on the project. Starting that month, staff began to participate in meetings held by the Charlottesville/Albemarle Visitor's Bureau, to discuss promotion of BR 76.

In the summer of 2014, the TJPDC assembled a Bicycle Technical Committee, consisting of cycling experts from around the region, along with a representative from the Virginia Bicycling Federation and VDOT. The group also included stakeholders from tourism groups.

Methodology

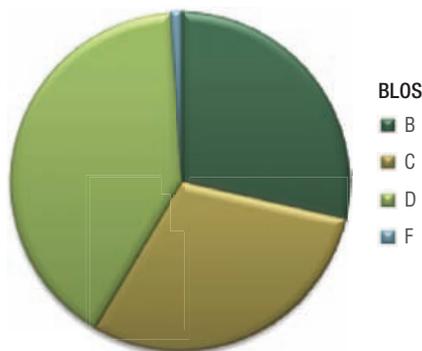
TJPDC staff worked closely with VDOT on data collection and conducted multiple site visits of the study area. VDOT representatives provided their expertise on roadway conditions and cycling deficiencies along the corridor. The Statewide Planning System (SPS) data was critical for this analysis, providing roadway dimensions, traffic counts and Level of Service information. If any roadway data seemed inaccurate, staff would verify dimensions with site visits and measurements from aerial photography. The Bicycle Technical Committee was another valuable resource for data collection.

Bike Level of Service

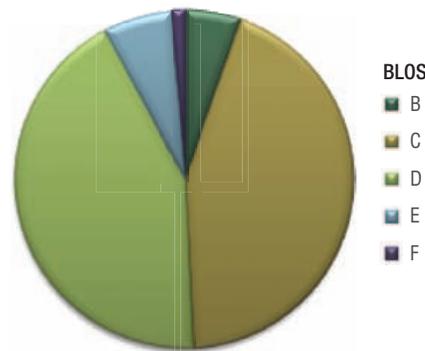
Staff used a Bike Level of Service (BLOS) calculator from the League of Illinois Bicyclists (LIB), as recommended by VDOT, to calculate bike compatibility. The equation provided a general score of bike compatibility for a given roadway. The calculator requires inputs on 8 critical indicators, which included:

1. Number of through-lanes per direction: (Default = 1 feet)
2. Width of outside lane, to outside stripe, in feet: (Default = 12 feet)
3. Paved shoulder, bike lane, OR marked parking area - outside lane stripe to pavement edge, in feet: (Default=0 feet)
4. Bi-directional Traffic Volume in ADT: (Default = 4000 ADT)
5. Posted speed limit in mph: (Default = 30 mph)
6. Percentage of heavy vehicles: (Default = 2%)
7. FHWA's pavement condition rating: (5 = Best, 1 = Worst; Default = 4)
8. Percentage of road segment with occupied on-street parking: (Default = 0%)

Current BLOS by Mileage

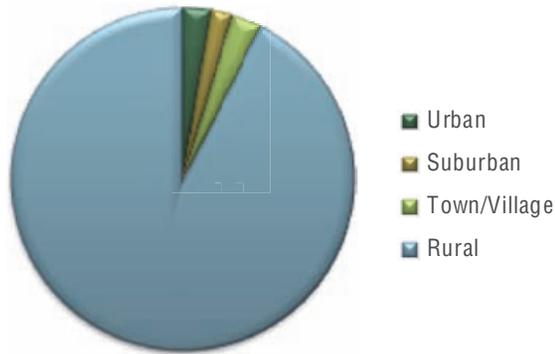


2035 BLOS by Mileage



<http://www.bikelib.org/>

Road Mileage by Environment



The BLOS equation provided a score between 'A' and 'F'. According to LIB, a score of 'A' through 'C' indicated roadways that were compatible or "comfortable enough" for experienced cyclists. The worst score is an 'F', representing a roadway that is not compatible for cycling.

BLOS scores and definitions:

BLOS A: High Level of Bike Compatibility

BLOS B: Compatible

BLOS C: Moderate Compatibility

BLOS D: Moderately Low Compatibility

BLOS E: Low Bike Compatibility

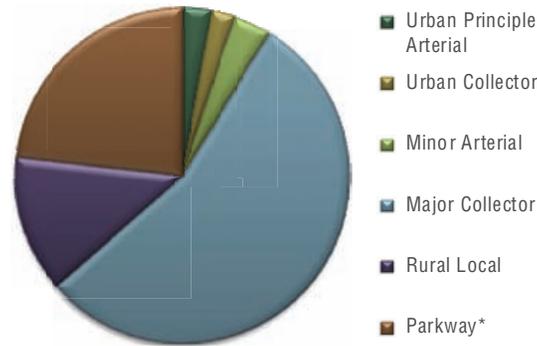
BLOS F: Extremely Low Compatibility

Overview

Environments

Across the study area, a rural landscape frames BR 76. Over 93 percent of the Route is within this rural environment. The remaining 7 percent of road mileage passes through small villages, the Town of Mineral, suburban areas and the City of Charlottesville. Consequently, cycling safety is linked with the challenges of rural transportation: high travel speeds, poor sight-distances and curvy roadways. Conversely, rural environments typically translate

Mileage by Road Classification



into lower traffic counts, which is why AASHTO targets rural roadways from the USBRS.

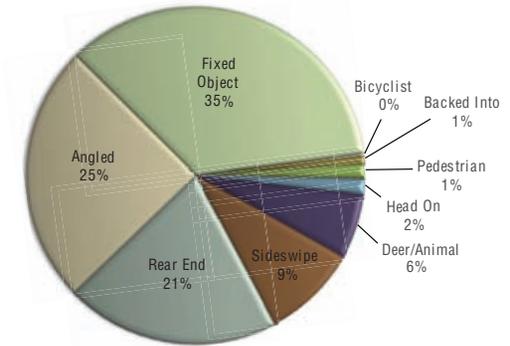
Functional Classifications

Due to the rural nature of the study area, BR 76 consists mostly of rural road-types, including rural collectors and local roads. Those roadways typically have fewer traffic counts and serve more local traffic, rather than higher speed through traffic. Since relatively small portions of the route are in urbanized areas, there are few urban roadway classifications in the study area.

Crash Data

The environments and roadway functions influence the types of safety issues along the corridor. Traffic accident data for the study area reveals that many accidents involve off-road collisions with fixed objects. This may be the result of narrow travel lanes on rural highways, a condition that can be particular hazardous to cyclists, since riders travel along the road's edge. The roadways of BR 76 also experience several angled collisions and sideswipes at intersections, which are where most cycling-related crashes occur. A positive from the crash data is the lack of collisions between motorists and bicyclists. The only bike-related crashes are in the City of Charlottesville, where vehicular and bike traffic is high. There may be bike-related crashes

Traffic Accidents by Type (2005-2011)



in the rural areas, but recording is generally less accurate.

Bike Level of Service (BLOS)

Using the LIB equations, TJPDC staff calculated the BLOS for all roadways along the Region 10 portion of BR 76. This report provides a detailed description of the scores for all roadways in the study area. Overall, approximately 42% of road mileage in the study area is incompatible for cycling (BLOS D-F).

VDOT's traffic forecasts show significant increases in Annual Average Daily Trips (AADT) along the corridor, for 2035. Without highway improvements to address cycling and road safety, the bike compatibility of BR 76 will noticeably decline. By 2035, 51% of the Bike Route will be incompatible for cycling. Additionally, there would also be a 24% decrease in road miles scoring a BLOS B.

Traffic Counts

The BLOS results are tied to the roadway geometries and traffic counts. While traffic heavily influences bike compatibility, Chart 1 implies that there are other factors involved as well.

Countywide Overview

Nelson County

In Nelson County, BR 76 accounts for over 32 miles of roadway, primarily along the Blue Ridge Parkway (Map 1). In terms of cycling safety, there are several locations with limited sight-lines, particularly the areas referenced in Map 2. The Nelson County map also illustrates the various overlooks along the Parkway and proximity to destinations, such as Wintergreen Resort and wineries. There is a short section of BR 76 on US 250, in the Afton area. This roadway is one of the most dangerous in the corridor and scored an 'F' on the BLOS calculations.

Western Albemarle County

The western side of Albemarle County is home to some of the most valued scenic vistas on BR 76, along with several tourist destinations. In terms of safety, the over 26 miles of BR 76 also presents frequent cycling hazards. Map 3 illustrates the various safety deficiencies, involving sight-distances, uneven road surfaces, dangerous intersections and guardrails.

City of Charlottesville

While the study area consists mostly of rural roadways, the streets in Charlottesville present a unique experience for cyclists. On the City's 3.5 mile section, riders have access to numerous services and resources, as well as historic landmarks. Consequently, this corridor can serve as a destination for most cyclists.

Additionally, the League of American Bicyclists identified Charlottesville as a Silver Level, Bicycle Friendly City. This is the highest rated locality on the Virginia portion of BR 76, whereas Williamsburg, Richmond, and Roanoke received Bronze ratings.

Eastern Albemarle County

In the eastern half of Albemarle County, BR 76 meanders 13 miles, between the City of Charlottesville and Fluvanna

County. The curvy roadway creates several deficiencies with sight-distances, as seen in Map 4. In terms of recreation and tourism, this area has some of the most desirable destinations, with the homes of two presidents and proximity to local wineries.

Fluvanna County

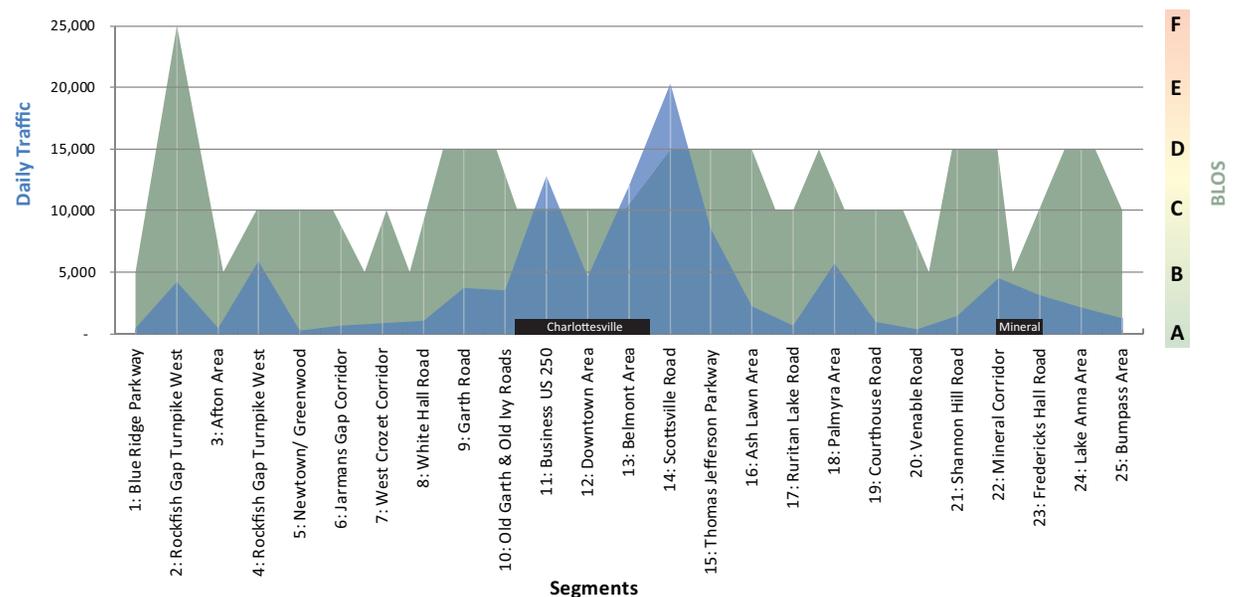
In Fluvanna County, BR 76 passes through the Village of Palmyra and several small crossroads. The route accounts for over 23 miles of roadway. Most cycling hazards involve sight-distances and guardrails. Refer to Map 5.

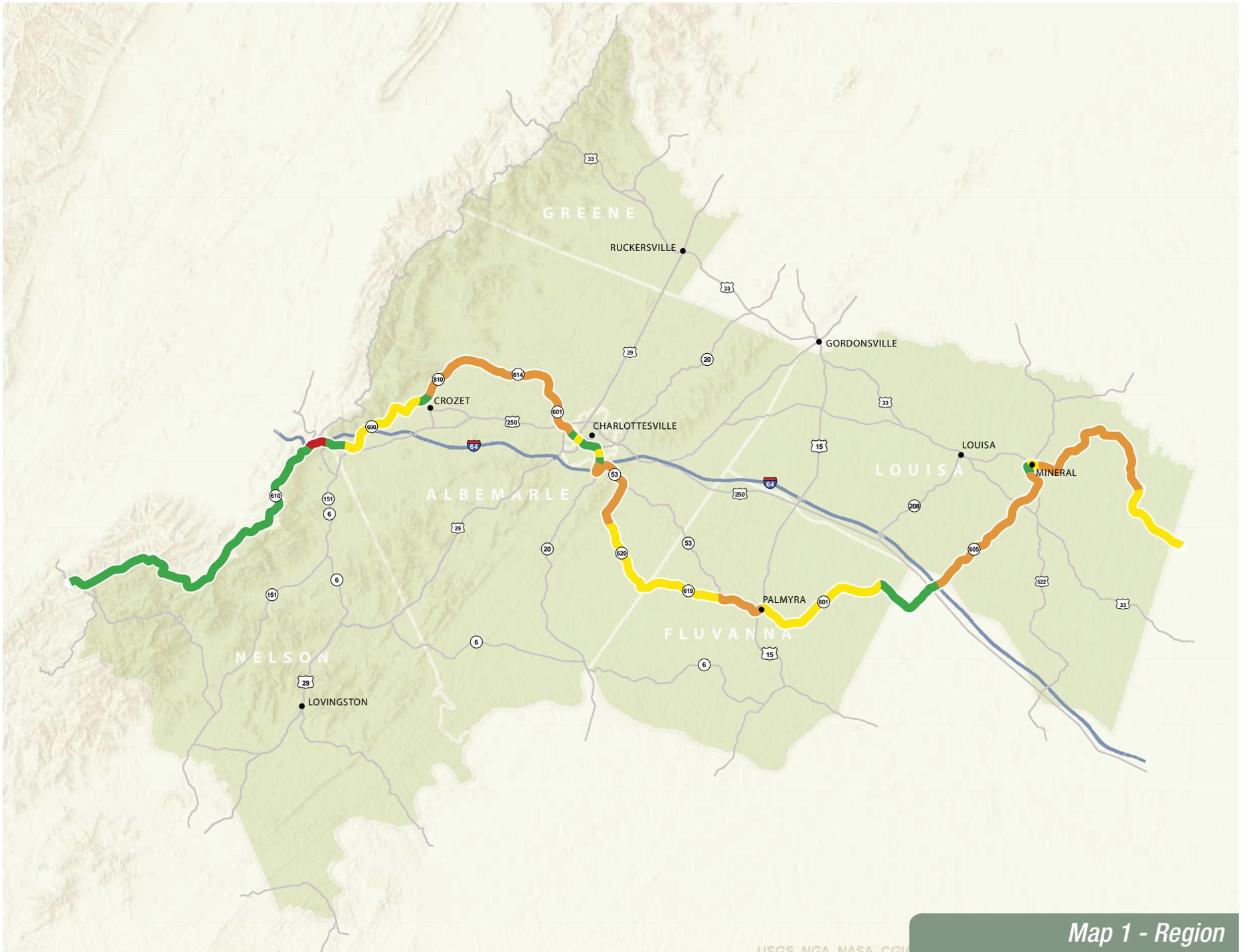
Louisa County

There are nearly 35 miles of BR 76 in Louisa County, passing through the only incorporated town along the study area. In Louisa County, the most common road hazards are narrow roadways with guardrails. Refer to Map 6.



Annual Average Daily Traffic (AADT) and Bike Level of Service (BLOS) by Roadway Segments



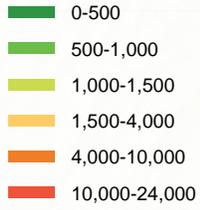


USGS NGA NASA CGI

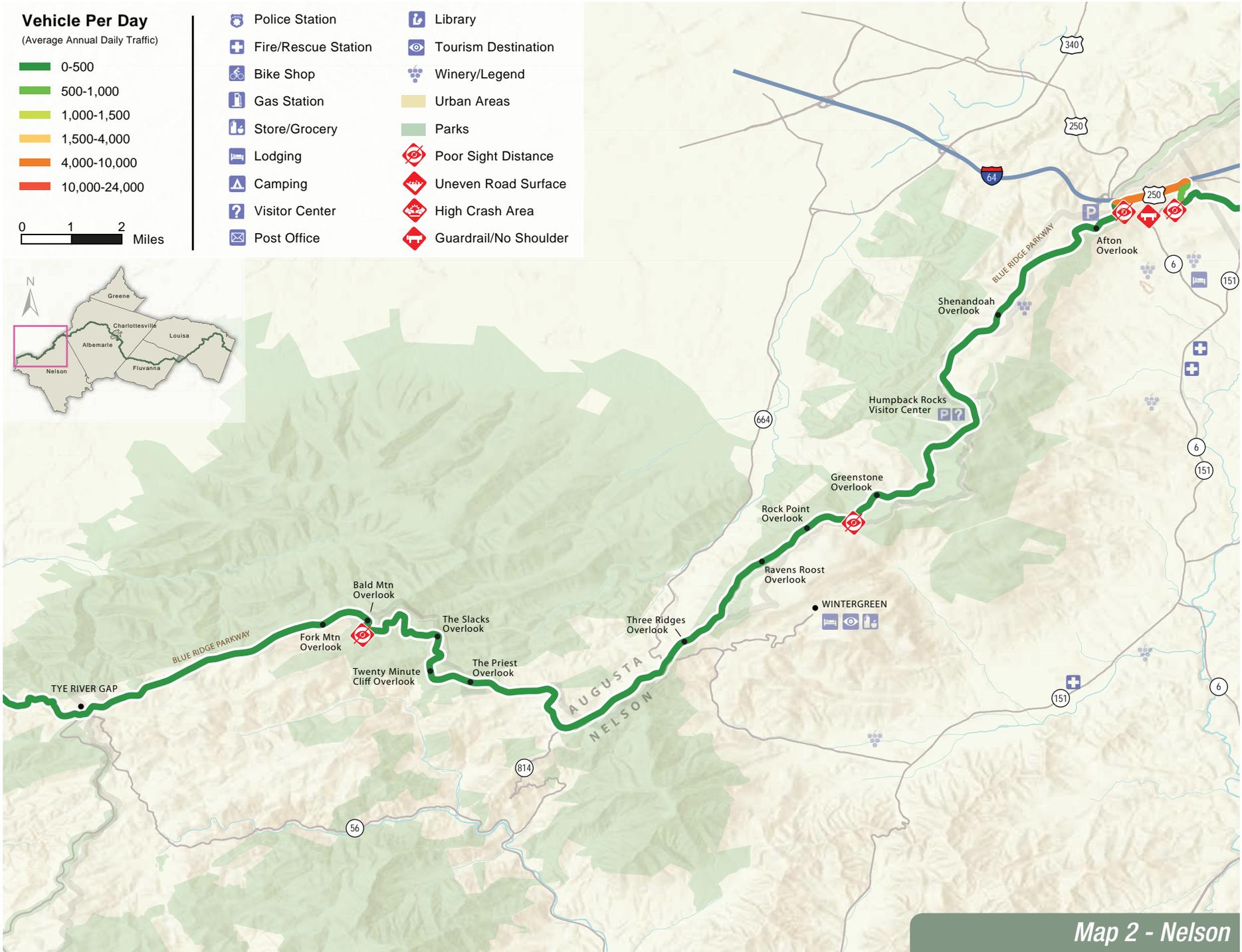
Map 1 - Region

Vehicle Per Day

(Average Annual Daily Traffic)



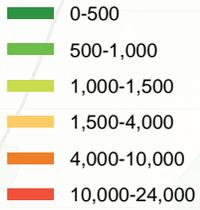
- | | |
|---------------------|-----------------------|
| Police Station | Library |
| Fire/Rescue Station | Tourism Destination |
| Bike Shop | Winery/Legend |
| Gas Station | Urban Areas |
| Store/Grocery | Parks |
| Lodging | Poor Sight Distance |
| Camping | Uneven Road Surface |
| Visitor Center | High Crash Area |
| Post Office | Guardrail/No Shoulder |



Map 2 - Nelson

Vehicle Per Day

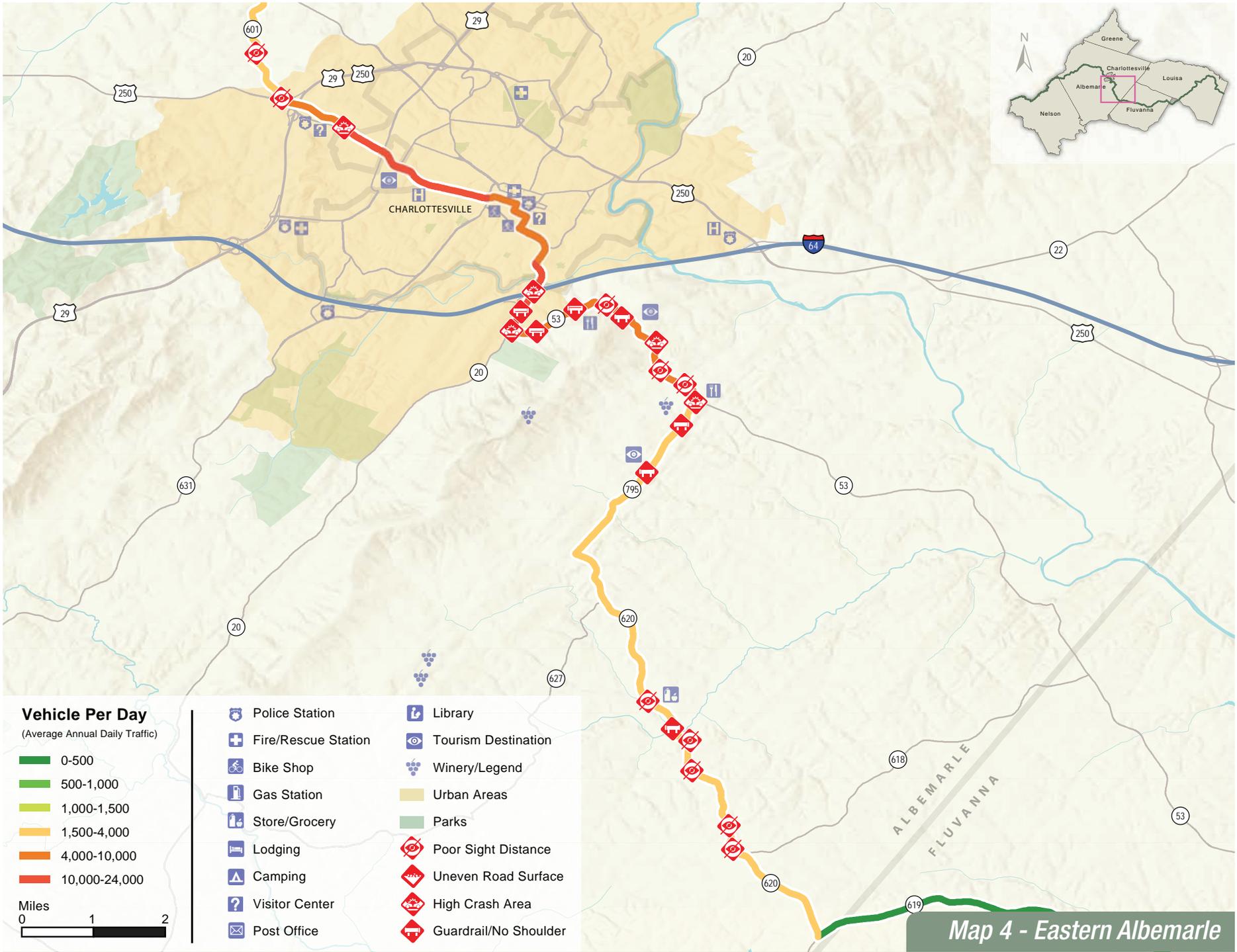
(Average Annual Daily Traffic)

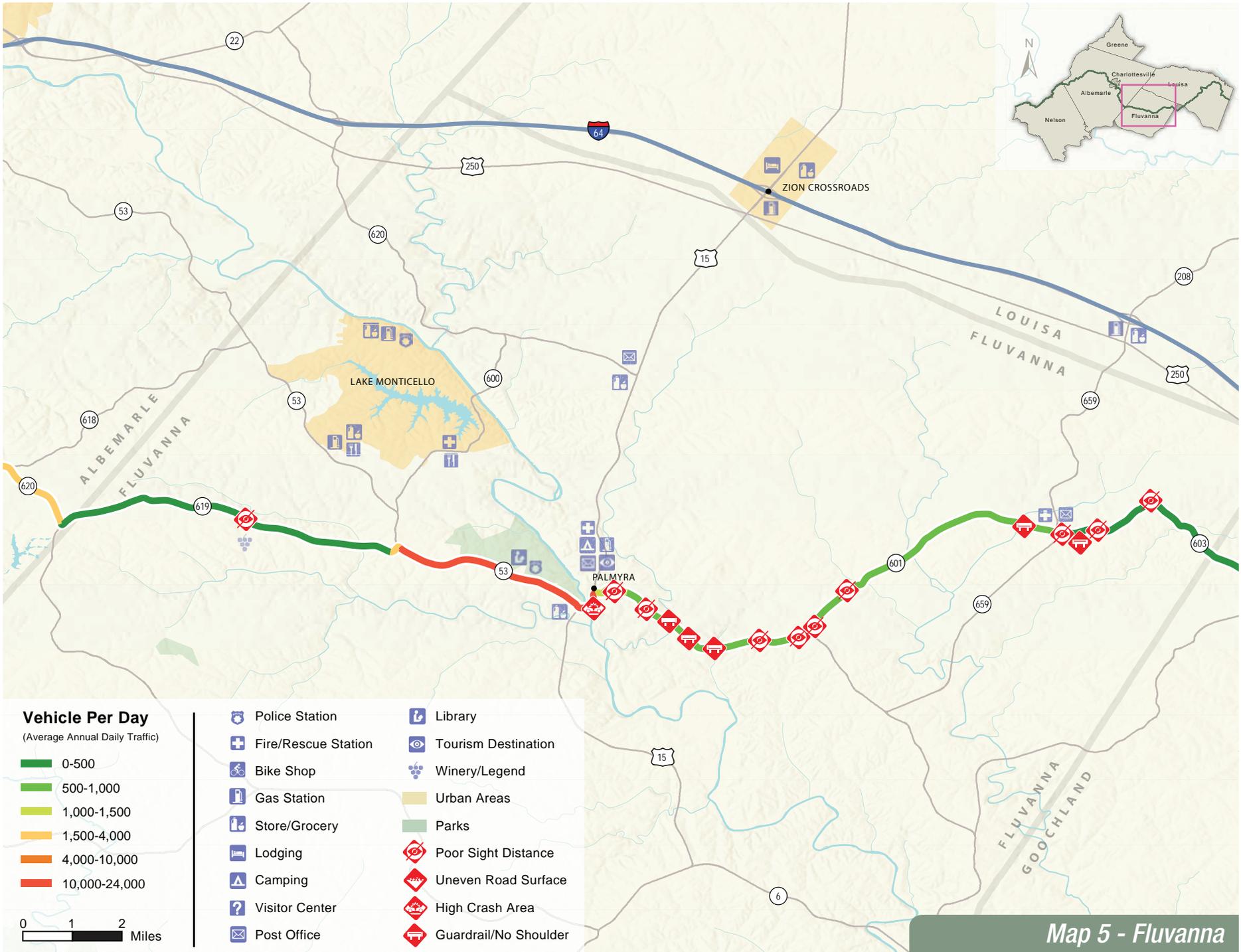


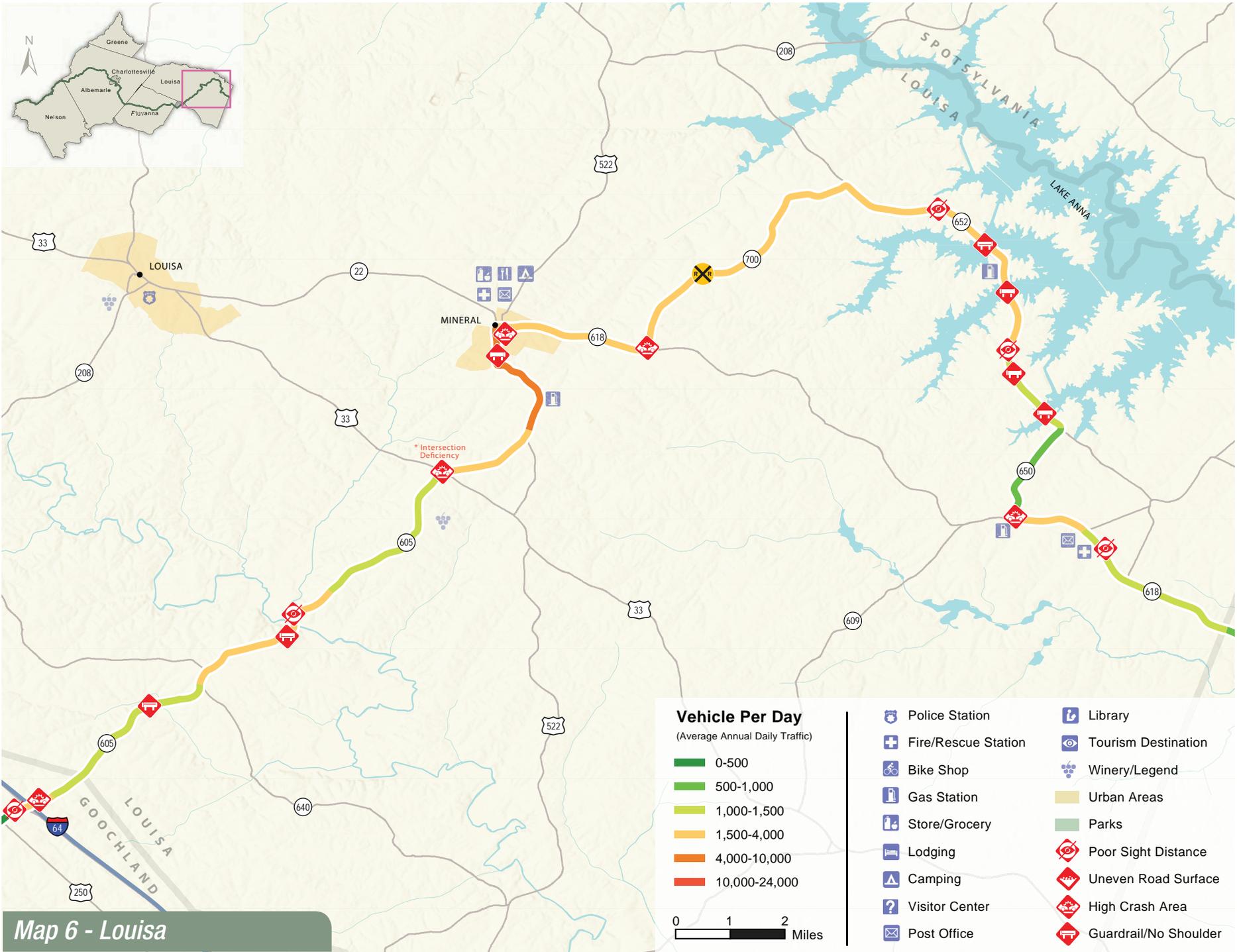
- | | |
|---------------------|-----------------------|
| Police Station | Library |
| Fire/Rescue Station | Tourism Destination |
| Bike Shop | Winery/Legend |
| Gas Station | Urban Areas |
| Store/Grocery | Parks |
| Lodging | Poor Sight Distance |
| Camping | Uneven Road Surface |
| Visitor Center | High Crash Area |
| Post Office | Guardrail/No Shoulder |



Map 3 - Western Albemarle







Segment Corridors

The following segments are the main deliverables of this report, providing a detailed inventory of all road, traffic and recreational conditions along this portion of BR 76. This existing conditions inventory is divided into 25 segments, or sub-corridor studies.* Each segment includes roadways that are grouped together based on functional classifications, road dimensions and general corridor characteristics. The goal is to have concise but comprehensive assessments for every segment of BR 76 in the region. Each segment functions as its own mini-plan, with a detailed inventory, assessments and recommendations. Stakeholders can refer to a given segment to find information and recommendations on these targeted areas.

In every segment, there are six (6) sections, to provide an overview of the cycling conditions and recreational value of each corridor. These sub-headings cover:

- Segment characteristics,
- Road features,
- Traffic conditions,
- Recreational,
- Cycling Assessment, and
- Recommendations.

** Customized versions of this report were created for each of the five localities in the study area. This version may not include all 25 segments.*

Segment Characteristics

Each segment begins with a general description of the corridor. This includes an overview of the roadway designations and adjacent land uses, along with feedback from local cyclists.

Environment

Roadways are classified as either rural or urban, based on VDOT and AASHTO definitions. These classifications deter-

mine whether AASHTO's rural or urban cycling standards should be applied to the corridor (Refer to Appendix).

Functional Classification System

The functional classification system identifies the function and design of roadways. For the purposes of this report, these classifications help to highlight how motorists use the roadways and whether the corridor is intended to serve high-speed, through-traffic or low-speed, local trips. The categories include:

- Urban principal arterial
- Urban minor arterial
- Urban collector
- Urban local
- Rural principal arterial
- Rural minor arterial
- Rural major collector
- Rural minor collector
- Rural local

(Refer to Glossary)

Roadways

A list of roadways helps to define the boundaries of each segment. This list includes mileage to communicate the length of each corridor. Please note that the distances are measured in road-miles, not lane-miles.

Land Uses

Land use is a critical component to transportation and can heavily influence recreational cycling. Consequently, the segments include a description of the land uses along each corridor. (For a more detailed look at existing land uses, refer to the appendix).

Public Comments

While local cyclists are aware of BR 76, many do not intentionally target their rides for those roadways. Instead, local riders pick unofficial routes that provide the safest and most satisfying rides. At the same time, local riders will know the existing roadway and traffic conditions better than out-of-town riders. Consequently, feedback from locals was critical to the review of existing conditions.

Road Features

The assessment of road features is the first of two sections that identify bike compatibility of each road section. Roadway widths and geometrics are critical considerations for cycling.

Road Sections

Road widths are the simplest and fundamental aspect of roadway geometries. Under each segment, there are detailed measurements of the travel lanes and shoulders. Each segment also includes assessments of existing bike facilities. While shared use lanes are the most common facility along BR 76, there are also bike lanes, wide shoulders, and wide outside lanes. (Refer to Glossary.)

Bike Signage

Signage can direct cyclists along the Bike Route; provide information or warnings to riders; and, inform motorists of areas with heavy bike traffic. In each segment, there is a count of all bike-related signs that are currently in the corridor.

Featured Intersections

Intersections are the most dangerous places for cyclists and are where most bike-related accidents occur. Due to this importance, each segment includes a list of intersections in the corridor. The text includes a brief description of the intersections and identifies any apparent deficiencies.

Sight Distance

Particularly on rural roads, sight-lines can be fundamental to cycling safety. Under each segment, there is an overview of sight distances throughout the featured roadways.

Additional Road Hazards

In certain segments, there are additional road hazards that do not fall under a specific section heading. The report identifies any of these additional hazards, road surfaces, guardrails, or dangerous curves.

Planned Road Improvements

The segments include lists of any existing recommendations, projects, assessments or studies that may influence road conditions on BR 76. In many cases, existing recommendations will benefit cycling safety. These findings help to feed into the action items of this study, guiding VDOT and other stakeholders to give priority to projects along BR 76.

Traffic Conditions

The traffic conditions assessment is the second part to the equation for bike compatibility. Traffic flow is one of the most important characteristics that affect cycling safety.

Traffic Counts

The ADT data in this report originates from VDOT's 2012 traffic counts. The segments also include 20-year forecasts from VDOT, to anticipate future traffic volumes. These future counts help to prioritize roadway improvements and determine whether portions of BR 76 should be rerouted to lower volume roads.

Truck Traffic

The amount of truck traffic can greatly influence bike compatibility. Truck blast occurs when heavy vehicles generate high winds that can blow cyclists off-balance. Other than safety, heavy vehicles can also diminish overall comfort for riders. The truck traffic assessment is expressed as a percentage of total ADT, as seen in the sub-headings.

Travel Speeds

The segments include inventories on the posted speed limits. Due to traffic congestion and road conditions, the actual travel speeds may be lower or higher than what is posted. Consequently, the segments include estimates of those actual speeds.

Level of Service

The Level of Service (LOS) serves as a congestion stan-

dard for roadways (refer to glossary). The existing LOS data originates from VDOT's 2012 records. The segments also include VDOT forecasts for the year 2035.

Traffic Accidents

Crash data is a key indicator of general roadway safety, especially if the accidents involve cyclists. VDOT provided crash data, for the years 2005 to 2011. In each segment, there is an analysis that shows a breakdown of crash types and locations.

Additional Traffic Hazards

This final section addresses any miscellaneous traffic hazards, such as distracted drivers, high levels of pedestrian and bus traffic or other traffic conditions that could endanger cyclists.

Recreational

Since BR 76 serves mostly recreational purposes, the location and quality of attractions is an important consideration. In each segment, there is an assessment of historic and scenic resources, tourist destinations, cycling services and resources, access points and terrain.

Historic Resources

Whether open to the public or visible from the roadway, historic resources can be an important part of recreational cycling. These resources give the Bike Route a unique character and allow cyclists to connect with the history of our region, state and nation. The Virginia Department of Historic Resources (VDHR) provided mapping data on the sites along the corridors.

Highway Markers

At the roadside, highway markers can be valuable resources, allowing visitors to pause and learn more about historic places and famous residents who lived in the area. The 25 segments include a list of any highway markers or historic plaques on or near the Route.

Scenic Resources

Scenic resources are difficult to measure but provide great value to recreational riding. While a corridor can be attractive to visitors, there may not be any identified vistas or views from the roadway. The segments indicate any official designation or scenic byways. There is also a short description of notable views.

Other Destinations

Other than historic sites, there may be other destinations that interest cyclists. These destinations could include wineries, orchards, parks, trails, small towns and other interesting places.

Cycling Services & Resources

For long distance riders, there is great interest in cycling services and resources. These amenities may include items such as: restrooms, food and water, air pumps, medical services, post offices and internet access, along with bike shops, information centers and lodging.

Access Points

Access is an important consideration for recreational cycling. While some cyclists attempt to complete BR 76 at once, others may break this ride into multiple trips. There are still others who may want to access BR 76 for a shorter rider, with no intention of completing other portions of the Route. In addition to short route cycling, long distance riders frequently have support and gear (SAG) vehicles that need short term parking, as cyclists often "leap frog" the SAG vehicle, taking turns driving. Each segment includes an inventory of these public parking areas.

Topography

In this region, cyclists experience frequent changes in topography, as the Route passes through the foothills and into the Blue Ridge Mountains. The segments include a cross-section of the terrain in each corridor, along with a brief description.

Cycling Assessment

The cycling assessment provides an overview of the inventory found in each segment corridor. This includes a score of bike compatibility and recreational value. The recreational assessment is less scientific, resulting in a general range of values from low to high. The recreational range is based on the presence and quality of destinations and amenities in the segment.

Recommendations

The recommendations section includes a preliminary list of actions that can improve cycling safety and experience in the segment corridors. A more thorough, in-depth list of recommendations is included in a consolidated project list, found at the back of the report.

Overview of Segments

To provide a quick reference of the conditions throughout the study area, the following matrix highlights the key indicators. This data feeds into the BLOS equations, to identify an overall bike compatibility rating. Since road and traffic conditions can vary within a segment, some BLOS scores may be displayed in a range. The 25 segments are listed in order, from west to east.



BLOS Key Indicators

	Segment	BLOS	Road Conditions		Traffic Conditions		
			Lane Widths (Feet)	Width of Shoulder/Bike Lane (Feet)	Annual Average Daily Trips (AADT)	Truck Traffic (% of AADT)	Posted Speed (MPH)
Rural	1: Blue Ridge Parkway	B*	10	None	440	0%	45
	2: Rockfish Gap Turnpike West	F	10	0 – 2	8,450	7%	35 – 55
	3: Afton Area	B – C*	8 – 11	0 – 2	435	1%	55 (NP)
	4: Rockfish Gap Turnpike East	C	10 – 12	1 – 2	5,890	4%	55
	5: Newtown/Greenwood	C	9	None	290	0%	55 (NP)
	6: Jarmans Gap Corridor	C	8	None	635	1%	40
	7: West Crozet Corridor	B – C	9	None	875	.5%	40
	8: White Hall Road	D	9	.5	2,020	2%	45
	9: Garth Road	D	9 – 10	0 – .5	3,700	1.5%	35 – 50, 45 (TR)
SU	10: Old Garth & Old Ivy Roads	D	9 – 11	0 – .5	3,495	1%	30
Urban	11: Business US 250	B – C	10 – 14	5 + 8 (Parking)	12,850	2%	25 – 35
	12: Downtown Area	B – C	9 – 12	8 (Parking)	4,625	3%	25
	13: Belmont Area	B – C	10 – 12	8 (Parking)	12,000	2%	25 – 35
SU	14: Scottsville Road	D	12	0 – 12	20,345	2%	45
Rural	15: Thomas Jefferson Parkway	D	10	1 – 2	8,525	3%	45
	16: Ash Lawn Area	C – D	10	None	2,200	1%	45 - 55
	17: Ruritan Lake Road	C	9	None	600	0%	45
	18: Palmyra Area	C – D	11	.5 – 10	5,650	8%	35 – 55
	19: Courthouse Road	C	9	None	980	0%	40
	20: Venable Road	B – C	9	None	385	0%	55
	21: Shannon Hill Road	D	9 – 10	None	1,470	4%	45 – 50
	22: Mineral Corridor	B – D	12	1 – 3	4,535	3.5%	25 – 55
	23: Fredericks Hall Road	C – D	10	None	3,100	2%	25 – 45
	24: Lake Anna Area	D	10	0 – 1	2,160	3%	55
	25: Bumpass Area	C	9 – 10	None	1,255	1%	35 – (55) NP

*Other conditions may diminish BLOS; SU = Suburban; NP = Not Posted; TR = Trucks

Segment L1: Shannon Hill Corridor

Louisa and Goochland* Counties

Segment L1 evaluates the existing cycling conditions on Shannon Hill and Willis Proffitt Roads, between VA 603 (Tab-scott Road), to the south, and US 522 (Pendleton Road), to the north. This corridor is an important connector for BR 76, linking eastern Fluvanna County with the Town of Mineral. While there are safety concerns and limited recreational attractions in this corridor, there are limited alternatives for this connection.

Segment Characteristics

Rural Environment

- Major Collector
- Secondary Route

Road Segments

- » *Total Road Mileage: 13.71 Miles*
 - VA 605 (Shannon Hill Road)* – 3.4 Miles
 - VA 605 (Shannon Hill Road) – 8.86 Miles
 - VA 605 (Willis Proffitt Road) – 1.45 Miles
- *In Goochland County*

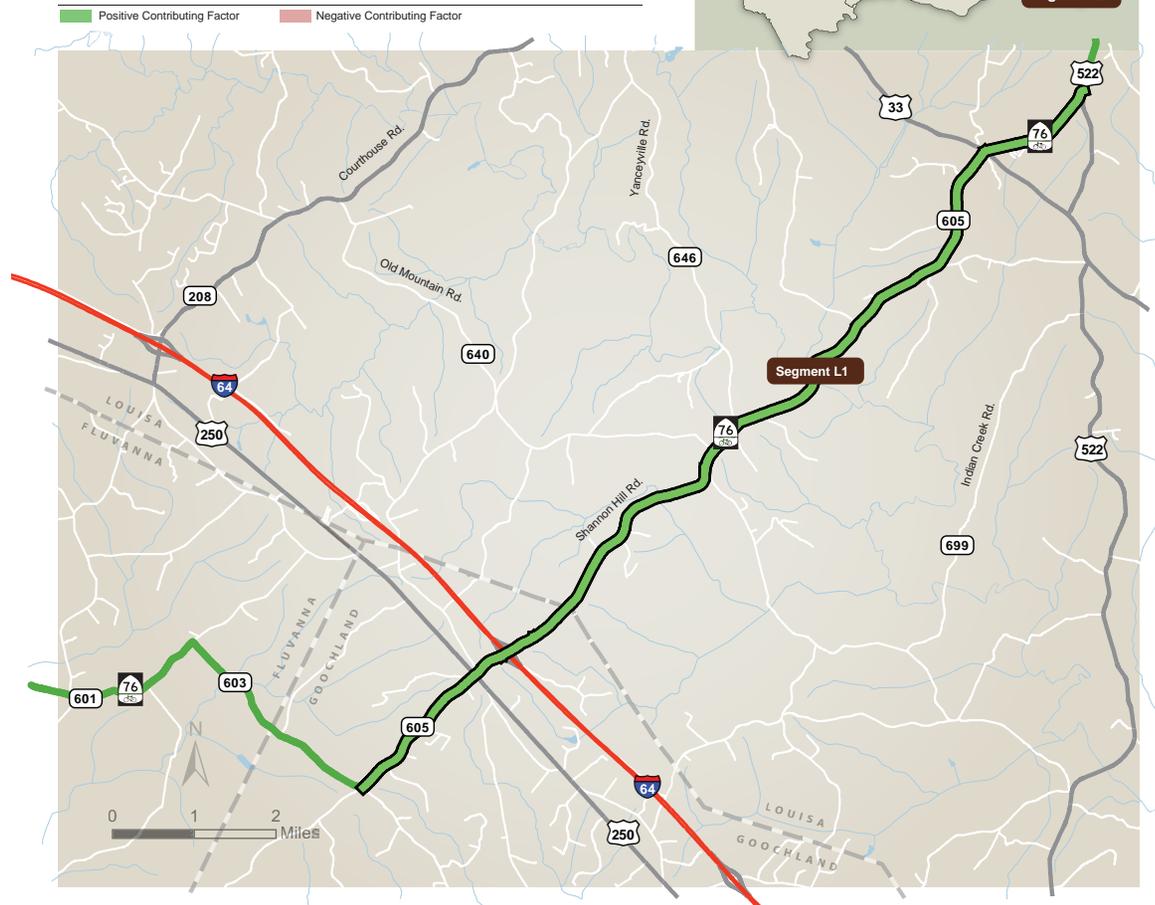
Land Uses

» *Rural*
The Shannon Hill corridor is a rural area, consisting of forests, farms and low-density residential subdivisions. There is a winery in this corridor, along with a couple of churches, as well.

Public Comment

» *No Comments*

D Bike Level of Service	1,470 Annual Average Daily Trips	45 - 50 Posted Speed (MPH)
9.5' Average Lane Widths (feet)	0' Shoulder/Bike Lane Width (feet)	4% Truck Traffic (percent)



- Route 76 Profile Segment
- Route 76 Bike Route
- Water Body
- County Boundary



Road Features

Road Sections

» Rural Two-Lane

Around the Interstate 64 interchange, VA 605 widens to a paved surface of 22 feet. This road section consists of 10 to 11-foot travel lanes and limited, paved shoulders. Besides this section, most of VA 605 is a narrow rural roadway, consisting of 9-foot travel lanes, with a total paved surface of 18 feet. (Figure 21-1)

» Shared Lane Bike Facility

In the typical road section, there are no paved shoulders. In general, the roadside consists of vegetated ditches, along with narrow bands of gravel in some areas.

Bike Signage

» Adequate Signage

There are ten (10) BR 76 signs. While these signs are effective at guiding cyclists, there is no other bike-related signage.

Featured Intersections

» Interstate 64

This is one of two (2) interstate interchanges within the BR 76 study area. The interchange at Shannon Hill Road is a hazardous environment for cyclists, as there are guardrails and retaining walls at the roadside. There are also high travel speeds and traffic volume. Additionally, the four (4) interchange ramps produce potential conflict points between cyclists and vehicles. (Figure 21-2)

Note: This interchange is also within Goochland County, which is part of Richmond Regional Planning District.

» US 33 (Jefferson Highway)

This four-way intersection is the most accident prone location in the Shannon Hill corridor, with at least 20 crashes between 2005 and 2011. Most of those accidents were angled collisions between vehicles. Additionally, VDOT

identified sight-distance issues at this intersection, including obstructed views from vegetation and issues related to vertical sight distance. (Figure 21-3)

» Other intersections in this corridor include:

- VA 603 (Tabscott Road)
- US 250 (Broad Street)
- VA 693 (Martin Road)
- VA 653 (Shannon Hill)
- VA 640 (East Old Mountain Road)
- VA 640 (West Old Mountain Road)
- VA 646 (Yanceyville Road)
- VA 644 (Mount Airy Road)
- VA 643 (Cuckoo Road)
- US 522 (Pendleton Road)

Sight Distance

» Clear Sight-Lines

Additional Road Hazards

» Guardrails

There are three (3) locations where guardrails frame the roadway, limiting the ability of cyclists to maneuver away from the road in case of emergency. Locations where guardrails are on the uphill lanes are particularly hazardous to cyclists. (Figure 21-4)

Planned Road Improvements

» General Road Improvements

The Louisa County Comprehensive Plan states that there are future needs related to Shannon Hill and Willis Profit Road. There are no specific recommendations on what those improvements would entail.

» Road Widening

The RLRP identifies operational and geometric deficiencies on the southern segments of VA 605 and for Willis Profit Road. The plan recommends road reconstruction that includes full-width lanes and shoulders. These improvements are listed as long-term alternatives.

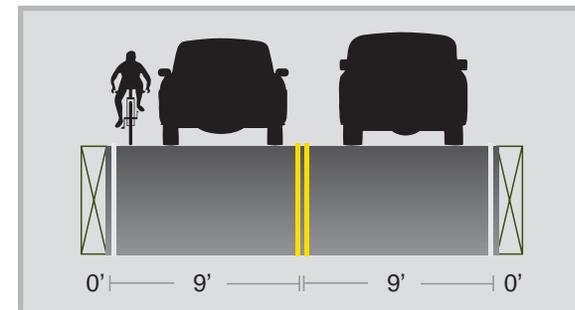


Figure 21-1: Typical Road Section



Figure 21-2: Interstate 64 Interchange

» Intersection Improvements

The RLRP identifies safety deficiencies with the US 33 intersection. The plan includes short-, mid- and long-term recommendations to address these deficiencies. In the short-term, the plan calls for improved maintenance of roadside vegetation for sight-distance. The mid-term recommendation is to consider reducing the speed limit. The long-term recommendation is to consider reconstruction to a lower vertical curve, to improve vertical sight distance.

Traffic Conditions

Traffic Counts

» 1,380 to 1,560 ADT

Shannon Hill Road has moderate to high traffic counts, considering the roadway geometries. Volumes range from



Figure 21-3: Jefferson Highway Intersection



Figure 21-4: Guardrails

1,376 to 1,556 ADT, with Willis Proffitt Road carrying 1,549 ADT. In Goochland County, the traffic counts reach 1,700 ADT at the Interstate 64 interchange, with counts decreasing further towards the south.

VDOT forecasts suggest that traffic will continue to increase over the next twenty years. By 2035, the existing counts on Shannon Hill and Willis Proffitt Road may rise by 1,000 ADT. With this added traffic, counts could reach 2,200 to 2,600 ADT.

Truck Traffic

» *4 Percent*

On VA 604, traffic from heavy vehicles is a major contributing factor to diminishing the bike compatibility score.

Travel Speeds

» *45 to 50 MPH*

The speed limit is 45 MPH near the intersection with Tab-scott Road, but soon increases to 50 MPH as motorists approach Louisa County. In these areas, the speed limit for trucks remains at 45 MPH. At VA 644, the posted speed drops again to 45 MPH for the northern segments of this corridor.

Level of Service

» *A – Free Flow &*

» *B - Reasonably Free Flow*

Currently, on the VA 605 corridor, motorists are able to travel at or above the posted speed limit. VDOT forecasts show that VA 605 will continue at a LOS B for the next twenty years, despite increases in traffic counts.

Traffic Accidents

» *82 Crashes, 0 Fatal*

Between 2005 and 2011, there were 82 crashes in the Louisa County portion of this corridor. The intersection with US 33 had the highest concentration of crashes, with at least 20 recorded accidents. Overall, the most common crash type in this corridor was off-road collisions. *Note: There were no recorded crashes between motorists and cyclists.*

Recreational

Historic Resources

» *No Identified Resources*

Scenic Resources

» *No Designations*

Other Destinations

» *Agri-Tourism*

There is a winery near the US 33 intersection, which provides a destination opportunity for cyclists.

Cycling Services & Resources

» *Water & Restrooms*

At the winery, there are restrooms for patrons, but there are no additional services or resources for cyclists in this corridor.

Access Points

» *No Access*

Topography

» *Flat and Rolling*

The terrain on VA 605 is relatively flat, though there are subtle climbs in multiple areas. The largest hills are at the South Anna River, with topography sloping towards the river.

Route Assessment

Bike Compatibility: BLOS D

Most road sections on VA 605 scored a BLOS D, indicating that the road is incompatible for cycling. The combination of a narrow road surface, traffic counts and higher speeds contribute to this score. The deciding factor is the presence of truck traffic, causing wind blast on the narrow travel lanes. Despite these hazards, there are also conditions that foster cycling safety. Generally, road surfaces are in excellent condition and sight distances are adequate.

Recreational: Low Value

The recreational aspects of VA 605 are limited. There is no access to scenic or historic resources. Also, there are limited cycling resources in the area. The only destination is the winery near US 33. The relatively easy terrain could be another benefit.

Recommendations

Additional Signage

The TJPDC should work with VDOT and Louisa County to

install additional bike signage that informs cyclists and warns motorists of frequent bike traffic.

Alternate Route

The TJPDC should work with AASHTO to explore an alternate route that would follow the historic ride of Jack Jouett, who rode from Louisa County to Monticello to warn Thomas Jefferson of advancing British soldiers, in the Revolutionary War.

Road Widening

The TJPDC should work with VDOT and Louisa County to provide further study on the road widening recommendations listed on the RLRP and Local Comprehensive Plan.

Study of Intersections

The TJPDC should work with VDOT and Louisa County to provide further study on the intersection recommendations listed in the RLRP.

Partner with Richmond Regional

The TJPDC should coordinate with Richmond Regional Planning District Commission to explore any potential road improvements on the Goochland County section of BR 76.



Segment L2: Mineral Corridor

Town of Mineral and Louisa County

Segment L2 evaluates the existing cycling conditions on Pendleton Road and sections of BR 76 that pass through the Town of Mineral. This corridor includes the only incorporated town in this study area, helping to make this area a destination for cyclists. While there are several benefits to cycling in this corridor, there are also several challenges to cycling safety and comfort.

Segment Characteristics

Rural Environment

- Minor Arterial
- Primary Route

Road Segments

- » *Total Road Mileage: 2.27 Miles*
- US 522 (Pendleton Road) – 1.54 Miles
- US 522 (Mineral Avenue) - .66 Mile
- US 522 (East 1st Street) - .07 Mile

Land Uses

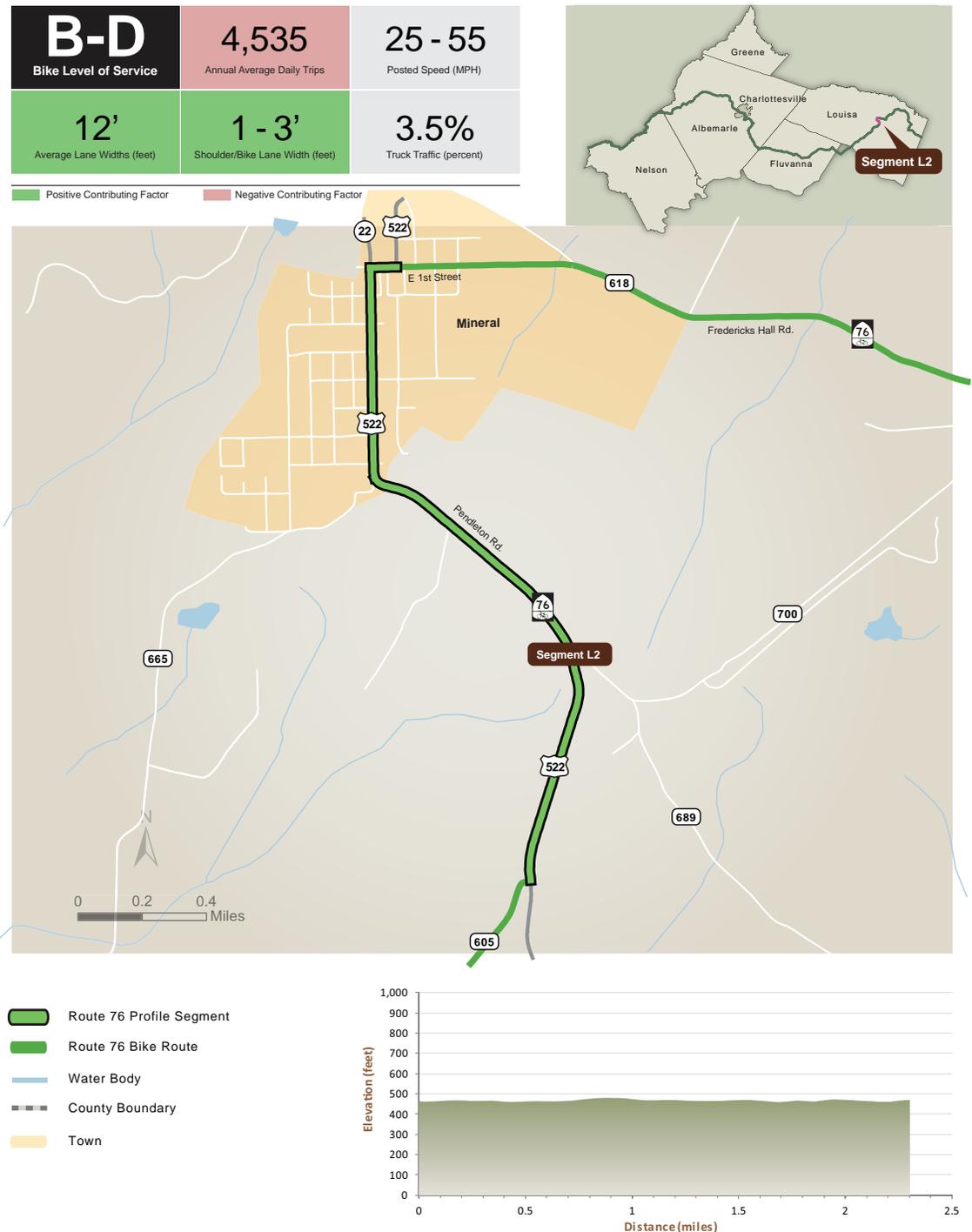
» *Small Town and Rural*

The character of land uses varies throughout the Mineral corridor. Along Pendleton Road, the surrounding area consists mostly of farms, wooded lots and large residential properties. At the Mica Road intersection, the adjacent land is dedicated to industrial and storage uses.

In the Town of Mineral, US 522 serves as the town’s main street. This street includes a mix of uses, including restaurants, a grocery store and service station.

Public Comment

» *No Comments*



Road Features

Road Sections

» Rural Two-Lane

The road dimensions vary greatly in this corridor. On Pendleton Road, there are two (2) travel lanes, 12 feet wide. (Figure 22-1)

On Mineral Avenue, the street section expands to three lanes, from West 6th Street north. The middle lane serves as a turn lane for a local grocery store and 5th Street. North of this intersection, the road becomes two lanes and the road surface consists of 56 feet of pavement. (Figure 22-2)

On East 1st Street, the roadway becomes narrower. With 40 feet of pavement. There are portions that allow for on-street parking, but the only markings for parallel parking are on the westbound lane, west of the railroad crossing. There is curb and gutter on the road edge. (Figure 22-3)

» Wide Outside Lane

Throughout this corridor, there are paved shoulders and wide outside lanes that allow cyclists to move away from travel lanes. On Pendleton Road, there are paved shoulders that range from 1 to 3 feet, with grass shoulders and shallow ditches adjacent to the pavement. On Mineral Avenue, there is 10 feet of on-street parking for both north- and southbound lanes. The remaining pavement consists of two 23-foot travel lanes.

Bike Signage

» Adequate Signage

There are four (4) BR 76 signs. While these signs are effective at guiding cyclists, there are no other bike-related signs.

Featured Intersections

» Typical, Town Intersection

There are seven (7) intersections along Mineral Avenue that are similar in design. The side streets at these intersections

include: West 6th Street, 5th Street, West 4th Street, West 3rd Street and 2nd Street. Many of these intersections have minor issues with sight distance, as on-street parking or vegetation can obscure sight-lines. (Figure 22-4)

» VA 522 (Mineral Avenue)/ VA 522 (East 1st Street)

This T-intersection is a major bottleneck in the community, with relatively high traffic counts. With the railroad crossing on 1st Street, a passing train can essentially close the intersection. In those instances, long traffic queues form behind turning vehicles. With limited turning radii, there are also issues with trucks turning at this intersection, creating potential dangerous situations for cyclists. Tractor trailers and other large vehicles sometimes collide with utility poles and other roadside features, as the drivers attempt this turning movement. In addition to these deficiencies, there are obstructions to sight-lines and multiple conflict points between vehicles and cyclists. (Figure 22-5)

» VA 208 (Louisa Avenue)

This T-intersection appears to have several deficiencies related to sight-distance and access management. From Louisa Avenue, vegetation blocks view to the east and west. Consequently, motorists pull into the intersection in order to view oncoming traffic. With access management, there are multiple intersections and entrances within the same general area. Within 200 feet of this intersection, there are two (2) additional intersections, four (4) business/service entrances, and ingress/egress at the firehouse. (Figure 22-6)

» Other intersections in this corridor include:

- VA 700 (Mica Road)
- VA 605 (Willis Proffitt Road)
- VA 665 (West 9th Street)

Sight Distance

» Clear Sight-Lines

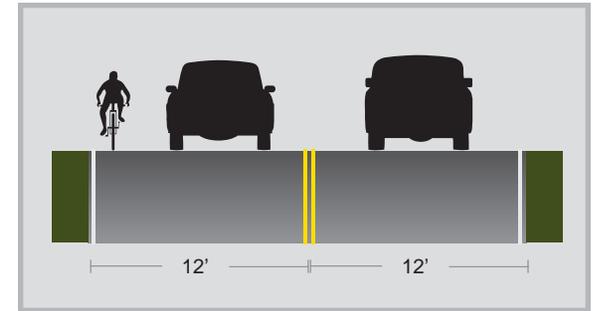


Figure 22-1: Typical Road Section for Pendleton Road



Figure 22-2: Typical Road Section for Mineral Avenue



Figure 22-3: Typical Road Section for East 1st Street

Additional Road Hazards

» On Street Parking

Another feature that generally concerns cyclists is parallel parking. On Mineral Avenue and 1st Street, on-street parking restricts road widths and present hazards, as open car doors can serve as an abrupt obstacle to riders. Since a low percentage of on-street parking is occupied on Mineral



Figure 22-4: Typical Intersection



Figure 22-5: East 1st Street Intersection



Figure 22-6: Sight-Lines from Louisa Avenue

Avenue, these dangers are minimized.

» **Railroad Crossing**

There is a railroad cross on this segment, though East 1st Street crosses the railroad at a right-angle. This minimizes dangers of a bike tires getting caught in the railroad's flangeway.

Planned Road Improvements

» *Monitoring of Intersection*

The Louisa County Comprehensive Plan and RLRP identify the East 1st Street intersection as a bottleneck. The RLRP recommends that this intersection be monitored for potential improvements.

» *New Road*

The Louisa County Comprehensive Plan recommends the construct of a new bypass, from Route 656 to the Town of Mineral, to relieve the East 1st Street intersection. The RLRP also references this recommendation. There are no timelines or funds dedicated to this project.

» *Mixed-Use Path*

Louisa County has preliminary plans for a mixed-use trail that would connect the Town of Mineral with the Lake Anna area. If the County were to build this trail, then there may be an alternate route for cyclists, away from traffic. Currently, there are no timelines or funds assigned to this trail project.

Traffic Conditions

Traffic Counts

» *3,700 to 5,370 ADT*

US 522 plays an important role in intra-county travel and carries significant traffic through the Mineral area. South of town, the traffic counts on Pendleton Road reach 5,368 ADT. Those same volumes flow through Mineral Avenue. On East 1st Street, the counts decrease to 3,723 ADT.

According to VDOT's 2035 forecasts, traffic volumes in this corridor may increase significantly. In the next twenty years, counts could rise to 8,750/8,900 ADT on Mineral Avenue and Pendleton Road. Traffic on East 1st Street could increase to 4,400 ADT. These increases in traffic could significantly influence bike compatibility in the future.

Truck Traffic

» *2 to 5 Percent*

There is a significant amount truck traffic on US 522, where heavy vehicles account for 5 percent of total ADT. These percentages influence the BLOS score for this corridor. On East 1st Street, this figure drops to a moderate 2 percent.

Travel Speeds

» *25 to 55 MPH*

There are different speed limits set for the various sections of this corridor. On the southern end, between Willis Proffitt and Mica Roads, the posted speed is set at 55 MPH. Between Mica Road and the town limits, the speed limit drops to 45 MPH. Within the Town, speed limits reduce once again to 35 MPH. On East 1st Street, the limit is 25 MPH. Actual travel speeds are typically 10 MPH over the posted speed. In the case of East 1st Street, speeds remain low, because of the railroad crossing and multiple intersections.

Level of Service

» *C - Stable Flow, at or Near Free Flow*

When trains pass through town, long traffic queues can build behind the East 1st Street intersection. During normal conditions, the corridor experiences a LOS C, where roads remain safely below capacity, and motorists can travel at or above the speed limit. With the forecast of higher traffic counts in the future, the LOS would subsequently diminish as the road approaches capacity.

Traffic Accidents

» *47 Crashes, 1 Fatal*

Between 2005 and 2011, there were 47 crashes in this corridor. This includes 23 traffic accidents on Pendleton Road, where off-road collisions were the most common crash type. One of those off-road collisions resulted in a fatality in 2010, just south of the Mica Road intersection. There were 10 crashes along Mineral Avenue and 5 accidents at the intersection with East 1st Street. Between Mineral and Louisa Avenue, there were 14 crashes, which was the second highest occurrence of accidents per mile

in the study area. *Note: There are no records of crashes between motorists and cyclists.*

Recreational

Historic Resources

» *Historic*

This corridor includes the Town of Mineral Historic District, which is on the Virginia and National Historic Registries. This portion of BR 76 provides views of structures that have historic significance, such as the Mineral Train Depot and several private homes.

Scenic Resources

» *No Designations*

Other Destinations

» *Town of Mineral*

The Town of Mineral offers cyclists with several service opportunities. As the only incorporated town in the study area, this corridor is a destination for cyclists.

Cycling Services & Resources

» *All Services*

There are several businesses that sell food and water, and provide access to restrooms. There are also two (2) service stations, which have air pumps. On the northern edge of the corridor, the Mineral Fire Station is a major hospitality feature, well regarded by cyclists worldwide, by allowing cyclists to stay overnight. Several miles to the west (on Yanceyville Road), Sophia House offers lodging and meals. There are other Bed and Breakfast opportunities in this area. In terms of parkland, Mineral is home to Walton Park, which has the potential to serve as a camp site.

Access Points

» *On-Street Parking*

There are several parking areas in the Town of Mineral, where cyclists could access the Bike Route.

Topography

» *Flat*

Route Assessment

Bike Compatibility: BLOS B – D

The BLOS varies greatly in this corridor. On Pendleton Road, the roadway is uncomfortable for cycling, due to high traffic counts and speeds, along with the high volume of truck traffic. On Mineral Avenue, the travel lanes are unusually wide and the speeds are relatively low. Consequently, the street is highly compatible for cycling, with a BLOS B. Along this section, even novice cyclists would feel comfortable riding in the street. On East 1st Street, the narrower travel lanes and on-street parking result in a BLOS C score, meaning the street is moderately compatible for cycling.

Recreational: High Value

In terms of recreation and amenities, there are several benefits to this corridor. The Town offers opportunities for several valuable services, such as lodging at the firehouse and air pumps. The Town has historic resources and a small town feel that would be interesting to cyclists. There are no scenic vistas in the area, but the Town creates an interesting environment for travelers.

Recommendations

Additional Signage

The TJPDC should work with VDOT and Louisa County to install additional bike signage that informs cyclists and warns motorists of frequent bike traffic.

Maintenance of Vegetation

The TJPDC should work with VDOT to examine the need to address vegetation at intersections, which may obstruct sight-lines.

Installation of Bike Lanes

The TJPDC should work with the Town of Mineral and VDOT on coordinating the installation of bike lanes on Mineral Avenue.

Additional Study of Intersection

Pursuant to the Louisa County Comprehensive Plan and RLRP, the TJPDC should work with VDOT, the County and Town on further study of the Mineral Avenue/East 1st Street Intersection.

Information Center

The TJPDC should work with the Town of Mineral to consider a BR 76 information center at Town Hall or the Firehouse. The center could include cycling information and access to cycling repair kits.



Segment L3: Fredericks Hall Road

Town of Mineral and Louisa County

Segment L3 evaluates the existing cycling conditions on Fredericks Hall Road, between the Town of Mineral, to the west, and VA 700 (Johnson Road), to the east. The Fredericks Hall Road corridor serves as a connector for BR 76, linking the Town of Mineral to eastern segments. While there are several benefits to cycling along VA 618, there are also hazards to riders.

Segment Characteristics:

Rural Environment

- Major Collectors
- Secondary Routes

Road Segments

- » *Total Road Mileage: 2.18 Miles*
- VA 618 (East 1st Street) - .54 Mile
- VA 618 (Fredericks Hall Road) – 1.64 Miles

Land Uses

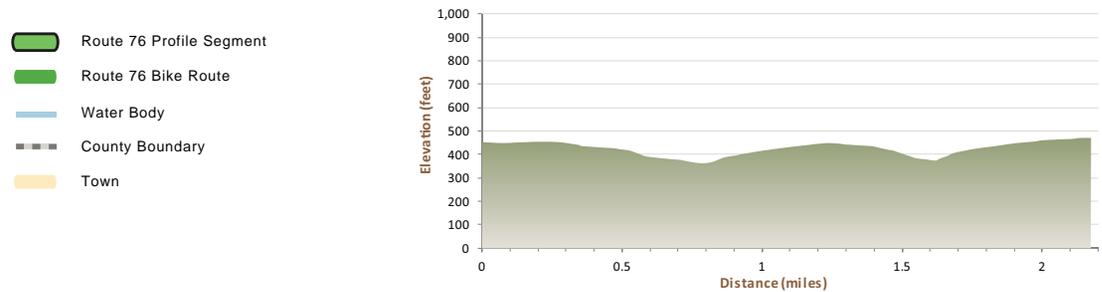
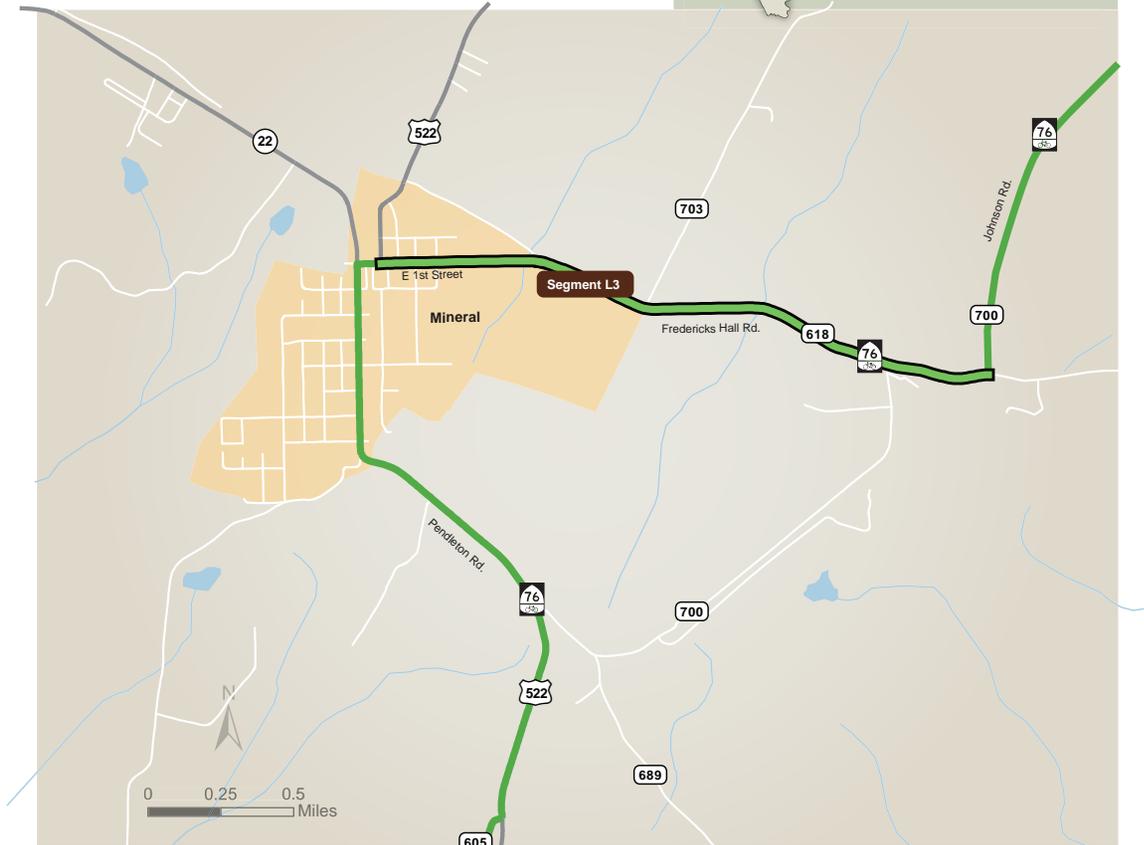
» *Small Town and Rural*

The western end of this corridor is within the Town of Mineral. While most of the properties in this section of VA 618 are undeveloped, the land uses have the scale of a small town, with small residential lots and services. East of the Mineral, Fredericks Hall Road passes by wooded, undeveloped properties, along with several small residential properties.

Public Comment

» *No Comments*

C-D Bike Level of Service	3,100 Annual Average Daily Trips	25 - 45 Posted Speed (MPH)
10' Average Lane Widths (feet)	0' Shoulder/Bike Lane Width (feet)	2% Truck Traffic (percent)
Positive Contributing Factor		Negative Contributing Factor



Road Features

Road Sections

» Rural Two-Lane

Along VA 618, the roadway consists of two 10-foot travel lanes, resulting in a total pavement width of 20 feet. (Figure 23-1)

» Shared Lane Bike Facility

There are no paved shoulders. Instead, the outside edge of the roadway is framed by narrow, grass shoulders and shallow ditches. Consequently, cyclists must share travel lanes with motorists.

» Bike Lanes

At the intersection with VA 703 (Spring Road) there are 4-foot bike lanes on the east- and westbound lanes. The bike lanes span approximately 720 feet, but then reduce back to a shared lane bike facility. (Figure 23-2)

Bike Signage

» Adequate Signage

There are two (2) BR 76 signs. There are also seven (7) signs that inform motorists of the bikes lanes near Spring Road.

Featured Intersections

» Typical, Town Intersection

There are four (4) intersections in the town portion of this corridor, all involve local streets. Those streets include Louisa Avenue South, Saint Cecilia Avenue, Richmond Avenue and Albemarle Avenue. All of these intersections are similar in scale, as the cross streets are narrow roadways that carry low volumes of traffic. In some areas, sight lines may be limited by vegetation, but overall, there are no apparent deficiencies at these intersections.

» VA 703 (Spring Road)

This T-intersection includes a unique feature for a rural road section, bike lanes. On VA 618, there are over 700 feet

of bike lanes in this vicinity. On the westbound lane of VA 618, there is a short right turn lane that merges onto Spring Road. The road markings allow for a break in the bike lane, to accommodate turning vehicles. Overall, the markings and sight distances are sufficient for cycling safety.

» VA 700 (Johnson Road)

This T-intersection marks the eastern end of the Fredericks Hall Road Profile. While there are no immediate concerns with this intersection, there were several reported crashes. Between 2005 and 2011, there were 8 traffic accidents within the intersection, including a pedestrian collision. There may be obstructed sight-lines from Johnson Road that could have contributed to these accidents.

» Other intersections in this corridor include:

- VA 208 (Louisa Avenue)
- VA 667 (Old Tolersville Road)
- VA 700 (Mica Road)

Sight Distance

» Clear Sight-Lines

Additional Road Hazards

» Lack of Shoulders

While travel speeds are relatively low, the higher traffic counts create a need for additional shoulders along VA 618. Without paved shoulders, cyclists are exposed to this vehicular traffic.

Planned Road Improvements

» No Planned Improvements

Traffic Conditions

Traffic Counts

» 3,000 to 3,200 ADT

East 1st Street carries relatively high traffic counts for the roadway dimension, with 3,202 ADT. The counts are due to

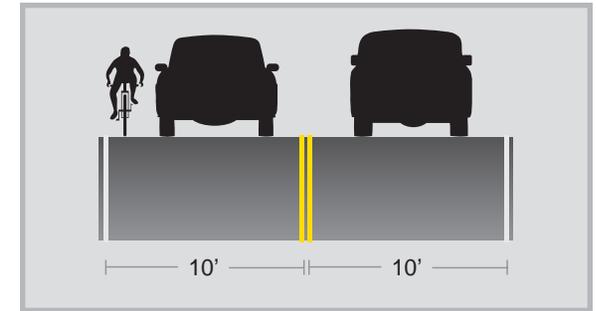


Figure 23-1: Typical Road Section



Figure 23-2: Bike Lanes

the intra-county importance of this corridor. To the east of Mineral, volumes drop slightly to 3,078 ADT.

VDOT anticipates that ADT will rise for this corridor, over the next twenty years. Traffic counts on East 1st Street could increase by 1,200 in that time, to 4,400 ADT. To the east, counts on Fredericks Hall Road could rise by 1,000, resulting in 4,000 ADT. These increases could significantly diminish bike compatibility.

Truck Traffic

» 2 Percent

Heavy vehicles account for a moderate percent of total ADT (2 percent), which does not significantly influence bike compatibility.

Travel Speeds

» 25 to 45 MPH



Figure 22-3: Mineral Train Depot



Figure 23-4: Mineral Firehouse

The posted speed varies as VA 618 transitions from the Town of Mineral. In Mineral, the speed limit is set at 25 MPH, until the town limits, where the speed increases to 35 MPH. The speed limit increases to 45 MPH, just east of the VA 703 (Spring Road) intersection. Generally, actual travel speed is approximately 10 MPH over the posted speed.

Level of Service

» *B - Reasonably Free Flow*

There is no traffic congestion identified in the corridor. Motorists are able to travel at or above the posted speed limit, with a high level of comfort. VDOT forecasts show that the LOS will degrade slightly by 2035 (to LOS C), where the roadway will still remain under capacity.

Traffic Accidents

» *30 Crashes, 1 Fatal*

There were 30 crashes along this corridor, between 2005

and 2011. This includes 6 crashes on East 1st Street and 24 crashes on Fredericks Hall Road. In the Town, most crashes were rear-end collisions, whereas off-road collisions were more common in the rural areas, to the east. There was 1 fatal crash, an off-road collision near the intersection with Mica Road. *Note: There are no records of crashes between motorists and cyclists.*

Recreational

Historic Resources

» *Historic District*

VA 618 passes through the Town of Mineral Historic District, which is on the Virginia and National Historic Registers. This portion of BR 76 also provides views of structures with historic significance, such as the Mineral Train Depot. (Figure 23-3)

Scenic Resources

» *No Designations*

Other Destinations

» *Town of Mineral*

Cycling Services & Resources

» *Restrooms, Food/Beverages, Supplies, Lodging and Medical Services*

The Mineral Firehouse provides lodging for cyclists and serves as a destination for cyclists. The fire department also trains their crews in first aid, which could be important for cyclists who sustain injuries. There are several businesses in the town that offer services that are useful to cyclists. (Figure 23-4)

Access Points

» *On-Street Parking*

There are several parking areas in the Town of Mineral, where cyclists could access the Bike Route.

Topography

» *Flat*

While there are topography changes, VA 618 is relatively flat. The biggest grade change occurs in the Town of Mineral, where the road slopes down at a 3 percent grade, towards Old Tolersville Road.

Route Assessment

Bike Compatibility: BLOS C & D

The BLOS in this corridor varies, based on road and traffic conditions. In the Town of Mineral, VA 618 scored a 'C', where the environment is moderately compatible for cycling. While the traffic counts are relatively high, the speeds are low, at 25 MPH. Once the speed limit increases to 35 MPH, the BLOS score drops to a 'D', which is incompatible for cycling. In combination with the higher speeds, there are no shoulders and relatively narrow travel lanes. The only other location with a BLOS C is at the bike lanes near Spring Road.

There are several features that are positive to cycling safety and comfort. The road surface is in excellent condition. The existing bike lanes are a great start for further road improvements. The truck traffic is low. The sight-distances are unobstructed, except in a few instances. Finally, the low to moderate number of entrances onto VA 618 results in fewer conflict points between vehicles and cyclists.

Recreational: High Value

In terms of recreation and amenities, there are several positives for cycling in this area. The terrain is flat, lacking difficult climbs. The scenic and historic resources are limited, but cyclists can still experience a rural setting. The Town of Mineral offers multiple opportunities for cyclists to replenish supplies, rest and explore. Finally, the Mineral Firehouse is a well-known destination for cyclists, providing lodging and access to first aid.

Recommendations

Additional Signage

The TJPDC should work with VDOT and Louisa County to install additional bike signage that informs cyclists and warns motorists of frequent bike traffic.

Maintenance of Vegetation

The TJPDC should work with VDOT to examine the need to address vegetation at intersections, which may obstruct sight-lines.

Shoulder Improvements

The TJPDC should work with VDOT to draft estimates and plans for additional bike lanes, which would expand on those already in place. The TJPDC can also add this project to the RLRP, for the 2015 update of that plan.



Segment L4: Lake Anna Area

Louisa County

Segment L4 evaluates the existing cycling conditions on Johnson and Kentucky Springs Roads, in the Lake Anna area. These roads are on the eastern end of the BR 76 study area. While there is a large recreational asset, a 13,000 acre lake, there are no few accessible destinations for cyclists. Consequently, this corridor serves more as a connector to other destinations along the Bike Route. While the roadways in this segment are relatively wider than in other rural roadways, there are several challenges to cycling safety and comfort.

Segment Characteristics

Rural Environment

- Major Collectors
- Secondary Routes

Road Segments

- » **Total Road Mileage: 10.79 Miles**
- VA 700 (Johnson Road) – 4.6 Miles
- VA 652 (Kentucky Springs Road) – 6.19 Miles

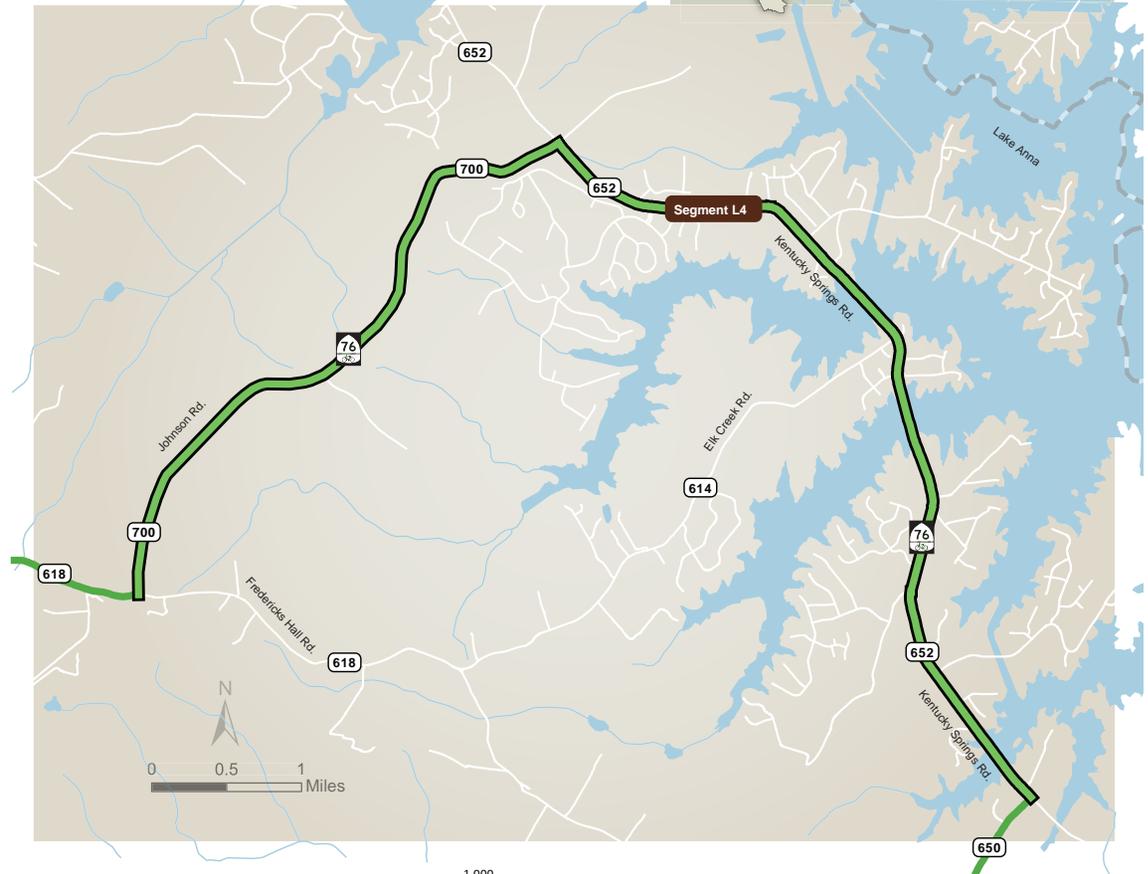
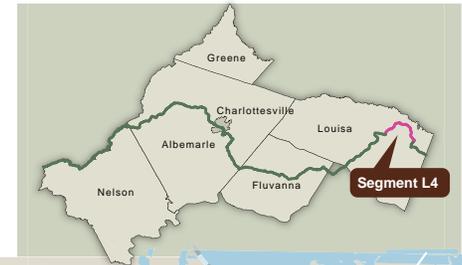
Land Uses

» Rural and Suburban

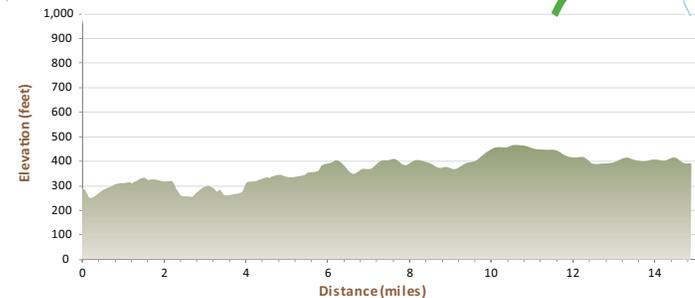
In the Lake Anna segment, the adjacent land uses are rural and suburban in nature. Along VA 700, the surrounding area consists mostly of undeveloped, wooded lots and a handful of homes. VA 652 has a more suburban character, with several large, residential subdivisions that take advantage of the waterfront along Lake Anna. Other than a few miscellaneous uses, this entire area consists of forests, residential lots and a few small farms. Occasionally, BR 76 passes over dikes and small bridges, which cut across the many coves of Lake Anna. (These coves are actually cooling ponds for the North Anna Power Station).

D Bike Level of Service	2,160 Annual Average Daily Trips	55 Posted Speed (MPH)
10' Average Lane Widths (feet)	0 - 1' Shoulder/Bike Lane Width (feet)	3% Truck Traffic (percent)

Positive Contributing Factor Negative Contributing Factor



- Route 76 Profile Segment
- Route 76 Bike Route
- Water Body
- County Boundary



Road Features

Road Sections

» Rural Two-Lane

Johnson and Kentucky Springs Road are both rural, two-lane roadways with the same general dimensions. These roads consist of 22 feet of pavement, which includes two (2) travel lanes of approximately 10 feet. (Figure 24-1)

» Shared Lane Bike Facility

The shoulders in this corridor are minimal, with less than a foot of pavement on the outside edge. Beyond the pavement, there are shallow ditches, except for a few instances where there are guardrails.

Bike Signage

» Additional Signage Needed

There are five (5) BR 76 signs. There should be an additional sign at Pottiesville Road, to direct cyclists onto Kentucky Springs Road. Also, there are no other bike-related signs in the corridor.

Featured Intersections

» VA 700 (Johnson Road)/VA 652 (Kentucky Springs Road)

This intersection experiences additional traffic because of its location and function. The northern leg is the only access point for the North Anna Power Station. The southern leg takes travelers towards the Town of Mineral, whereas the east and west legs provide access to residential subdivisions and destinations along Lake Anna. Because of the additional traffic, this is one of the only signalized intersections in the rural portions of the study area. (Figure 24-2)

There do not appear to be any immediate deficiencies in this intersection. Sight-distances appear to be sufficient. Between 2005 and 2011, there were only five (5) reported accidents within this intersection.

» Other intersections in this corridor include:

- VA 618 (Fredericks Hall Road)
- VA 614 (Elk Creek Road)
- VA 650 (Pottiesville Road)

Access Management

» Low Number of Conflict Points

There are relatively few conflict points along VA 700 and VA 652. Johnson Road has more occurrences of ingress/egress from individual residential lots, with 43 driveways in 4.6 miles. Most of these entrances are clustered together in specific areas. While there is more residential property along Kentucky Springs Road, there are only 31 residential driveways and over a longer distance, over six (6) miles. Most of those homes are within residential subdivisions, resulting in 17 entrances onto the roadway. These consolidated entrances minimize the number of conflict points along the corridor.

Sight Distance

» Clear Sight-Lines

Additional Road Hazards

» Railroad Crossing

On VA 700, the railroad crossing occurs at an angle, which increases the chances that a bike tire could slip into the railroad's flangeway.

» Guardrails

On VA 652, there are guardrails directly adjacent to the roadside, which limits the ability of cyclists to maneuver away from traffic. (Figure 24-7)

Planned Road Improvements

» Road Widening

The RLRP identifies geometric deficiencies on VA 652. The plan recommends road reconstruction that includes full-width lanes and shoulders. These improvements are listed as long-term solutions, though there are no specific funds or timelines assigned to this recommendation.

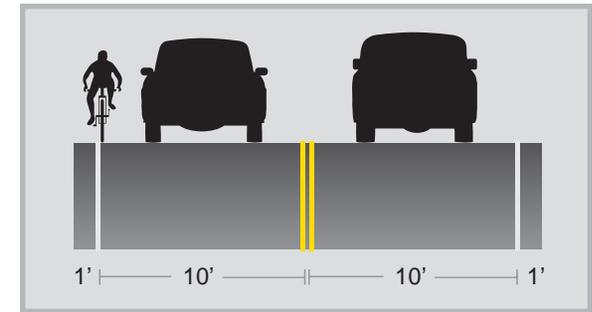


Figure 24-1: Typical Road Section



Figure 24-2: Johnson/Kentucky Springs Road



Figure 24-3: Guardrails on Kentucky Springs Road

Traffic Conditions

Traffic Counts

» 1,430 to 2,890 ADT

Traffic counts vary across this corridor. Johnson Road carries 1,911 ADT, which is relatively high for the roadway

geometries. Kentucky Springs Road also carries relatively high traffic counts due to travel associated with the lake community and the Lake Anna Power Station. The western segment of VA 652 has the highest counts, with 2,885 ADT. The counts gradually decrease to the east, reaching 1,427 ADT. Overall, the counts in this corridor are a primary contributor to the poor bike compatibility score.

(Note: VDOT typically collects traffic counts during the fall months. As a seasonal destination, Lake Anna attracts more people and traffic during the summer, meaning that these ADT figures may not be representative of peak season.)

VDOT forecasts indicate that overall traffic counts may increase over the next twenty years. Near the intersection with VA 700, traffic volumes may raise by approximately 1,000 ADT. To the east (closer to the Bypass area) counts would rise to a lesser extent, from 1,427 to 1,900 ADT by 2035. With these increases in traffic, bike compatibility will continue to diminish.

Truck Traffic

» 3-4 Percent

On VA 700, truck traffic accounts for approximately 3 percent of total ADT and does not greatly influence cycling conditions. On Kentucky Springs Road, heavy vehicles are a larger share of the overall traffic, with 4 percent, which begins to diminish the cycling score.

Travel Speeds

» 55 MPH

The posted speed limit is 55 MPH throughout the Lake Anna corridor, but the actual travel speeds are assumed to be closer to 65 MPH. These speeds are high, considering the roadway dimensions and the effects on cycling safety. Consequently, speed is a contributing factor to the poor bike compatibility score.

Level of Service

» B - Reasonably Free Flow &

» C - Stable Flow, at or Near Free Flow

In the Lake Anna area, the level of traffic congestion varies, but all road sections are safely below capacity. With the lack of congestion, motorists are able to travel at or above the posted speed.

VDOT forecasts show little change in LOS over the next twenty years. The only section anticipated to degrade in LOS would be the roadway between Carr's Bridge and Bohannon Roads, where LOS could marginally drop from 'B' to 'C'.

Traffic Accidents

» 63 Crashes, 0 Fatal

There were 26 crashes on Johnson Road, between 2005 and 2011. Over half were off-road collisions, suggesting geometric deficiencies. One-third of the total accidents on Johnson Road occurred at the T-intersection with Fredericks Hall Road, including an incident with a pedestrian.

There were 40 crashes on Kentucky Springs Road, where almost half were off-road collisions. The remaining crashes were mainly angled collisions between vehicles or deer-related accidents. Throughout the corridor, there were no apparent areas with an unusually high occurrence of crashes. *Note: There are no records of crashes between motorists and cyclists on this roadway either.*

Recreational

Historic Resources

» No Identified Resources

Scenic Resources

» No Designations

Other Destinations

» Lake Anna State Park

Except for southwest Virginia, Lake Anna State Park is the

only Virginia State Park in relative proximity to BR 76. The main challenge for cyclists is access. This park is on the northern shores of Lake Anna and cyclists must travel several miles, on incompatible roadway conditions, to access it.

» North Anna Information Center

The North Anna Nuclear Information Center, 1022 Haley Drive, Mineral, VA 23117, is unique to BR 76 in Virginia and possibly nationwide. At the information center, visitors can learn more about the area, the Power Station and Nuclear Power. The center also has restrooms and picnic tables.

Cycling Services & Resources

» Air Pumps, Restrooms & Food/Water

At the Elk Creek Road intersection, there is a service station that has an air pump and restrooms for patrons, along with food and water.

Access Points

» No Access

There are no public parking areas in this corridor that allow cyclists to access BR 76.

Topography

» Flat

The roadways in the Bypass area are relatively flat, with no significant hills or climbs.

Difficulty Level

» Low Difficulty

With a flat terrain and limited curves, this corridor provides a relatively easy ride for cyclists. Despite the terrain, the road and traffic conditions can cause moderate discomfort for even experienced riders.

Route Assessment

Bike Compatibility: BLOS D

With a BLOS D, the roads in this corridor are relatively

incompatible for cycling. There were several contributing factors to this score. The traffic counts and speeds are relatively high, given the road dimensions. Without adequate shoulders, cyclists are exposed to these high traffic volumes and speeds. (AASHTO standards indicate that the shoulders would ideally be 6 feet). Without shoulders, cyclists are also subject to truck blast, from heavy vehicles. The guardrails and railroad crossing also contribute to the relatively poor cycling environment.

Despite these dangers, there are benefits to cycling in this area. The road surfaces are in excellent condition. The travel lanes are wider than other rural roads in the study area. Access management is sufficient, limiting the number of conflict points. Also, there are minimal deficiencies at the intersections in this corridor.

Recreational: Low Value

While there are critical amenities, the recreational value in this area is relatively low. There are no historic resources. Any scenic vistas are in areas where cyclists cannot appreciate the views. There are no other tourist destinations that would interest cyclists. There is no access to Lake Anna. Also, there is no identifiable access to the Bike Route by car.

There are recreational benefits to this corridor. The terrain is flat, providing an easy ride. There are also important services and resources, such as air pumps and restrooms for patrons of the service station.

Recommendations

Additional Signage

The TJPDC should work with VDOT and Louisa County to install additional bike signage that informs cyclists and warns motorists of frequent bike traffic.

Road Widening

The TJPDC should work with VDOT and Louisa County to

develop greater detail on the recommendation in the RLRP, to widen the roadway.

Additional Study on Traffic Counts

The TJPDC should work with VDOT to collect seasonal traffic counts for the Lake Anna area, to determine the increase of ADT over summer months.

Study Alternate Route

The TJPDC should work with AASHTO to evaluate an alternate route that bypasses the cycling hazards in the Lake Anna area. Fredericks Hall Road is a frequent shortcut from Mineral to Bypass and should be evaluated as an official alternate for cyclists.

Information Center

The TJPDC should work with Dominion Power to explore the possibility of providing additional resources at the North Anna Information Center that would cater to cyclists.



Segment L5: Bumpass Area

Louisa County

Segment L5 evaluates the cycling conditions in the Bumpass portion of the study area, located in the northeast corner of Louisa County, near Lake Anna. While there are benefits to cycling in this corridor, there are few recreational amenities or destinations, making this a connector route. In terms of safety, there are also several challenges to cycling safety and comfort.

Segment Characteristics

Rural Environment

» Major Collectors

- Rural Local (VA 650)
- Secondary Routes

Road Segments

- » Total Road Mileage: 5.89 Miles
- VA 650 (Pottiesville Road) – 1.9 Miles
- VA 618 (Fredericks Hall Road) – 1.11 Miles
- VA 618 (Belsches Road) – 2.88 Miles

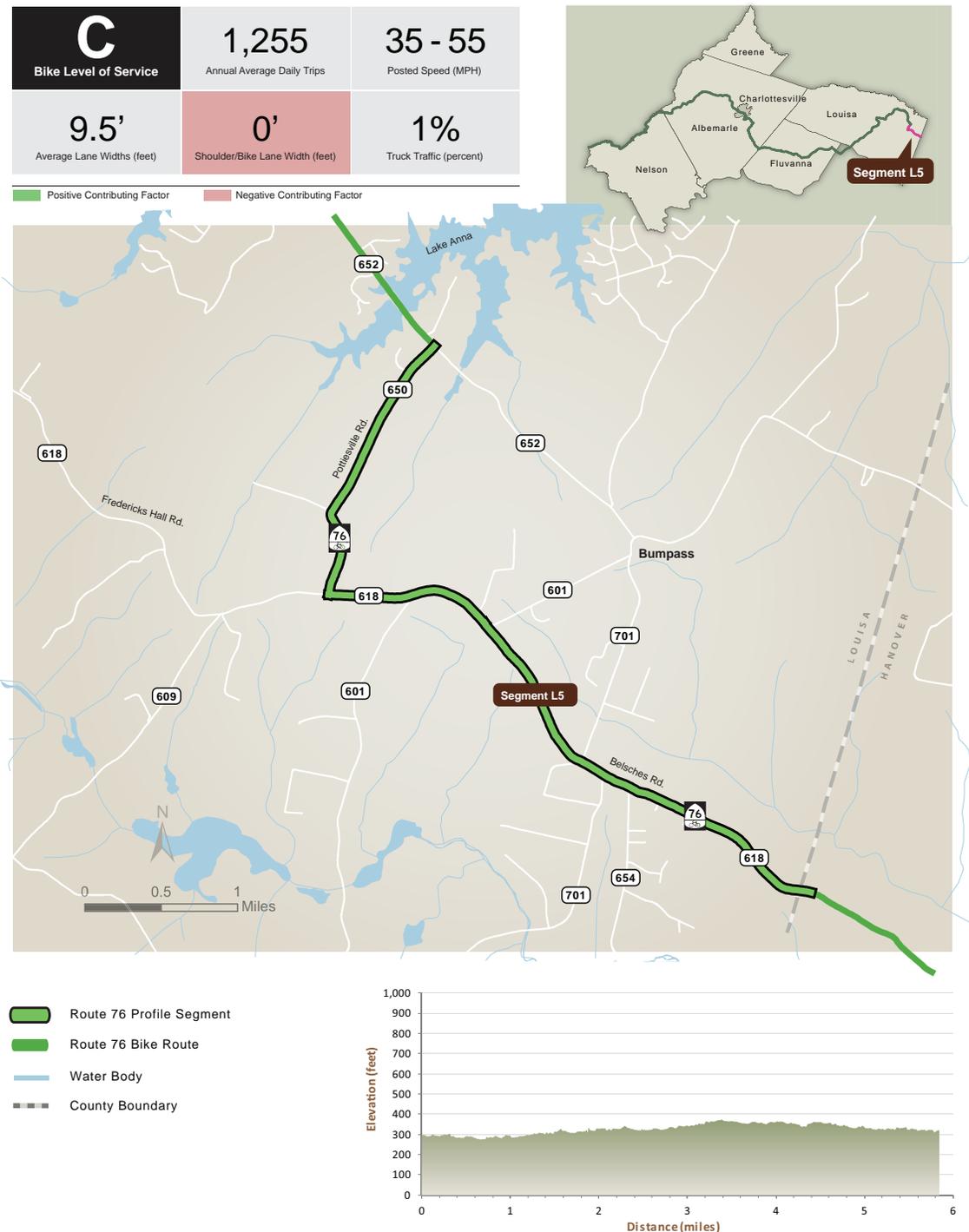
Land Uses

» Rural

The Bumpass area is a rural setting, consisting mostly of wooded properties, pastures, farms and large residential lots. There are a couple of residential subdivisions in this corridor, along with an industrial property at the corner of Pottiesville and Fredericks Hall Roads. The industrial property is a notable land use that generates truck traffic.

Public Comment

» No Comments



Road Features

Road Sections

» Rural Two-Lane

The Road section varies slightly in this corridor. Pottiesville Road consists of an 18-foot paved surface, which includes 9-foot travel lanes. (Figure 25-1). On Fredericks Hall Road, the pavement widens to 20 feet (10-foot travel lanes). To the east, Belsches Road narrows again to 18 feet of asphalt. (Figure 25-2)

» Shared Lane Bike Facility

There are no paved shoulders in this corridor, forcing cyclists to share the same travel lanes as general traffic. At the road edge, there are shallow ditches or lawns.

Bike Signage

» Additional Signage Needed

There are five (5) signs that identify BR 76. There is one (1) Bike Route sign that is missing, on Pottiesville Road. Additionally, there is no other bike-related signage in this segment.

Featured Intersections

» VA 650 (Pottiesville Road)/ VA 618 (Fredericks Hall Road)

The main issue at this T-intersection is access management. There are several entrances within 300 feet of the intersection. This includes entrances to a small mobile home park, single-family home, church, service station and industrial operation. This additional access creates potential conflict points between vehicles and cyclists.

» VA 601 (Bumpass Road)

There are potential roadway deficiencies at this Y-intersection. A gravel road segment cuts across the Y of the intersection, which could cause confusion with turning movements. Those access points include entrances to 3 residential properties, a private business, the post office and a fire station.

» Other intersections in this corridor include:

- VA 652 (Kentucky Springs Road)
- VA 601 (Diggstown Road)
- VA 701 (Borden Road)

Sight Distance

» Clear Sight-Lines

Additional Road Hazards

» Lack of Shoulders

With the existing traffic volumes and speeds, the lack of shoulders creates safety concerns for cyclists. These issues are somewhat diminished by the roadside features, which consists of lawns and shallow ditches, which allows cyclists to bail from the roadway, if needed.

Railroad Crossing

There is a railroad crossing on Pottiesville Road, near the intersection with VA 618. While railroad crossings can be a hazard to cyclists, this crossing appears to be relatively safe, since the road approaches the railroad at a 90 degree angle.

Planned Road Improvements

» Road Widening

The RLRP identifies geometric deficiencies along VA 618. The plan recommends roadway reconstruction that includes full-width lanes and shoulders. These improvements are listed as long-term solutions.

The Louisa County Comprehensive Plan states that there are major needs for VA 618, due to truck traffic from the industrial property at the intersection of Pottiesville and Fredericks Hall Roads. The plan also states that these needs may be mitigated if the operation made use of rail service in the future.

Traffic Conditions

Traffic Counts

» 590 ADT to 1,920 ADT

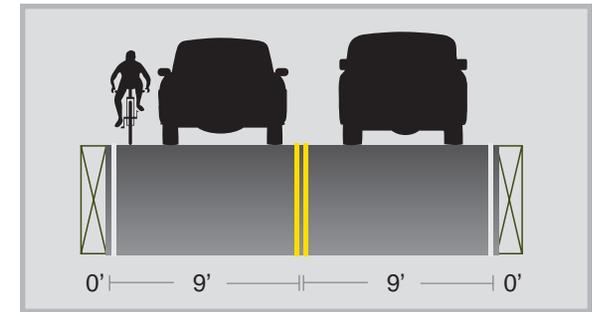


Figure 25-1: Typical Road Section on Pottiesville Road

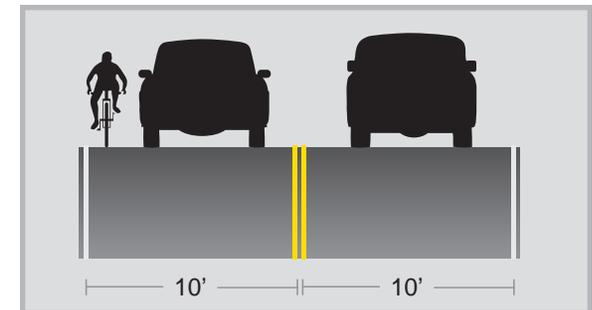


Figure 25-2: Typical Road Section on Fredericks Hall Road



Figure 25-3: Hanover County Line

Traffic counts vary in the Bumpass area. Pottiesville Road carries the lowest traffic counts, as would be expected for a local road, with 588 ADT. The highest volumes are on the Fredericks Hall Road segment, with 1,563 ADT. Near the Hanover County line, there are 1,919 ADT on Belsches Road.

Note: VDOT typically collects these counts during the fall months. With Lake Anna, the peak season for traffic is during the summer months, meaning that the ADT figures may not be representative of peak season.

Over the next twenty years, VDOT anticipates a rise in traffic volumes. Pottiesville Road may increase to 1,200 ADT, while future counts on VA 618 may reach 2,300 ADT. With an increase in traffic, bike compatibility would diminish.

Truck Traffic

» *0-2 Percent*

Travel Speeds

» *35 to 55 MPH*

The speed limit in this segment varies. While the speed is not posted on Pottiesville Road, the default limit is 55 MPH. Near the intersection of VA 650 and VA 618, the speed drops to 35 MPH. On the eastern segment of VA 618, the speed limit is set at 45 MPH. On average, motorists tend to travel close to 10 MPH faster than the posted speed. These higher speeds may be more common with the straight, flats roadways in this segment.

Level of Service

» *A – Free Flow*

» *B – Reasonably Free Flow*

In the Bumpass area, traffic flows freely and vehicles are able to travel at or above the posted speed limit. VDOT forecasts show that there could be minor increases in traffic congestion by 2035. Areas with LOS A may decrease marginally: to LOS B. Conditions on Belsches road will likely remain unchanged.

Traffic Accidents

» *34 Crashes, 1 Fatal*

Between 2005 and 2011, there were 34 recorded crashes in this corridor. Belsches Road had the highest occurrence of crashes, with 18. This includes a fatal accident that occurred in 2011, with an off-road collision near the Hanover

County line. Most of the crashes in this area involved off-road crashes, with roadside features such as trees or road signs. *Note: There are no recorded crashes between motorists and cyclists, between 2005 and 2011. (Figure 25-3)*

Recreational

Historic Resources

» *No Identified Resources*

Scenic Resources

» *No Designations*

Other Destinations

» *Bumpass Park*

Louisa County maintains a park just outside of this corridor. Bumpass Park includes playing fields and open space for visitors.

Cycling Services & Resources

» *Air Pumps, Restrooms, Food/Beverage & Medical Services, Post Office*

While there are few destinations in this segment, there are several services that can be of great benefit to cyclists. Just west of the intersection of VA 650 and VA 618, there is a service station with air pumps, restrooms and other supplies. Farther east, there is a fire station near the intersection with Bumpass Road. These stations typically have personnel with training in first-aid. A post office in this area may be useful to cyclists, who need to send/receive equipment, emergency repair parts and other supplies.

Access Points

» *Post Office & Bumpass Park*

There is parking at the Post Office and Bumpass Park that could allow access to BR 76.

Topography

» *Flat*

Difficulty Level

» *Low Difficulty*

Route Assessment

Bike Compatibility: BLOS C

With a BLOS C, this corridor is moderately compatible for cycling. The roadway is relatively narrow, with no paved shoulders. Given the traffic conditions, roadways would ideally have 4-foot shoulders, according to AASHTO standards. There is also a relatively high number of turning movements in the segment, introducing greater possibility of conflict points between cyclists and motorists.

While there are cycling dangers on these roads, there are also several benefits to cycling. The surface conditions are excellent. There are clear sight-lines, so that motorists can easily spot and avoid cyclists. There are no other identified hazards to cycling safety.

Recreational: Low Value

While there are critical amenities in this corridor, the recreational value of this area is relatively low. There are no historic or scenic resources; and, there are no other tourist destinations that would interest cyclists.

Given these deficiencies, there are recreational benefits to this corridor. The terrain is flat, providing an easy ride. There are important services and resources, such as air pumps and medical services. Also, there is public parking, allowing access to the Bike Route.

Recommendations

Additional Signage

The TJPDC should work with VDOT and Louisa County to install additional bike signage that informs cyclists and warns motorists of frequent bike traffic.

Road Widening

The TJPDC should work with VDOT and Louisa County to develop greater detail on the RLRP recommendation, to widen the roadway.

Additional Study on Traffic Counts

The TJPDC should work with VDOT to collect traffic counts for the Lake Anna area that capture peak season counts, to determine the increase of ADT over summer months.

Camping at Bumpass Park

The TJPDC should work with Louisa County to consider camping opportunities for cyclists at Bumpass Park. There may be opportunities to limit camping to cyclists.

