Roanoke Valley-Alleghany
REGIONAL
commission

Rural Bikeway Plan

PREPARED JULY 2020

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Introduction

The Roanoke Valley - Alleghany Regional Commission (RVARC) produced the original Rural Bikeway Plan in 1997. This is its second update. The study area for this document encompasses several rural localities in the Roanoke Valley - Alleghany Region: Alleghany County, Craig County, Covington, Clifton Forge, and the rural parts of Roanoke County and Botetourt County. Development of this plan was guided by input from a steering committee of representatives from six localities and two agencies, survey input from economic development interests, and input from three public meetings.

What the Rural Bikeway Plan is:

The Rural Bikeway Plan reviews current conditions for bicycling in the rural areas of the Roanoke Valley-Alleghany region including why people bicycle, where they are bicycling, and the quality of bicycle facilities. The plan identifies routes to consider for bicycle facilities to improve the safety and comfort of bicyclists. The Virginia Department of Transportation (VDOT) and the localities served by this plan can incorporate many of the infrastructure recommendations into routine maintenance and projects. The plan also offers localities, bicycling-oriented businesses, and others strategies to encourage more people to bicycle.

What the Rural Bikeway Plan is not:

The Rural Bikeway Plan does not provide recommendations for trails, forest service roads, or routes maintained by agencies other than VDOT or localities, such as the National Forest Service or National Park Service.

Although Franklin County is in the Roanoke Valley - Alleghany Region, the West Piedmont Regional Bicycle Plan covers Franklin County so it is not included in this document. The urbanized areas of Botetourt and Roanoke Counties are part of the Roanoke Valley Transportation Planning Organization (RVTPO), and recommendations for these areas can be found in the RVTPO Regional Bikeway Plan, last updated in 2012.

Existing Conditions

The rural study area is an appealing place for bicyclists who live in the area, those coming for a daytrip from the urbanized Roanoke and New River Valleys, and those visiting from other regions who may spend the night. Small towns, cities, and subdivisions are easy and comfortable for bicycling to work, church, school, shopping, and services. The low traffic and beautiful scenery are among the attractions of the rural area. Rural residents, businesses, and localities want to encourage bicycling because of the benefits to the economy, personal health, and quality of life. In areas with higher concentrations of people, jobs, and services, the low traffic makes bicycling to work, school, and errands appealing and safe, but high traffic roads are barriers to otherwise safe, short bicycle trips. Existing conditions for bicycling include built facilities and plans and studies.

Existing Facilities

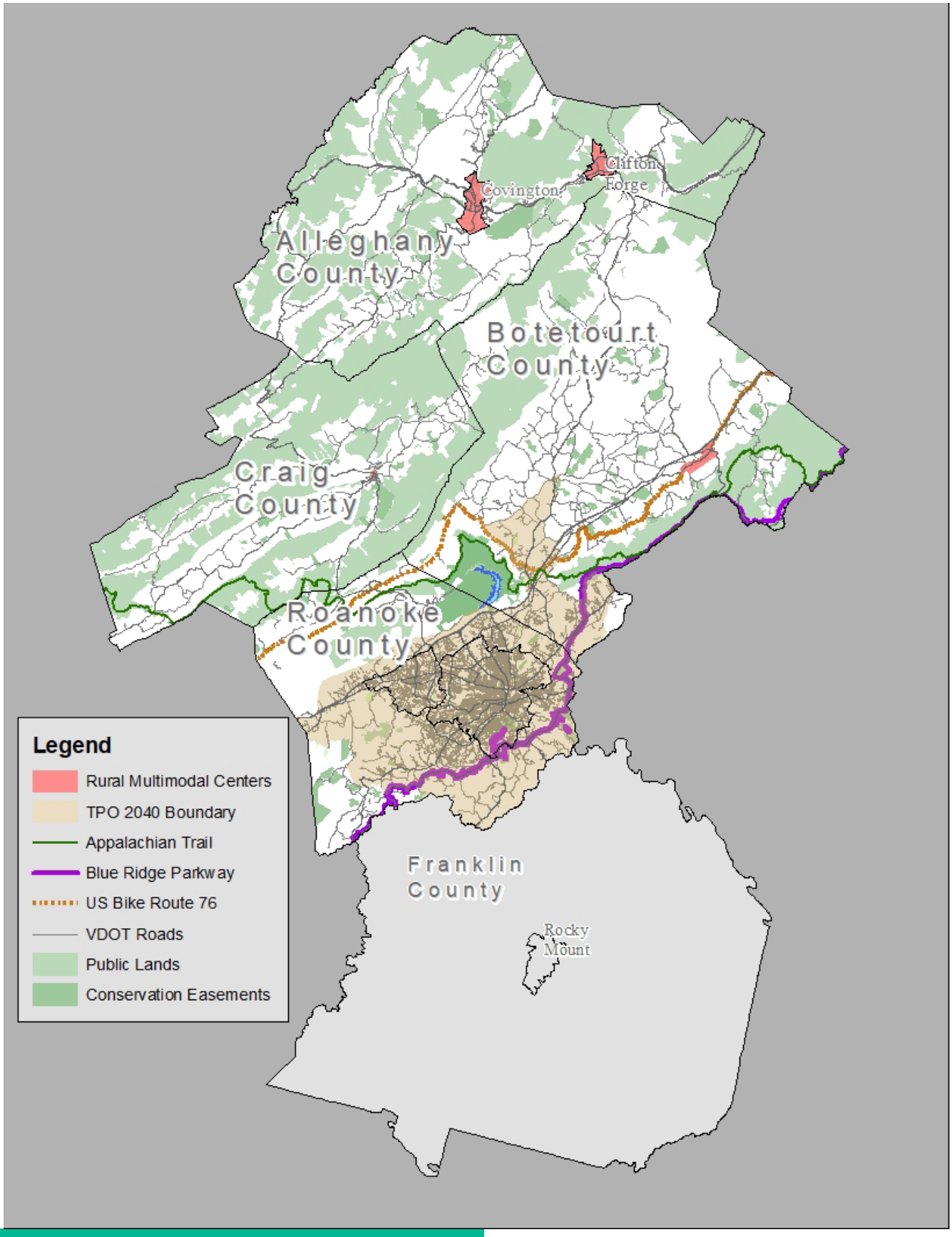
This section describes existing facilities within the study area and reviews related plans, such as the comprehensive plans of the localities in the study area and the bikeway plans of adjacent regions.

Existing bikeways in the study area include:

- US Bicycle Route 76, the only signed on-road bicycle route in the study area;
- Popular bicycle routes near the urbanized area, such as the Blue Ridge Parkway or Bradshaw Road;
- Remote routes, such as Route 311 leading up to Paint Bank;
- Jackson River Greenway, for any level of bicyclist;
- Gravel roads, which are increasingly popular among bicyclists; and
- Mountain bike trails through public lands.

Many roads in the rural area and residential streets in cities and towns are low traffic and, except for Bicycle Route 76, do not have bicycle accommodations. Other roads can be made more comfortable for bicyclists with very little improvement, with more extensive improvements needed for key connections.

Figure 1: RVARC Service Area, Study Area, and Existing Conditions



Review of Related Plans

Roads do not stop at jurisdictional lines and neither do bikeways. To harmonize planning efforts across borders and between modes of travel, this document reviews relevant plans and studies. This includes:

- Comprehensive plans of localities in the study area;
- Bicycle plans of adjacent planning districts and the adjacent urbanized area; and
- Other relevant plans and studies, such as the Clifton Forge Bicycle & Pedestrian Plan, U.S. Bicycle Route 76 Study, 2013 Multimodal System Design Guidelines, 2035 RVARC Rural Long Range Transportation Plan, and Regional Bicycle Suitability Study Phase II.

Comprehensive Plans

Most localities in the study area refer to the Rural Bikeway Plan in the transportation chapter of their comprehensive plan (Figure 2).

Figure 2: Locality Comprehensive Plans

Locality	Year	Comprehensive Plan
Alleghany County	2013	The transportation chapter references the 2006 Rural Bikeway Plan and lists three projects with bicycle accommodations.
Botetourt County	2017	The transportation chapter references the RVTPO Regional Bikeway Plan and the US Bike Route 76 Study.
Clifton Forge	2012/2019 update	The transportation chapter of the 2012 Comprehensive Plan references the 2006 Rural Bikeway Plan and lists one project with bicycle accommodation (sharrows on Commercial Ave).
		The 2019 Comprehensive Plan lists two projects with bicycle accommodations: sharrows on Commercial Ave and a road diet on Main St.
Covington	2013	No bicycle reference
Craig County	2013	The transportation chapter references the 2006 Rural Bikeway Plan, lists two projects with bicycle accommodations (shoulders), and identifies a greenway connection.
Roanoke County	2005	The transportation chapter references the 1997 Rural Bikeway Plan, the Phase I Regional Bicycle Suitability Study, and the Phase II Regional Bikeway Suitability Study.

Adjacent Regions

The study area shares borders with five regions that have bicycle plans:

- Central Shenandoah Valley Bicycle Plan (2005)
- Region 2000 Bicycle Plan (2010)
- New River Valley's Bikeway, Walkway, Blueway Plan (2011)
- West Piedmont Regional Bicycle Plan (2018)
- The urbanized area contained in the Bikeway Plan for the Roanoke Valley Area Metropolitan Planning Organization (2012)

The study area also shares borders with Greenbrier County and Monroe County in West Virginia. These counties are part of West Virginia's Regions 1 and 4 Planning and Development Councils, which do not have bikeway plans.

Organized rides, cycling clubs, and individual bicyclists have favorite routes that cross from one planning district's bikeway plan into another. For example, about half of the Mountains of Misery Ride is in Montgomery County, which is in the New River Valleys' Bikeway, Walkway, Blueway Plan, and half is in Craig County, which is in this plan. U.S. Bicycle Route 76 begins in Yorktown, Virginia and ends in Missouri. In this region, it runs from Rockbridge County, which is in the Central Shenandoah Valley Bicycle Plan, into Botetourt County and Roanoke County, which are both in this plan, and then continues into Montgomery County, which is in the New River Valley's Bikeway, Walkway, Blueway Plan.

The four adjacent regions' bicycle plans include urban and rural areas while the Roanoke Valley-Alleghany Regional Commission has separate plans for its urban and rural areas.

Quality of life, connections, and transportation stood out as common goals of the bicycle plans of adjacent regions. For example, in their goals, the Central Shenandoah Valley cited maintaining the rural quality of life, the New River Valley improving the quality of life within the region, and West Piedmont enhancing the quality of life. Region 2000 goals mentioned ensuring connections to major destinations, trail networks, transit and other pedestrian transportation modes, West Piedmont providing connectivity between residential areas and activity centers, and Central Shenandoah Valley providing an interconnected network of facilities that link cities, towns, and key destinations. West Piedmont noted adding multimodal options to existing trans-

portation networks, Central Shenandoah Valley providing facilities for transportation and recreation, and Region 2000 using bicycles to meet transportation, recreational, and health needs.

Both the New River Valley's Bikeway, Walkway, Blueway Plan and the West Piedmont Regional Bicycle Plan identify a connection to the Roanoke Greenway as a priority. Otherwise, there is little or no coordination identified between adjacent regions. Bike routes identified in one plan end at the border of the region. This update of the Rural Bikeway Plan addresses continuity with plans outside of its study area.

The economic impact of bicycling is of keen interest to rural areas. The Central Shenandoah Planning District Commission, partnering with the Roanoke Valley-Alleghany Regional Commission, published The Economic Impact of Bicycling in the

Figure 3: Routes Connecting to Other Regions

Road Name	Connects to
Blacksburg Road	New River
Blue Ridge Parkway	New River, West Piedmont, Central, MPO
Bent Mountain Road	West Piedmont
Douthat Road	Central Shenandoah
Hot Springs Road	Central Shenandoah

Figure 4: Goals or Objectives of Neighboring Bikeway Plans

Central Shenandoah Valley in 2016, which the West Piedmont Regional Bicycle Plan analyzed against the backdrop of its region, noting similarities and differences to assess how applicable the economic impact findings in Central Shenandoah Valley might be to West Piedmont. Another innovation of the West Piedmont Regional Bicycle Plan is the inclusion of gravel roads. Gravel roads are increasingly popular for recreational bicycling and are appealing because of the low traffic volumes but are less technically challenging than mountain bike trails. Gravel roads are unlikely to need or receive improvements designed for bicycling, but they are considered bicyclist destinations. Bicyclists may use paved roads to access gravel roads or to travel from one gravel road to another and it is very important to the choice of bicycle whether a road is paved or gravel. Therefore, gravel roads were considered in this plan.

Other Plans and Studies

Other plans and studies that are relevant to the Rural Bikeway Plan are:

- Roanoke Valley Greenway Plan (2018)
- Clifton Forge Bicycle & Pedestrian Plan (2017)
- U.S. Bicycle Route 76 Study (2017)
- Multimodal System Design Guidelines (2013)
- 2035 Rural Long Range Transportation Plan (2011)
- Regional Bicycle Suitability Study Phase II (2004)

The Roanoke Valley Greenway Plan includes Botetourt and Roanoke Counties as well as the greenways in the urbanized Roanoke Valley. Greenways are primarily separate from roads rather than on-road accommodations, but may be routed onto roads for some segments. The 2018 update addressed neighborhood connections, which included on-road connections. This plan considered on-road connections to present and future greenways in rural Botetourt and Roanoke Counties.

The Clifton Forge Bicycle & Pedestrian Plan addresses bicycle and pedestrian connections primarily within Clifton Forge, with discussion of connectivity to nearby areas such as Selma-Low Moor Rd. Clifton Forge is within the study area of this plan and so this plan reinforces the recommendations of the Clifton Forge Bicycle & Pedestrian Plan.

The US Bicycle Route 76 Study identified spot improvements and systemic improvements. Examples of spot improvements are pavement maintenance or paved shoulders and other safety measures at locations which have more traffic or higher truck traffic. Systemic improvements include wayfinding signs and apps, amenities such as bathrooms and shuttle service, and better marketing or advertising of events and amenities. A shuttle service has been discussed for various outdoor amenities, but the only close study of a shuttle service in the study area is being conducted around access to the McAfee Knob trailhead on the Appalachian Trail. No details about how a potential shuttle service might work were provided in the USBR 76 study.

Visit Virginia's Blue Ridge recommended destination signage for its localities, including Botetourt County and Roanoke County. The destination signage was not intended explicitly for bicyclists but could be used or adapted to encourage and facilitate bicycling.

In 2013 the Virginia Department of Rail and Public Transportation published Multimodal System Design Guidelines and established the concept of multimodal centers. A multimodal center is an area of high multimodal connectivity and intense activity of up to one-mile diameter. This concept is significant because sidewalks, bike lanes, and bus routes are not enough in themselves to generate multimodal activity – there must be reasons to visit a place. Once there, there must also be safe paths to walk and bicycle. Multimodal centers and districts aren't just found in urban areas. Rural areas also have areas of concentration of people and jobs compared to the surrounding area. In rural areas, generally low traffic volume makes bicycling to and from and around these multimodal centers appealing.

The development of multimodal centers has several steps, the first of which is an analysis of population density and employment density. The Multimodal System Design Guidelines identify Potential Multimodal Centers in Virginia based on this preliminary analysis, including in the rural study area of this plan. To identify Potential Multimodal Centers, ArcGIS was used to calculate the density of jobs and population from 2010 Census data, cross checked with Census block density, and verified with aerial imagery.

The study categorized multimodal centers into six types defined for the Multimodal System Design Guidelines "to establish a basic palette of place types for planning

purposes" . The six types are based on activity density (jobs plus population per acre, shown in Figure 5).

There are four Potential Multimodal Centers are in the study area on this statewide list: Buchanan (P1), Clifton Forge (P2), Covington (P3), and New Castle (P2). However, more analysis is needed to determine their boundaries. Furthermore, there may be additional multimodal centers that did not meet the minimum criteria for the state-wide analysis but are significant to the region which could be identified with a similar methodology.

Figure 5: Potential Multimodal Centers in the Study Area

Type	Name	Activity Density*
P1	Rural or Village Center	<2
P2	Small Town or Suburban Center	2-7
P3	Medium Town or Suburban Center	7-14
P4	Large Town or Suburban Center	14-34
P5	Urban Center	34-70
P6	Urban Core	70+

An offshoot of VTrans 2035, the statewide long range transportation plan, was the development of rural long range transportation plans throughout the state, including the RVARC 2035 Rural Long Range Transportation Plan in 2011. Goal 8 of this plan is "Provide on-road and off-road bicycle and pedestrian accommodations" and the plan cites RVARC's 2006 Rural Bikeway Plan and its recommendations. However, the intersection and segment deficiencies and recommendations identified in the Rural Long Range Transportation Plan were categorized as operation, safety, or other and did not address bicycle deficiencies or recommendations.

The Roanoke Valley-Alleghany Regional Commission analyzed the suitability of roads for bicyclists in two studies. The *Regional Bicycle Suitability Study Phase II* included rural roads (Phase I was urban only). Factors such as traffic volume, lane width, number of lanes, and shoulder or bike lane width play a major role in how comfortable a road is for bicycling, and these factors can be plugged into an equation that calculates the bicycle level of service. A grade of "A" is very comfortable for any bicyclist, including small children, while a grade of "F" is extremely uncomfortable for most bicyclists. An example of an "A" grade is a separated bike path. Many rural roads in the study area may be comfortable for experienced, adult cyclists and score a "C". Although the study was completed more than a decade ago, the measurements that went into the level of service calculations haven't changed substantially. While rural roads might typically score a "C", those that were selected for analysis in the *Regional Bicycle Suitability Study Phase II* have higher traffic volumes than most rural roads in the study area and received a level of service grade of D or E (Figure 6). These routes were carefully considered in the update of this Rural Bikeway Plan.

Figure 6: Routes from the Bicycle Suitability Analysis

Route	From/To	Jurisdiction	Level of Service
311/Catawba Valley Dr	419 to Craig County Line	Roanoke County	D/E
779/Catawba Rd (US Bike Route 76)	311 to US 220	Botetourt County, Roanoke County	D/E
18/Carpenter Dr/Potts Creek Rd	Edgemont Dr to Craig County Line	Alleghany County, Covington	D/E
US 60/Madison St/Midland Trail	US 220 to Covington East City Limit and Covington West City Limit to I-64	Alleghany County	D
629/Douthat State Park Rd	Falcon Ridge Rd to Bath County Line	Alleghany County	C/D
Blue Ridge Parkway	Floyd County Line to Bedford County Line	Botetourt County, Roanoke County	D

Development of the Plan

Three phases of input guided the plan.

1. The steering committee identified roads that are popular bike routes, shaped broad public input strategies, and designed the economic development survey.
2. An economic development survey of retail owners, event organizers, and tourism or economic development staff identified amenities that appeal to event organizers and bicyclists. Survey responses informed the activities developed for public input sessions.
3. At three public input sessions, bicyclists weighed in on routes and amenities that influence where they choose to bicycle.

Steering Committee

The steering committee consisted of staff from localities in the study area and the Virginia Department of Transportation (VDOT). VDOT staff noted that they can use the plan to incorporate bicycle accommodations into paving schedules. In seeking public input, the steering committee expressed an interest in learning the economic development impacts of bicycling as well as where and why people avoid bicycling in certain areas. Connections between destinations within the study area as well as adjacent regions were desired. A primary concern from the steering committee was bicyclist safety on roads that also carry heavy logging trucks and concrete plant trucks.

Based on this feedback, input was sought on economic development aspects of bicycling via a survey and on the needs and interests of bicyclists via public input sessions.

Economic Development Survey

The economic development survey had open-ended questions and was sent to about 20 stakeholders in June 2019 which included bike shops, ride and event organizers, tourism and economic development staff, and bike club leaders (Figure 7). Staff received nine responses. Event organizers reported hosting events most recently in 2019.

Survey respondents indicated that they were seeing more interest and more activity in off-pavement bicycling, such as gravel road or mountain biking, and an increase in all types of bicycling. More people are purchasing bikes for mountain biking and gravel riding as well as electric bikes for all types of bicycling. The beauty, variety, and uniqueness of the environment attract bicyclists and event organizers. More amenities, such as a large meeting facility, hotels, and private camping options, and signage could attract more bicyclists and more events.

The responses in the economic development survey to open-ended questions about desired or appealing amenities were used as answer options in the public input sessions asking bicyclists what influences their decision of where to ride.

Figure 7: Organizations Invited to Participate in the Economic Development Survey

Organization invited to participate*	Responded
Alleghany Highlands Chamber of Commerce	Yes
Bike Virginia	No
Blue Mountain Adventures	No
Blue Ridge Parkway	No
Cardinal Bikes	No
Catawba Sustainability Center	No
Catawba Valley Farmers Market	No
Clifton Forge Trail Club	No
Downshift Bikes and Brews	Yes
East Coasters Bike Shop	Yes
Friends of the Blue Ridge Parkway	No
Gravelocity Endurance Event	No
Just the Right Gear	No
Jackson River Outfitters	No
Mountains of Misery	No
National Park Service	No
Roanoke Mountain Adventures	Yes
Roanoke Outside	Yes
Town of Clifton Forge	Yes
Underdog Bikes	No
Virginia State Parks	Yes
Virginia Tech Cycling Club	No
Visit Virginia's Blue Ridge	No
USDA Forest Service	Yes
Wilderness Adventure at Eagle Landing	Yes

Public Input Sessions

Twenty-nine people provided input at three public input sessions held at Jack Mason's Tavern in Clifton Forge, Just the Right Gear bicycle shop near Catawba, and Downshift Bikes & Brews shop in Roanoke. Sessions were held from 5:00 - 7:00 pm on Friday, January 24, 2020 (Jack Mason's Tavern and Just the Right Gear) and Friday, January 31, 2020 (Downshift Bikes & Brews).

Figure 8: Types of Bicycle Trips

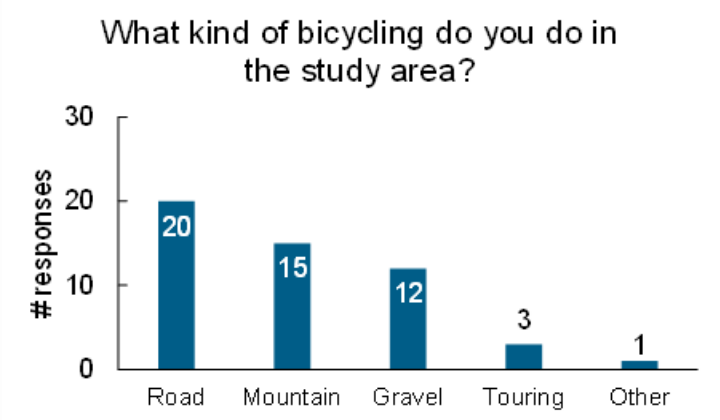
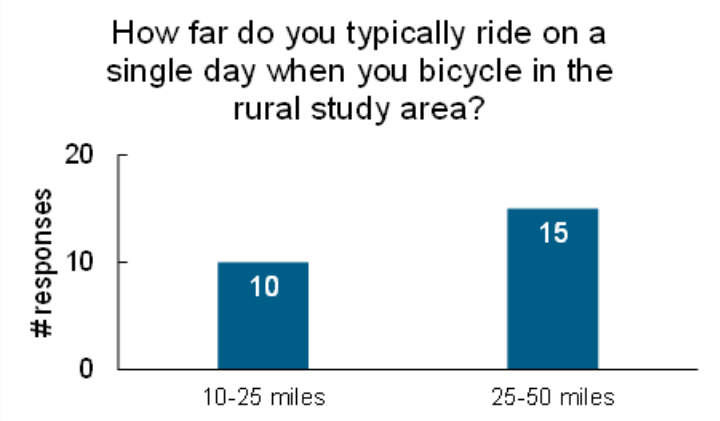


Figure 9: Distance of Bicycle Trips



While most participants ride on roads in the study area, many also mountain bike and ride on gravel, and a few engage in bicycle touring (Figure 8).

Most participants' typical rural rides are 25-50 miles. Many typically ride 10 miles in the study area (Figure 9).

Low traffic, trails and gravel roads, challenging terrain, scenery or history, and food or lodging appeal to participants when they are deciding where to bicycle (Figure 10). Other factors some consider are events, smooth roads, parking, public lands, and signage. One participant mentioned "familiarity" as the most influential factor in deciding where to ride.

Participants commented about their favorite rides, what could be improved, and what they like.

Concerns included narrow roads and a need for signs. Several popular roads were identified as narrow. Mountain Pass Road (Route 652) in Botetourt County was cited as narrow and dangerous, although it is a significant connection between Daleville in the urbanized area and the Blue Ridge Parkway in the rural area. There were requests for wayfinding and share-the-road signs and requests for signs on specific roads. There was a desire for specific paved trail connections: completion of the Valley to Valley Trail, and a rail-to-trail project between Clifton Forge or Glen Wilton and Roaring Run. There is a lack of beginner mountain bike trails in Alleghany County, which has many advanced trails.

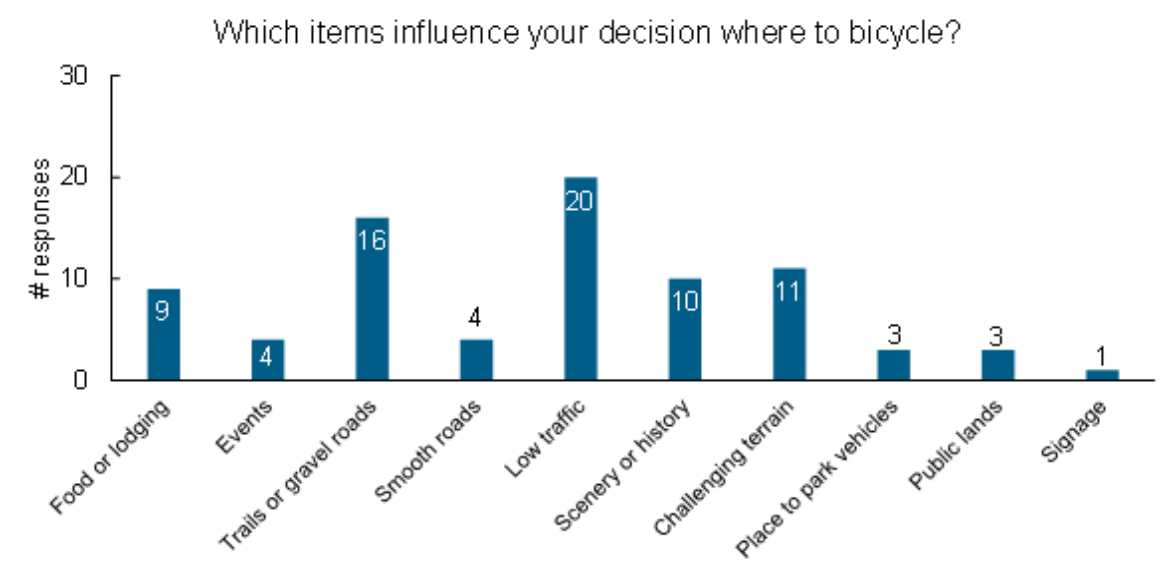
Participants like scenery, destinations, and pleasant riding. They want to keep some things the way they are: keep gravel roads unpaved and on paved roads, do not put rumblestrips in the centerline (because they believe that rumblestrips in the centerline discourage drivers from allowing three feet when passing bicyclists).

Ten participants who provided their zip code live in Roanoke City (5), Roanoke County (3), Blacksburg (1), and Franklin County (1). Route feedback received during the public input sessions suggests that participants bicycle in many parts of the study area (even if they do not live there or did not provide their zip code).

Bicycling is transportation, whether the trip purpose is leisure or business, just as vehicle trips are transportation whether the driver is delivering meals to seniors or visiting a relative. Unlike vehicles, bicycle trips are often assumed to be recreational transportation trips and the public input reflected this. Bicyclists who consider their trips to be recreational are often also accessing goods and services, including gas stations, restaurants, lodging, and tourist attractions. The needs of people who bicycle to work, school, church, shopping, errands, etc. were inadvertantly not captured by this process, as evidenced by the input that was received.

Without further study, there is not much information about how many people bicycle in the study area nor their trip purpose. The 2018 American Community Survey, product of the US Census Bureau, shows that 0% to 0.8% of workers commute to work

Figure 10: Factors Used to Determine Routes



primarily by bicycle (Figure 11). This is the only data available, but omits workers who sometimes commute by bicycle and trips by bicycle to school, church, shopping, errands, visits, and other purposes.

With its focus on all modes of transportation and all trip purposes, the Rural Long-Range Plan update (anticipated in 2021) will be an opportunity to fill in information about bicycle trips that are more business-oriented than leisure.

Figure 11: Commute to Work Bicycle Mode Share

Locality	No. of Workers	Percent Commute by Bicycle
Alleghany County	5,960	0.30%
Botetourt County	15,658	0%
Clifton Forge	1,154	0.80%
Covington	2.437	0%
Craig County	2,124	0%
Roanoke County	15,658	0%

[Blank]

Vision, Goals, and Strategies

The Roanoke Valley-Alleghany region envisions a well-connected network for safe short daily trips or long leisurely rides to promote health, support local economies, and provide alternatives for moving around the region.

Goals

Input gathered during the development of this plan reveals that different populations want the same things for different reasons. Event organizers want what will make the event a better experience for their participants, while economic development interests want what will appeal to event organizers and to individual bicyclists. Bicyclists want what will make their experience more convenient and enjoyable. What is desired is consistent among all stakeholders:

- Connected places,
- Economic attractions, and
- Safe routes.

Connected Places

A common theme from input received during the plan development was the importance of connections, specifically:

- Continuous safe routes between rural and urban areas;
- Connections between paved and unpaved routes; and
- Connections to amenities.

The recommendations in this plan include improving key connections. The steering committee and locality staff selected roads that are key connections. Public input was solicited on these roads to confirm those connections and to see if any were missed.

Economic Attraction

Signs help bicyclists navigate routes. Bicyclists rely on bike signs to navigate, event organizers look for bike signs to decide what routes to use, businesses catering to bicyclists locate near bike signs, and drivers expect to see bicyclists when they see bike signs. Signs do not just indicate where bicyclists already are; they can increase the number of bicyclists on a route. Signs help new bicyclists feel more comfortable when they are unfamiliar with a route and make all bicyclists feel safer and more confident about being on the route. Recommendations in this plan include signs to mark routes and alert drivers that bicyclists may be present.

PRIORTY RURAL-URBAN CONNECTIONS

Bradshaw Road (Roanoke County)
Mountain Pass Road (Botetourt County)
Catawba Valley Drive (Roanoke and Craig Counties)
US 60 (in and out of Covington)
Future Valley to Valley Trail (Roanoke and Montgomery Counties)

PRIORITY PAVED-UNPAVED CONNECTIONS

Peaceful Valley Road (Route 611 in Craig County) and gravel roads
Craigs Creek Road (Route 615 in Craig County)
and forest service roads
Carvins Cove mountain bike trails (Roanoke County)
Jackson River Scenic Trail (Alleghany County)

PRIORITY CONNECTIONS TO DESTINATIONS

Clifton Forge and Covington to Douthat State Park
Future Clifton Forge to Roaring Run connection
New Castle to Paint Bank (Craig County)

Public input emphasized Bradshaw Road (Route 622 in Roanoke County) and Paint Bank Road (Route 311 in Craig County) as priorities for signage because these are among the most popular routes. Bradshaw Road is part of a loop that several bicycle groups in the urbanized region use. Paint Bank Road is a scenic, low traffic route that connects New Castle to Paint Bank with the Swinging Bridge Restaurant, the Depot Lodge, the Paint Bank General Store, and Potts Creek Outfitters.

Safe Routes

The low traffic volume on many rural roads is what makes these roads feel safe and appealing to bicyclists, but roads with higher traffic volume are sometimes unavoidable in accessing the low traffic roads. Some low traffic rural roads have safety issues, such as narrow mountain roads with sharp drop-offs or blind curves and crests or heavy logging trucks sharing the roadway.

Paved and striped shoulders, widened lanes, marked bike lanes, and signs are recommended for routes depending on various factors including traffic volume, lane width, and grade.

Strategies

The League of American Bicyclists has identified five categories – the Five E's – that make great places for bicycling: Engineering, Education, Encouragement, Enforcement, and Evaluation and Planning. This section presents strategies in these five categories.

Engineering

Provide safety improvements such as widened lanes, paved shoulders, bike lanes, or signage on all routes indicated within the Infrastructure Recommendations to allow for ease of use and navigation for cyclists.

Responsible agencies: VDOT – Salem District, VDOT – Staunton District, and localities
Timeframe: Repaving schedule

Preserve public gravel roads within the service area where possible for use as bicycle facilities and attractions.

Responsible agencies: VDOT – Salem District, VDOT – Staunton District, and localities
Timeframe: Ongoing

Place wayfinding signage in key areas, including areas of transition such as routes which lead into urban areas, cities and towns, and other population centers. Visit Virginia's Blue Ridge recommended destination signage within its localities, including Botetourt County and Roanoke County.

Responsible agencies: VDOT – Salem District, VDOT – Staunton District, Visit Virginia's Blue Ridge, and localities
Timeframe: Ongoing

Education

RIDE Solutions partner with localities and event organizers to provide education and Bike Rodeos at local events.

Responsible agencies: RIDE Solutions and localities
Timeframe: Begin in fiscal year 2020-2021

RIDE Solutions reach out to businesses and employees in the area to promote the Guaranteed Ride Home program for carpooling, bicycling, and walking.

Responsible agency: RIDE Solutions
Timeframe: Begin in fiscal year 2020-2021

Encouragement

Document popular loop routes that could direct tourism towards key destinations, such as Douthat State Park, downtowns, and other similar places of interest.

Responsible agencies: Localities and RVARC
Timeframe: Localities submit fiscal year 2021-2022 (or later) work program request to RVARC

Develop an interactive map of bicycle facilities and bicyclist comfort levels.

Responsible agencies: Localities and RVARC
Timeframe: Localities submit fiscal year 2021-2022 (or later) work program request to RVARC

Enforcement

Enforce Virginia's 3-foot passing law.

Responsible agency: State police, locality police, or sheriff departments
Timeframe: Ongoing

Evaluation and Planning

Improve off-road planning for rural cycling infrastructure in localities such as Craig, Alleghany, Covington, and Clifton Forge, which are outside of the Greenway Commission jurisdiction and thus not served by trail and greenway planning conducted by that organization.

Responsible agencies: Localities and RVARC
Timeframe: Localities submit work program request to RVARC for fiscal year 2021-2022 or later

Improve planning data for all identified routes where possible.

Responsible agencies: VDOT – Salem District and VDOT – Staunton District
Timeframe: Ongoing

Incorporate rural bikeway routes in future updates of urban bikeway plans to create a unified future vision for rural and urban localities within the region, prioritizing connections between rural and urban multimodal centers.

Responsible agencies: Localities and RVARC
Timeframe: Localities submit fiscal year 2021-2022 (or later) work program request to RVARC

Regional Bicycle & Pedestrian Committee invite rural locality staff, interested citizens, or other stakeholders to discussions about actions the community could take to encourage or improve bicycling in the rural study area.

Responsible agency: RVARC
Timeframe: Fiscal year 2020-2021

Improve public input in the rural area for future rural bikeway plan updates and the rural long-range plan update: 1) Expand list of potential points of contact, including schools, neighborhood associations, and other organizations; 2) Seek public input on the bicycle commuting experience and needs.

Responsible agency: RVARC
Timeframe: Fiscal year 2020-2021

Define rural multimodal centers that have already been identified and identify rural multimodal centers that were not identified previously.

Responsible agency: RVARC
Timeframe: Fiscal year 2020-2021

Infrastructure Recommendations

This update differs significantly from the 2006 Plan Update in that it includes specific infrastructure recommendations. These recommendations should be implemented along the identified routes whenever opportunity arises. Implementation of these recommendations will be driven largely by maintenance schedules and available maintenance funds at the discretion of VDOT and the local governments. In some cases, specific recommendations may be implemented as road projects through separate funding streams, but this plan has not undertaken estimates to assess the costs associated with these potential projects. In those cases, localities will work with VDOT to assess the project, estimate costs, and apply for project funding. Figure 12 through Figure 24 identify routes and recommendations by locality.

These recommendations were derived using statewide planning data collected by VDOT for roadways in the study area. A matrix was then created with assigned values for various fields, such as Average Annual Daily Traffic, traffic speed, percentage of truck traffic, percent grade, and existing shoulder and lane widths. Methodology details are described in Appendix C. Planning data was not available for all of the roads identified and so specific recommendations could not always be calculated. In these cases, the recommendation is to pursue further planning data for use in future updates.

Many low traffic, rural roads are safe and comfortable for bicycling without much, if any, additional infrastructure. Other roads, particularly key connections, should ideally feature signs, paved striped shoulders, and/or bike lanes.

A full map of identified roadways and their corresponding recommendations is included in Appendix A.

Alleghany County

While much of Alleghany County has a very widely dispersed population, there is still a desire for bicycle accommodations along many primary roads. In particular, the areas closer to the City of Covington, the Town of Clifton Forge, and along the US 60 Business and US 220 Business corridors feature destinations in closer proximity that with the proper bicycling accommodations can be more attractive to residents for daily bicycle trips. Alleghany County also offers bicycling and other outdoor recreation opportunities and destinations that could be connected via a bicycling network, including Douthat State Park, Jackson River Trail, and the Gran Fondo race event.

Figure 12: Alleghany County Recommendations Map

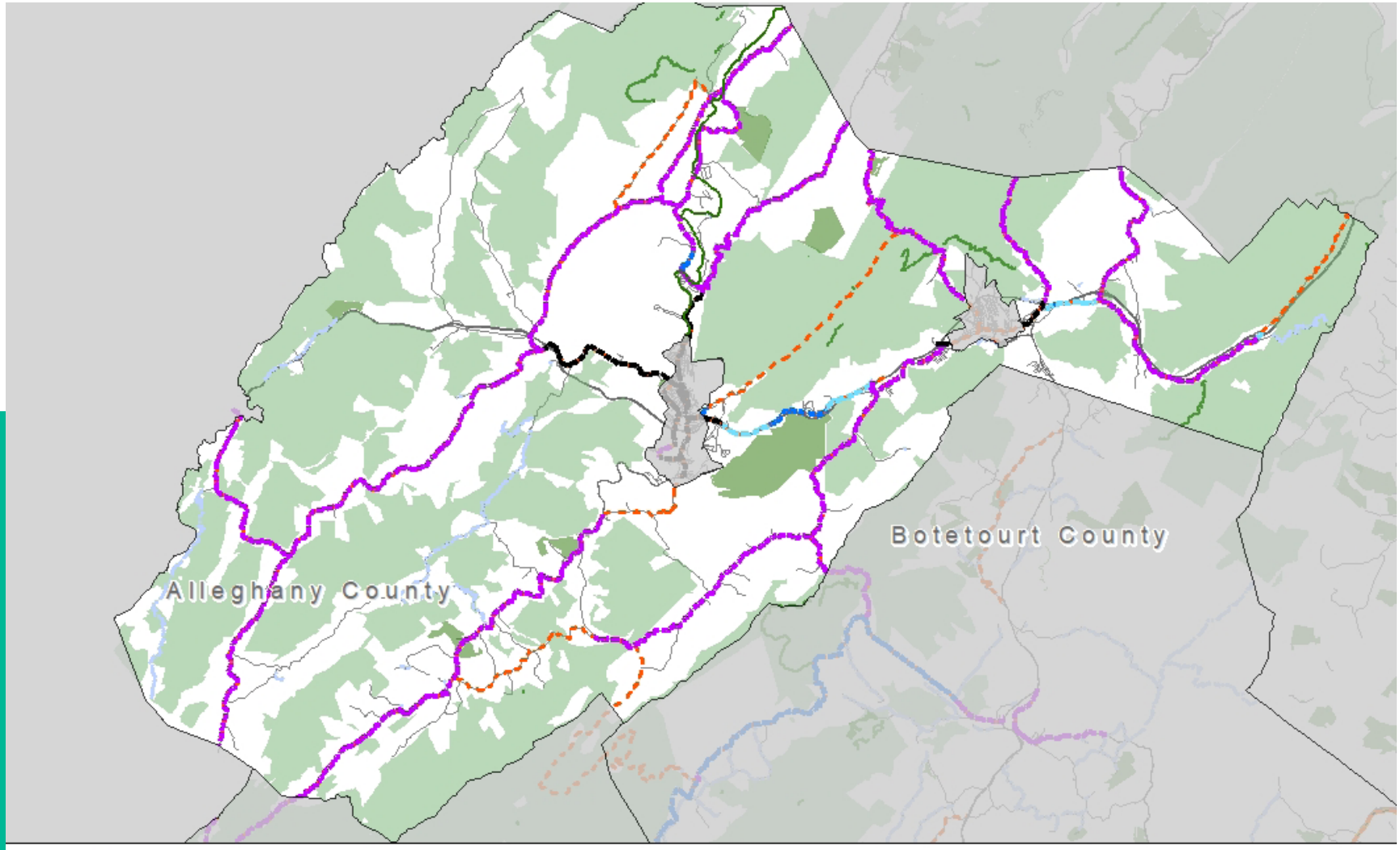


Figure 13: Alleghany County Recommendations Table

Road Name	Route Number	Jurisdiction	VDOT Residency	Segment From	Segment To	Recommendations
Dolly Ann Drive (625)	00625	Alleghany County	Lexington	JB:ECL COVINGTON	DEERVIEW LANE	Widen Lanes
Douthat State Park Road (629)	00629	Alleghany County	Lexington	AUTUMN LANE	MEADOWS OF WILSON CT	Paved Shoulder
Douthat State Park Road (629)	00629	Alleghany County	Lexington	MEADOWS OF WILSON CT	BATH CL	Paved Shoulder
Douthat State Park Road (629)	00629	Alleghany County	Lexington	I-64	AUTUMN LANE	Paved Shoulder
Dunlap Creek Road (159)	00159	Alleghany County	Lexington	RTE 665	RTE 600	Paved Shoulder
Dunlap Creek Road (159)	00159	Alleghany County	Lexington	RTE 311	RTE 665	Paved Shoulder
Dunlap Creek Road (159)	00159	Alleghany County	Lexington	RTE 600	I-64	Paved Shoulder
Dunlap Creek Road (159)	00060	Alleghany County	Lexington	I-64	.40 MI EAST I-64 WEST	Bike Lanes
Grafton Street (US 60)	00060	Alleghany County	Lexington	CLIFTON FORGE ECL	RTE 220	Bike Lanes
Grafton Street (US 60)	00060	Alleghany County	Lexington	RTE 220	I-64	Bike Lanes
Highway 42	00042	Alleghany County	Lexington	.12 MI SOUTH RTE 774	BATH CL	Paved Shoulder
Hot Springs Road (US 220)	00220	Alleghany County	Lexington	COVINGTON NCL	RTE 687	Bike Lanes
Hot Springs Road (US 220)	00220	Alleghany County	Lexington	RTE 640	BATH CO LINE	Paved Shoulder
Hot Springs Road (US 220)	00220	Alleghany County	Lexington	RTE 687	RTE 640	Paved Shoulder
Indian Draft Road (600/641)	00600	Alleghany County	Lexington	MIDLAND TRAIL	MORRIS HILL ROAD W	Paved Shoulder
Indian Draft Road (600/641)	00641	Alleghany County	Lexington	MORRIS HILL ROAD W	MORRIS HILL ROAD E	Paved Shoulder
Indian Draft Road (600/641)	00641	Alleghany County	Lexington	RTE 666	RTE 687	Paved Shoulder
Jackson River Road (687)	00687	Alleghany County	Lexington	RTE 220	JACKSON RIVER	Paved Shoulder
Jackson River Road (687)	00687	Alleghany County	Lexington	1.14 MI NORTH RTE 637	BATH CL	Paved Shoulder
Jackson River Road (687)	00687	Alleghany County	Lexington	JACKSON RIVER	RTE 642	Widen Lanes
Jackson River Road (687)	00687	Alleghany County	Lexington	RTE 638 SOUTH	1.14 MI NORTH RTE 637	Paved Shoulder
Jackson River Road (687)	00687	Alleghany County	Lexington	.35 MI NORTH RTE 641	RTE 640	Paved Shoulder
Jackson River Road (687)	00687	Alleghany County	Lexington	RTE 642	.35 MI NORTH RTE 641	Paved Shoulder
Jackson River Road (687)	00687	Alleghany County	Lexington	RTE 640	RTE 638 SOUTH	Paved Shoulder
Kanawha Trail (311)	00311	Alleghany County	Lexington	WEST VIRGINIA SL	RTE 159	Paved Shoulder
Kanawha Trail (311)	00311	Alleghany County	Lexington	RTE 159	WEST VIRGINIA SL	Paved Shoulder
Longdale Furnace Road (632)	00632	Alleghany County	Lexington	LONGDALE FURNACE RD; RT. 670E/W , VA-42N/S	LONGDALE FURNACE RD; RT. 670E/W	Signage Only
Longdale Furnace Road (632)	00632	Alleghany County	Lexington	LONGDALE FURNACE RD; RT. 670E/W , VA-42N/S	LONGDALE FURNACE RD; RT. 670E/W	Signage Only
Longdale Furnace Road (632)	00632	Alleghany County	Lexington	LONGDALE FURNACE RD; RT. 670E/W , VA-42N/S	LONGDALE FURNACE RD; RT. 670E/W	Signage Only
Longdale Furnace Road (632)	00670	Alleghany County	Lexington	GRAFTON ST; VA-42N/S; US-220N/S, BUS US-60E/W;LONGDALE FURNACE RD	GOLF COURSE VW; LONGDALE FURNACE RD; RT. 632N/S	Widen Lanes
Longdale Furnace Road (632)	00670	Alleghany County	Lexington	GRAFTON ST; VA-42N/S; US-220N/S, BUS US-60E/W;LONGDALE FURNACE RD	GRAFTON ST; VA-42N/S; US-220N/S, BUS US-60E/W;LONGDALE FURNACE RD	Signage Only
Longdale Furnace Road (632)	00632	Alleghany County	Lexington	LONGDALE FURNACE RD; RT. 670E/W , VA-42N/S	FORTY TWO RD; LONGDALE FURNACE RD; VA-42N/S; VA-269E/W	Signage Only
Longdale Furnace Road (632)	00042	Alleghany County	Lexington	I- 64	.12 MI SOUTH RTE 774	Paved Shoulder
Longdale Furnace Road (632)	00269	Alleghany County	Lexington	.11 MI WEST I- 64	I-64	Signage Only
Longdale Furnace Road (632)	00269	Alleghany County	Lexington	I-64	RTE 632	Paved Shoulder
Longdale Furnace Road (632)	00269	Alleghany County	Lexington	RTE 632	RTE 722	Paved Shoulder
Longdale Furnace Road (632)	00269	Alleghany County	Lexington	RTE 722	.11 MI WEST I- 64	Paved Shoulder
Madison Street (US 60/US 220)	00060	Alleghany County	Lexington	COVINGTON ECL	RTE 1104	Bike Lanes
Midland Trail (600)	00600	Alleghany County	Lexington	RTE 159	RTE 661 SOUTH	Paved Shoulder
Midland Trail (US 60)	00060	Alleghany County	Lexington	RTE 651	RTE 654 EAST	Bike Lanes
Midland Trail (US 60)	00060	Alleghany County	Lexington	RTE 654 EAST	COVINGTON WCL	Bike Lanes
Midland Trail (US 60)	00060	Alleghany County	Lexington	.40 MI EAST I-64 WEST	.53 MI WEST RTE 651	Bike Lanes
Midland Trail (US 60)	00060	Alleghany County	Lexington	.53 MI WEST RTE 651	RTE 651	Bike Lanes
Morris HIll Road (600/666)	00666	Alleghany County	Lexington	RTE 641	RTE 638	Paved Shoulder
Natural Well Road (638)	00638	Alleghany County	Lexington	RTE 666	RTE 687 NORTH	Paved Shoulder
Pitzer Ridge Road (657)	00657	Alleghany County	Lexington	Potts Creek Road (18)	Covington City Limit	Improved Data Needed
Potts Creek Road (18)	00018	Alleghany County	Lexington	RTE 607(POTTS CREEK)	RTE 608	Paved Shoulder
Potts Creek Road (18)	00018	Alleghany County	Lexington	RTE 608	RTE 614	Paved Shoulder
Potts Creek Road (18)	00018	Alleghany County	Lexington	RTE 614	RTE 657	Paved Shoulder
Potts Creek Road (18)	00018	Alleghany County	Lexington	CRAIG CL	RTE 607(POTTS CREEK)	Paved Shoulder
Rich Patch Road (616)	00616	Alleghany County	Lexington	Bens Run Road (613)	Blue Spring Road (615)	Improved Data Needed
Rich Patch Road (616)	00616	Alleghany County	Lexington	BLUE SPRING ROAD RD (RTE 615)	HAYES GAP ROAD (RTE 619)	Paved Shoulder
Rich Patch Road (616)	00616	Alleghany County	Lexington	RTE 619 SOUTH	RTE 621	Paved Shoulder
RIch Patch Road (616)	00616	Alleghany County	Lexington	RTE 623	RTE 696	Paved Shoulder
Rich Patch Road (616)	00616	Alleghany County	Lexington	RTE 622	RTE 623	Paved Shoulder
Rich Patch Road (616)	00616	Alleghany County	Lexington	RTE 621	RTE 622	Paved Shoulder
Ridgeway Street (US 60/US 220)	00060	Alleghany County	Lexington	I-64 EAST	RTE 696	Bike Lanes
Ridgeway Street (US 60/US 220)	00060	Alleghany County	Lexington	.18 MI EAST RTE 696	CLIFTON FORGE WCL	Bike Lanes

Road Name	Route Number	Jurisdiction	VDOT Residency	Segment From	Segment To	Recommendations
Ridgeway Street (US 60/US 220)	00060	Alleghany County	Lexington	RTE 696	.18 MI EAST RTE 696	Bike Lanes
Roaring Run Road (621)	00621	Alleghany County	Lexington	BOTETOURT CO	RTE 616	Paved Shoulder
Selma Low Moor Rd (696)	00696	Alleghany County	Lexington	NCL CLIFTON FORGE	RTE 60 BUSINESS	Paved Shoulder
Selma Low Moor Rd (696)	00696	Alleghany County	Lexington	WCL CLIFTON FORGE	MID RTE 1002	Paved Shoulder
Selma Low Moor Rd (696)	00696	Alleghany County	Lexington	RTE 1312	WCL CLIFTON FORGE	Paved Shoulder
Selma Low Moor Rd (696)	00696	Alleghany County	Lexington	SOUTH RAMP I-64	RTE 1312	Paved Shoulder
Selma Low Moor Rd (696)	00696	Alleghany County	Lexington	EAST RTE 1002	NCL CLIFTON FORGE	Paved Shoulder
Selma Low Moor Rd (696)	00696	Alleghany County	Lexington	NORTH RAMP I-64	SOUTH RAMP I-64	Paved Shoulder
Selma Low Moor Rd (696)	00696	Alleghany County	Lexington	MID RTE 1002	EAST RTE 1002	Paved Shoulder
Sulfur Spring Road (606)	00606	Alleghany County	Lexington	MORRIS HOLLOW ROAD	BATH CL	Paved Shoulder
Sulfur Spring Road (606)	00606	Alleghany County	Lexington	CLIFTON FORGE NCL	RTE 699	Paved Shoulder
Summit Drive (616)	00616	Alleghany County	Lexington	Potts Creek Road (18)	Bens Run Road (613)	Improved Data Needed
Valley Ridge Road (1104)	01104	Alleghany County	Lexington	SMOKEY BEAR LN; RT. 797N/S ; I-64W RAMP 16B, US-220N, US-60P/P; RAMP INTERSECTION:FROM RT 64 WEST	SMOKEY BEAR LN; RT. 797N/S US-60P/P; RAMP INTERSECTION:FROM RT 64 WEST	Signage Only
Valley Ridge Road (1104)	01104	Alleghany County	Lexington	SMOKEY BEAR LN; RT. 797N/S ; I-64W RAMP 16B, US-220N, US-60P/P; RAMP INTERSECTION:FROM RT 64 WEST	SMOKEY BEAR LN; RT. 797N/S US-60P/P; RAMP INTERSECTION:FROM RT 64 WEST	Signage Only
Valley Ridge Road (1104)	01104	Alleghany County	Lexington	SMOKEY BEAR LN; RT. 797N/S ; I-64W RAMP 16B, US-220N, US-60P/P; RAMP INTERSECTION:FROM RT 64 WEST	OAKCREST DR	Widen Lanes
Valley Ridge Road (1104)	01102	Alleghany County	Lexington	SC-1104E/W ; SC-1104E/W	SC-1101E/W W (ALLEGHANY COUNTY)	Signage Only
Valley Ridge Road (1104)	01104	Alleghany County	Lexington	SMOKEY BEAR LN; RT. 797N/S ; I-64W RAMP 16B, US-220N, US-60P/P; RAMP INTERSECTION:FROM RT 64 WEST	SMOKEY BEAR LN; RT. 797N/S US-60P/P; RAMP INTERSECTION:FROM RT 64 WEST	Signage Only
Valley Ridge Road (1104)	01104	Alleghany County	Lexington	MADISON ST E; US-60E/W, US-220N/S; US-60E, US-220S;VALLEY RIDGE RD	SMOKEY BEAR LN; RT. 797N/S US-60P/P; RAMP INTERSECTION:FROM RT 64 WEST	Signage Only
Winterberry Avenue (1101)	01101	Alleghany County	Lexington	SC-1107E/W	SC-696E/W	Signage Only
Winterberry Avenue (1101)	01101	Alleghany County	Lexington	SC-1107E/W	SC-1107E/W	Bike Lanes
Winterberry Avenue (1101)	01101	Alleghany County	Lexington	SC-1104E/W ; SC-1104E/W	SC-1107E/W	Signage Only
Winterberry Avenue (1101)	01101	Alleghany County	Lexington	SC-1107E/W	SC-1107E/W	Signage Only

Botetourt County

Much of the southern portion of Botetourt County is located in the Roanoke Valley urbanized area, covered in the RVTPO Regional Bikeway Plan. While much of the growth and development is concentrated in the southern portion of the county, many areas of Botetourt remain rural in nature with low-density development. Buchanan and Eagle Rock are rural activity centers amenable to daily bicycle trips given the appropriate accommodations. Growth will likely continue along the rural-urban interface, as the urbanized area expands. This growth offers the opportunity to coordinate the provision of bicycle accommodations with development in the area. Botetourt County also has an abundance of outdoor recreation, as well as cultural tourism opportunities such as the Gran Fondo race event. The Appalachian Trail, Blue Ridge Parkway, Bike Route 76, and the James River pass through the county.

Figure 14: Botetourt County Recommendations Map

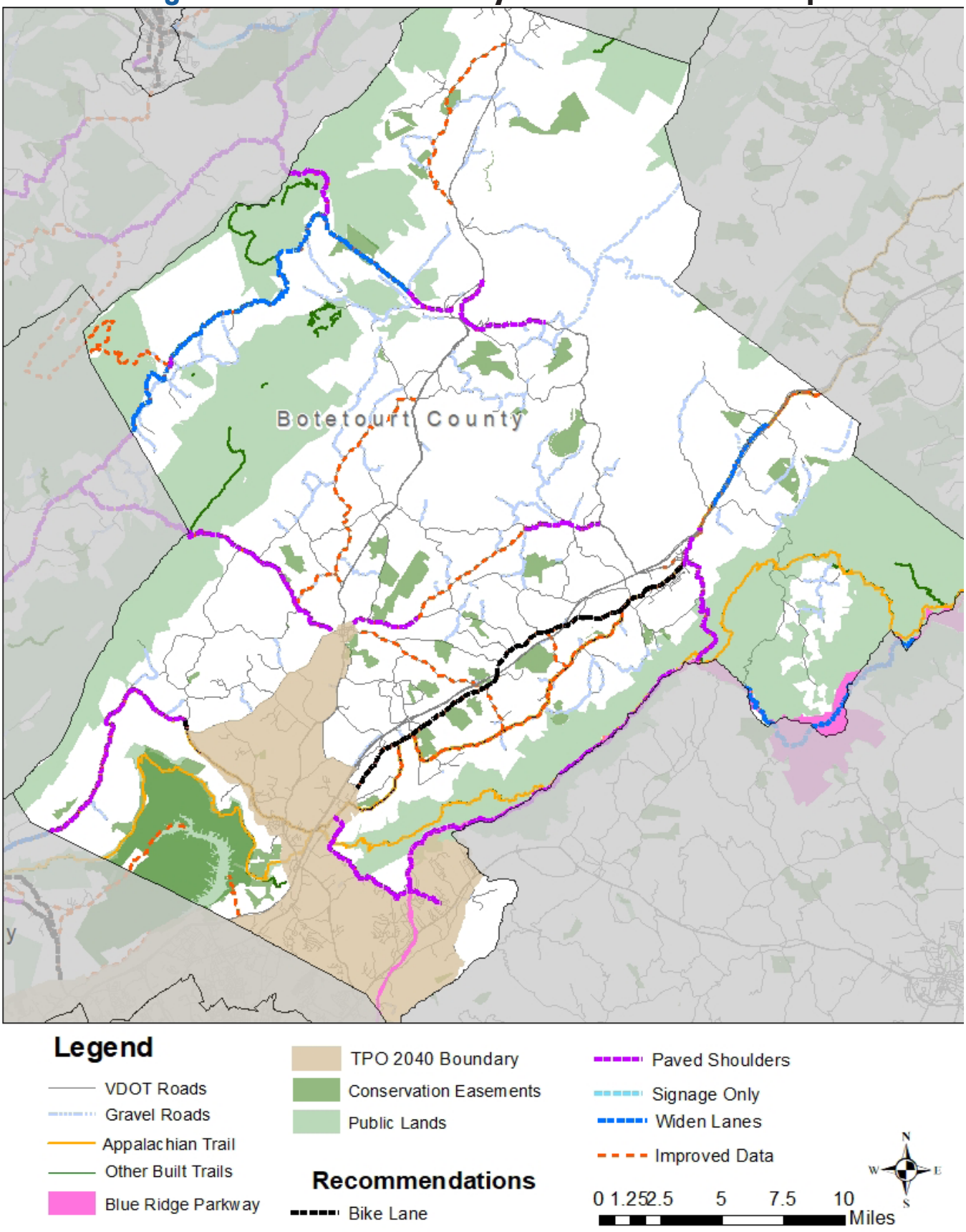


Figure 15: Botetourt County Recommendations Table

Road Name	Route Number	Jurisdiction	VDOT Residency	Segment From	Segment To	Recommendations
Catawba Road (779)	00779	Botetourt County	Salem	RTE 600 SOUTH	RTE 600 NORTH	Paved Shoulder
Catawba Road (779)	00779	Botetourt County	Salem	RTE 664	RTE 666	Paved Shoulder
Catawba Road (779)	00779	Botetourt County	Salem	RTE 600 NORTH	ROUTE 664	Paved Shoulder
Catawba Road (779)	00779	Botetourt County	Salem	RTE 666	RTE 630	Bike Lanes
Catawba Road (779)	00779	Botetourt County	Salem	ROANOKE CL	RTE 600 SOUTH	Paved Shoulder
Church Street (43)	00043	Botetourt County	Salem	RTE 693 NORTH	RTE 688 NORTH	Paved Shoulder
Church Street (43)	00043	Botetourt County	Salem	RTE 688 NORTH	RTE 870	Paved Shoulder
Craig Creek Rd (615)	00615	Botetourt County	Salem	LIGNITE ROAD	ROARING RUN ROAD	Widen Lanes
Craig Creek Rd (615)	00042	Botetourt County	Salem	LIGNITE ROAD	BRANCHWATER ROAD	Paved Shoulder
Craig Creek Rd (615)	00615	Botetourt County	Salem	CRAIG CL	LIGNITE ROAD	Widen Lanes
Craig Creek Road (615)	00615	Botetourt County	Salem	RTE 685	RTE 759	Paved Shoulder
Craig Creek Road (615)	00615	Botetourt County	Salem	RTE 743	RTE 685	Paved Shoulder
Craig Creek Road (615)	00615	Botetourt County	Salem	RTE 759	RTE 220	Paved Shoulder
Craig Creek Road (615)	00615	Botetourt County	Salem	ROARING RUN ROAD	RTE 743	Widen Lanes
Frontage Road (Rt 11)	00054	Botetourt County	Salem	RTE 614 (ARCADIA RD)	ROUTE 623 WEST	Widen Lanes
Grove Hill Road (606)	00606	Botetourt County	Salem	RTE 600 EAST	ROUTE 630	Paved Shoulder
Grove Hill Road (606)	00606	Botetourt County	Salem	.22 MI EAST RTE 666	RTE 600 WEST	Paved Shoulder
Grove Hill Road (606)	00606	Botetourt County	Salem	CRAIG CO	RTE 666 EAST	Paved Shoulder
Grove HIll Road (606)	00606	Botetourt County	Salem	RTE 600 WEST	RTE 600 EAST	Paved Shoulder
Grove Hill Road (606)	00606	Botetourt County	Salem	RTE 666 EAST	.22 MI EAST RTE 666	Paved Shoulder
I-81 Frontage Road (F054)	00011	Botetourt County	Salem	RTE I-81 ON RAMP	F-54	Paved Shoulder
I-81 Overpass	00623	Botetourt County	Salem	F-054	F-055	Widen Lanes
Lee Highway (11)	00011	Botetourt County	Salem	Overlap Rte; Hardbarger Rd PR/NP (Botetourt Cnty), SC-636E/W (Botetourt Cnty)	I-81N Rmp 162A	Bike Lanes
Lee Highway (11)	00011	Botetourt County	Salem	Overlap Rte; Lee Hwy PR/NP (Botetourt Cnty), US-11N/S	Overlap Rte; Lee Hwy PR/NP (Botetourt Cnty), US-11N/S	Paved Shoulder
Lee Highway (11)	00011	Botetourt County	Salem	RTE 43 WEST	NCL BUCHANAN	Paved Shoulder
Lee Highway (11)	00011	Botetourt County	Salem	RTE 43 EAST	RTE 43 WEST	Paved Shoulder
Lee Highway (11)	00011	Botetourt County	Salem	NEW WCL BUCHANAN	RTE 43 EAST	Bike Lanes
Lee Highway (11)	00011	Botetourt County	Salem	WEST RAMP RTE I-81	RTE 715(E. INT)	Bike Lanes
Lee Highway (11)	00011	Botetourt County	Salem	RTE 651	RTE 640 (S. INT.)	Bike Lanes
Lee Highway (11)	00011	Botetourt County	Salem	RTE 640(S. INT.)	RTE 606 WEST	Bike Lanes
Lee Highway (11)	00011	Botetourt County	Salem	RTE 715(E. INT.)	NEW WCL BUCHANAN	Bike Lanes
Lee Highway (11)	00011	Botetourt County	Salem	RTE 606 WEST	WEST RAMP RTE I-81	Bike Lanes
Lee Highway (11)	00011	Botetourt County	Salem	RTE 670	RTE 651	Bike Lanes
Mountain Pass Road (652)	00652	Botetourt County	Salem	RTE 653	RTE 605	Paved Shoulder
Mountain Pass Road (652)	00652	Botetourt County	Salem	RTE 11	Rte 653	Paved Shoulder
Mountain Pass Road (652)	00652	Botetourt County	Salem	RTE 658	RTE 1530	Paved Shoulder
Mountain Pass Road (652)	00652	Botetourt County	Salem	RTE 605	RTE 658	Paved Shoulder
Narrow Passage Road (43)	00043	Botetourt County	Salem	RTE 870	RTE 220	Paved Shoulder
Old Fincastle Road (655)	00655	Botetourt County	Salem	Botetourt Road South (US 220)	Botetourt Road North (US 220)	Improved Data Needed
Parkway Drive (43)	00043	Botetourt County	Salem	SCL BUCHANAN	RTE 11 SOUTH	Paved Shoulder
Parkway Drive (43)	00043	Botetourt County	Salem	BEDFORD CL	SCL BUCHANAN	Paved Shoulder
Prices Bluff Road (622)	00622	Botetourt County	Salem	Botetourt Road (US 220)	Glen Wilton Road (633)	Improved Data Needed
Reservoir Road (648)	00648	Botetourt County	Salem	Roanoke County Limit	Terminus	Improved Data Needed
Roaring Run Road (621)	00621	Botetourt County	Salem	ALLEGHANY CL	RTE 615	Paved Shoulder
Springwood Rd (630)	00630	Botetourt County	Salem	RTE 9479	RTE 681	Paved Shoulder
Springwood Rd (630)	00630	Botetourt County	Salem	RTE 601 WEST	RTE 9479 EAST	Paved Shoulder
Springwood Rd (630)	00630	Botetourt County	Salem	RTE 634 WEST	RTE 625 WEST	Paved Shoulder
Springwood Rd (630)	00630	Botetourt County	Salem	RTE 9479 EAST	RTE 43	Paved Shoulder
Springwood Rd (630)	00630	Botetourt County	Salem	RTE 681	RTE 639	Paved Shoulder
Springwood Rd (630)	00630	Botetourt County	Salem	RTE 625 WEST	RTE 601 WEST	Paved Shoulder
Springwood Road (630)	00630	Botetourt County	Salem	Wheatland Rd (RTE 639)	RTE 634 West	Improved Data Needed
Stoney Battery Road (651)	00651	Botetourt County	Salem	Urbanized Boundary	Lee Highway (11)	Improved Data Needed

Town of Clifton Forge

The Town of Clifton Forge adopted its own bicycle plan, the Clifton Forge Bicycle & Pedestrian Plan, in 2017, included in Appendix F. As noted in the Clifton Forge Comprehensive Plan, key destinations in Clifton Forge are within easy biking distance, low traffic volume and low speeds create safe bicycling conditions, and ancillary facilities could promote bicycling. Furthermore, a key goal of the Comprehensive Plan is to connect to surrounding communities and engage in regional planning efforts.

Figure 16: Clifton Forge Bicycle & Pedestrian Plan Recommendations

Table summarizing all proposed network improvements (distances are approximated)

Project ID	Project Name	Improvement Type	Approx. Length (ft)
X1	Verge St & A St	Marked Crosswalk	-
X2	Main St & A St	Signalized Crosswalks	-
X3	Main St & D St	Signalized Crosswalks	-
X4	Commercial Ave & Church St	Signalized Crosswalks	-
X5	Main St & Commercial Ave	Signalized Crosswalks	-
X6	W Ridgeway St & Selma-Low Moor Rd	Marked Crosswalk & Median Refuge	-
W1	Main St (Ingalls St to Oakwood Dr)	Sidewalk	2500
W2	Selma-Low Moor Rd (W Ridgeway St to RR Bridge)	Sidewalk	900
C1	Jefferson Ave (Main St to Linden Ave)	Mixed Traffic Connector	6000
C2	Ingalls St (Main St to Jefferson Ave)	Mixed Traffic Connector	6150
C3	Tremont St/Sioux Ave (Rose Ave to N Town Limits)	Mixed Traffic Connector	2300
C4	Rose Ave (Keswick St to N Town Limits)	Mixed Traffic Connector	3250
C5	A St (Main St to Verge St)	Mixed Traffic Connector	1350
C6	Verge St (A St to western terminus)	Mixed Traffic Connector	1550
C7	Selma-Low Moor Rd (W Ridgeway St to Richmond St)	Mixed Traffic Connector	1650
M1	Main St/E Ridgeway St (Roxbury St to Park)	Shared Lane Markings	3800
M2	Main St/Keswick St/Roxbury St (E to W Ridgeway St)	Shared Lane Markings	1400
B1	Main St (Booker T. Washington Park to Ex. Shoulders)	Bicycle Lanes	4150
B2	Verge St (A St to E Town Limits)	Bicycle Lanes	2400
B3	W Ridgeway St (Fifth St to Roxbury St)	Bicycle Lanes	3000
B4	W Ridgeway St (Fifth St to Jackson River Bridge)	Bicycle Lanes	2050
S1	W Ridgeway St (Jackson River Bridge to Comm. College)	Shared Use Shoulder	2350
T1	Smith Creek Trail Segment 1 (C&O Depot/Amphitheater)	Trail	1200
T2	Smith Creek Trail Segment 2 (Pine St to Church St)	Trail	500
T3	Smith Creek Trail Segment 4 (Clay St to Memorial Park)	Trail	700
T4	Smith Creek Trail Segment 5 (Memorial Park Loop)	Trail	2500
T5	Smith Creek Trail Howard St Connector	Trail	250
T6	Lover's Walk to Smith Creek Trail Connector	Trail	600
T7	Lover's Walk to Hazel Run Trail Connector	Trail	1050
T8	Smith Creek Trail to Bryant St Connector	Trail	1000
T9	Bryant St to Oak Hill Ave Connector	Trail	850
T10	Hazel Run Trail to Fairview Ave Connector	Trail	1400
T11	Hazel Run Trail to Ingalls St (Fairview Ave Spur)	Trail	500
T12	Hazel Run Trail to Ingalls St Connector	Trail	600
T13	Oak St to Fairmont Park Trail Connector	Trail	400
T14	Alleghany St to W Ridgeway St Connector (Stairs)	Trail	450
T15	River St to Verge St Connector (Swing Bridge)	Trail	-
T16	Rail to Trail (Verge St to Selma-Low Moor Rd)	Trail	7850
T17	Verge St Scenic Loop (Town Limits Towards US-220)	Trail	3900

City of Covington

As with Clifton Forge, the City of Covington has greater numbers of people living and working in close proximity than much of the study area, creating an environment that facilitates bicycling. Many areas of the City of Covington have significant potential for cost effective improvements in bicycling conditions through the provision of ancillary facilities, such as bike racks, signage and pavements markings. Potential locations for bike racks include popular destinations - city hall, Alleghany Highlands Regional Library, commercial business centers such as the Highland Centre and Jamison Commerce Center, schools such as Edgemont Primary School and Covington High School, and downtown.

Figure 17: City of Covington Recommendations Map

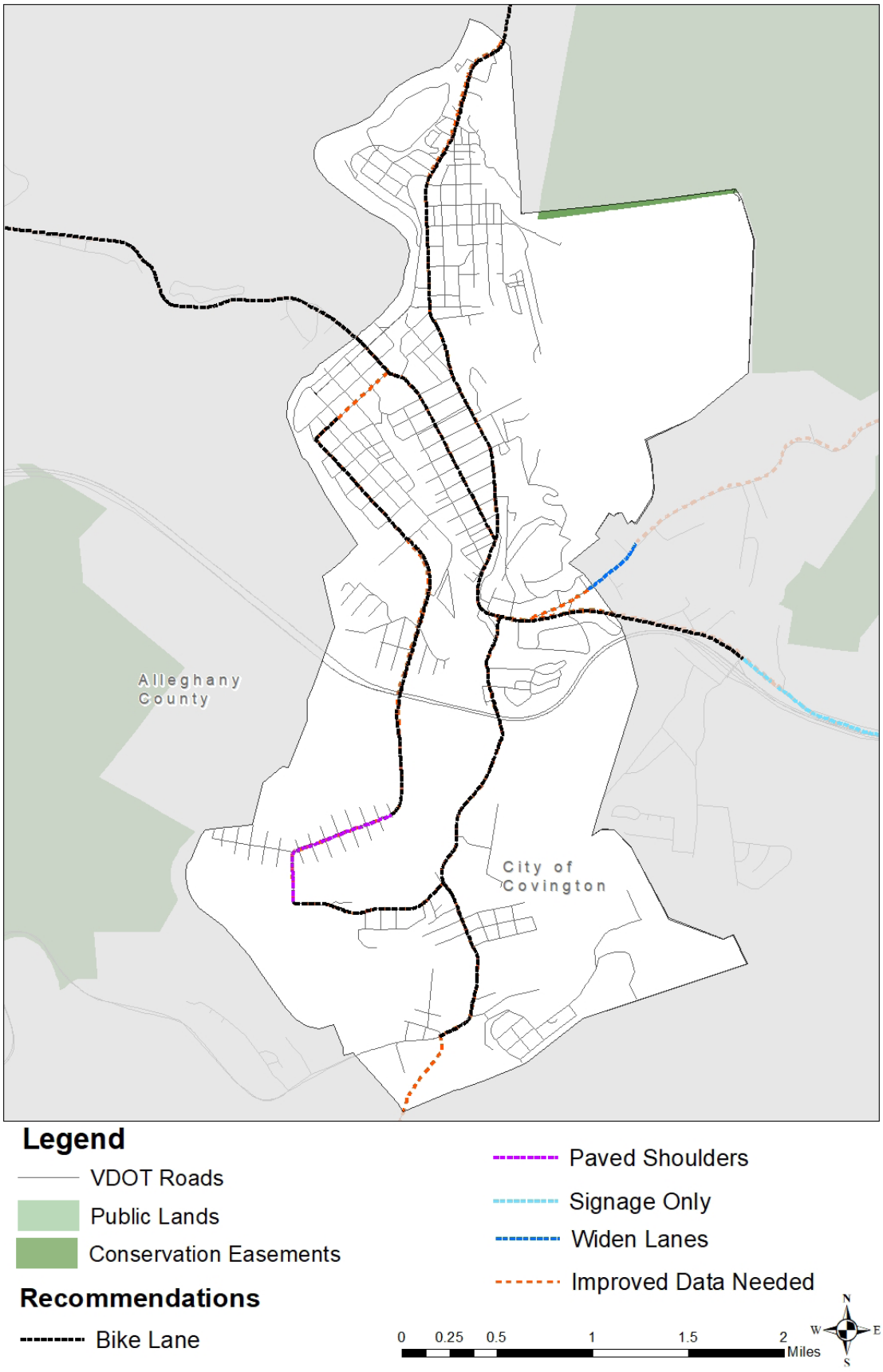


Figure 18: City of Covington Recommendations Table

Road Name	Route Number	Jurisdiction	VDOT	Segment From	Segment To	Recommendation
Pitzer Ridge Road (657)	00657	City of Covington	Lexington	Indian Valley Road (18)	Alleghany County Limit	Improved Data Needed
Alleghany Avenue (US 60/US 220)	00220	City of Covington	Lexington	EAST LOCUST STREET	NORTH MAGAZINE AVENUE	Bike Lanes
Rayon Drive	09030	City of Covington	Lexington	WEST EDGEMONT DRIVE	WEST JACKSON STREET	Paved Shoulder
Jackson Street	09040	City of Covington	Lexington	SOUTH RAYON DRIVE	SOUTH WILLIS AVENUE	Paved Shoulder
Alleghany Avenue (US 60/US 220)	00220	City of Covington	Lexington	SOUTH MONROE AVENUE	EAST LOCUST STREET	Bike Lanes
Craig Avenue (154)	00154	City of Covington	Lexington	SO. DURANT ROAD	CHESTNUT STREET	Bike Lanes
Craig Avenue (154)	00154	City of Covington	Lexington	RIVERVIEW DRIVE	CRAIG AVENUE	Bike Lanes
Madison Street (US 60)	00060	City of Covington	Lexington	RTE 18	ECL COVINGTON	Bike Lanes
Alleghany Avenue (US 60/US 220)	00220	City of Covington	Lexington	NORTH MAGAZINE AVENUE	NCL COVINGTON	Bike Lanes
Edgemont Drive	09020	City of Covington	Lexington	SOUTH CARPENTER STREET	RAYON DRIVE	Bike Lanes
Jackson Street	09010	City of Covington	Lexington	SOUTH WILLIS AVENUE	.2 MI NORTH FR-203	Bike Lanes
Durant Road	00154	City of Covington	Lexington	ROUTE I-64	RIVERVIEW DRIVE	Bike Lanes
Carpenter Drive (18)	00018	City of Covington	Lexington	SOUTH PITZER RIDGE	JACKSON RIVER BRIDGE	Bike Lanes
Durant Road	09010	City of Covington	Lexington	.2 MI NORTH FR-203	RTE I- 64	Bike Lanes
Craig Avenue (154)	00154	City of Covington	Lexington	CHESTNUT STREET	LOCUST STREET	Bike Lanes
Alleghany Avenue (US 60/US 220)	00060	City of Covington	Lexington	SOUTH MONROE AVENUE	SOUTH HIGHLAND AVENUE	Bike Lanes
Madison Street (US 60)	00060	City of Covington	Lexington	SOUTH HIGHLAND AVENUE	SOUTH ASHLAND AVENUE	Bike Lanes
Monroe Avenue (US 60)	00060	City of Covington	Lexington	WEST LOCUST STREET	HAWTHORNE STREET	Bike Lanes
Monroe Avenue (US 60)	00060	City of Covington	Lexington	JACKSON RIVER BRIDGE	WEST RIVERSIDE DRIVE	Bike Lanes
Carpenter Drive (18)	00018	City of Covington	Lexington	JACKSON RIVER BRIDGE	DURRANT ROAD EXT	Bike Lanes
Madison Street (US 60)	00060	City of Covington	Lexington	SOUTH ASHLAND AVENUE	RTE 18	Bike Lanes
Monroe Avenue (US 60)	00060	City of Covington	Lexington	WEST RIVERSIDE DRIVE	WEST LOCUST STREET	Bike Lanes
Monroe Avenue (US 60)	00060	City of Covington	Lexington	HAWTHORNE STREET	SOUTH ALLEGHANY STREET	Bike Lanes
Carpenter Drive (18)	00018	City of Covington	Lexington	DURANT ROAD EXT	RTE 220 MADISON STREET	Bike Lanes
Midland Trail (US 60)	00060	City of Covington	Lexington	WCL COVINGTON	JACKSON RIVER BRIDGE	Bike Lanes
Locust Street	09140	City of Covington	Lexington	SOUTH LEXINGTON AVE	SOUTH CRAIG AVE	Bike Lanes

Craig County

Craig County is the least densely populated locality in the study area. The Town of New Castle represents the primary population and commercial center in Craig County which is most conducive to short bicycle trips to access nearby destinations. Popular activity centers within New Castle include businesses on Main Street, Market Street, and Salem Avenue (Route 311) government buildings such as the Health Center, Courthouse, McCleary Elementary School and Craig County High School. There are numerous roadways in Craig County that are popular with cyclists for long leisurely rides. Moreover, there are miles of biking and hiking trails in the Jefferson National Forest

Figure 19: Craig County Recommendations Map

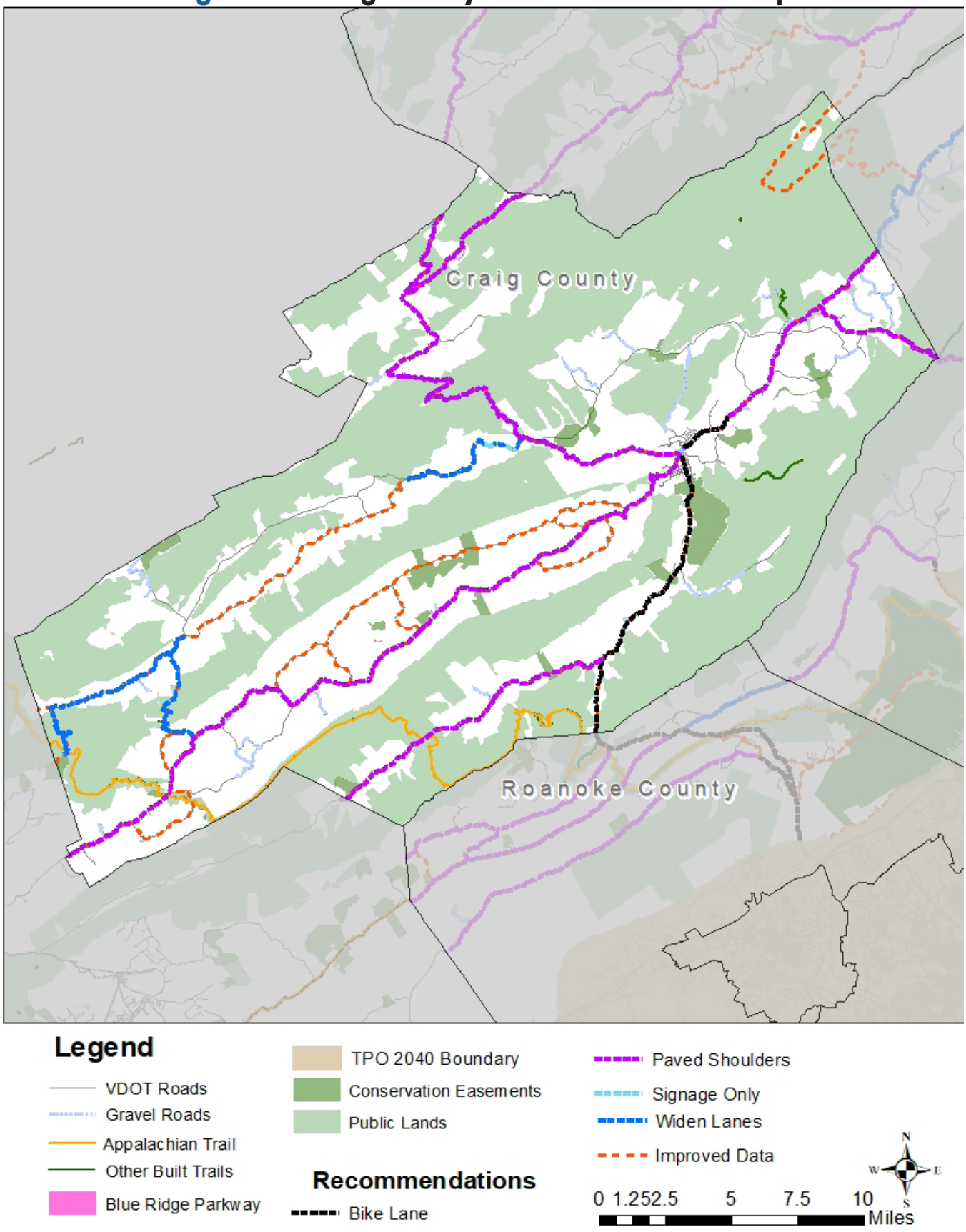


Figure 20: Craig County Recommendations Table

Road Name	Route Number	Jurisdiction	VDOT Residency	Segment From	Segment To	Recommendations
Caldwell Mountain Road (606)	00606	Craig County	Salem	RTE 614	BOTETOURT CL	Paved Shoulder
Caldwell Mountain Road (606)	00606	Craig County	Salem	RTE 615	RTE 614	Paved Shoulder
Craig Valley Road (311)	00311	Craig County	Salem	.85 MI NORTH RTE 619	1.41 MI NORTH RTE 619	Bike Lanes
Craig Valley Road (311)	00311	Craig County	Salem	.70 MI NORTH RTE 618	RTE 640	Bike Lanes
Craig Valley Road (311)	00311	Craig County	Salem	RTE 619	.85 MI NORTH RTE 619	Bike Lanes
Craig Valley Road (311)	00311	Craig County	Salem	ROANOKE CL	RTE 619	Bike Lanes
Craig Valley Road (311)	00311	Craig County	Salem	RTE 618	.70 MI NORTH RTE 618	Bike Lanes
Craig Valley Road (311)	00311	Craig County	Salem	1.41 MI NORTH RTE 619	RTE 618	Bike Lanes
Craigs Creek Road (615)	00615	Craig County	Salem	RTE 606	BOTETOURT CL	Paved Shoulder
Craigs Creek Road (615)	00615	Craig County	Salem	RTE 689	Rte 686 West	Bike Lanes
Craigs Creek Road (615)	00615	Craig County	Salem	RTE 686 WEST	RTE 609	Paved Shoulder
Craigs Creek Road (615)	00615	Craig County	Salem	RTE 614	RTE 610	Paved Shoulder
Craigs Creek Road (615)	00615	Craig County	Salem	RTE 649	Rte 689	Bike Lanes
Craigs Creek Road (615)	00615	Craig County	Salem	RTE 609	Rte 614	Paved Shoulder
Craigs Creek Road (615)	00615	Craig County	Salem	RTE 638	RTE 649	Bike Lanes
Craigs Creek Road (615)	00615	Craig County	Salem	RTE 1004	ECL NEWCASTLE	Paved Shoulder
Craigs Creek Road (615)	00615	Craig County	Salem	ECL NEWCASTLE	RTE 638	Bike Lanes
Craigs Creek Road (615)	00615	Craig County	Salem	RTE 610	RTE 606	Paved Shoulder
Craigs Creek Road/Market Street (615)	01004	Craig County	Salem	PAINT BANK RD; VA-311N/S	MIDDLE ST; RT. 650N/S	Signage Only
Craigs Creek Road/Market Street (615)	01004	Craig County	Salem	MIDDLE ST; RT. 650N/S	MAIN ST; MARKET ST; RACE ST; RT. 615E/W	Signage Only
Cumberland Gap Road (42)	00042	Craig County	Salem	GILES CL	RTE 629	Paved Shoulder
Cumberland Gap Road (42)	00042	Craig County	Salem	RTE 645 WEST	RTE 624	Paved Shoulder
Cumberland Gap Road (42)	00042	Craig County	Salem	.30 MI WEST RTE 622	RTE 645 WEST	Paved Shoulder
Cumberland Gap Road (42)	00042	Craig County	Salem	RTE 667	RTE 625	Paved Shoulder
Cumberland Gap Road (42)	00042	Craig County	Salem	RTE 1001	RTE 311	Paved Shoulder
Cumberland Gap Road (42)	00042	Craig County	Salem	RTE 624	RTE 1001	Paved Shoulder
Cumberland Gap Road (42)	00042	Craig County	Salem	RTE 625	.30 MI WEST RTE 622	Paved Shoulder
Cumberland Gap Road (42)	00042	Craig County	Salem	.38 MI WEST RTE 658	RTE 667	Paved Shoulder
Cumberland Gap Road (42)	00042	Craig County	Salem	RTE 629	.38 MI WEST RTE 658	Paved Shoulder
Johns Creek Road (632)	00632	Craig County	Salem	SC-601W/E	SC-658W/E TERMINUS:SOUTHWEST	Widen Lanes
Johns Creek Road/Johns Creek Mountain Road (658)	00658	Craig County	Salem	JOHNS CREEK RD; RT. 632E/W	PAINT BANK RD; VA-311N/S	Widen Lanes
Johns Creek Road/Johns Creek Mountain Road (658)	00658	Craig County	Salem	CUMBERLAND GAP RD; OLDE GLADE TRL; VA-42N/S	HAPPY HOLLOW RD; RT. 662N/S	Widen Lanes
Johns Creek Road/Johns Creek Mountain Road (658)	00632	Craig County	Salem	SC-658W/E ; OVERLAP TERMINUS:SOUTHWEST	SC-658W/E TERMINUS:MID	Widen Lanes
Johns Creek Road/Johns Creek Mountain Road (658)	00658	Craig County	Salem	JOHNS CREEK RD; RT. 632E/W	JOHNS CREEK RD; RT. 632E/W	Widen Lanes
Johns Creek Road/Johns Creek Mountain Road (658)	00658	Craig County	Salem	JOHNS CREEK RD; RT. 632E/W	JOHNS CREEK RD; RT. 632E/W	Widen Lanes
Johns Creek Road/Johns Creek Mountain Road (658)	00658	Craig County	Salem	JOHNS CREEK RD; RT. 632E/W	JOHNS CREEK RD; RT. 632E/W	Signage Only
Johns Creek Road/Johns Creek Mountain Road (658)	00658	Craig County	Salem	JOHNS CREEK RD; RT. 632E/W	JOHNS CREEK RD; RT. 632E/W	Signage Only
Johns Creek Road/Johns Creek Mountain Road (658)	00658	Craig County	Salem	HAPPY HOLLOW RD; RT. 662N/S	JOHNS CREEK RD; RT. 632E/W , RT. 658E (CRAIG COUNTY); WEST	Widen Lanes
Northside Road (630)	00630	Craig County	Salem	Walnut Tree Ln (675)	Cumberland Gap Road (42)	Improved Data Needed
Northside Road (630)	00630	Craig County	Salem	Walnut Tree Ln (675)	Lugar Hill Road (629)	Improved Data Needed
Paint Bank Road (311)	00311	Craig County	Salem	RTE 602	RTE 18	Paved Shoulder
Paint Bank Road (311)	00311	Craig County	Salem	RTE 658	RTE 602	Paved Shoulder
Paint Bank Road (311)	00311	Craig County	Salem	RTE 42	RTE 658	Paved Shoulder
Paint Bank Road (311)	00311	Craig County	Salem	RTE 18	WEST VIRGINIA SL	Paved Shoulder
Potts Creek Road (18)	00018	Craig County	Salem	1.92 MI SOUTH ALLEGHANY CL	1.26 MI SOUTH ALLEGHANY CL	Paved Shoulder
Potts Creek Road (18)	00018	Craig County	Salem	RTE 311	1.92 MI SOUTH ALLEGHANY CL	Paved Shoulder
Potts Creek Road (18)	00018	Craig County	Salem	1.26 MI SOUTH ALLEGHANY CL	ALLEGHANY CL	Paved Shoulder
Rocky Gap Trail (601)	00601	Craig County	Salem	SC-601E/W ; JB:GILES - CRAIG COUNTY LINE	SC-632E/W W (CRAIG COUNTY)	Widen Lanes

Road Name	Route Number	Jurisdiction	VDOT Residency	Segment From	Segment To	Recommendations
Salem Ave (311)	00311	Craig County	Salem	RTE 640	RTE 678	Bike Lanes
Salem Ave (311)	00311	Craig County	Salem	RTE 678	RTE 42	Bike Lanes
Sugar Maple Road (625)	00625	Craig County	Salem	Little Mountain Road (624)	Cumberland Gap Road (42)	Improved Data Needed
Upper Craigs Creek Road (621)	00621	Craig County	Salem	MONTGOMERY CL	RTE 651	Paved Shoulder
Upper Craigs Creek Road (621)	00621	Craig County	Salem	RTE 651	RTE 311	Paved Shoulder

Roanoke County

As with Botetourt County, much of Roanoke County is located in the urbanized area and therefore, covered in the RVTPO Regional Bikeway Plan. Many of the recommended bike routes are connections between the RVTPO urbanized area and popular bike routes in the rural study area. The urbanized corridors for bicycle accommodation, as well as current and proposed greenways, are included on the Roanoke County Map in Appendix A.

The Appalachian Trail, Blue Ridge Parkway, USBR 76, and the Roanoke River pass through the county. The Blue Ridge Parkway, managed by the National Park Service, is a popular bicycling route in Roanoke County. More information about the Blue Ridge Parkway can be found later in this chapter.

Figure 21: Roanoke County Recommendations Map

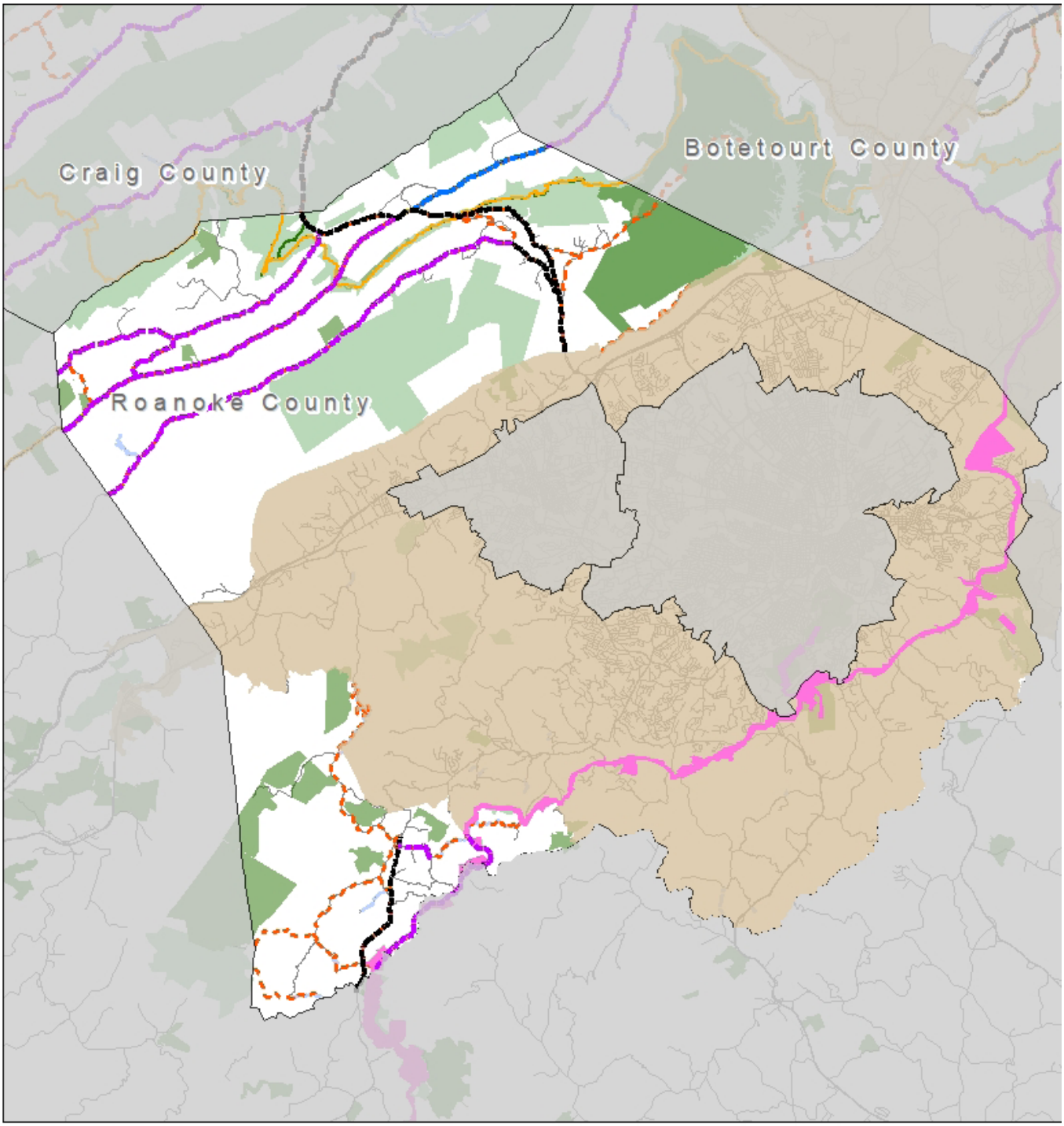


Figure 22: Roanoke County Recommendations Table

Road Name	Route Number	Jurisdiction	VDOT Residency	Segment From	Segment To	Recommendations
Bent Mountain Road (221)	00221	Roanoke County	Salem	RTE 708(IVY RIDGE RD)	RTE 711 NORTH	Bike Lanes
Bent Mountain Road (221)	00221	Roanoke County	Salem	FLOYD CL	RTE 708(IVY RIDGE RD)	Bike Lanes
Blacksburg Road (785)	00785	Roanoke County	Salem	MONTGOMERY CL	RTE 697	Paved Shoulder
Blacksburg Road (785)	00785	Roanoke County	Salem	RTE 697	RTE 311	Paved Shoulder
Bradshaw Road (622)	00622	Roanoke County	Salem	RTE 699	RTE 864	Paved Shoulder
Bradshaw Road (622)	00622	Roanoke County	Salem	RTE 873	RTE 699	Paved Shoulder
Bradshaw Road (622)	00864	Roanoke County	Salem	RTE 311	RTE 622	Bike Lanes
Bradshaw Road (622)	00622	Roanoke County	Salem	MONTOGOMERY CL	RTE 873	Paved Shoulder
Catawba Creek Road (779)	00779	Roanoke County	Salem	RTE 320	BOTETOURT CL	Widen Lanes
Catawba Creek Road (779)	00779	Roanoke County	Salem	RTE 311	RTE 320	Widen Lanes
Catawba Valley Drive (311)	00311	Roanoke County	Salem	.46 MI MORTH RTE 419	RTE 864 NORTH	Bike Lanes
Catawba Valley Drive (311)	00311	Roanoke County	Salem	.18 MI NORTH RTE 779	RTE 785	Bike Lanes
Catawba Valley Drive (311)	00311	Roanoke County	Salem	RTE 785	CRAIG CL	Bike Lanes
Catawba Valley Drive (311)	00311	Roanoke County	Salem	RTE 864 NORTH	.18 MI NORTH RTE 779	Bike Lanes
Newport Road (624)	00624	Roanoke County	Salem	WCL MONTGOMERY CO	SANDYRIDGE RD; RTE 697	Paved Shoulder
Newport Road (624)	00624	Roanoke County	Salem	RTE 697	RTE 620	Paved Shoulder
Newport Road (624)	00624	Roanoke County	Salem	RTE 620	RTE 311	Paved Shoulder
Old Catawba Road (864)	00864	Roanoke County	Salem	Catawba Valley Road (311)	Bradshaw Road (622)	Improved Data Needed
Patterson Drive (669)	00669	Roanoke County	Salem	Roanoke County Limit	County Line Road (644)	Improved Data Needed
Poage Valley Road (690)	00690	Roanoke County	Salem	Sugar Camp Creek Road (690)	Urbanized Boundary	Improved Data Needed
Poor Mountain Road (612)	00612	Roanoke County	Salem	Urbanized Boundary	Tinsley Lane (711)	Improved Data Needed
Rocky Road (144)	00144	Roanoke County	Salem	Bottom Creek Lane (607)	Bent Mountain Road (221)	Improved Data Needed
Sandyridge Rd (697)	00697	Roanoke County	Salem	RTE 785	RTE 624	Paved Shoulder
Slings Gap Rd (612)	00612	Roanoke County	Salem	BENT MOUNTAIN ROAD	FRANKLIN NCL	Paved Shoulder
Sugar Camp Creek Road (690)	00690	Roanoke County	Salem	Slings Gap Road (612)	Poage Valley Road (690)	Improved Data Needed
Timberview Road (1404)	01404	Roanoke County	Salem	Dutch Oven Road (863)	Terminus	Improved Data Needed
Tinsley Lane (711)	00711	Roanoke County	Salem	Bent Mountain Road N (221)	Bent Mountain Road S (221)	Improved Data Needed

Blue Ridge Parkway

The Blue Ridge Parkway plays a unique role within the study area. It is an important rural biking asset connecting stretches of southern Roanoke County to eastern Botetourt County. It is also a major connector from these areas into the Roanoke Valley, including the City of Roanoke, urban parts of Roanoke and Botetourt Counties, and the Town of Vinton. The Blue Ridge Parkway is maintained and operated by the National Park Service (NPS), yet VDOT does collect roadway data on some stretches of the Parkway.

Accordingly, though the recommendations included below were developed with the use of VDOT data, the Regional Commission recognizes that any changes to the Blue Ridge Parkway must be determined by the NPS. The Blue Ridge Parkway is unlike most roadways in the study area in that it is intended and designed for scenic travel rather than to access destinations. However, in the future, the NPS may wish to consult with VDOT's Complete Streets Guidance for ideas on how best to accommodate bicyclists who are major users of this facility.

Figure 23: Blue Ridge Parkway Extent in Study Area

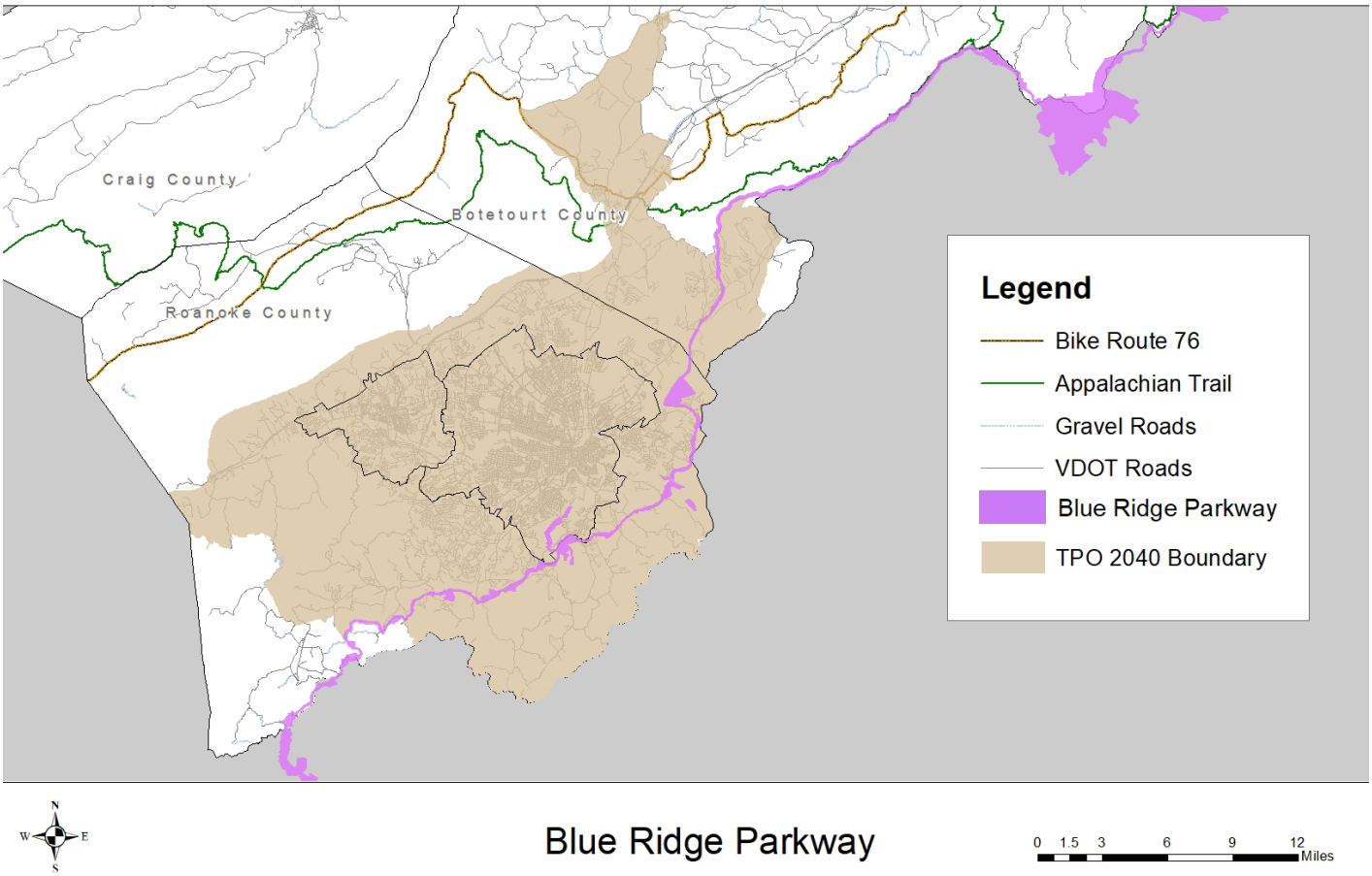
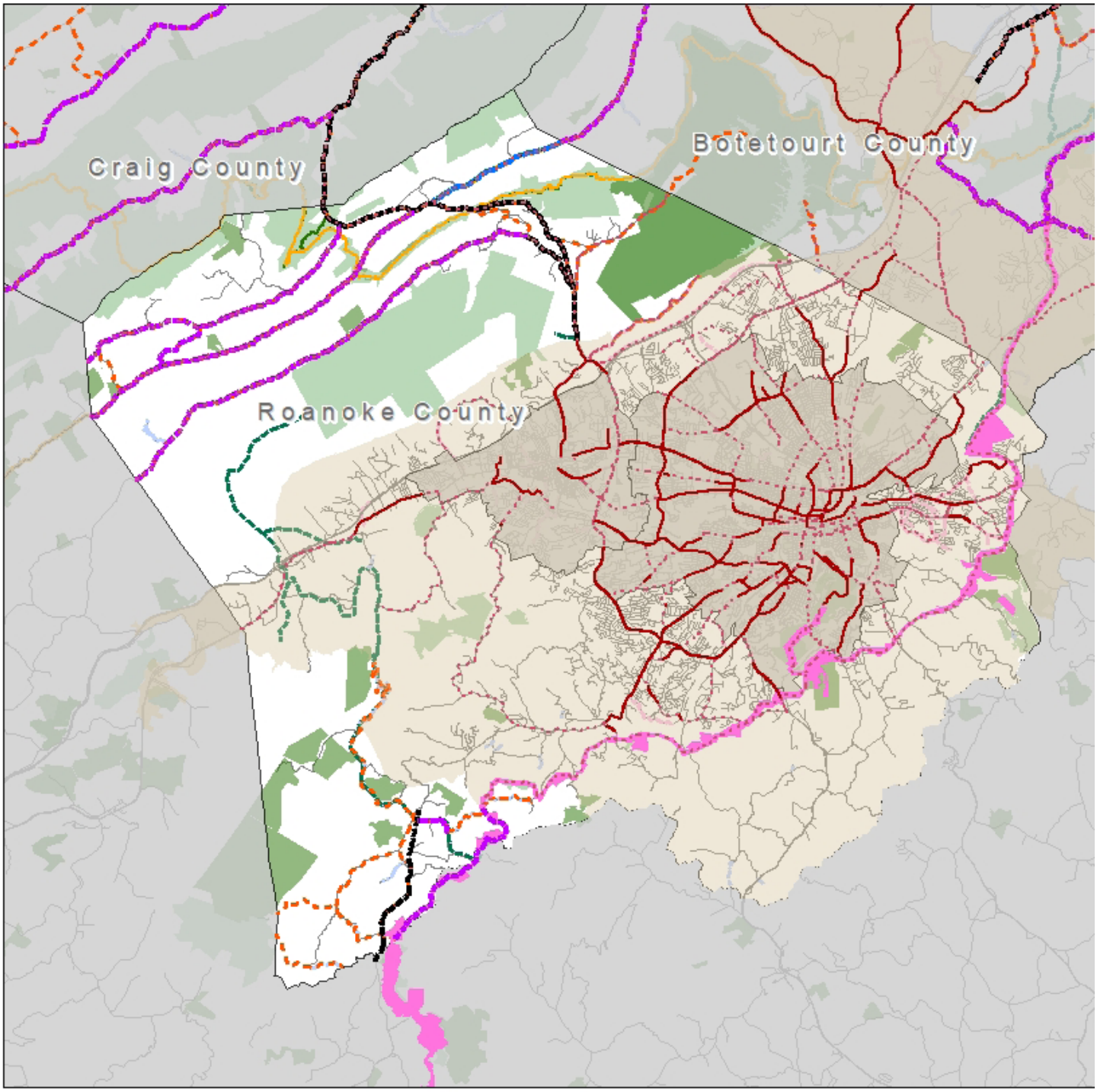


Figure 24: Blue Ridge Parkway Recommendations

Road Name	Route Number	Jurisdiction	VDOT	Segment From	Segment To	Recommendations
Blue Ridge Parkway	00048	Botetourt County	Salem	3.82 MI NORTH RTE 652 OP	BEDFORD CL	Paved Shoulder
Blue Ridge Parkway	00048	Botetourt County	Salem	BEDFORD CL	RTE 43	Widen Lanes
Blue Ridge Parkway	00048	Botetourt County	Salem	RTE 43	BEDFORD CL	Widen Lanes
Blue Ridge Parkway	00048	Botetourt County	Salem	RTE 652 OP	3.82 MI NORTH RTE 652 OP	Paved Shoulder
Blue Ridge Parkway	00048	Roanoke County	Salem	FLOYD CL	SUGAR CAMP CREEK UNDERPASS	Paved Shoulder

Appendix A: Additional Maps

Figure 25: Roanoke County Map with Roanoke Valley TPO Recommendations



Legend

- TPO Bikeway Plan Progress
- TPO Bikeway Plan Routes
- Proposed Greenway Connections
- Proposed Greenway Routes
- Appalachian Trail
- Other Built Trails
- VDOT Roads
- Gravel Roads
- Blue Ridge Parkway
- TPO 2040 Boundary
- Conservation Easements
- Public Lands

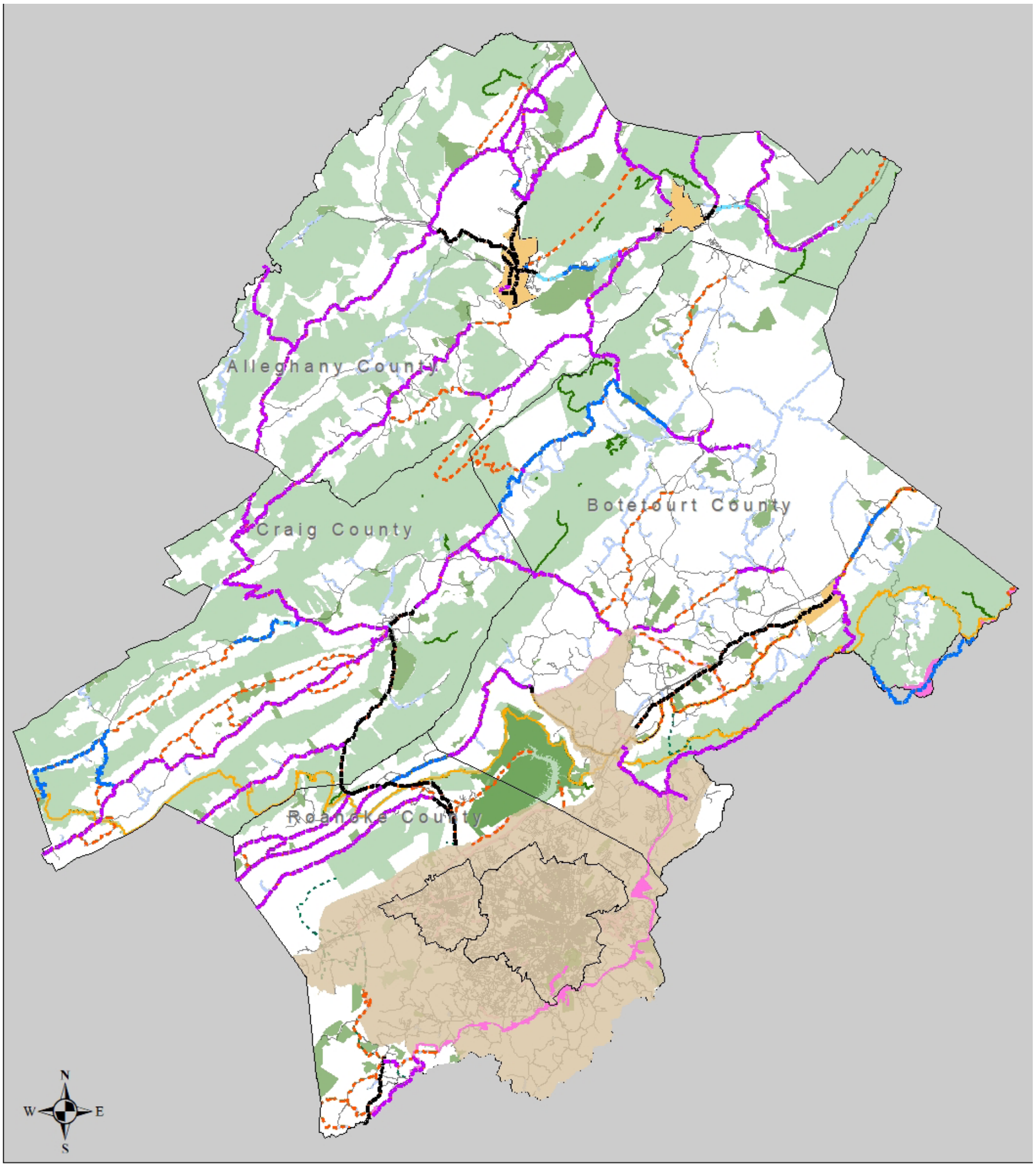
Recommendations

- Bike Lane
- Paved Shoulders
- Signage Only
- Widen Lanes
- Improved Data

N, W, E, S

0 1 2 4 6 8 Miles

Figure 26: All Rural Bikeway Plan Recommendations



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Appendix B: Public Input

Economic Development Survey

What parts of the study area do you primarily represent? (# responses)

- Craig County (2)
- rural Roanoke County (2)
- rural Botetourt County (1)
- Alleghany County, Covington, or Clifton Forge (5)
- Outside of the study area (2)

What kinds of bicycling do you see in the study area? (# responses)

- Road biking (9)
- Mountain biking (9)
- Gravel biking (7)
- Bicycle touring (7)
- Commuting by bicycle (3)

Do you feel you've noticed trends, such as more or fewer individual bicyclists, organized groups, or events, or changes in the types of bicycling? Please describe your observations.

- More people on e-bikes needing access to trails, greenways, and other approved riding surfaces that are not roadways.
- Definitely more interest in riding off pavement, particularly dirt and gravel roads. People are regularly searching for those types of roads. Mountain biking is also making a strong "comeback" in our area and that's big. It seems that the groups I see are smaller than they used to be.
- We have noticed significant mountain bikes on our trails and increase in mountain bike events on USFS trails. A new mountain bike organization has formed in Clifton Forge. Bicycling has increased along the Jackson River sites.
- I have seen an increase in the number of bicyclists...both road and mountain/trail riding.
- An increase in all types of bicycling especially on the JRST & at Douthat
- Many more cyclists on the road, both locals as well as bicycle tourists.

What amenities and attractions does our study area have that attract bicyclists, bicycling events, and organized rides?

- Wonderful scenery, blue ridge parkway, historic towns, civil war history, challenging terrain, great beer, souther food... the list is very long.
- State park Lake, picnic area, cabins, restaurant, over 43 miles of trails and camp-

grounds
- Some amount of non-paved roads. Less-travelled roads. Scenic mountains particularly in Southwest Roanoke County.
- Mountain bike trails and parking at access points along the trails. Mountain bike races and outfitter guides are present on the districts.
- A wide range of environment and topographic changes
- great trails for all skill levels
- Scenic back roads. Forest service gravel roads (primarily Craig County). Easy to work with local governments. Temperate year-round climate (attracts Canadian cyclists every spring).
- Great roads for road biking, excellent Backcountry mountain bike riding and gravel riding.
- Natural beauty, topography, location, trails, roads and gravel roads.

What amenities and attractions do we lack that could attract bicyclists, bicycling events, and organized rides?
- Downtown crits, gravel races, e-bike approved infrastructure.
- Large meeting facility
- Places to "hang out" in the immediate are that appeal to riders. Better signage for routes. Safe routes: Roanoke County can be pretty scary along some of the more popular routes.
- More hotels and lodging access. Need more trail volunteers to maintain trails.
- Organized tours
- Lack of funding to complete the JRST; lack of resources for trail maintenance; limited businesses to serve as sponsors for organized events
- Primitive camping options. Signage. Marked bike lanes. Wider berms. Maps of popular road rides, gravel rides, etc.

Questions for survey respondents who operate or manage a bike shop or other business that supports bicyclists

What support do you need for your business?
- Money being put towards trail maintenance
- Maps! Continued driver education. Customers. :)

Please describe any trends in sales you've noticed, such as types of bikes sold or quantity of bicycling gear.

- More ebikes, lots of gravel bikes, and beginner level bikes.
- Gravel bikes. Gravel bikes. Gravel bikes. Also most riders are "getting" the idea of daytime running lights
- An increase in the number of people traveling here to mountain bike.

Questions for survey respondents who have organized bicycling events

What do you look for when setting up an event?
- Terrain, interest, skill required, time of year
- User group and volunteer
- Safe routes.
- Safe and scenic route
- Infrastructure: electricity, parking, water, camping. Scenic setting. Options for non-riders to do (i.e. what can they do to be entertains/kept busy while the event is taking place.
- Ability to serve alcohol on site. Music-friendly noise ordinances.

What amenities and attractions does the study area have that appeal to you as an event organizer?
- Good location
- All events have been in the state park
- Beautiful rural roads
- Scenic routes and great volunteers
- Beauty. Smooth roads. Plenty of gravel routes.

What amenities or attractions would make this a better place for bicycling events?
- More money towards promotion and trail maintenance.
- Large meeting area
- Bike lanes or even just wider shoulders. More amenities like restaurants, cafes, etc
- Better lodging options and additional sponsorship dollars
- Location for festival portion of an event - start/finish, food, music, camping, etc. Explore Park is good, but inability to have a road event on Parkway is problem-atic.

What event(s), if any, have you organized in the study area?
- Party rides
- Facilitated the use of state park for mountain bike race
- Group rides

- Alleghany Gran Fondo

How many people attended the most recent event you organized in the study area? (# responses)
- 51 to 75 (1)
- 76 to 200 (2)
- <10 (1)

What year was the most recent event you organized in the study area? (# responses)
- 2019 (4)

Do you have any other comments and bicycling in the study area?
- Great job
- Bicycling is increasing in the area.
- Town of Clifton Forge is committed to support and continue the encouragement of future retail bike shops and bicyclists.
- When a community is comprised of more that 50% public lands, these rural areas need the state and federal gov't to see tourism as a economic driver in the community and financial support tourism initiatives and tourism infrastructure. I would like to discuss this more with the group creating the study
- We do the GO Cross cyclocross race but it is in the City so I didn't include it in previous questions. We also did a Twilight Criterium a few years ago in the city too. One of the reasons we choose to do them in the City is because of access to hotels, music, restaurants, etc.

Public Input Sessions

Comments on map - concerns and requests
- Bradshaw Road (622) loop - Signs
- Upper Craigs Creek Road (621) - Signage
- Newport Road (624) - Narrow
- Paint Bank Road (311) - Narrow
- Lee Highway (11) - Bigger shoulder, Less gravel on shoulder
- Mountain Pass Road (652) - Narrow
- Mountain Pass Road (652) - Dangerous, needs wider
- Mountain Pass Road (652) - Connect to urban
- Carvins Cove - E-bikes allowed
- Carvins Cove - More trails off Brushy Mountain
- Catawba Valley Drive (311) - Bigger Shoulder

- Catawba Valley Drive (311) - Wider shoulder on 311 until Bradshaw Road (622) → dropoff problem
- Midland Road (US60) - Dangers go east and west Covington - Callaghan
- Trail from Clifton Forge to Roaring Run
- Railbed Glen Wilton → Roaring Run

Comments on map - favorite rides
- Douthat Road - Scenic
- Little Mountain Road - Love
- McGraw Gap Road (606) - Airport Climb
- Jackson River Road (687) - Fortny Branch Morris Hill Campground
- Peaceful Valley Road (611) - Lots of access to gravel/trail riding off this road
- Craigs Creek Road (615) - Forest roads loop to 615

Other comments - Concerns and requests
- All high volume routes → Wide shoulders
- Signed rural suggested routes
- Bike-able trails symbolized diff from hiking-only trails?
- Don't pave gravel!
- Centerline rumblestrips discourage drivers from 3 feet
- Valley to Valley Trail
- No phone service in the rural area!
- I would love to see signed rural routes for recreational cycling in the 25-35 mile range paved and mixed surface route. (Like miniature Bike Route 76)
- Beginner/park-setting mountain biking in Alleghany County
- Connect Roanoke City and Daleville
- Bike lanes/shoulders would be great
- Signage improvement as well
- More bike lanes would be nice as well as safer places to ride.
- It would be great to learn of regional bicycling attractions, properties and conditions, considering the time needed to travel to the further reaches!
- Perhaps collaborating with the city to market/advertise a city → rural bikeway.

Other comments - Resources and suggestions (RVARC comments in italics)
- Local Facebook Group
- Trans VA Route North of the study area
- VA Endurance Series → Gravelocity Most of the Gravelocity route is not in the study area; the parts of the route that are in the study area are included
- Wilderness Rd Initiative

- 606 Tour de Bath Unable to find the route
- Gravel Roads → included in Forest Service maps. Check out gravelroads.org (That url is not functional but we have used the VDOT unpaved roads layer in developing this plan.)
- FHWA has recommendations for rural biking
- Forest Service campground
- Division between road cyclists and gravel cyclists
- This could become awesome.
- Honestly I just appreciate that the fact that cycling is being raised to the extent that it is. It was not like this 10 years ago.
- I'm happy you are working on the plan and I support more bikeways of all types.

Zip codes (# responses)
- 24013 (1)
- 24014 (1)
- 24015 (3)
- 24018 (1)
- 24060 (1)
- 24065 (1)
- 24153 (2)

Race/Ethnicity (# responses)
White (10)

Appendix C: Methodology

The recommendations contained in this document were derived using VDOT state roadway data. This appendix describes the matrices used to determine these recommendations.

State roadway planning data is made available through ArcGIS online to the TPO and RVARC staff approximately every six to twelve months. VDOT collects data through studies on roadway sections. The methodology used by VDOT to determine these data points is not included in this document. Data collected by VDOT which was used in creating the Regional Commission's recommendations includes:

- lane widths
- shoulder surface types
- the width of the shoulder if it exists
- posted speeds
- estimated percentage of truck traffic
- current volume of traffic (AADT)
- horizon year estimate volume of traffic (Horizon AADT)
- percent grade

These elements were moved into two matrices. The first matrix included current AADT, horizon AADT, posted speed, and percent truck traffic. Scores were assigned to these values as described in "Figure 25: Bike Lane Logic".

Figure 27: Bike Lane Logic

Attribute	Value	Weight
Percent Truck Traffic	<10%	0
	>10%	1
Most Recent AADT	<1500	0
	1500-3000	1
	>3000	2
Horizon AADT	<1500	0
	1500-3000	1
	>3000	2
Posted Speed	<35	0
	35-45 or no posted speed	1
	>45	2

These scores were then added up. The maximum possible score was a value of 7. The minimum possible score was a value of 0. No roadway in this matrix scored above a 6. Scores of 5 and 6 received a recommendation to include a bike lane as a future project for the stretch of roadway in question. These values were determined using the Complete Streets Guide prepared by VDOT, which recommends bike lanes for roadways with an AADT greater than or equal to 3,000 and a speed limit greater than or equal to 45 miles per hour. To receive a score of 5, a roadway had to have at least two of the following: an AADT or horizon AADT of greater than 3,000 and a speed limit of greater than 45 miles per hour. Many of the roads in question also showed truck traffic of greater than ten percent.

The remainder of roadways with statewide planning data were scored in a separate matrix. This matrix contained the percent grade of the road segment in question, the average lane width, the right shoulder lane width and type, the left shoulder lane width and type, and the posted speed. As with the previous matrix, scores were assigned to each of these values.

The possible accommodations recommended in "Figure 26: Logic for Other Recommendations" were selected from VDOT's Complete Streets Guidance. Specifically, these accommodations included paved shoulders, widened outer lanes, and signage. While ideally roadways might have some combination of these accommodations (for example, a roadway may have both paved shoulders and route signage) these are the minimum safe accommodations given roadway characteristics. Paved shoulders may exist in some cases where paved shoulders are recommended. In this case, paved shoulders should be expanded to meet the FHWA guidance found on page 3-5 of Small Town and Rural Multimodal Networks, included in "Figure 26: FHWA Guidance for Paved Shoulders".

Figure 28: FHWA Guidance for Paved Shoulders

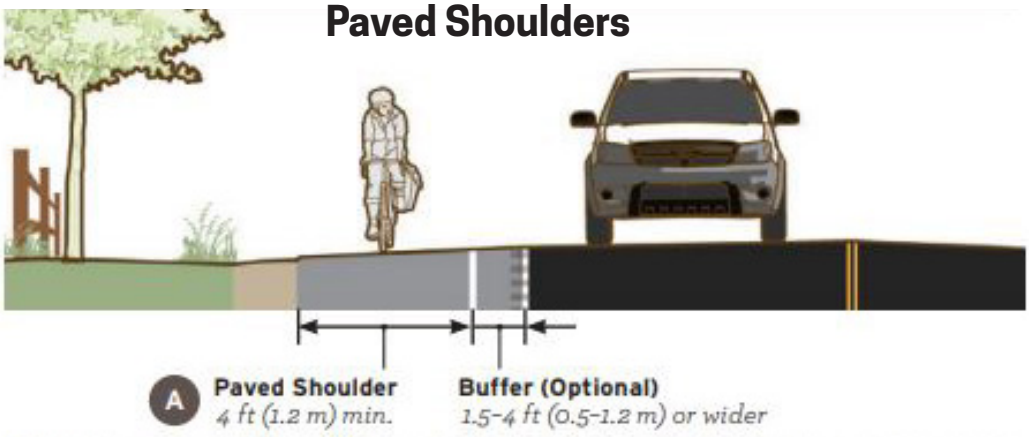

Figure 3-1. When adequate width is provided, shoulders can serve bicycle trips along roads too busy for comfortable shared roadway travel.

Figure 29: Logic for Other Recommendations

Attribute	Value	Weight
Percent Grade	1-3%	1
	4-6%	2
	7-9%	3
	>10%	4
Average Lane Width	13-14 ft	0
	>15 ft	1
	<12 ft	2
Right Shoulder Type	Pavement	1
	Earth	2
	Gravel	3
	Curb/No Shoulder	4
Right Shoulder Width	>5ft	0
	4-5 ft	1
	<4ft	2
Left Shoulder Type	Pavement	1
	Earth	2
	Gravel	3
	Curb/No Shoulder	4
Left Shoulder Width	>5ft	0
	4-5 ft	1
	<4ft	2
Posted Speed	<35 mph	0
	35-45 or not posted	1
	>45 mph	2

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Appendix D: USBR 76 Study

US BICYCLE ROUTE 76

A study of the Roanoke Valley – Alleghany Region

November 2017

Roanoke Valley-Alleghany
REGIONAL
commission

Acknowledgements

This study was completed with the help of an advisory committee. The Regional Commission would like to thank the members of this committee, listed below, for their assistance in providing feedback on the study, as well as collecting data through car and bicycle surveys of the route.

David Holladay, Roanoke County Staff

Jim Farmer, Botetourt County Staff

Liz Belcher, Greenway Coordinator

Lindsay Webb, Roanoke County Staff

Lisa Sumpter, Botetourt County Staff

Mary Zirkel, Town of Buchanan Staff

Robert Beatty, Botetourt County Staff

Tim Miller, Greenway Commission Representative

Eddie Wells, RVARC Staff

This study is a product of the Roanoke Valley – Alleghany Regional Commission.

Project lead: Amanda McGee

Contents

Table of Figures

Acronyms

AADT - Average Annual Daily Traffic

AASHTO – American Association of State Highway and Transportation Officials

AT - Appalachian Trail

B&B - Bed & Breakfast

CDP – Census Designated Place

NPS - National Park Service

RSTP - Regional Surface Transportation Program

RVAMPO - Roanoke Valley Area Metropolitan Planning Organization

RVARC - Roanoke Valley Alleghany Regional Commission

RVTPO – Roanoke Valley Transportation Planning Organization

TA - Transportation Alternatives

UA - Urbanized Area

UC – Urban Cluster

USBRS - United States Bicycle Route System

USFS - United States Forest Service

VDOT - Virginia Department of Transportation

VDHR – Virginia Department of Historical Resources

Introduction

Established in 1978 by the American Association of State Highway and Transportation Officials (AASHTO), the United States Bicycle Route System (USBRS) is a network of long-distance cycling routes in the United States (Figure 3). The purpose of the USBRS is to facilitate bicycle travel on appropriate roads, paths and highways over routes that are desirable for interstate bicyclists. A route is formed as a continuous network of available roads through two or more states connecting and traversing areas of scenic, cultural, and recreational interest.

Figure 1: USBR 1 and 76, Virginia Department of Transportation (VDOT)

US Bicycle Route 76, along with USBR 1, is one of the two original USBRS routes officially designated in 1982. Also known as the TransAmerica Trail (and formerly the Bikecentennial), USBR 76 is an east-west oriented, cross-country bicycle route running for approximately 4,250 miles from Yorktown, Virginia to Astoria, Oregon. Approximately 500 miles of USBR 76 are located in Virginia between Yorktown in the east and the Kentucky state line near Breaks Interstate Park in the west (Figure 1). In Virginia, USBR 76 is demarcated with rectangular, black and white, signs with a bicycle image, route number, and directions arrow.

Figure 2: USBR 76 Sign, VDOT

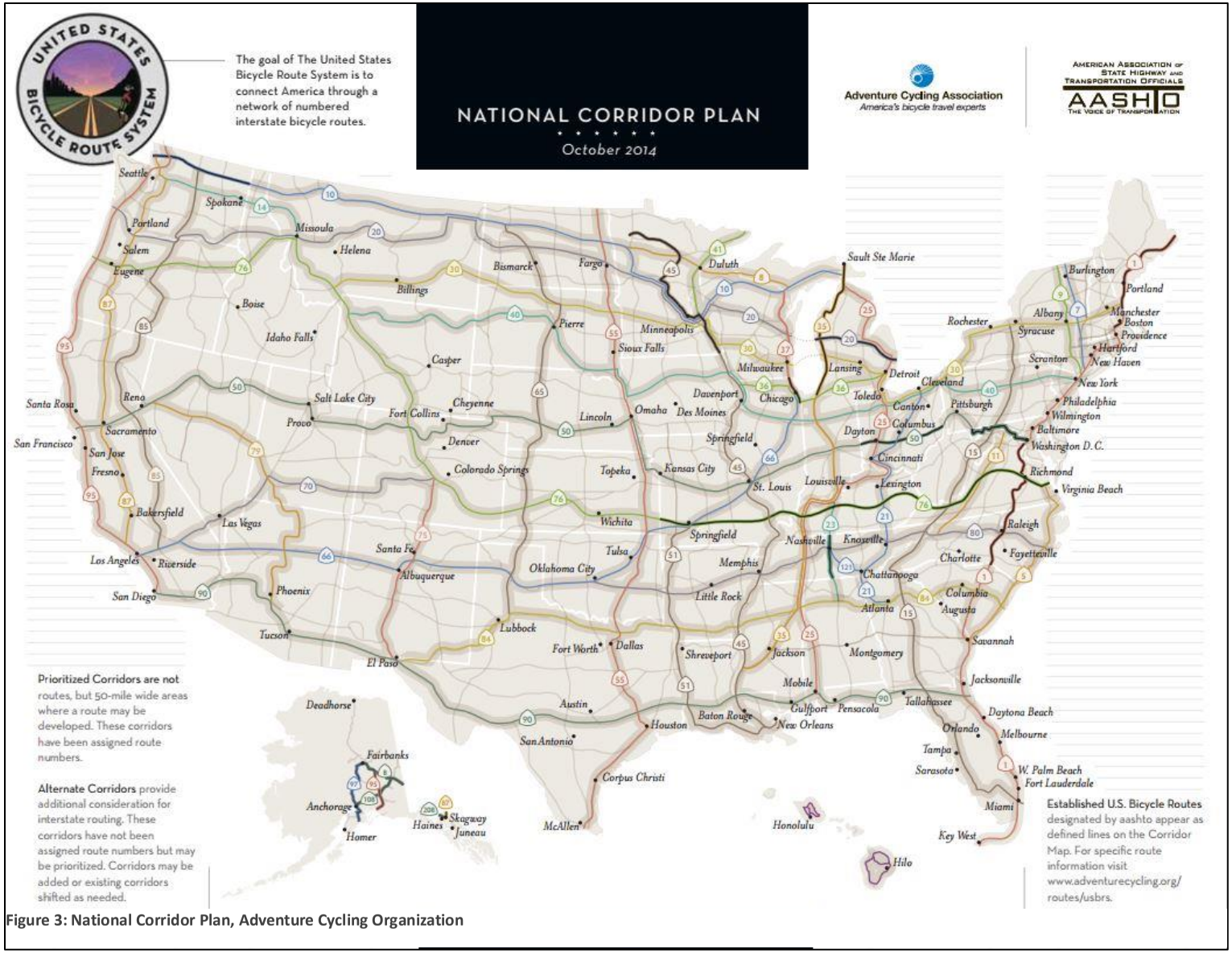

Figure 3: National Corridor Plan, Adventure Cycling Organization

Study Purpose

The primary objectives of this study are to provide a comprehensive overview and analysis of USBR 76 in the Roanoke Valley – Alleghany Regional Commission service area, and to develop recommendations to improve the user experience, better showcase the region's natural, cultural and recreational resources, and increase the economic benefits derived from USBR 76. Specific tasks and activities include:

- Analyzing the roadway geometrics, operations, and signage;
- Compiling an inventory of services, destinations, activity centers, and points of interest along and proximate to USBR 76;
- Mapping;
- Analyzing the economic impact of USBR 76;
- Identifying the deficiencies of and needed improvements to USBR 76;
- Identifying possible spur routes from USBR 76 through other portions of the study area; and
- Identifying adjacent and proximate land use use(s).
- Exploring ways to increase the economic benefits of USBR 76 for Botetourt and Roanoke Counties and the greater region;

Study Area

USBR 76 traverses 55.4 miles of roadways in Botetourt County and Roanoke County and includes areas within the Roanoke Valley Area Transportation Planning Organization (RVTPO) 2040 study area as well as RVARC's Rural Transportation Planning Program area. The study area is also within the Virginia Department of Transportation (VDOT) Salem District which is responsible for construction and maintenance of roadways in the counties of Botetourt and Roanoke.

While the primary focus of this study is on the USBR 76 corridor and proximate areas, it also considers USBR 76 in the context of the larger region (Figure 4). Tables 1 lists the various geographies within the study area.

Table 1: Census Geographies

Census Geography	Population
Botetourt County	33,074
Roanoke County	92,439
Roanoke Urbanized Area*	211,071
Roanoke Metropolitan Statistical Area**	308,238
Town of Buchanan	1,416
Town of Troutville	550
Daleville Census Designated Place	2,100
Cloverdale Census Designated Place	2,941

* Roanoke UA includes the cities of Roanoke and Salem and portions of Bedford, Botetourt, Montgomery, and Roanoke counties

** Roanoke MSA includes the cities of Roanoke and Salem and the counties of Botetourt, Craig, Franklin, and Roanoke

Beyond officially recognized or administrative geographies, USBR 76 passes through numerous unincorporated communities, locally identified places, and population centers.

Table 2: Locally Identified Places

Place	Place Type(s)	County
Catawba	unincorporated area	Roanoke
Lone Star	unincorporated area	Botetourt
Mt. Union	unincorporated area	Botetourt
Nace	unincorporated area	Botetourt
Lithia	unincorporated area	Botetourt

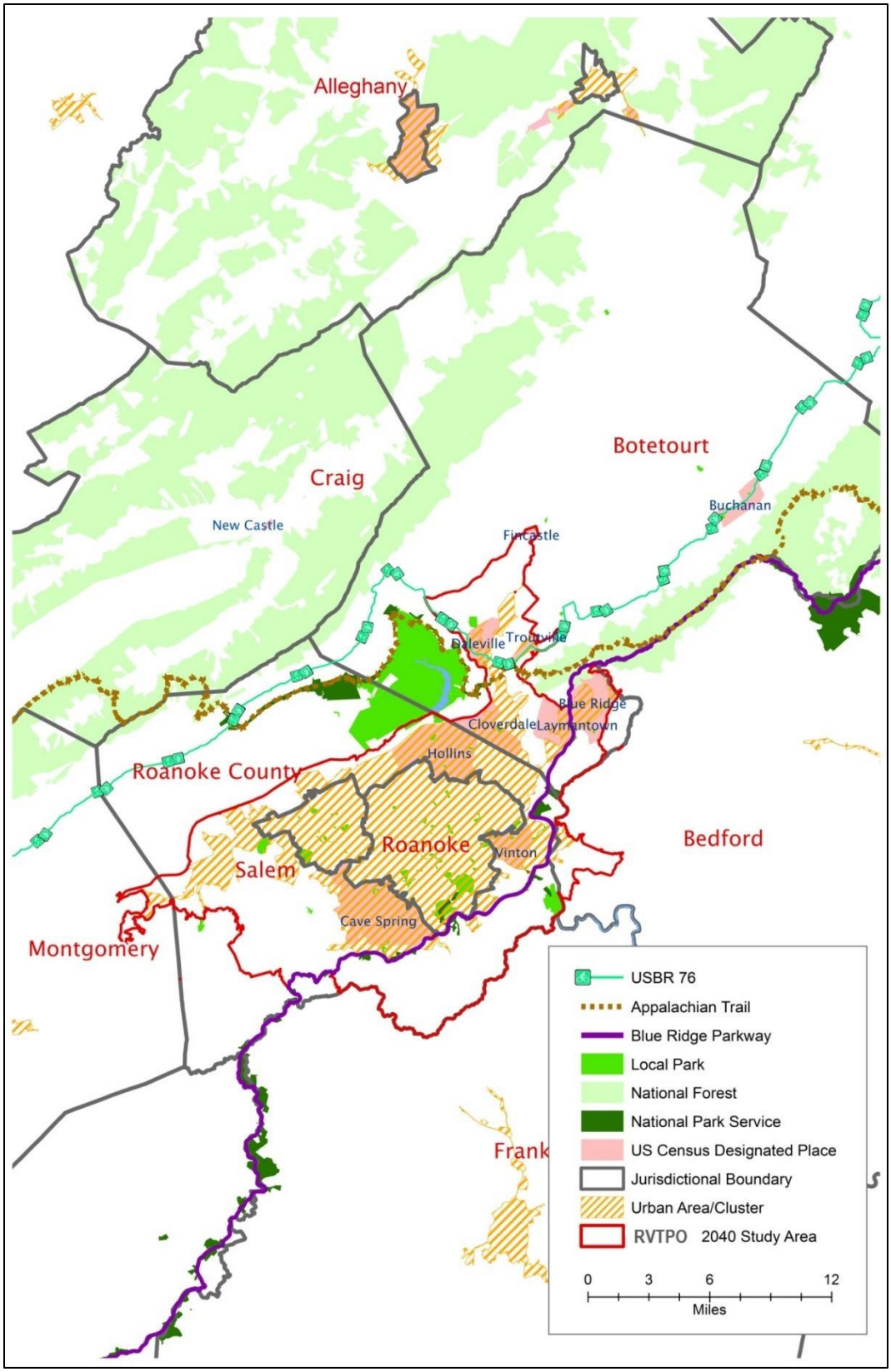

Figure 4: Study Area - Roanoke Valley

Physiography

USBR 76 traverses the Valley and Ridge and the Blue Ridge physiographic/geologic provinces of Virginia (Figure 5). The Valley and Ridge physiographic/geologic province is characterized by sedimentary rocks folded and faulted in anticlines (ridges) and synclines (valleys) and a trellis drainage pattern with streams running parallel to long ridges. USBR 76 passes through both the Roanoke River and James River watersheds crossing the divide several times along the route and paralleling or crossing Catawba Creek, Tinker Creek, the James River, and a number of smaller streams.

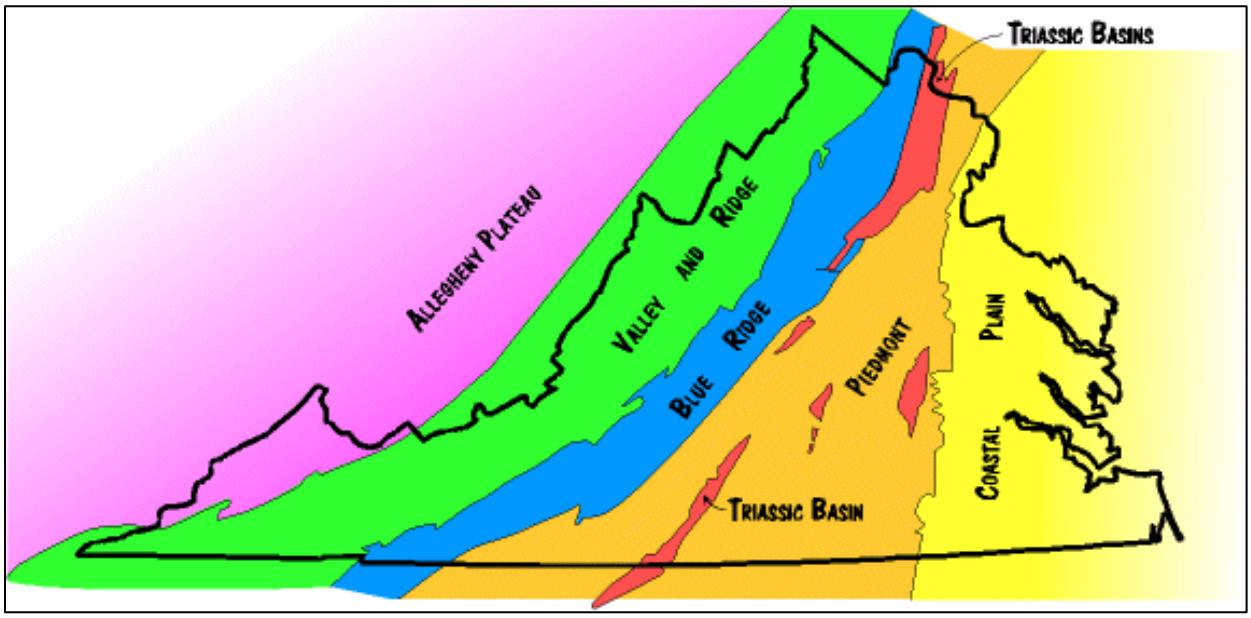

Figure 5: Geologic and Physiographic Provinces of Virginia, James Madison University

Weather and Climate

The study area climate can be generally characterized as humid-subtropical (Cfa) to humid continental – warm summer (Dfa) with considerable variation based on elevation. Both climate types are characterized by seasonal variation in temperature and precipitation distributed throughout the year. Table 3 and Figure 6 provide average temperatures and precipitations for the study area.

Table 3: Average Temperature and Precipitation - Roanoke Virginia

	January	February	March	April	May	June
Average high in °F	46	49	58	68	76	83
Average low in °F:	28	30	37	45	53	62
Average precipitation in inch	2.91	2.87	3.46	3.39	4.06	3.82
Average snowfall in inch	6	6	2	1	0	0
	July	**August**	**September**	**October**	**November**	**December**
Average high in °F	87	86	78	69	59	48
Average low in °F	66	65	58	47	38	30
Average precipitation in inch	4.06	3.54	3.9	2.87	3.39	2.95
Average snowfall in inch	0	0	0	0	1	4

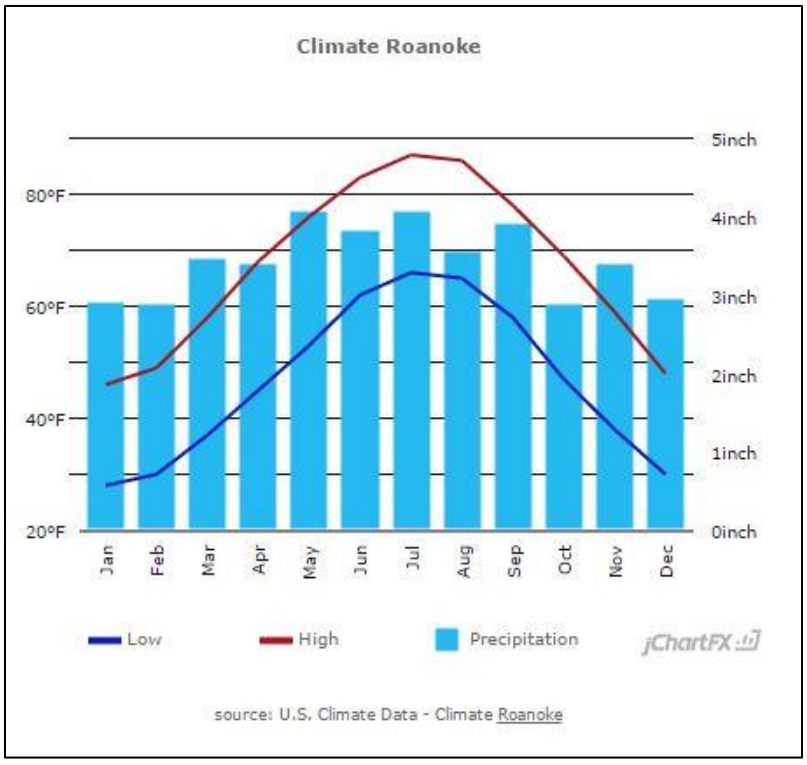

Figure 6: Roanoke Climograph, US Climate Data

Methodology

In order to collect the data needed to complete this study, the following methods were used.

Field Visits

Locality staff and RVARC staff took two driving tours of the route. One driving tour encompassed the parts of the route located within Roanoke County, and was led by Roanoke County staff. The second driving tour was led by Botetourt County and Town of Buchanan staff, and took place on the sections located within Botetourt County. The goal of these tours was to locate signage which may not have been included in the VDOT shapefiles (dated 2009) and to identify potential amenities or points of interest along the route.

Short Survey

RVARC staff created a brief, 5-question online survey to distribute to area bicyclists regarding their experiences on USBR 76 within the study area. This survey divided the route into sections, listed in the Section Analysis. The results of the survey as well as the original survey questions are included in Appendix C.

Rider Experience

Tim Miller, a local cyclist and member of the Roanoke Valley Greenway Commission, biked this route with an eye to navigation issues and hazards which might present themselves to cyclists, including road surface, safety, and other issues. His experience informed the Section Analysis.

Other USBR 76 Studies

In Virginia, there have been other studies conducted by planning district commissions (PDC) which may be relevant to readers of this study. These are the corridor studies undertaken by the Thomas Jefferson PDC and the New River Valley PDC. References to both of these studies are available in the Sources and Related Works section at the end of this document.

The New River Valley's corridor study is of particular impact on this document as that PDC borders the Regional Commission study area. The NRVPDC service boundary begins at the Montgomery County line and continues along the USBRS 76 corridor from there.

Overview of the USBR 76 Corridor

This section provides a comprehensive overview of USBR 76 in the study area including route description, roadway geometrics and operations, and related information. Information was collected using fieldwork, GIS, stakeholder input, and secondary data sources. Route analysis includes the following items:

- route segments
- elevation profile
- directions / cue sheets
- roadway classification speed limit
- annual average daily traffic
- travel lane pavement width
- shoulder type, width, and condition
- pavement condition
- signage
- maintenance issues
- hazards or safety concerns
- adjacent or proximate activity centers or points of interest

The Virginia Department of Transportation is responsible for construction and maintenance on all public roadways, including USBR 76 designed segments, in Botetourt and Roanoke counties.

Route Description

USBR 76 runs for 55.4 miles through Botetourt and Roanoke Counties, entering/exiting Botetourt County from Rockbridge County in the east and entering/exiting Roanoke County from Montgomery County in the west (Figure 7). Of this distance, 13.7 miles are located in Roanoke County and 40 miles are in Botetourt County. Figure 8 provides an elevation profile, with reference points along USBR 76, in the study area. Table 4 provides detailed, turn-by-turn USBR 76 route directions (cue sheet) for both east-to-west and west-to-east travel.

The route topography in the study area is generally rolling, interspersed with moderately difficult climbs/descents. Elevation along the route ranges from approximately 2,000 feet to 900 feet, with the highest elevation (approximately 1,977 feet) at the Roanoke River/James River drainage divide on Blacksburg Road (785) in eastern Roanoke County and the lowest point (approximately 900 feet) at the James River in the Town of Buchanan (Figure 8).

Table 4: USBR 76 Cue Sheet - Botetourt and Roanoke Counties

East to West Travel Direction			
Total Distance (miles)	**Direction**	**Roadway**	**Distance to Next Maneuver (miles)**
0	Straight	Lee Highway (US 11) – enter Botetourt Co from Rockbridge Co	3.5
3.5	Right	Overpass Road (623) crossing 1-81	0.1
3.6	Left	Frontage Road 54	4.0
7.6	Left	Lee Highway (US 11)/Main Street through Town of Buchanan	3.9
11.5	Left	Lithia Road (640)	6.3
17.8	Left	Nace Road (640)	3.9
21.7	Left	Lee Highway (US 11)	0.6
22.3	Left	Stoney Battery Road	3.4
25.7	Left	Lee Highway (US 11)	1.1
26.8	Right	Valley Road (779)	1.6
28.4	Right	US 220 (Roanoke Road)	0.2
28.6	Left	Catawba Road (779)	13.2
41.8	Straight	Catawba Creek Road (779) – enter Roanoke Co from Botetourt Co	3.6
45.4	Right	Catawba Valley Road (311)	0.5
45.9	Left	Blacksburg Road (785)	9.6
55.5	Straight	Blacksburg Road (785) – enter Montgomery Co from Roanoke Co	
West to East Travel Direction			
Total Distance (miles)	**Direction**	**Roadway**	**Distance to Next Maneuver (miles)**
0	Straight	Blacksburg Road (785) – enter Roanoke Co from Montgomery Co	9.6
9.6	Right	Catawba Valley Road (311)	0.5
10.1	Left	Catawba Creek (779) – enter Botetourt Co from Roanoke Co	3.6
13.7	Straight	Catawba Road (779)	13.2
26.9	Right	US 220 (Roanoke Road)	0.2
27.1	Left	Valley Road (779)	1.6
28.7	Left	Lee Highway (US 11)	1.1
29.8	Right	Stoney Battery Road	3.4
33.2	Right	Lee Highway (US 11)	0.6
33.8	Right	Nace Road (640)	3.9
37.7	Right	Lithia Road (640)	6.3
44.0	Right	Lee Highway (US 11)/Main Street through Town of Buchanan	3.9
47.9	Right	Frontage Road 54	4.0
51.9	Right	Overpass Road (623) crossing 1-81	0.1
52.0	Left	Lee Highway/Frontage Road 55	3.5
55.5	Straight	Lee Hwy (US 11)/FR 55– enter Rockbridge Co from Botetourt Co	

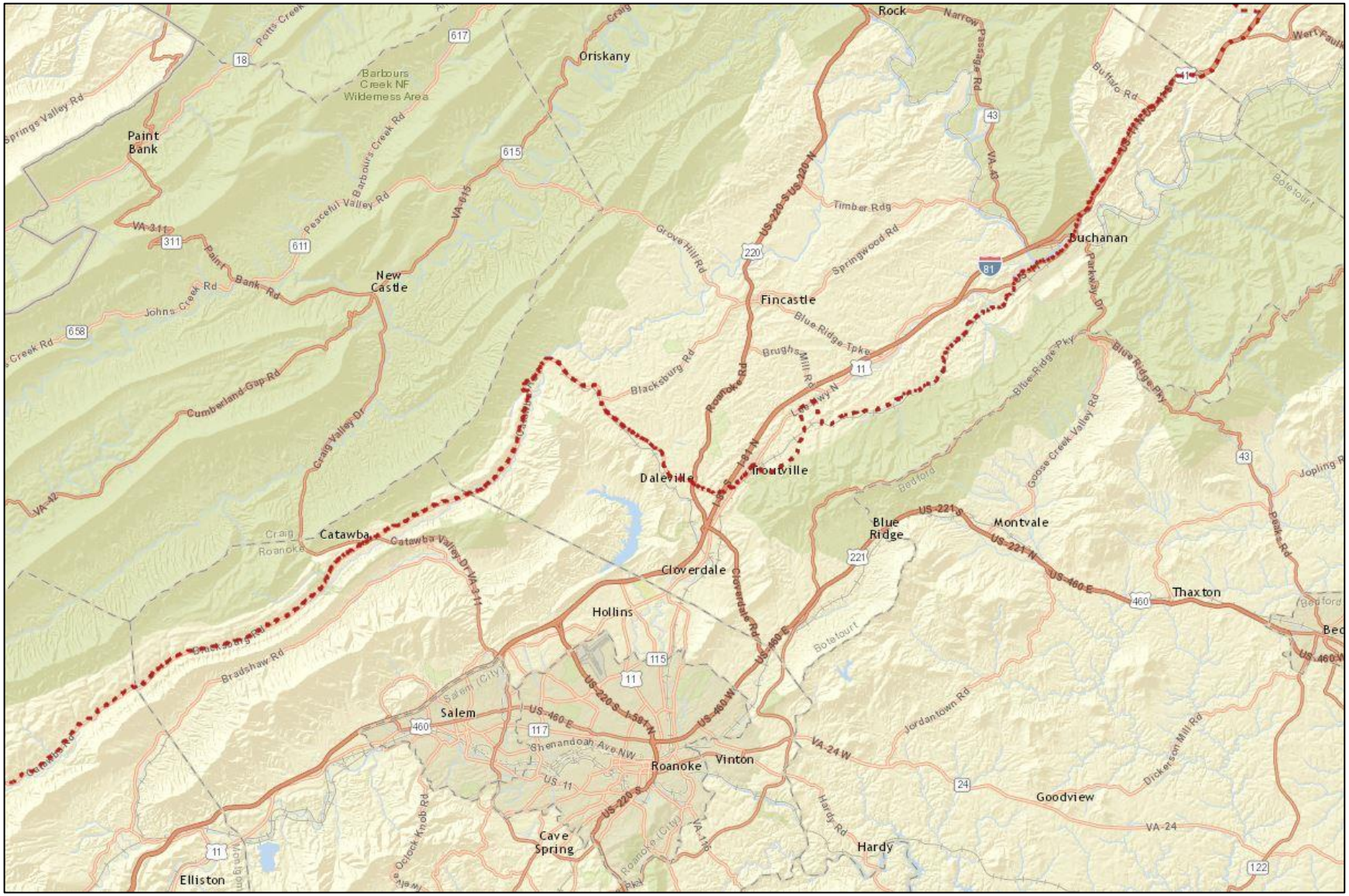

Figure 7: USBR 76 in Botetourt and Roanoke County

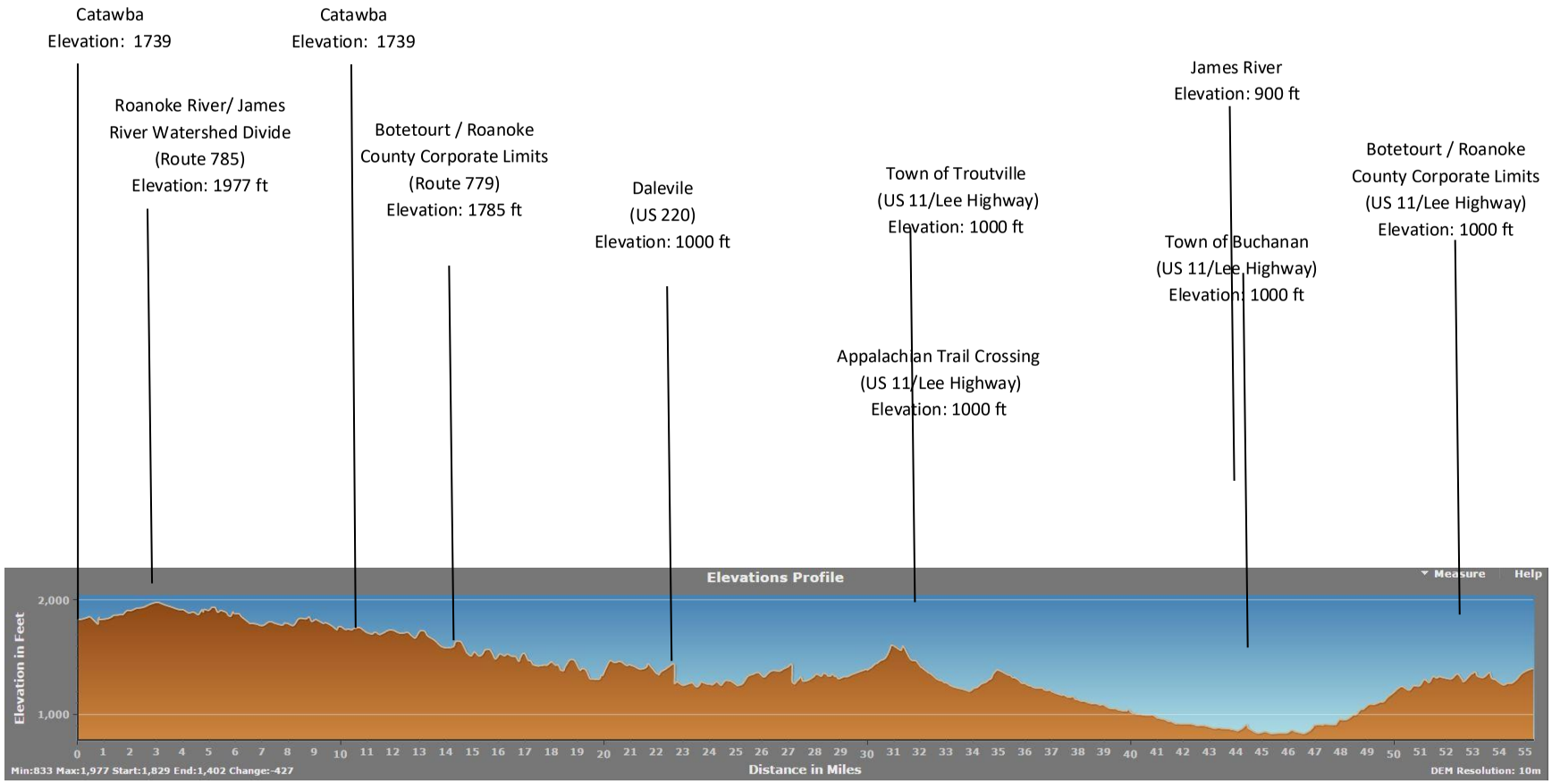

Figure 8: USBR 76 Elevation Profile - Botetourt and Roanoke Counties

Table 5: USBR 76 Study Area Roadways, VDOT

ROADWAY SEGMENT NAME	FROM	TO	LOCALITY	VDOT CLASSIFICATION	SPEED LIMIT	LENGTH (MILES)
BLACKSBURG (ROUTE 785)	CORPORATE LIMIT	CATAWBA VALLEY (ROUTE 311)	ROANOKE COUNTY	RURAL MAJOR COLLECTOR	55	9.6
CATAWBA VALLEY (ROUTE 311)	BLACKSBURG (ROUTE 785)	CATAWBA CREEK (ROUTE 779)	ROANOKE COUNTY	RURAL MAJOR COLLECTOR	55	0.5
CATAWBA CREEK (ROUTE 779)	CATAWBA VALLEY (ROUTE 311)	CORPORATE LIMIT	ROANOKE COUNTY	RURAL MAJOR/MINOR COLLECTOR	55	3.6
ROANOKE COUNTY MILES						**13.7**
CATAWBA	CORPORATE LIMIT	MPO STUDY AREA BOUNDARY (BLACKSBURG)	BOTETOURT COUNTY	RURAL MAJOR/MINOR COLLECTOR	55	8.5
CATAWBA	MPO STUDY AREA BOUNDARY (BLACKSBURG RD)	US 220 (ROANOKE)	BOTETOURT COUNTY	URBAN COLLECTOR	55	4.6
US 220 (ROANOKE)	CATAWBA (ROUTE 779)	VALLEY	BOTETOURT COUNTY	URBAN PRINCIPAL ARTERIAL	45	0.2
VALLEY (779)	US 220 (ROANOKE)	LEE HIGHWAY (US 11)	BOTETOURT COUNTY	URBAN COLLECTOR	35	1.6
US 11 (LEE HIGHWAY)	VALLEY	STONEY BATTERY	BOTETOURT COUNTY	URBAN PRINCIPAL ARTERIAL	40/35	1.1
STONEY BATTERY	LEE HIGHWAY (US 11)	LEE HIGHWAY (US 11)	BOTETOURT COUNTY	LOCAL NON-CLASSIFIED	30/25	3.4
US 11 (LEE HIGHWAY)	STONEY BATTERY	NACE	BOTETOURT COUNTY	RURAL MAJOR COLLECTOR	55	0.6
NACE (640)	LEE HIGHWAY (US 11)	LITHIA	BOTETOURT COUNTY	LOCAL NON-CLASSIFIED	40/35	3.9
LITHIA (640)	NACE (640)	LEE HIGHWAY (MAIN)	BOTETOURT COUNTY	LOCAL NON-CLASSIFIED	40/35	6.3
LEE HIGHWAY (MAIN)	LITHIA	FRONTAGE ROAD 54 (1-81)	BOTETOURT COUNTY	RURAL MAJOR COLLECTOR	55/35/25	3.9
FRONTAGE ROAD 54 (1-81)	LEE HIGHWAY (MAIN)	OVERPASS (623)	BOTETOURT COUNTY	LOCAL NON-CLASSIFIED	35	4.0
OVERPASS (623)	FRONTAGE ROAD 54 (1-81)	US 11 (LEE HIGHWAY)	BOTETOURT COUNTY	LOCAL NON-CLASSIFIED	35	0.1
US 11 (LEE HIGHWAY)	OVERPASS (623)	CORPORATE LIMIT	BOTETOURT COUNTY	RURAL MAJOR COLLECTOR	55	3.5
BOTETOURT COUNTY MILES						**41.7**
STUDY AREA TOTAL MILES						**55.4**

Table 6: USBR 76 Average Annual Daily Traffic (AADT), VDOT

Route Number	Route Name	Locality	Segment Length	Segment Start	Segment End	AADT	Percent 2 and 4 Tire Vehicles	Percent Busses	Percent Single Unit Trucks 2 Axle	Percent Single Unit Trucks 3+ Axle	Percent Combination Trucks 1 Trailer	Percent Combination Trucks 2+ Trailer
00785	Blacksburg Rd	Roanoke County	2.18	Montgomery County Line	80-697 Sandyridge Rd	310	98%	0%	1%	0%	0%	0%
00785	Blacksburg Rd	Roanoke County	7.55	80-697 Sandyridge Rd	SR 311 Catawba Valley Dr	350	98%	0%	1%	0%	0%	0%
00779	Catawba Creek Rd	Roanoke County	0.75	SR 311 Catawba Valley Dr; 80-698 Keffer Rd	SR 320 Catawba Hospital Dr	800	No Data	No Data	No Data	No Data	No Data	No Data
00779	Catawba Creek Rd	Roanoke County	1.56	SR 320 Catawba Hospital Dr	80-600 Moses Family Rd	640	No Data	No Data	No Data	No Data	No Data	No Data
00779	Catawba Creek Rd	Roanoke County	1.32	80-600 Moses Family Rd	Botetourt County Line	240	No Data	No Data	No Data	No Data	No Data	No Data
00311	Catawba Valley Dr	Roanoke County	6.70	SR 419 Electric Rd	80-779 Catawba Creek Rd	9100	97%	0%	1%	1%	1%	0%
00311	Catawba Valley Dr	Roanoke County	0.52	80-779 Catawba Creek Rd	80-785 Blacksburg Rd	4800	96%	0%	1%	1%	1%	0%
00311	Catawba Valley Dr	Roanoke County	2.54	80-785 Blacksburg Rd	Craig County Line	4500	96%	0%	1%	1%	1%	0%
00779	Catawba Rd	Botetourt County	4.62	Roanoke County Line	11-600 S, Little Catawba Creek Rd	230	No Data	No Data	No Data	No Data	No Data	No Data
00779	Catawba Rd	Botetourt County	1.31	11-600 S, Little Catawba Creek Rd	11-600 N, Haymakertown Rd	690	No Data	No Data	No Data	No Data	No Data	No Data
00779	Catawba Rd	Botetourt County	1.43	11-600 N, Haymakertown Rd	11-664 Asbury Lane	800	No Data	No Data	No Data	No Data	No Data	No Data
00779	Catawba Rd	Botetourt County	0.72	11-664 Asbury Lane	11-666 Haymakertown Rd	1500	100%	0%	0%	0%	0%	0%
00779	Catawba Rd	Botetourt County	0.33	11-666 Haymakertown Rd	11-630 Blacksburg Rd	2300	90%	1%	1%	1%	8%	0%
00779	Catawba Rd	Botetourt County	2.89	11-630 Blacksburg Rd	11-672 E, Etzler Rd	5300	87%	1%	1%	1%	9%	0%
00779	Catawba Rd	Botetourt County	0.46	11-672 E, Etzler Rd	11-675 Glebe Rd	4200	100%	0%	0%	0%	0%	0%
00779	Catawba Rd	Botetourt County	0.80	11-675 Glebe Rd	11-626 Mimosa St	4700	100%	0%	0%	0%	0%	0%
00779	Catawba St	Botetourt County	0.55	11-626 Mimosa St	US 220 N, Roanoke Rd	5800	100%	0%	0%	0%	0%	0%
00779	Valley Rd	Botetourt County	1.46	US 220 S, Roanoke Rd	WCL Troutville	1400	100%	0%	0%	0%	0%	0%
00779	Valley Rd	Town of Troutville	0.15	WCL Troutville	US 11 Lee Highway	1500	100%	0%	0%	0%	0%	0%
00011	Lee Highway	Botetourt County	0.10	Roanoke County Line	80-601 Shadwell Dr	17000	93%	1%	1%	1%	4%	0%
00011	Lee Highway	Botetourt County	2.73	80-601 Shadwell Dr	ALT SR 220 Cloverdale Rd	12000	90%	1%	1%	2%	6%	0%
00011	Lee Highway	Botetourt County	0.25	ALT SR 220 Cloverdale Rd	Ramp From I-81 NB at Exit 150 B	6800	99%	0%	0%	0%	0%	0%
00011	Lee Highway	Botetourt County	1.09	Ramp From I-81 NB at Exit 150 B	SCL Troutville	6800	99%	0%	0%	0%	0%	0%
00011	Lee Highway	Town of Troutville	1.85	SCL Troutville	NCL Troutville	6800	99%	0%	0%	0%	0%	0%
00011	Lee Highway	Botetourt County	2.98	NCL Troutville	11-640 Brughs Mill Rd	4900	95%	1%	1%	1%	1%	0%
00011	Lee Highway	Botetourt County	5.86	11-640 Brughs Mill Rd	I-81 South of Buchanan	3100	95%	1%	1%	1%	1%	0%
00011	Lee Highway	Botetourt County	2.23	I-81 South of Buchanan	WCL Buchanan	4100	95%	1%	1%	1%	2%	0%
00011	Main St	Town of Buchanan	0.43	WCL Buchanan	11-625 Mt Joy Rd	4100	95%	1%	1%	1%	2%	0%
00011	Main St	Town of Buchanan	2.09	11-625 Mt Jay Rd	SR 43 Parkway Dr	4000	95%	1%	1%	1%	2%	0%
00011	Main St	Town of Buchanan	0.18	SR 43 Parkway Dr	SR 43 First St	4100	95%	2%	2%	0%	1%	0%
00011	Main St	Town of Buchanan	0.78	SR 43 First St	NCL Buchanan	2800	95%	1%	1%	1%	2%	0%
00011	Lee Highway	Botetourt County	0.35	NCL Buchanan	I-81 North of Buchanan	2800	95%	1%	1%	1%	2%	0%
00651	Stoney Battery Rd	Town of Troutville	0.10	US 11 MID, Lee Highway	11-716 Apple Orchard Lane	1400	No Data	No Data	No Data	No Data	No Data	No Data
00651	Stoney Battery Rd	Town of Troutville	0.33	11-716 Apple Orchard Lane	ECL Troutville	410	No Data	No Data	No Data	No Data	No Data	No Data
00651	Stoney Battery Rd	Botetourt County	3.05	ECL Troutville	US 11 N, Lee Highway	460	No Data	No Data	No Data	No Data	No Data	No Data
00640	Nace Rd	Botetourt County	0.90	US 11 S, Lee Highway	11-711 Houston Mines Rd	1100	No Data	No Data	No Data	No Data	No Data	No Data
00640	Nace Rd	Botetourt County	3.05	11-711 Houston Mines Rd	11-606 E, Blue Ridge Trpk	620	No Data	No Data	No Data	No Data	No Data	No Data
00640	Lithia Rd	Botetourt County	3.46	11-606 E, Blue Ridge Trpk	11-636 Hardbarger Rd	260	No Data	No Data	No Data	No Data	No Data	No Data
00640	Lithia Rd	Botetourt County	2.89	11-636 Hardbarger Rd	US 11 N, Lee Highway	340	No Data	No Data	No Data	No Data	No Data	No Data
00623	Overpass Rd	Botetourt County	0.08	FR-55 Lee Highway	FR-54 Frontage Rd	380	No Data	No Data	No Data	No Data	No Data	No Data
00054	Purgatory Mountain Rd	Botetourt County	1.24	Dead End	I-81 Interchange	230	No Data	No Data	No Data	No Data	No Data	No Data
00054	Frontage Rd	Botetourt County	0.84	I-81 Interchange	11-614 Arcadia Rd	650	No Data	No Data	No Data	No Data	No Data	No Data
00054	Frontage Rd	Botetourt County	1.58	11-614 Arcadia Rd	11-608 Indian Rock Rd	1100	No Data	No Data	No Data	No Data	No Data	No Data
00054	Frontage Rd	Botetourt County	2.08	11-608 Indian Rock Rd	11-622 Alpine Rd	2400	No Data	No Data	No Data	No Data	No Data	No Data
00054	Frontage Rd	Botetourt County	0.85	11-622 Alpine Rd	Dead End	180	No Data	No Data	No Data	No Data	No Data	No Data

USBR 76 Roadway Segments

USBR 76 utilizes 16 separate roadway segments in the study area with the majority being classified as Rural Major Collectors by VDOT. Speeds limits range from 25 MPH to 55 MPH with the highest speed limits generally occurring in Roanoke County on Blacksburg Road, Catawba Valley Drive (Route 311), and Catawba Creek Road. The highest speed limits in Botetourt County occur on Catawba Road and US Route 11 (Lee Highway). Table 5 shows more information about the roadways within the study area.

In Roanoke County, average annual daily traffic (AADT) ranges from a high of 4,800 along Catawba Valley Drive (311) to a low of 240 on Catawba Creek Road (779). In Botetourt County, the high is 5,800 on Catawba Street, and the low is 230 on Catawba Road. These numbers show a great deal of traffic variation throughout the route, depending on the roadway in question. High traffic volume is centered around denser development patterns and major highways such as U.S. 220, S.R. 311, and U.S. 11.

Signage

Wayfinding signage is an important element of navigating any on-road route. USBR 76 users should be able to easily follow the route in either direction without becoming lost. Key points for signage include turns and junctions. Signage is maintained by VDOT as part of their general maintenance operations within road right-of-way.

Figure 9 contains the sign map which was created with the help of VDOT and the locality staff of Roanoke County, Botetourt County, and the Town of Buchanan. It shows a well-signed corridor. Survey of the corridor showed only one significant hazard with respect to signage. This was at the 311 junction. More on this issue will be discussed in the Section Analysis.

Land Use

Land use along the corridor is broadly characterized by rural farmland, with the exception of key locations such as Troutville, Buchanan, and Daleville. Figures 10 and 11 contain the future land use maps for Roanoke County and Botetourt County, respectively.

The pink area in northern Roanoke County corresponds to the Catawba Community Center and Catawba Post Office locations. This color denotes a village center. The rest of the route contained within Roanoke County is conservation or other rural use.

In Botetourt, much of the route is also located in rural, low-density use areas. However, Daleville in particular may present issues in the future for this corridor, since the land use in this area is particularly dense, being part of the Roanoke MPO boundary. Daleville is located within the large, orange section in the Botetourt County future land use map which denotes medium density residential and commercial development in this area.

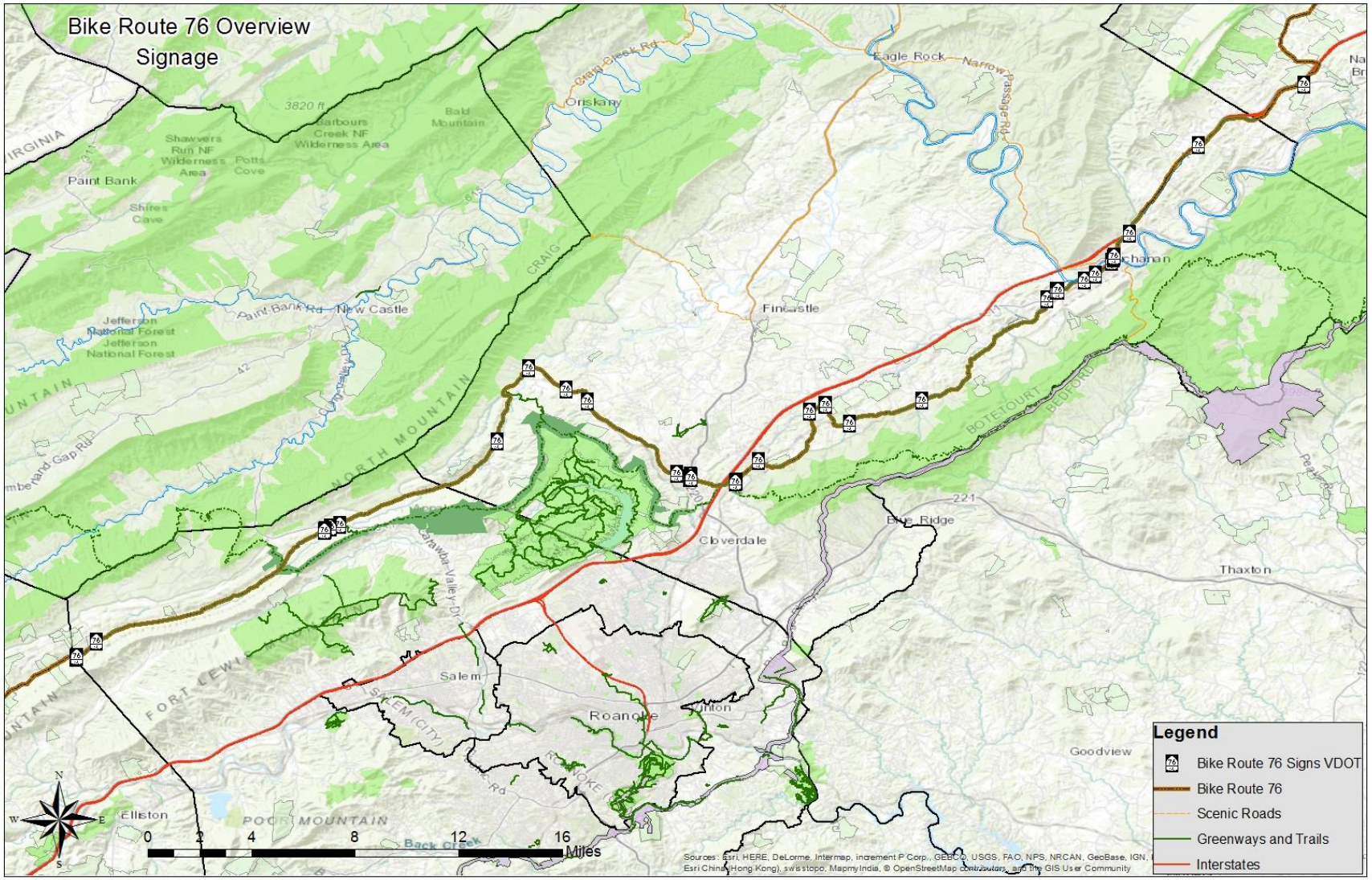

Figure 9: Signage on the Corridor

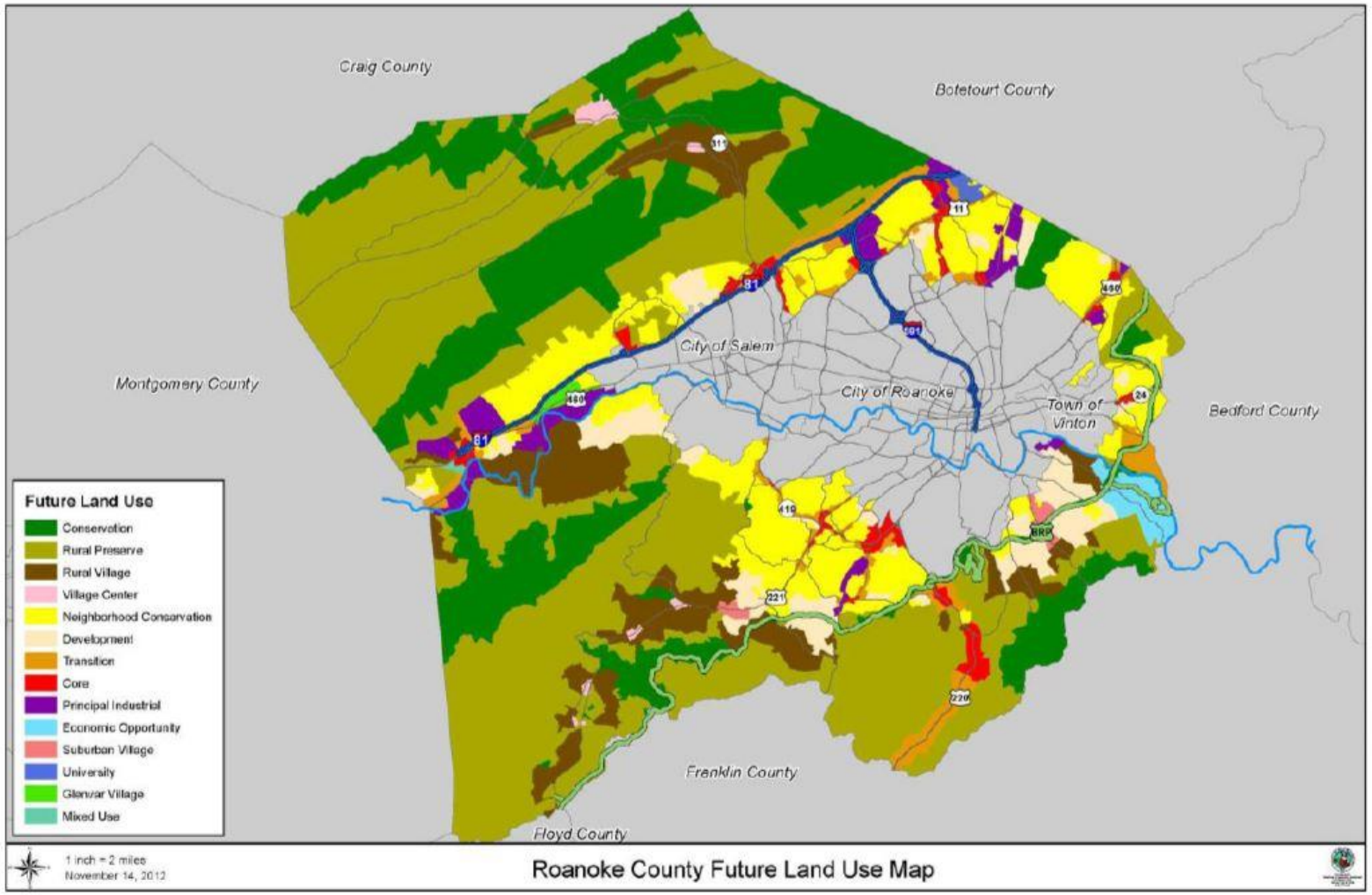

Figure 10: Roanoke County Future Land Use Map

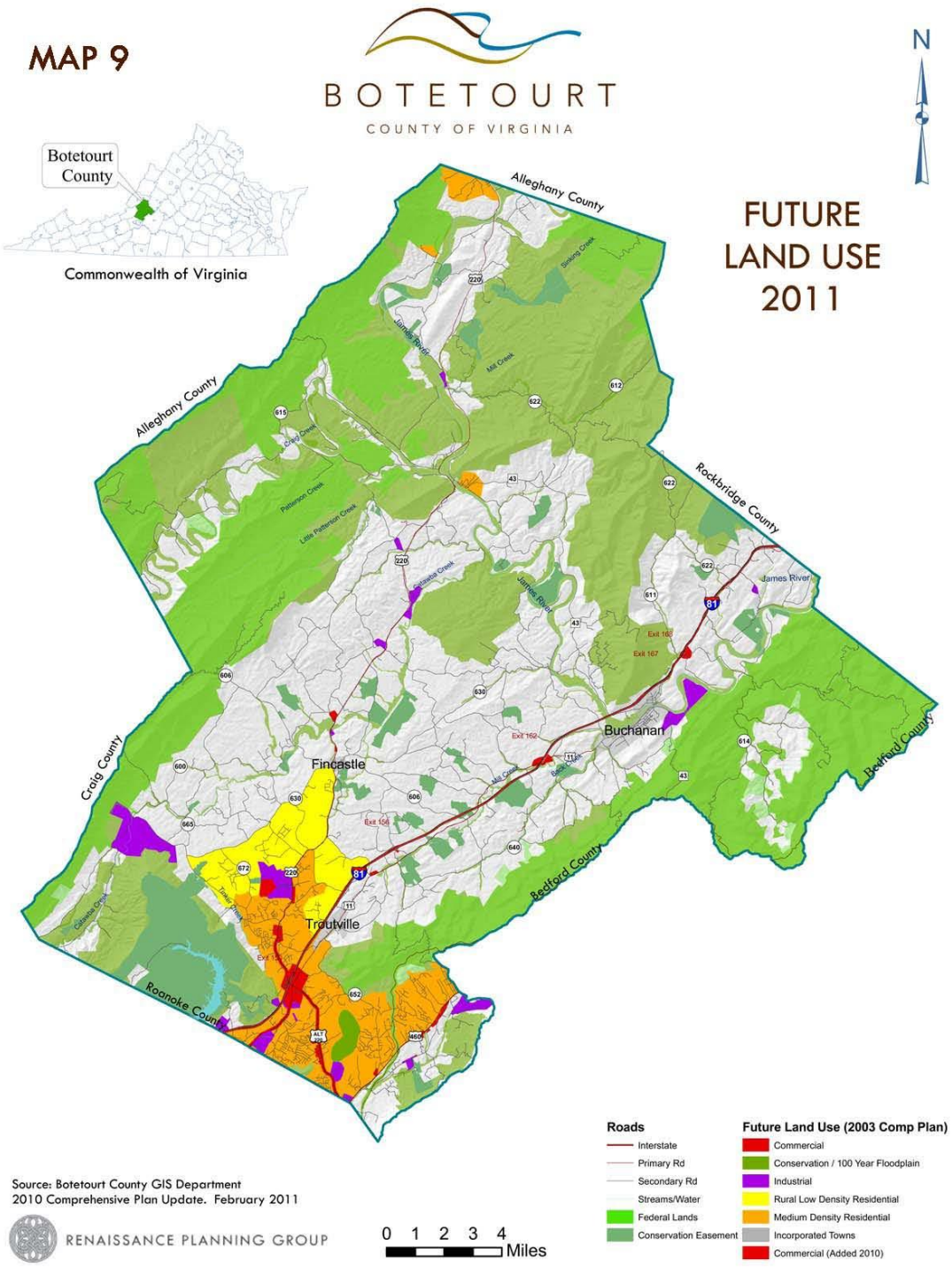

Figure 11: Botetourt County Future Land Use Map

Economic Impact

Currently, USBR 76 largely bypasses population centers in the Roanoke Valley. This is likely by design. Bypassing major population centers puts cyclists on rural road, which improves their safety and experience by allowing for lower traffic volume and scenic views. This, however, somewhat limits the potential for economic impact on the Roanoke Valley. Attempts at quantifying the direct and indirect economic impacts of USBR 76 encounter therefore face several challenges, including lack of empirical data. While USBR 76 showcases the study area's scenic beauty and natural resources, direct, tangible economic benefits (sales tax, employment, visitor spending) from the route are limited, especially in Roanoke County.

One way of increasing economic impact of USBR 76 is to encourage spur and loop routes off of the main bike route. If destination traveler on looped routes were encouraged, the economic impact could increase. When cyclists find an event that extends their stay, such as the Damascus Trail Days, economic impact also increases. Hotels represent the largest daily expenditure for USBR 76 through-cyclists, based on available data.

Central Shenandoah Planning District Commission

The Central Shenandoah Planning District Commission (CSPDC) conducted a study in 2015 regarding the economic impact of bicyclists in their region. As they are neighbors to the Roanoke Valley – Alleghany Region, these numbers are perhaps the most relevant to this study.

The report, entitled *The Economic Impact of Bicycling in the Central Shenandoah Valley*, was published in August of 2016. In the Executive Summary, CSPDC cites that 71 percent of cyclists visiting the Central Shenandoah region stayed at least one night in the area, with average daily spending, including food, lodging, and other spending, being $155 per person. CSPDC estimates that direct economic impact for the region is $8.6 million, while indirect impact is $13.6 million. This number includes all bicycle tourism in the area, and may not be limited to on-road routes.

Adventure Cycling Organization

Regional Commission staff contacted the Adventure Cycling Organization to obtain information on USBR 76 use and expenditures. Based on a combination of USBR 76 map sales and the number of cyclists that visited the Adventure Cycling headquarters, the organization estimated a total of 1,200 USBR 76 through-cyclists annually.

Adventure Cycling Organization has also developed a compilation of reports and studies analyzing economic impact of bicycle routes and systems throughout the US and abroad. Based on review of the following studies, average daily (overnight) expenditure for USBR 76 through cyclists in the study area is estimated to be approximately $100 per person. Given the length of USBR in the study area it is estimated that through cyclists average one overnight stay, with Daleville or Buchanan being the most likely overnight locations. This is based off of evaluations from the two reports below.

Great Allegheny Passage (GAP)

A 2012 study of the Great Allegheny Passage shows that trail users spend an average of $114 for overnight stays. Businesses along the trail attributed thirty percent of their gross revenues to the GAP, and about half of the businesses said that the trail affected their decision to expand.

Montana

The Institute for Tourism and Recreation Research (ITRR) at the University of Montana's School of Forestry conducted a study entitled, "Analysis of Touring Cyclists: Impacts, Needs and Opportunities for Montana,"which found that multi-day cyclists spend $75 per day while in Montana, and stay an average of eight or more nights. Researchers queried cyclists who had visited Adventure Cycling headquarters in 2013, or who had purchased Montana section maps between 2010-2013. Cyclists hailed from 48 states and 18 countries.

2010 Cross State Ride

The annual economic impact observed during the 2010 Cross State Ride is estimated at $200,000. This is based on estimates provided by the Joseph Morgan at the Virginia Bicycle Federation (VBF). The VBF met with about 80 cross state riders during their two-week journey, or an average 40 per week. With an average of 40 through travelers spending approximately $250 per week for food, lodging and other expenses, weekly spending equals $10,000. Based on this observation, the estimated impact of 40 through cyclists per week over a 20 week optimum travel season yields an annual impact of $200,000. Overall, USBR 76 is comparable in economic impact to a major club sponsored day or weekend bicycle ride.

VBF hopes to get a more reliable rider count by putting a log in point at a location that all USBR 76 riders are likely to pass, such as the Draper Mercantile in Pulaski County.

Section Inventory

The following portion of this study will break the route into sub-sections for easier discussion of amenities and issues observed upon the route. The items listed for each sub-section have been determined by public survey and interviews with locality staff, as well as by riding the route either by car or bicycle. The hazards, points of interest, and amenities will be listed in order of encounter if riding the route from north to south under their respective headings. Links to more information about these listed locations can be found in Sources and Related Works section of this document.

Figure 12, below, shows historical markers, which will be discussed as points of interest in this section. Tables 7 and 8 further demonstrate historic sites within Botetourt and Roanoke County.

Special thanks for assistance on gathering information for this section must go to Tim Miller and locality staff.

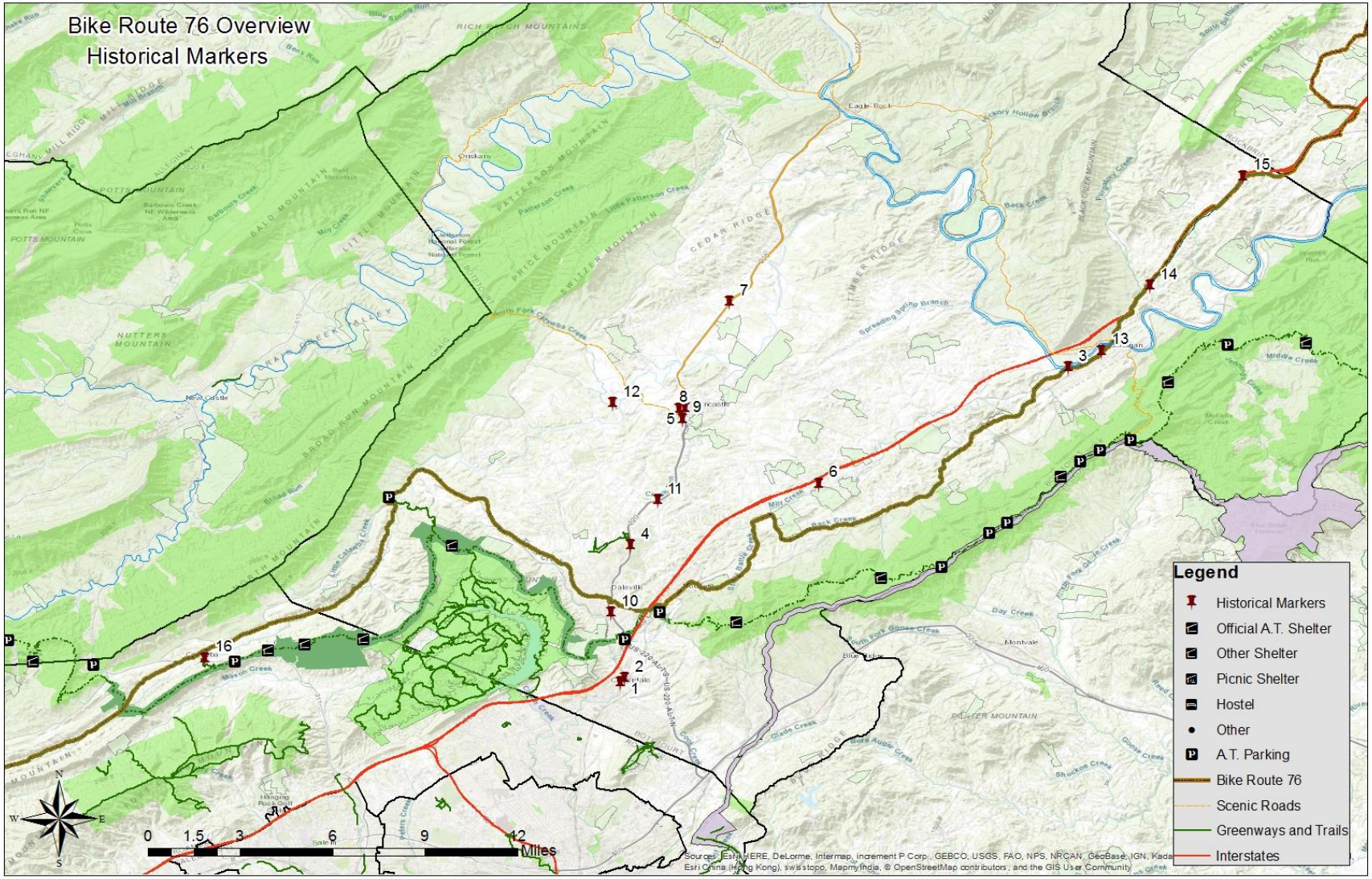

Figure 12: Historical Markers, VDHR, VDOT

Table 7: Historical Markers, VDOT

Historical Markers

Id	Name	Location	Locality
1	Old Carolina Road	US 11 and Read Mountain Rd.	Botetourt County
2	Cloverdale Furnace	US 11 and Gibson	Botetourt County
3	Looney's Ferry	US 11 Buchanan	Town of Buchanan
4	Greenfield	US 220 near Greenfield Center	Botetourt County
5	Botetourt County Courthouse Fire	Fincastle	Town of Fincastle
6	Coming of the Railroad	US 11	Botetourt County
7	Roanoke Valley Baptist Association	US 220 at Mary Alice/681	Botetourt County
8	Fincastle	US 220 at Fincastle	Town of Fincastle
9	Santillane	US 220 Fincastle	Botetourt County
10	Daleville College	US 220 at Tinker Mill Rd.	Botetourt County
11	Fort William	US 220 at Trinity	Botetourt County
12	Breckinridge Mill	Breckinridge Mill Rd at Grove Hill Rd.	Botetourt County
13	Buchanan	Main St (US 11) near Washington	Botetourt County
14	Cartsmill Gap	Arcadia Rd at I-81	Town of Buchanan
15	Audley Pauls Fort	US 11 at Reid Holler	Botetourt County
16	Catawba Sanatorium	Rte. 311, near Rte. 779, at Catawba.	Roanoke County

Table 8: Additional Historic Resources, VDHR

Historic Resource	Locality	Historic Register
Catawba Furnace	Botetourt	Virginia Landmarks Register
Anderson-Doosing-McDonald House (Doosing-McNeil Farm)	Roanoke	Virginia Landmarks Register / National Register
Johnsville Old German Baptist Meetinghouse	Roanoke	Virginia Landmarks Register / National Register
Wilson Warehouse	Botetourt-Buchanan	Virginia Landmarks Register / National Register
Looney Mill Creek Site	Botetourt	Virginia Landmarks Register / National Register
Thomas D. Kinzie House	Botetourt	Virginia Landmarks Register / National Register
Nininger's Mill	Botetourt	Botetourt Comprehensive Plan
Buchanan Historic District	Botetourt-Buchanan	Virginia Landmarks Register / National Register

Rockbridge County to Town of Buchanan

The study area begins at the border of Rockbridge County and Botetourt County. This section of the study area begins at Route 11, moves onto Overpass Road, continues onto Frontage Road into the Town of Buchanan, and then continues down Route 11 until the turn onto Lithia Road just past the Town of Buchanan's southern edge. The length of this section is approximately 10 miles.

Hazards

Hazards of note on this section are limited. Per Tim Miller, the two elements of note on this section are the increased road noise, and an increase in traffic in the last mile before the turn onto Lithia Road. The increased road noise in this section is a product of paralleling Interstate 81.

Points of Interest

There are several VDOT historical markers on this stretch of the route. Many of the historical markers are localized within the Town of Buchanan.

- Number 15: Audley Paul's Fort
- Number 14: Cartsmill Gap
- Number 13: Buchanan
- Number 3: Looney's Ferry

In addition there are VDHR recognized historic resource, Wilson Warehouse, now the Buchanan Community House, and the Looney Mill Creek Site.

Amenities

Key amenities for this stretch are centered within the Town of Buchanan. In addition to three restaurants, several small convenience and dollar stores, and bed and breakfasts, the town contains the below amenities.

Buchanan Post Office

The Buchanan Post Office provides a place to conduct mail pickup on long-distance trips.

Buchanan Library

The Buchanan Library has free wifi to allow cyclists to connect to the internet.

Twin River Outfitters

Twin River Outfitters primarily provides rentals of river adventure equipment with which to experience the James River Water Trail. They also own and operate the James River House, an establishment which offers both private rooms and bunks.

Town Park

The town park offers seasonally open public restrooms, as well as camping for the long-distance cyclist.

Blue Ridge Parkway Connection

A connection to the Blue Ridge Parkway can be made through the Town of Buchanan via Parkway Drive (43). More information about this spur is available in Appendix B.

Lithia Road to Town of Troutville

Continuing from the turn onto Lithia Road, the next subsection follows Lithia Road, Nace Road, U.S. Route 11 (Lee Highway), and Stoney Battery, to end in the Town of Troutville. This section is approximately 18.5 miles.

Hazards

Hazards of note on this section are minor, as this is one of the more rural areas of the study with well-maintained roads. However, there are some places of note to cyclists. Lithia Road can flood in places with extreme rains. In addition, there are five railroad crossings that can catch the wheels of a bicycle, though they are all flat and well-maintained. Cyclists coming either direction may notice sharp, unmarked turns which could be confusing for navigation and are not clearly signed to indicate in which direction the cyclist should continue. There is a sharp, downhill curve under the train trestle on Nace Road, about half a mile from the turn onto Route 11 if coming back towards of which Buchanan cyclists should be aware.

Points of Interest

There are no historical markers along this section of the route.

Woodpecker Ridge Bird Sanctuary

This is a privately owned property which contains trails for bird watching and is under conservation easement as a bird sanctuary. Cyclists and other persons visiting this property should be respectful of the owners.

Amenities

Notable along this corridor are the below amenities.

Fincastle Vineyard & Winery

This winery is located off of Lithia Road. There are often concerts and other special events here on the weekends during the summer.

Camp Bethel

Camp Bethel offers overnight accommodations with a prior reservation.

Greenwood Restaurant

This restaurant is located on Route 11, and takes cash only.

Troutville

The town of Troutville contains several amenities which are listed below.

Pomegranate

A fine dining restaurant with good ratings. This is a good place to stop for cyclists looking for a culinary adventure, though it is accordingly expensive.

Troutville Grocery and Goods

This is a good location for cyclists to stop to stock up on necessary food items.

Troutville Town Park

Troutville Town Park offers camping to cyclists and through-hikers on the Appalachian Trail.

Troutville Post Office

Another stop which cyclists can use to for mail pick-up on long trips.

Town of Troutville to Roanoke Cement

Leaving the Town of Troutville, the cyclist continues into the next subsection, turning off of Route 11 onto Valley Road (779), which crosses under Interstate 81 and continues to a junction with U.S. Route 220. After making the notable crossing of U.S. 220, the route continues onto Catawba Road (779) until reaching Roanoke Cement, owned by Titan Industries. This stretch is approximately 9 miles.

Hazards

Major hazards on this subsection include the crossing of U.S. 220, a multi-lane highway with high traffic volume during peak hours, and the truck traffic generated by Titan Industries on Catawba Road. This road is a narrow, two-lane road which shares many competing modes of traffic, including farm vehicles, cars, and cement trucks. While traffic volume is not as high as on U.S. 220, it can be intimidating for some cyclists.

Points of Interest

VDOT Markers of interest include the Daleville College, which is not directly on USBR 76 but south on U.S. 220. Additional sites of interest include VDHR designated historical sites Nininger's Mill and the Thomas D. Kinzie House.

Amenities

Amenities along this stretch include the below.

Flying Mouse Brewery

This is a small, locally owned brewery which caters specifically to outdoor adventurers of all stripes.

Catawba Corner

This short strip of stores contains a Subway and a Papa John's, for those needing a quick meal and is at the junction of U.S. 220 and Catawba Road (779).

SPOTLIGHT: DALEVILLE

Daleville is RVTPO Study Area, and is characterized by dense commercial development. There are numerous restaurants and businesses which may appeal to cyclists should they choose to leave the route and continue north or south on U.S. 220. These include businesses at Botetourt Commons to the south, including an outfitter, grocery store, an urgent care location, and several restaurants; as well as at Daleville Town Center to the north, which contains a taproom and other restaurants. Daleville Town Center will eventually connect to the Daleville Greenway.

Roanoke Cement to 311 Junction

Passing Roanoke Cement/Titan Industries, the cyclist continues on Catawba Road (779), follows it onto Catawba Creek Road, and then reaches the junction with Catawba Valley Road (311). This stretch is approximately 10 miles.

Hazards

There are numerous hazards on this section, though it is predominantly rural in nature. Most of those hazards are to do with the narrowness of the roadway and the patchy paving on this stretch, especially on Catawba Creek Road. There can also be limited visibility in stretches, as the road is curvy and narrow. Truck traffic from Roanoke Cement, while less frequent, is still present near that location.

Points of Interest

There is a VDOT Historical Marker at the entrance of Catawba Hospital, which was previously known as Catawba Sanatorium (number 16 on the Historical Markers map). Catawba Hospital does not have emergency services.

VT Catawba Sustainability Center

This is a farm owned by Virginia Tech which works to educate local farmers and to experiment with and demonstrate sustainable growing practices. It is directly adjacent to the Catawba Community Center, discussed further below.

Amenities

Andy Layne Trailhead

This trail leads to the Appalachian Trail and the popular peak of Tinker Cliffs, part of the Triple Crown.

Catawba Community Center

Roanoke County owns and operates this property. There is a bathroom on the property, and Roanoke County is working to expand the parking and bathroom facilities. This is the future trailhead of a greenway connection to McAfee's Knob, a part of the Triple Crown. It also hosts the Catawba Farmer's Market on Thursdays from 3-6pm, May through October.

Catawba Post Office

This post office sits at the Route 311 junction, and can be used for mail pick-up.

SPOTLIGHT: 311 JUNCTION

If a cyclist is interested in visiting more of the Roanoke Valley, they may turn south at the Rt. 311 Junction. This route can connect cyclists to Just the Right Gear. This road will also take cyclists to the City of Salem and the 311 Park and Ride. More information about this spur route is available in **Appendix A**.

311 Junction to Montgomery County

The last stretch of the route within the study area continues along Catawba Valley Road (311), before turning onto Blacksburg Road and following this road to the Montgomery County line. This stretch is approximately 10 miles.

Hazards

This area of the route is predominantly rural. Hazards include the high speeds on Catawba Valley Road, which has narrow or nonexistent shoulders. They also include the unguarded left-hand turn across the same rapidly moving traffic to reach Blacksburg Road. Once on Blacksburg Road, hazards are relatively limited, but cyclists should watch for water on the roads in places following heavy rains. In addition, weekend traffic on Blacksburg Road can be higher than expected.

Points of Interest

There are two VDHR-recognized historical sites on this route. These are the Johnsville Meetinghouse and the Doosing-McNeil Farm.

Amenities

There are two notable amenities on this section of the route, listed below.

Homeplace Restaurant

This restaurant serves copious amounts of home-cooked southern food in an idyllic setting.

Parking Lot

There is a gravel parking lot for cyclists wishing to do short day-trips or shuttle at the junction of Blacksburg Road and Route 311.

Survey Responses

An online survey was created to target perception of needed improvements on this stretch of USBR 76. Survey responses were limited, with seven respondents providing information. All respondents lived locally. Reponses from the survey are available in Appendix A.

Suggested improvements included:

- More USBR 76 signage
- More Share the Road signage
- Paved shoulders/widened shoulders
- Better paved surface
- Striped or wider lanes
- Reduced speed limits

Respondents were asked to choose which of these improvements would be better applied to which section of the study area.

While the number was responses was too small to gain consensus, at least four of the seven respondents identified the following improvements as important:

- Paved shoulders/widened shoulders in the Roanoke Cement to 311 junction subsection (5 responses); and in the 311 junction to Montgomery County subsection;
- More Share the Road signage in the Troutville to Roanoke Cement subsection and the Roanoke Cement to 311 junction subsection.

Additionally, at least three of the seven identified other improvements of:

- More Share the Road signage from Buchanan to Troutville and from the 311 junction to Montgomery County;
- Striped or wider lanes from Troutville to Roanoke Cement.

Desire for the majority of improvements was centered around the two section to either side of Roanoke Cement.

In terms of amenities, the focus of Question 3, bathrooms and a phone app received the most interest, followed by convenience stores. Additionally, a recommendation was made regarding a routing kiosk to access downtown Roanoke and the greater Roanoke Valley. This suggestion could have positive benefits for the economic impact of USBR 76 in the region.

Recommendations

USBR 76 likely has a positive impact on the region's economy, fueled primarily by bicycle tourism, though further studies are needed. Most of the benefits of this route are currently focused in Botetourt County and the Town of Buchanan, as there are more opportunities for a traveling cyclist to find food or lodging available.

While there is no data on the ratio of local cyclists from the surrounding area to cyclists traveling from further away to visit the Roanoke Valley – Alleghany Region, it is fair to assume that improvements to the corridor will appeal to both groups. Better connections to the Roanoke Valley may additionally encourage more local cyclists to travel to USBR 76 and the communities surrounding it.

Recommendations are grouped below.

Safety

- **Install Share the Road and related safety signage along the entire corridor**. Share the Road signs are a good way of informing drivers about the presence of cyclists on the road, and are more visible to drivers than USBR 76 signage.
- **Improve paved shoulders to provide shelter for cyclists.** A wide paved shoulder provides a safe area for cyclists to shelter should they need to leave the vehicle travel lane. This improvement is especially necessary in the areas surrounding Roanoke Cement and continuing to the Montgomery County line.
- **Better stripe or widen lanes as needed between Troutville and Roanoke Cement**. While paved shoulders are an ideal accommodation for rural bikeways, better striping and widening of lanes would be a helpful safety improvement throughout the corridor. The area from Troutville to Roanoke Cement is especially in need of additional lane width.
- **Improve the crossing of U.S. 220**. One of the most hazardous stretches of USBR 76 within the study area is the brief stretch along U.S. 220. The intersection of USBR 76 and U.S. 220 is characterized by a sharp right turn onto U.S. 220 followed by a near-immediate left turn at a light onto Catawba Road. To make the left turn, a cyclist must cross two lanes of traffic moving at posted speeds of up to 45 mph. Further study of this intersection is needed, and possible improvements could include increased warning signage for cars, better wayfinding signage for cyclists, widened shoulders on the left-hand side of U.S. 220 to allow for cyclists to shelter from traffic, and striping which could create a shelter space for cyclists within the turn lane.

Wayfinding

- **Improve wayfinding and directional signage along USBR 76**. While much of the corridor is navigable for a cyclist, wayfinding signage can also serve to bring cyclists into areas where amenities might be available. One way to do this is to create a kiosk at a convenient stopping location, such as the Town of Buchanan, which could provide information in how to reach the various communities of the Roanoke Valley and what friendly infrastructure may exist further along the trail.
- **Work with area agencies such as Roanoke Outside and Visit Virginia's Blue Ridge**. Advertising and access to information are important aspects of leveraging tourism dollars. Partnerships with these agencies could help to inform area and visiting cyclists of opportunities along the USBR 76 corridor.

- **Improve alternate access to area communities.** The Roanoke Valley and downtown Roanoke, as well as other communities, may be key draws for cyclists. Alternate route information is available in Appendix B informing access to the more urbanized areas of the Roanoke Valley for cyclist travelers. It will also be important to link future projects such as Daleville and Tinker Creek Greenways to the USBR 76 corridor, as this may provide for access to several important locations such as Botetourt Commons, communities in northern Roanoke County, and, eventually, an alternative route to downtown Roanoke.

Other

- **Improve USBR 76 signage at the 311 junction**. The 311 junction is characterized by a nontraditional intersection which requires two successive turns for the cyclist, and may be confusing if not familiar with the route.
- **Continue with plans to provide bathrooms at the Catawba Community Center**. Bathrooms are a key amenity for cyclists, and were the top-rated response in the survey.
- **Create a bicycle app.** Smartphone applications remain a positive way for people to easily navigate their surroundings. A regional or multi-region application that would incorporate the USBR 76 corridor amenities may be a powerful way of driving tourism and informing users.
- **Explore shuttle services for cyclists.** Local cyclists may be more likely to access USBR 76 if they knew they could park at one end and be ferried back to their car. Through cyclists may prefer a shuttle services for access to the Cities of Roanoke or Salem. Exploring the viability of a shuttle program or transit options to connect to the corridor could be a valuable way to encourage use of this route.

Sources and Related Works

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U.S. Bike Route 76: 2014 New River Valley Report, New River Valley Planning District Commission, Accessed June 2017, https://issuu.com/nrvregionalcommission/docs/nrv_br76_report.

U.S. Bicycle Route Corridor Plan, Adventure Cycling Association, November 2005, Accessed June 2017, http://atfiles.org/files/pdf/usbrcorridorplan.pdf.

"U.S. Bicycle Route System," Adventure Cycling Association, Accessed June 2017, http://www.adventurecycling.org/routes-and-maps/us-bicycle-route-system/.

Links to Restaurants and Other Amenities

Fincastle Winery, Botetourt County - http://www.fincastlewine.com/.

Flying Mouse Brewery, Botetourt County - http://flyingmousebrewery.com/.

The Homeplace Restaurant, Roanoke County - https://www.facebook.com/The-Homeplace-Restaurant-115564841808913/.

Twin River Outfitters, Town of Buchanan - https://canoevirginia.net/.

Appendix A: Survey and Survey Responses

The Survey Questions are included below, followed by answers received.

Questions

1. How often do you bicycle the Bike Route 76 corridor in Botetourt County and/or Roanoke County?

- ◯ Occasionally
- ◯ Weekly
- ◯ Monthly
- ◯ Yearly
- ◯ Never

2. What improvements do you feel are needed on the following sections?

	Rockbridge/Botetourt County line to Town of Buchanan	Town of Buchanan to Town of Troutville	Town of Troutville to Roanoke Cement	Roanoke Cement to Route 311	Route 311 to Roanoke/Montgomery County line
More Bike Route 76 signage	☐	☐	☐	☐	☐
More Share the Road signage	☐	☐	☐	☐	☐
Paved shoulders/widened shoulders	☐	☐	☐	☐	☐
Better paved surface	☐	☐	☐	☐	☐
Striped or wider lanes	☐	☐	☐	☐	☐
Reduced speed limits	☐	☐	☐	☐	☐

Do you have any additional comments about recommended improvements?

3. What amenities would cyclists be likely to use on this route?

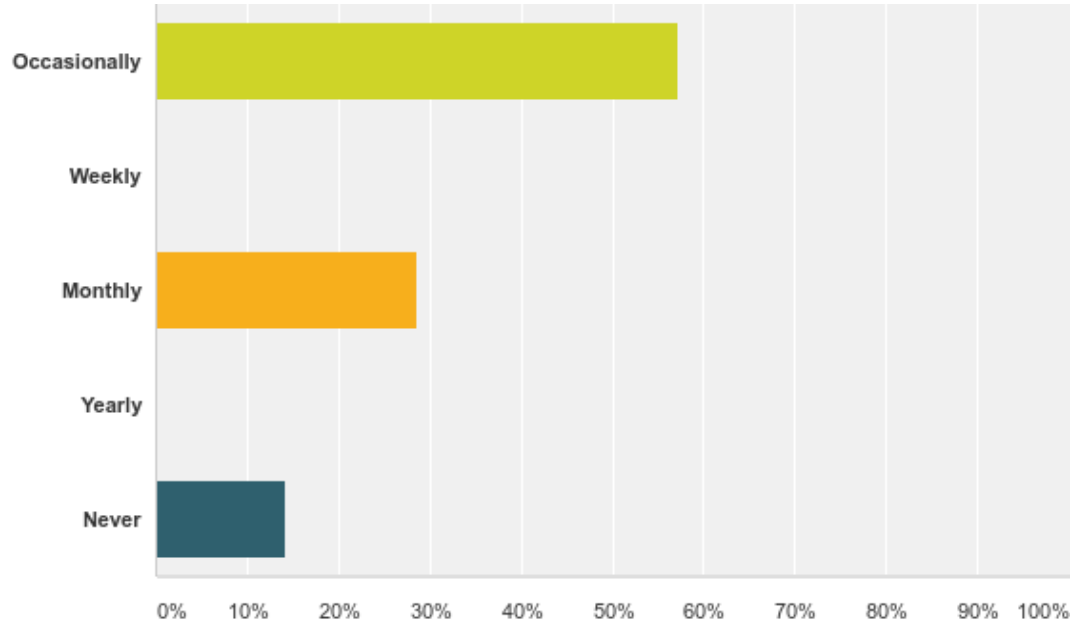
- [ ] Bathrooms
- [ ] Convenience stores
- [ ] Overnight accomodations
- [ ] Restaurants
- [ ] Bicycle shops
- [ ] Bicycle fixit stations
- [ ] Bicycle racks
- [ ] Bike Route 76 guide phone app
- [ ] Other (please specify)

4. Do you have any additional comments regarding Bike Route 76 in Roanoke and Botetourt Counties? (Open-ended)

5. Please provide your zip code to aid in our analysis. (Open-ended)

Answers

1. How often do you bicycle the Bike Route 76 corridor in Botetourt County and/or Roanoke County?



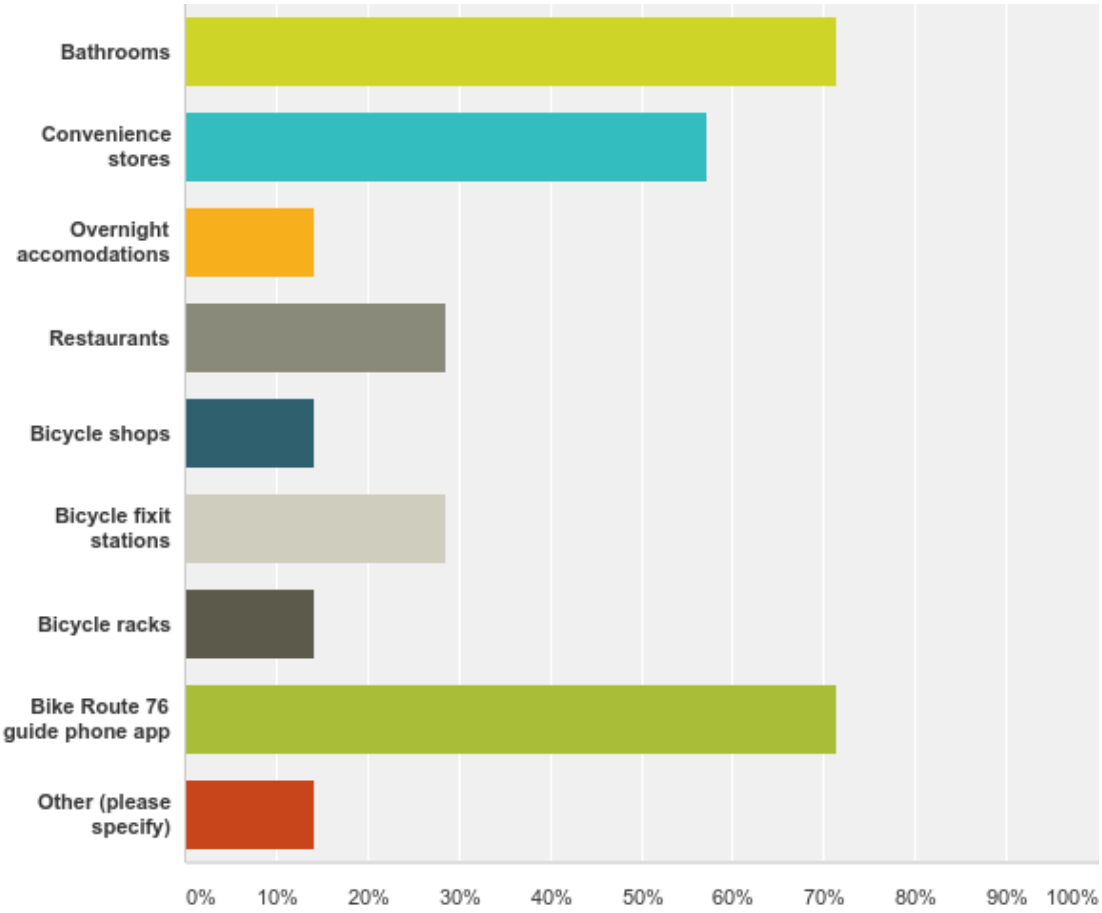
2. What improvements do you feel are needed on the following sections?

	Rockbridge/Botetourt County line to Town of Buchanan	Town of Buchanan to Town of Troutville	Town of Troutville to Roanoke Cement	Roanoke Cement to Route 311	Route 311 to Roanoke/Montgomery County line	Total Respondents
More Bike Route 76 signage	**25.00%** 1	**50.00%** 2	**50.00%** 2	**25.00%** 1	**25.00%** 1	4
More Share the Road signage	**33.33%** 2	**50.00%** 3	**66.67%** 4	**66.67%** 4	**50.00%** 3	6
Paved shoulders/widened shoulders	**33.33%** 2	**33.33%** 2	**33.33%** 2	**83.33%** 5	**66.67%** 4	6
Better paved surface	**25.00%** 1	**25.00%** 1	**50.00%** 2	**25.00%** 1	**25.00%** 1	4
Striped or wider lanes	**25.00%** 1	**50.00%** 2	**75.00%** 3	**50.00%** 2	**50.00%** 2	4
Reduced speed limits	**0.00%** 0	**50.00%** 1	**100.00%** 2	**50.00%** 1	**50.00%** 1	2

3. What amenities would cyclists be likely to use on this route?

Answer Choices	Responses	
Bathrooms	**71.43%**	5
Convenience stores	**57.14%**	4
Overnight accomodations	**14.29%**	1
Restaurants	**28.57%**	2
Bicycle shops	**14.29%**	1
Bicycle fixit stations	**28.57%**	2
Bicycle racks	**14.29%**	1
Bike Route 76 guide phone app	**71.43%**	5
Other (please specify)	**14.29%**	1
Total Respondents: 7		

Other: Routing kiosk to downtown Roanoke with western connections to rejoin Route 76



4. Do you have any additional comments regarding Bike Route 76 in Roanoke and Botetourt Counties?

Nice to have this in our area.

5. Please provide your zip code to aid in our analysis.

- 24014
- 24014
- 24012
- 24018
- 24964 (*believed to be 24064)
- 24184
- 24070

Appendix B: Spurs and Alternate Routes

This appendix shows several potential spur routes that could connect riders to the broader Roanoke Valley.

Catawba Valley Road (311) (west to east) – Roanoke County, Salem, City of Roanoke

- From Blacksburg Road (785) turn left on Catawba Valley Road (311). Continue south climbing over Catawba Mountain for x miles
- Turn right on Old Catawba Road
- Continue on Old Catawba Road, descending Catawba Mountain, to Bradshaw (624)
- Turn left onto Bradshaw Road
- Continue to Catawba Valley Road (311)
- Turn right onto Catawba Valley Road
- Continue to intersection of North Electric Road (419)
- Turn right on Thompson Memorial (311), then immediate left onto Kessler Mill Road
- Continue on Kessler Mill Road (or Hanging Rock Battlefield Trail Greenway) to Main St. approximately one 0.75 miles east of downtown City of Salem
- Turn Right onto Main Street to continue to downtown Salem, turn left onto Main Street to continue to the City of Roanoke
- Continue on Main Street (460, 11) for x miles to Melrose Avenue
- Continue straight on Melrose to Madison Avenue
- Continue on Madison Avenue to 8th Street NW
- Turn right onto 8th Street and continue for x miles to Harrison Avenue
- Turn left onto Harrison Avenue and continue for x mile to Gainsboro Road and downtown City of Roanoke
- Turn right onto Gainsboro Road and continue to downtown

Blue Ridge Parkway from Downtown Roanoke to Town of Buchanan (west to east)

- From downtown Roanoke City access the Blue Ridge Parkway (Route 24, Mill Mountain)
- Travel North to mile marker
- Parkway Drive (Route 43) to USBR 76 (Main Street / US 11) in the Town of Buchanan
- Continue east on USBR 76

US 11/460 (west to east) – Christiansburg to Roanoke Valley

- From Depot St. turn right onto Pepper St.
- Continue on Pepper St. to Main St.
- Turn right on Main St., then immediate right onto Roanoke St (US 11)
- Continue on Roanoke St (US 11) into Roanoke Valley

Appendix C: VDOT Roadway Functional Classification System

Rural Functional Classification System

Rural principal arterial

- Serves corridor movements of substantial statewide or interstate travel
- Serves all urban areas of 50,000 and over population and a majority of those over 25,000
- Provide an integrated network without stub connections
- Rural minor arterial
- Link cities and large towns (and other generators, such as major resorts)
- Spaced at such intervals so that all developed areas of the state are within a reasonable distance of an arterial highway
- Provide service to corridors with trip lengths and travel density greater than those served by rural collectors or local systems
- Design should be expected to provide for relatively high overall speeds, with minimum interference to through movement

Rural major collector

- Provide service to any county seat not on an arterial system, to larger towns not directly served by higher systems
- Link the above to nearby larger towns or routes of higher classification
- Serve the more important intra-county travel corridors
- Rural minor collector
- Spaced at intervals, consistent with population density
- Collect traffic from local roads and bring all developed areas within a reasonable distance of a collector road
- Provide service to the remaining smaller communities
- Link local traffic generators with their rural hinterland

Rural local

- Serves primarily to provide direct access to adjacent land
- Provide service to travel over relatively short distances as compared to collectors or other higher systems
- All facilities not on one of the higher systems

Urban Functional Classification System

Urban principal arterial

- Serves the major centers of activity of a metropolitan area
- Highest traffic volume corridors
- Roads serving the longest trip desires

- Carry a high proportion of the total urban area travel on a minimum of mileage
- Carry significant amounts of intra-area travel

Urban minor arterial

- Interconnect with and augment the urban principal arterial system and provide service to trips of moderate length at a lower level of travel mobility than principal arterials
- Include all arterials not classified as a principal and contains facilities that place more emphasis on land access, and offer a lower level of traffic mobility
- Urban collector
- Provides land access and traffic circulation within residential neighborhoods, commercial, and industrial areas
- Distributes trips from the arterials through these areas to their ultimate destination
- Collects traffic from local streets and channels it to the arterial system

Urban local

- All facilities not on one of the higher systems
- Serves primarily as direct access to abutting land
- Serves as access to the higher order systems
- Through traffic movement is deliberately discouraged

Source: http://www.virginiadot.org/projects/fxn_class/definitions.asp

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Appendix E: VDOT Repaving Schedules

VDOT Repaving Schedule, Salem Residency

BOTETOURT COUNTY

On Bikeway Plan?	Construction Year	Route	ROUTE_NAME	NLENGTH	BEGINLANDMARK	ENDLANDMARK
RVTPO	2020	11	R-VA US00011NB	0.273	BOTETOURT COUNTY/ROANOKE COUNTY LINE	0.129 MI. N. RTE. 822
RVTPO	2020	11	R-VA US00011NB	0.267	0.129 MI. N. RTE. 822	S. END TINKER CREEK BR. (SN = 1013)
RVTPO	2020	11	R-VA US00011SB	0.273	BOTETOURT COUNTY/ROANOKE COUNTY LINE	0.129 MI. N. RTE. 822
	2020	220	R-VA US00220NB	2.054	0.194 MI. N. SINT. RTE. 655	0.019 MI. N. RTE. 662
Rural	2021	11	R-VA US00011NB	0.610	Lee Hwy; Darby Rd; Rt. 721N/S	0.61 Mi. North NINT Rte. 721/ Darby Rd / Lee Hwy.
Rural	2021	11	R-VA US00011NB	0.610	Lee Hwy; Darby Rd; NINT Rt. 721	0.04 Mi. South Rte. 796/ Gravel Hill Road

ROANOKE COUNTY

On Bikeway Plan?	Construction Year	Route	ROUTE_NAME	NLENGTH	BEGINLANDMARK	ENDLANDMARK	NLANE	PVMT
No	2020	460	R-VA US00460WB	0.370	0.03 MI. W. 220ALT	BOTETOURT COUNTY LINE	2	BIT
RVTPO	2021	115	R-VA SR00115NB	0.179	RTE. 11/WILLIAMSON RD	0.07 MI. N. RTE. 1901/END DIVIDED	2	BIT
RVTPO	2021	115	R-VA SR00115NB	0.692	0.07 MI. N. RTE. 1901/END DIVIDED	RAMP TO & FROM I-81NB	4	BIT
RVTPO	2021	115	R-VA SR00115NB	0.048	RAMP TO & FROM I-81NB	Ramp to & from I-81SB	2	BIT
RVTPO	2021	115	R-VA SR00115SB	0.692	0.07 MI. N. RTE. 1901/BEGIN DIVIDED	RAMP TO & FROM I-81NB	4	BIT
RVTPO	2021	115	R-VA SR00115SB	0.318	RTE. 11/WILLIAMSON RD	0.07 MI. N. RTE. 1901/BEGIN DIVIDED	2	BIT
No	2021	220	R-VA US00220NB	1.133	0.40 Mi. North Rte. 668	0.17 Mi. North Rte. 679/BUCK MOUNTAIN ROAD	2	BIT

CRAIG COUNTY

On Bikeway Plan?	Construction Year	Route	ROUTE_NAME	NLENGTH	BEGINLANDMARK	ENDLANDMARK	NLANE	PVMT
Rural Update	2021	606	R-VA022SC00606EB	3.27	RTE. 615	0.74 MI. E. RTE. 612	2	CM-BIT
Rural	2021	311	R-VA SR00311NB	2.27	N. END POTTS CREEK BRIDGE	2.06 MI. N. SR-18	2	CM-BIT
Rural	2021	311	R-VA SR00311NB	1.33	2.06 MI. N. SR-18	WEST VIRGINIA STATE LINE	2	CM-BIT
No	2021	610	R-VA022SC00610NB	0.2	INTERSECTION RTE 615	INTERSECTION RTE 611	2	CM-NPM
No	2021	611	R-VA022SC00611NB	2.59	INTERSECTION RTE 615	INTERSECTION RTE 614	2	CM-NPM
No	2021	614	R-VA022SC00614EB	2.38	INTERSECTION RTE 615	BEGIN GRAVEL SECTION	2	CM-NPM
No	2021	617	R-VA022SC00617NB	9.65	INTERSECTION RTE 611	ALLEGHANY CO LINE	2	CM-NPM
No	2021	643	R-VA022SC00643NB	0.3	BEGIN GRAVEL PORTION	INTERSECTION RTE 615	2	CM-NPM
No	2021	647	R-VA022SC00647EB	0.5	INTERSECTION RTE 606	ESM	2	CM-NPM
No	2021	676	R-VA022SC00676EB	0.2	INTERSECTION RTE 615	ESM	2	CM-NPM
No	2021	682	R-VA022SC00682EB	0.13	INTERSECTION RTE 615	ESM	2	CM-NPM
No	2021	689	R-VA022SC00689NB	0.46	INTERSECTION RTE 615	INTERSECTION RTE 694	2	CM-NPM

Appendix F: Clifton Forge Bicycle and Pedestrian Plan

Town of Clifton Forge

Bicycle & Pedestrian Plan

2017

Acknowledgements

This Bicycle and Pedestrian Plan for the Town of Clifton Forge was prepared with contributions of support and ideas from town staff, the Parks & Trails Committee, Planning Commission, Town Council, and the citizens of Clifton Forge.

Planning Commission

Dr. Ronald Goings, Chairperson

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Ione Callendar

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Town Council

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Plan prepared by

Disclaimer

This study has been prepared in cooperation with the Virginia Department of Transportation and the Town of Clifton Forge. The contents of this study reflect informational input from town officials and the general public and analysis and recommendations prepared by the Staunton District Planning Office of the Virginia Department of Transportation. The contents do not necessarily reflect the official views or policies of the Federal Highway Administration, Federal Transit Administration, the Virginia Department of Transportation, or the Virginia Department of Rail and Public Transportation. This study is not a legal document, and does not constitute a standard, specification, or regulation. Any inclusion of manufacturer names, trade names, or trademarks is for identification purposes only and is not to be considered an endorsement. Although much care was taken to ensure the accuracy of information presented in this document, the Virginia Department of Transportation Staunton District Planning Office does not guarantee the accuracy of this information.

Acceptance of this document as evidence of fulfillment of the objectives of this planning study does not constitute endorsement / approval of the need for any recommended improvements, nor does it constitute approval of their location and design or a commitment to fund any such improvements. Additional project level environmental impact assessments and/or studies of alternatives may be necessary.

Non-Discriminatory Statement

The Virginia Department of Transportation fully complies with Title VI of the Civil Rights Act of 1964 and related statues and regulations in all programs and activities. For more information, see http://www.virginiadot.org/business/bu-civil-rights-title6.asp. Communication material in alternative formats can be arranged given sufficient notice.

Table of Contents

I. Introduction

Plan Purpose

The *Bicycle and Pedestrian Plan* sets forth a framework for the enhancement of bicycling and walking accommodations and related programs in the Town of Clifton Forge, VA for the purpose of increasing opportunities for active transportation and physical activity for residents and tourists, facilitating safe non-motorized commutes, and improving the overall quality of life for town residents.

Background

The impetus behind this planning effort stems from goal setting at the local level in the *Town of Clifton Forge Comprehensive Plan* (2012) and regionally in both the *Alleghany Highlands of Virginia Tourism Strategic Plan* (2014) and *Downtown Covington and Clifton Forge Visioning & Strategic Plan* (2011). The *Comprehensive Plan* summarizes the town's perspective on bicycling:

"Clifton Forge has much potential to be a bicycle-friendly town, without extensive on-street accommodations. It is compact, with many key destinations within easy biking/walking distance; traffic pattern and speeds in areas of the town (i.e., central business district) allow for safe bicycling conditions; neighborhood streets provide areas for safe bicycling. The provision of ancillary facilities, such as bike racks, signage and pavements markings could be a cost effective method of improving bicycling conditions and promote bicycling in the town."

The *Comprehensive Plan* sets forth recommendations related to the expansion of bicycling and walking facilities, such as bike racks, sidewalks, bike paths, and trails for exercise and recreation. The Plan also incorporates goal statements from regional planning documents endorsed by Town Council and Planning Commission. For example, several goal statements in the *Alleghany Highlands of Virginia Tourism Strategic Plan* (2012) are identified in the *Comprehensive Plan* as having an impact on the town:

- Trail connection needed between Clifton Forge and Douthat State Park – Feasibility determination made by January 2017 (Chamber, DCR)
- Bike lane plan needed to connect town with assets
- Transportation plan to encourage various forms of transportation/livability
- Need bicycle rental locations

These same goals are also present in the most recent 2014 update to the *Alleghany Highlands of Virginia Tourism Strategic Plan*, which is indicative of the region's interest in being an attractive destination for outdoor recreation. The *Downtown Covington & Clifton Forge Visioning & Strategic Plan* (2011) echoes the regional goal of supporting bike paths and recreational trails, focusing the identified need to the downtown areas of the two localities.

To address these local and regional goals and meet public desire for improved bicycling and walking connectivity, the Town of Clifton Forge initiated the effort to develop this Bicycle & Pedestrian Plan.

Why Bicycle & Pedestrian Planning Matters

While walking and bicycling are the two most basic and low cost forms of transportation, facilities to support these modes have been overlooked in much of the United States since the popularity of the automobile exploded in the 1950s. In response to a commensurate increase in separation between residential and commercial land uses in the latter half of the 20th century, much of the nation's transportation infrastructure built during that time was designed to facilitate trips by car over longer distances and at higher speeds. While older urban centers such as downtown Clifton Forge have maintained a network of sidewalks constructed before this suburban shift occurred, the expansion of such non-motorized accommodations outside the downtown core is a relatively new concept in much of the country. Likewise, accommodations designed specifically for safe bicycle commuting did not enter the public consciousness at a national level until the turn of the century. While there are many theories to explain these recent ideological changes, American's views on walking and bicycling have undeniably become more favorable over the past twenty years. From 2000 to 2014, the national rate for commuting by bicycle increased by roughly 60%, a faster amount of growth than any other commute mode by a wide margin. During this period, the share of commuters walking to work flat lined after sharply decreasing each of the two preceding decades (U.S. Census Bureau, Decennial Census & American Community Survey). Though rates of walking and bicycling are still very low relative to automobile travel (0.6% for bicycling and 2.8% for walking - U.S. Census Bureau, ACS), planning for non-motorized transportation has become much more commonplace in recent years as a result of many factors, such as increased public demand, a desire to preserve finite roadway capacity by decreasing the number of trips made by car, and a recognition of the potential economic advantages to promoting walkable commercial areas and bicycle tourism.

Seated along the Jackson River in Alleghany County at the southern end of the scenic Shenandoah Valley, the Town of Clifton Forge is well positioned to capture the benefits of promoting bicycling and walking. The town of 3.1 square miles is bordered by the vast, undeveloped natural area of the George Washington National Forest and is within close reach of the many recreational opportunities offered by the Alleghany Highlands region. While Clifton Forge is small at a population of about 3,800 (U.S. Census Bureau, 2015 ACS estimate), it is within short driving distance of several population centers, including the Cities of Covington (11 miles), Lexington (31 miles), and Roanoke (48 miles), as well as two nationally known resorts, The Greenbrier (31 miles) and The Homestead (30 miles).

A recently completed study for Alleghany County's neighbors in the counties of Rockbridge, Augusta, Rockingham, and Shenandoah (inclusive of cities) found that the bicycle tourism industry in the Central Shenandoah Valley had a total economic impact of $13.6 million and supported 184 jobs in 2015 (CSPDC, *The Economic Impact of Bicycling in the Central Shenandoah Valley, 2016*). These findings represent a parallel for the Alleghany Highlands region and provide an understanding of what part of the estimated $133 billion per year U.S. bicycle recreation industry is captured in just one section of the Shenandoah Valley. The contribution of the overall active outdoor recreation industry in the U.S. is estimated to be $730 billion, capturing many other activities popular in the Alleghany Highlands, such

as hiking, camping, and paddling. (Outdoor Industry Foundation, *The Active Outdoor Recreation Economy: A $730 Billion Annual Contribution to the U.S. Economy*, 2006).

In addition to these potential economic benefits, bicycling and walking accommodations contribute toward a healthier, more livable community by providing alternative travel options to those without access to a vehicle and by increasing the attractiveness of outdoor recreation.

Vision Statement

The Town of Clifton Forge offers a network of public facilities and programs supportive of walking and bicycling, providing convenient non-motorized transportation and a natural extension of the vast outdoor recreational opportunities found in the beautiful Alleghany Highlands.

Goals

Goal 1 To expand and maintain a network of safe, well-connected walking and bicycling accommodations.

> ***Objective 1.1*** Ensure that maintenance efforts adequately address bicycle and pedestrian user accommodations.
>
> ***Objective 1.2*** Fill gaps in the on-street walking and bicycling network to provide convenient access between residential clusters and desirable destinations.
>
> ***Objective 1.3*** Ensure that the walking and bicycling network are supportive of all user ages and skill levels.
>
> ***Objective 1.4*** Provide recreational opportunities that take advantage of the scenic qualities of the Alleghany Highlands region.
>
> ***Objective 1.5*** Diversify funding opportunities for walking and bicycling accommodations.

Goal 2 To establish and foster programs and policies supportive of walking and bicycling.

> ***Objective 2.1*** Expand and continue town support of education and encouragement programs aimed towards bicycling, walking, active transportation, and outdoor physical activity.
>
> ***Objective 2.2*** Consider inclusion of walking and bicycling accommodations in all street improvement projects, maintenance efforts such as repaving, and other relevant public projects such as park renovations.
>
> ***Objective 2.3*** Revise the Code of Ordinances to facilitate implementation of the Clifton Forge Bicycle & Pedestrian Plan.
>
> ***Objective 2.4*** Ensure that local planning efforts reference and complement the Clifton Forge Bicycle & Pedestrian Plan.

Goal 3 To physically and logically connect walking and bicycling in Clifton Forge to its surrounding communities and outdoor recreational activities in the Alleghany Highlands region.

Objective 3.1 Ensure that regional and state planning efforts reference and complement the Clifton Forge Bicycle & Pedestrian Plan.

Objective 3.2 Promote local and regional tourism that highlights walking, bicycling, and outdoor recreation in Clifton Forge and the Alleghany Highlands region.

Objective 3.3 Engage in regional planning efforts that complement and expand upon the Clifton Forge Bicycle & Pedestrian Plan.

Planning Process

This planning process was initiated by the Town of Clifton Forge with the endorsement of the Town Council and Planning Commission. Town staff approached the Virginia Department of Transportation (VDOT) Staunton District Planning office in March 2016 to request assistance with the gathering of public input and plan development. To kick off the effort, town and VDOT staff hosted a public input meeting on May 17, 2016 at the Clifton Forge Public Library. Those in attendance were asked to consider the current state of the town's bicycling and walking atmosphere and make recommendations as to how it might be improved. A conceptual set of walking and bicycling routes developed by member of the Clifton Forge Parks & Trails Initiative was shared to spur conversation. Maps were provided for markup and visualization of existing trails and sidewalks. Most comments were made directly on the maps, with verbal comments also being gathered by facilitators. Four individuals chose to complete the written comment sheet that was openly available. These responses are detailed below:

I. Please complete this statement, "A good bicycle & pedestrian network in Clifton Forge would allow me to…"
   - Exercise & enjoy the area
   - Run 6-10 miles without repeating myself every day

II. What bicycle and/or pedestrian projects and programs do you recommend and why?
   - Repair swing bridge to complete loop
   - Bike racks at Kroger and gas stations
   - Recreation maps
   - Loop routes through town

III. Other comments/suggestions:
   - Need sidewalk on Business 60/220 from Exxon to Kroger
   - Need a non-stop way of getting from downtown to The Heights near Linden Park
   - Connect Race Street to Rose Avenue
   - Connect Main St across A St bridge to Verge St

Following the meeting, the comment form was posted online, with the comment period remaining active until June 7, 2016. No responses were received during this period.

Maps were provided at the public meeting for markup by attendees

Comments made directly on the maps provided at the public meeting are summarized below:

- Widen shoulder on Route 60/Ridgeway St/Main St from downtown to Dabney S. Lancaster Community College
- New walking/mountain bike loop trail around Dabney S. Lancaster Community College campus
- New trail along south bank of Jackson River connecting Selma-Low Moor Rd in Selma to Frazier Hill Ln and Verge St in Clifton Forge
- Widen shoulder on Selma-Low Moor Rd from Selma to Low Moor
- Repair the swing bridge over Jackson River between downtown and Verge St
- New sidewalk on Route 60/Main St from Ingalls St in Clifton Forge to Longdale Furnace Rd in Cliftondale Park
- New trail along Route 220 to connect Route 60/Main St in Cliftondale Park to the south across the Jackson River bridge to Verge St in Clifton Forge
- New trail from Verge St in Clifton Forge to connect south to the community of Glen Wilton in Botetourt County via an abandoned road bed
- New trail parallel to I-64 and Route 60 to connect Lexington to Douthat State Park through Cliftondale Park
- New bike rack at:
    - Memorial Park, Linden Park, Matthews Park, Clifton Forge School of the Arts, Booker T. Washington Park, Kroger grocery store, and Route 60 Exxon (Cliftondale Park)

The recommendations presented in this plan incorporate comments from the public and synthesize relevant ideas from previous planning efforts, including:

- *Comprehensive Plan, Town of Clifton Forge* (2012)
- *Alleghany Highlands of Virginia Tourism Strategic Plan, Alleghany Highlands Chamber of Commerce and Tourism (2014)*
- *Smith Creek Corridor Action Plan, Town of Clifton Forge* (2013)
- *Downtown Covington and Clifton Forge Visioning & Strategic Plan, Alleghany Highlands Chamber of Commerce and Tourism* (2011)
- *2035 Rural Long Range Transportation Plan, Roanoke Valley Alleghany Regional Commission* (2011)
- *Regional Bicycle Suitability Study: Phase II, Roanoke Valley Alleghany Regional Commission* (2004)

This plan builds upon existing and proposed walking and bicycling facilities to identify gaps in connectivity and additional ways to expand opportunities for physical activity and non-motorized, active transportation in Clifton Forge. Short-term and long-term recommendations are provided, covering both infrastructure-related and program-related solutions.

A rough draft of the plan was presented to the Parks & Trails Committee in February 2017. Following incorporation of comments, a draft plan was submitted to the town in April 2017. A final draft was later presented to the Parks & Trails Committee in August 2017.

II. Existing Conditions

Overview

With its gridded street layout and compact land use pattern, Clifton Forge has a strong framework for walking and bicycling connectivity. These characteristics are particularly important given the challenging terrain that divides neighborhoods into interconnected tabletops at varying elevations. As seen in the existing bicycle & pedestrian network map, a robust sidewalk network around the town's core provides cohesion between downtown and its adjacent neighborhoods, making walking an easy option. Some of the more recently developed neighborhoods to the north and east of downtown lack sidewalks, but may be enhanced through off-street trail connections to nearby destinations. While Clifton Forge has no officially designated on-street bicycling facilities, such as bike lanes, 25 mph speed limits and relatively low traffic volumes contribute to favorable cycling conditions on most town streets.

In considering ancillary accommodations supportive of walking, Clifton Forge has done an admirable job in providing well placed and designed crosswalks on uncontrolled approaches in the downtown area. For example, the crosswalk across E Ridgeway Street at Loop Street is located where consistent pedestrian activity is expected, features restricted parking spaces to improve driver-pedestrian visibility, and incorporates in-street signage to supplement the marked crosswalk in physically highlighting the crosswalk location for drivers.

Crosswalk across E Ridgeway St at Loop St

Legend

- Sidewalk
- Paved Trail
- Unpaved Trail
- Wide Shoulders
- ADT Average Daily Traffic

Existing Bicycle & Pedestrian Network

Clifton Forge Bicycle & Pedestrian Plan

VDOT Virginia Department of Transportation

Pedestrian accommodations have also been taken into consideration at the town's five traffic signals, all of which are located in the downtown area. Each signalized intersection has multi-way marked crossings, though wear and tear has faded markings at many locations. Signalized intersections are important areas of focus for pedestrian safety since right-of-way designation may be clear for the driver using the signal indication, but less clear for pedestrians who may not know when it is safe to cross without separate pedestrian signals. At signals that do not operate on a fixed cycle, pedestrian signals are also important for ensuring that the right-of-way is held for the pedestrian in the absence of vehicle traffic on a minor approach actuated by vehicle detection.

With pedestrian signals only being provided at the intersection of E Ridgeway Street & Commercial Avenue, consideration could be given to whether accommodations would provide safety benefits at the other four signalized intersections.

Traffic signal with pedestrian signals at E Ridgeway St & Commercial Ave

Even a brief trip through town reveals past efforts in improving connectivity across steep terrain and waterways. In the example below, stairs on Ridgeway St connect to an unimproved, narrow trail leading up to Alleghany St over a 40-foot elevation change. Similar stairways can also be found on Pine St where walkways lead down to sidewalks paralleling the street at a lower elevation and also provide a public connection to Church St using an unimproved alley on A St.

Stairs connecting W Ridgeway St to Alleghany St

Stairs connecting Pine St to A St

Another interesting example of a historical connective facility can be found in the "swing bridge" over the Jackson River connecting residents on Verge St directly to the heart of downtown Clifton Forge, bypassing the longer route over the A St bridge. This bridge is owned by CSX railroad and was closed in recent years as a result of potential structural issues identified during an inspection.

CSX swing bridge over the Jackson River

Looking to current town planning efforts, significant expansions have been made to the off-street trail network in recent years, providing safer, more scenic, and direct connections for walking and bicycling when compared to on-street alternatives. Also notable in these recent projects is the implementation of a cohesive wayfinding sign theme, as seen in some of the examples below.

Hazel Run Trail extension to Richmond Avenue

Connects Booker T. Washington Park/Route 60 to Ingalls St and upper Jefferson St area

Fairmont Park Trail spur of the Hazel Run Trail

Connects Booker T. Washington Park/Route 60 to neighborhood surrounding Linden Park

Smith Creek Trail (first complete segment)

Connects Pine St downtown to Lowell St and Memorial Park area

In developing recommendations for this plan, opportunities for blending past and present infrastructure efforts will be explored to build a stronger overall walk-bike network.

Crash History

To evaluate where non-motorized safety issues may be present, a 5-year history of crashes involving pedestrians and bicyclists in Clifton Forge and within one mile of the town limits was gathered. From 2012 to 2016 there were 5 crashes involving pedestrians, each of which resulted in an injury and can be seen in the map below. No crashes involving a bicyclist were reported during this time period. Detailed reports were reviewed for the 5 pedestrian crashes to investigate the potential for improvements that may prevent future crashes of the same type. The results from this review are summarized below:

2012 – 2013

No reported crashes involving pedestrians or bicyclists.

2014

February – A pedestrian stepped out to cross Rt. 220B/Rt. 60B near Selma-Low Moor Rd during a severe winter storm and was struck by a vehicle. The driver and the pedestrian stated that they didn't see each other due to limited visibility during the storm.

October – Main St/Jefferson Ave – Pedestrian was struck by a vehicle turning right from Main St while crossing Jefferson Ave just north of the intersection.

2015

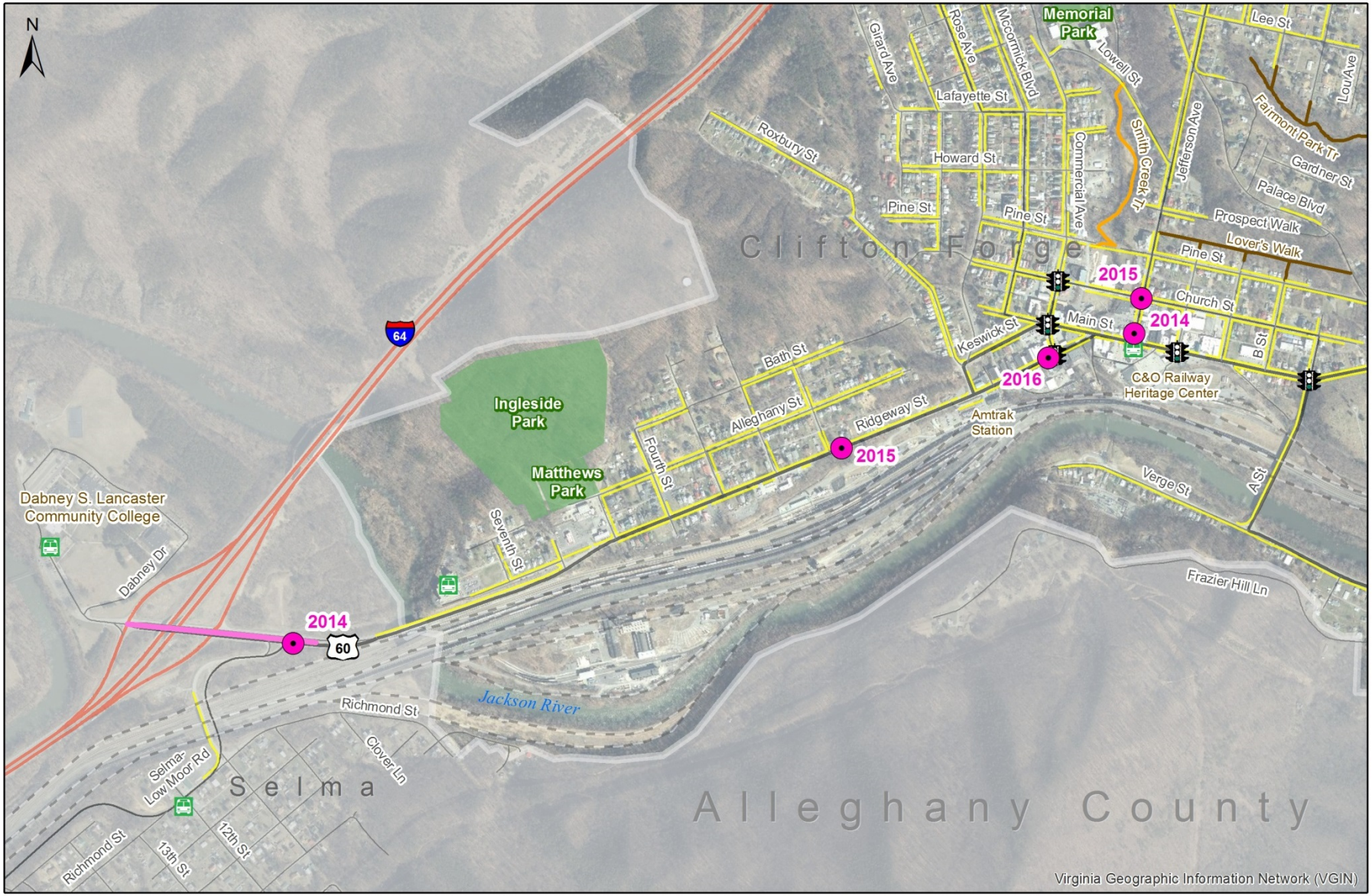
February – Vehicle in on-street parking space on W Ridgeway St near 1st St backed into a pedestrian that was shoveling snow.

May – Jefferson Ave/Church St – Pedestrian crossing Church St at its intersection with Jefferson St was struck by left turning vehicle on a stop-controlled approach.

2016

October – Pedestrian ran into traffic between parked cars outside of a crosswalk on E Ridgeway St near the Commercial Ave intersection and was struck by a vehicle.

With few crashes, each of which occurred at a different location, this analysis did not produce any identifiable trends with regard to a particular geographic area or set of conditions.



Legend

- Pedestrian Crash
- Sidewalk
- Paved Trail
- Unpaved Trail
- Wide Shoulders

Crashes Involving Pedestrians (2012 - 2016)

Clifton Forge Bicycle & Pedestrian Plan

VDOT Virginia Department of Transportation

Walking Barriers & Countermeasures

The attractiveness of walking and bicycling may be reduced in areas where conditions are perceived as being dangerous or uncomfortable for one or more reasons. Identifying these physical and perceived "barriers" to walking and bicycling is a valuable exercise in understanding what improvements, or "countermeasures", may be beneficial. These recommendations are provided as a toolbox of options that may apply in the context of Clifton Forge and are not necessarily targeted for a specific location.

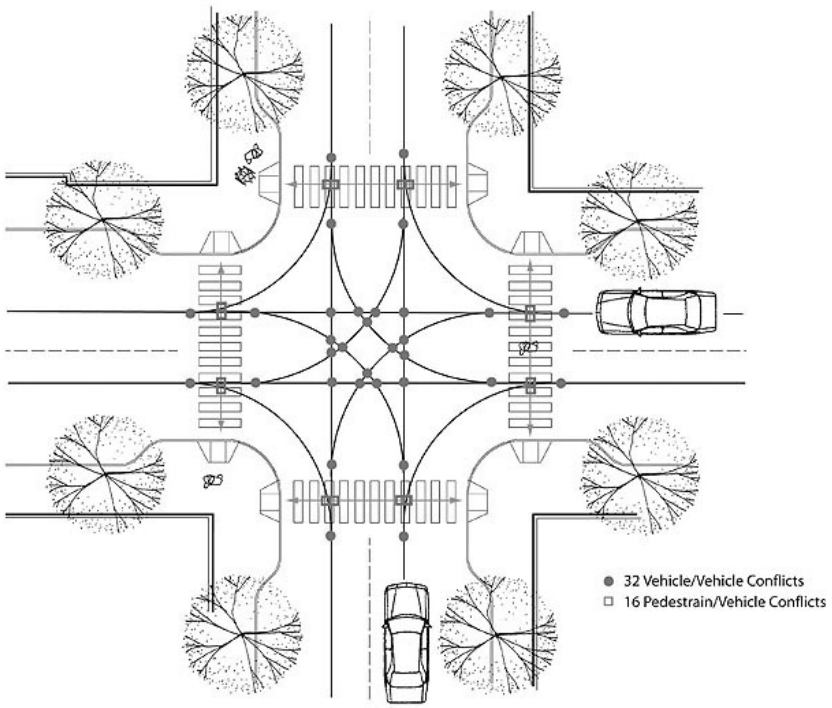
Pedestrian Crossings

Pedestrians can generally be expected to follow desire lines between attractions when crossing a street, with higher volumes of foot traffic being found in locations having a concentration of commercial or tourism-related destinations. To facilitate the safe crossing of streets where vehicle traffic is also relatively high, marked crosswalks should be considered for installation following guidelines set forth by industry best practices, such as those detailed in VDOT's memorandum *IIM-TE-384: Pedestrian Crossing Accommodations at Unsignalized Locations*.

Caution should especially be given to the placement of crosswalks mid-block and across uncontrolled intersection approaches, ensuring that the surrounding environment, travel speeds, and roadway geometry are such that drivers would have a reasonable expectation of crossing pedestrians. Additionally, conditions should provide drivers and pedestrians with high visibility of one another, while also encouraging vehicles to yield to crossing pedestrians using research-backed tools, such as those described in this section.

Crosswalk planning should focus on strategically enhancing crossing opportunities in areas where there are pedestrian attractions on both sides of the street, particularly at higher traffic intersections in the downtown area. Intersections with traffic signals but no pedestrian signals are an excellent starting point for crossing enhancement, as they combine the high number of vehicle-pedestrian conflict points inherent at standard intersections with the added confusion of not knowing when it is safe to cross because pedestrian right-of-way is not clearly indicated. Pedestrian signals more clearly designate right-of-way and hold the traffic signal for a set interval to allow time for pedestrians to cross without changing to serve a conflicting direction of vehicle traffic.

Pedestrian signals

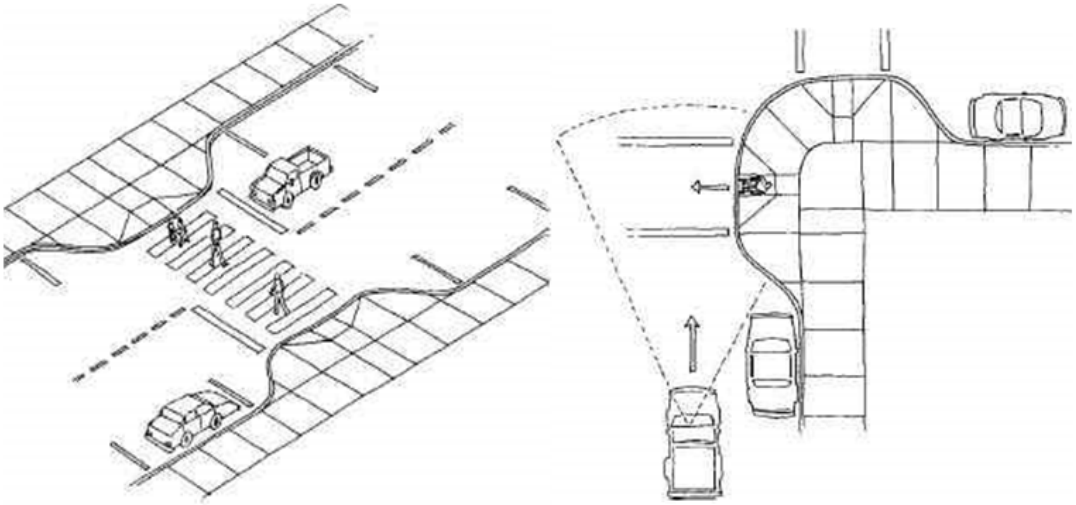


Pedestrian-vehicle conflict points at a 4-way intersection

As of 2017, pedestrian signals are only provided for one crossing movement at one intersection located at E Ridgeway Street & Commercial Avenue. Consideration should be given to whether accommodations can be provided at the town's other four signalized intersections, all of which are located in the downtown area where there is regular foot traffic. Prioritizing investments for these upgrades could take into consideration the volume of traffic on each cross street, the length of the crossing, and the posted speed limit, with higher values being an indication of a lower level of pedestrian comfort.

Pedestrian signals would enhance the crossing at the Main St & D St intersection at the entrance to the C&O Railway Heritage Center

Curb extensions are another example of how a pedestrian crossing may be enhanced. As seen in the images below, these features physically narrow the roadway by pushing out the curb at a pedestrian crossing to provide several advantages, including an improved sight line between pedestrians and drivers past on-street parking blocks, a protected waiting area for pedestrians, a visual cue to drivers that a crosswalk is present, and a traffic calming, or slowing, effect for vehicles. These features are also referred to as bulb-outs.



Examples of curb extensions at crosswalk locations
(FHWA, Designing Sidewalks and Trails for Access)

The *Manual on Uniform Traffic Control Devices (MUTCD)* and the *Virginia Supplement to the MUTCD* set forth recommended practice and requirements on the proper installation of pedestrian signals, marked crosswalks, and signage. With regard to crosswalk signage, the Virginia Supplement to the MUTCD offers some relevant requirements that should be considered in Clifton Forge during maintenance and enhancement efforts.

It is recommended that crosswalks at mid-block and uncontrolled locations be supplemented by a pedestrian crossing sign (W11-2) in each direction with a downward facing arrow plaque (W16-7P) pointing to the crossing location. These signs help call driver attention to the crossing location, particularly where the marked crosswalk is not clearly visible. In Virginia, these signs are required to have a fluorescent yellow-green background.

The MUTCD R1-6 in-street sign has been demonstrated to increase the likelihood of driver yield behavior by FHWA referenced studies and is currently used at several downtown locations to call attention to mid-block and uncontrolled crosswalks. In Virginia, these signs are required to have a fluorescent yellow-green background and use the "YIELD" statement. The "STOP" statement does not apply in Virginia because our state code requires that drivers at crosswalks *yield* the right-of-way to pedestrians

crossing the highway. When used, these signs are required to be placed in the middle of the street at the crosswalk rather than on the sidewalk or near the curb. All of applications of this signage in Clifton Forge are located appropriately, but consideration should be given to changing over to the "YIELD" text.

In-street pedestrian sign on Main St

Sidewalk Interruptions

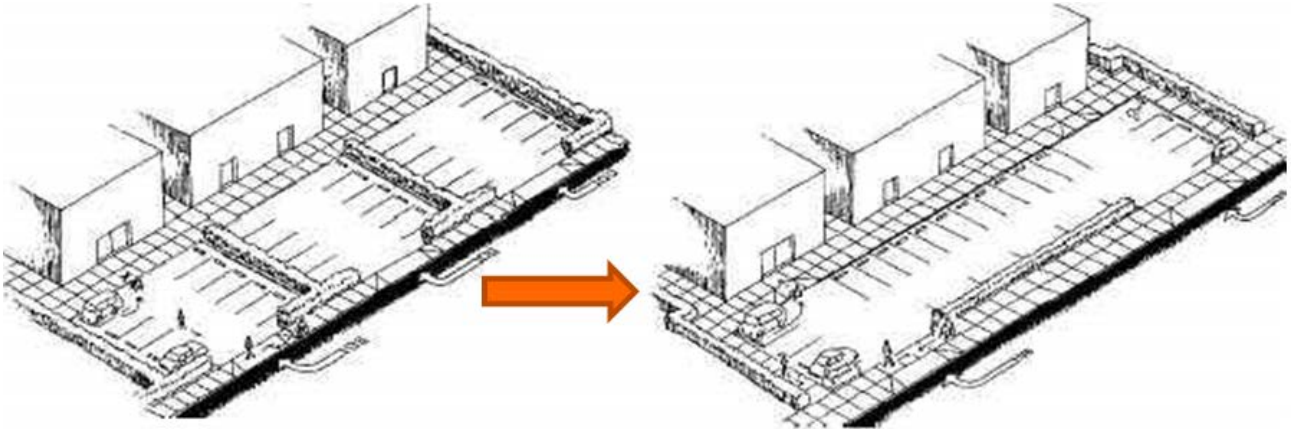
Wide and closely spaced commercial entrances lower the comfort level for pedestrians and bicyclists by increasing the potential for conflict with turning motorists. Wide entrances to heavily trafficked businesses are of particular concern for pedestrians where sidewalks are interrupted, as the path of entering and exiting motorists is not clearly delineated. Such conditions increase the opportunity for pedestrian-motorist conflicts by reducing the predictability of where motorists will cross the sidewalk.

Example of wide and closely spaced commercial entrances on W Ridgeway St

Entrance design issues are typically addressed during the site plan phase of redevelopment projects when property owners are required to meet more recent standards with regard to the width, number, and spacing of entrances. Clifton Forge does not have its own design standards at present, but may defer to the *VDOT Access Management Guidelines* found in Appendix F of the *Road Design Manual*. Negotiations with private property owners outside of redevelopment actions may produce results if the town provides adequate incentive and the quality of site access can be maintained.

One common countermeasure used when multiple businesses are within close proximity is the use of parcel interconnections with shared entrances and parking areas, as demonstrated in the images below.

Such an arrangement reduces the total number of entrances needed, thereby minimizing the conflict points for both pedestrians and vehicles on the frontage street interacting with customers entering and exiting the parking lot. Additionally, this may improve pedestrian connectivity between adjacent businesses.



Parcel interconnections with shared driveways and parking
(FHWA, Designing Sidewalks and Trails for Access)

Rural Roadway Sections

Roadways on the more rural fringes of town may present a challenge for pedestrians because they lack a shoulder and may have vegetation, signs, drainage ditches, or other obstacles that prevent or limit the comfort of walking and bicycling. Examples include Main St east of Ingalls St and Sioux St, which transitions from an alley to Route 606 towards Hot Springs. The addition of 4-foot minimum shoulders during repaving efforts is a popular and cost effective way to add a minimal pedestrian and bicycling accommodation on such roadways, provided there is adequate level area and roadway drainage is adequate.

Example of shoulder on one side of Main St at Oakhill Ave

Bicycling Barriers & Countermeasures

On-Street Parking

On-street parking can lower the comfort level for bicyclists when use of on-street spaces is inconsistent, as cyclists typically feel inclined to move to the right to let vehicles pass and must move left to avoid parked cars. When bicyclists choose to position and reposition to avoid parked cars, the predictability of their actions is reduced from the motorist's perspective. While this is less of an issue on low volume residential streets, cyclist-motorists conflicts may increase when such conditions are present on higher trafficked roadways such as Main St and W Ridgeway St. To reduce conflicts between bicycles and vehicles, it is recommended that marked on-street parking be limited on collector and arterial classified streets to areas where parking demand is expected to be high and/or adjacent residents do not have convenient off-street parking opportunities.

On 25 mph roadways where bicyclists share the travel lane with motorists and on-street parking is occupied sporadically, shared lane markings or "sharrows" may be a beneficial treatment. In this application, shared lane markings clarify proper lane positioning for bicyclists outside of the parked car "door zone" while alerting motorists to the potential presence of bicyclists.

On-street parking may act as a beneficial feature for bicyclists in low volume residential areas if parking stalls are consistently filled, as their riding path is more predictable and physically constrained travel ways provide a traffic calming effect that naturally reduces driving speeds. Such conditions can be found in the older neighborhoods adjacent to downtown, Memorial Park, and Matthews Park where the majority of homes were constructed without driveways and residents regularly use on-street parking.

Topography

One of the more significant challenges in providing convenient connectivity for bicycling in and around Clifton Forge is the steep topography separating downtown from the higher elevation neighborhoods to the north. Creative off-street paths that follow the terrain to minimize grade steepness have been devised in previous planning efforts, including Hazel Run Trail beginning in Booker T. Washington Park and the conceptual Smith Creek Trail that would connect downtown to Memorial Park.

Challenges with terrain may exist on steep and narrow residential streets where bicyclists riding uphill have no space to move to allow a motorist to pass. Jefferson Ave provides on-street parking on the downhill side of the street only, demonstrating a configuration that prevents this issue, providing a predictable and uninterrupted climbing space for bicyclists even though the same space is shared with vehicles due to the narrow street width.

Limiting parking to the downhill side on Jefferson Ave provides a predictable bicycle climbing space

Bicycle Parking

Bicycle parking should be incorporated into public spaces and commercial properties to provide a safe and convenient storage location. Partnering with private businesses to incentivize or request a rack be installed on their property is one way that other communities have successfully approached the expansion of bicycle parking. For developing properties, it is recommended that bicycle parking be a site planning requirement. The Association of Pedestrian and Bicycle Professionals (APBP) provides bicycle parking guidelines that can be adopted locally for standardization. The Inverted U style rack is a common style that meets these guidelines because it supports a bicycle at two points, doesn't trap the wheels, and provides secure lockup.

Bicycle rack Masonic Amphitheater

III. Network Development

Origin-Destination & Network Gap Analysis

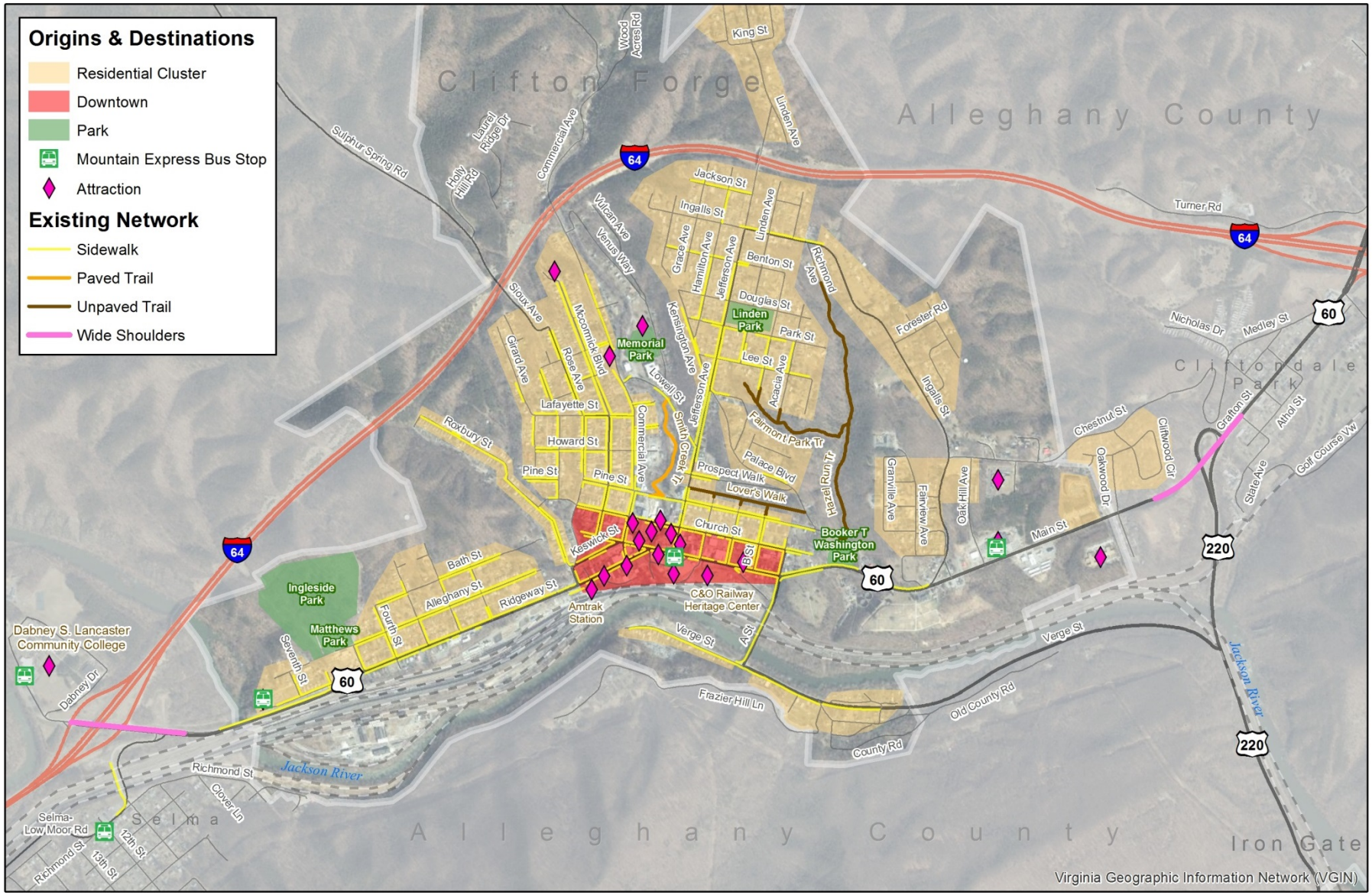
In planning for a well-connected, convenient pedestrian and bicycle network, it is necessary to understand the common starting and ending points of non-motorized trips in Clifton Forge. Visualizing these "origins" and "destinations" facilitates both the identification and prioritization of appropriate improvements between clusters of locations known to produce and attract pedestrians and bicyclists. The origin-destination analysis for this plan considers the following points of interest:

- Residential neighborhoods
- Retirement Communities
- Schools
- Public services
- Lodging
- Tourist attractions
- Parks
- Major retailers
- Major employers outside other categories
- Mountain Express bus stops
- Amtrak station
- Adjacent communities

The origins & destinations map below shows the spatial relationship of these categories and their location relative to existing bicycle and pedestrian accommodations. Each dense neighborhood residential area is grouped into a "residential cluster". The other points of interest that aren't separated on the map are grouped into the "attraction" category for simplicity. The downtown area is highlighted because it is one large attraction area, though specific attraction sites within downtown are still identified separately to visualize where they cluster.

Review of the origins & destinations map reveals existing gaps in sidewalk, bikeway, and trail connectivity in several areas. A few of the notable isolated areas include:

- Dabney S. Lancaster Community College, separated from Clifton Forge by a 35 mph 4-lane section of W Ridgeway St
- Major retailers and residential clusters at the eastern edge of Clifton Forge, separated from the heart of town by a 35 mph 3-lane section of Main St
- Residential clusters along Ingalls St and northern Jefferson Ave, separated by indirect connectivity to commercial destinations
- Nearby communities of Selma, Cliftondale Park, and Iron Gate, separated by 35 mph or higher arterial roadways



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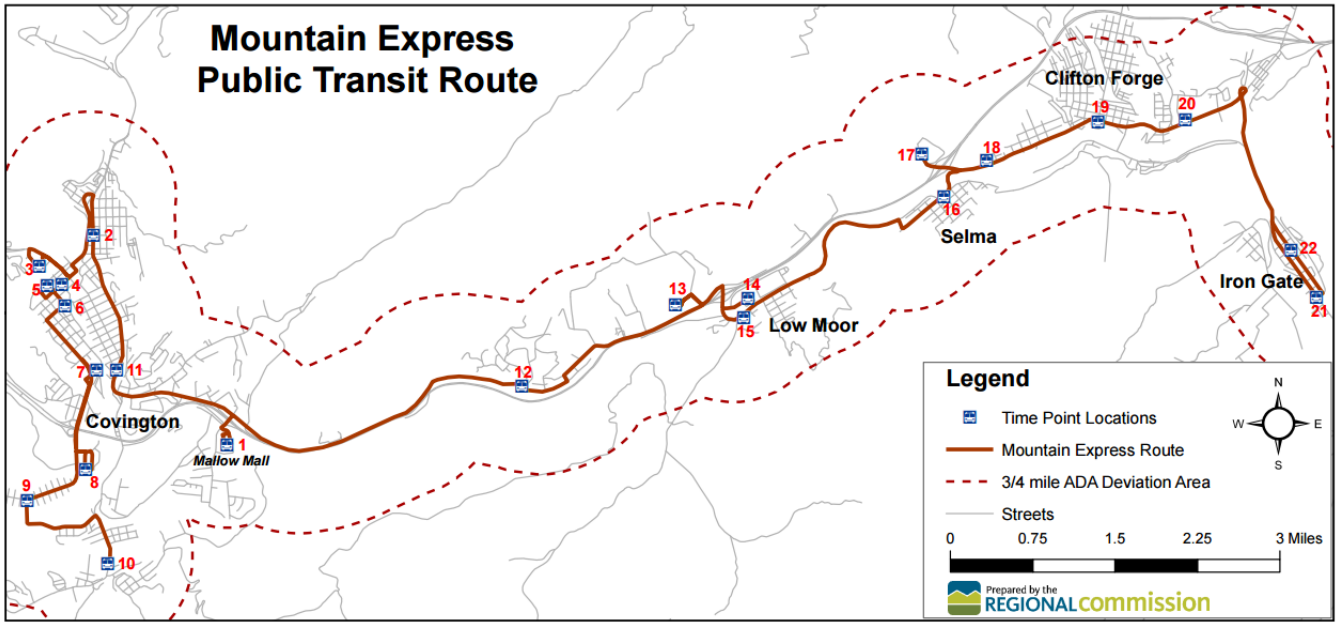
Origins & Destinations

Clifton Forge Bicycle & Pedestrian Plan

Bus stops for the Mountain Express service are also shown on the origins & destinations map. This regional bus service provided by RADAR Transit is depicted in the map below and operates Monday through Friday, 8 am to 5 pm, with 1.5 hour headways. Non-motorized accessibility to bus stops is a significant consideration, as those using the bus are less likely to own a vehicle. The bus has three stops in Clifton Forge: Scott Hill Apartments off of W Ridgeway St (stop 18), Clifton Forge Town Hall at Main St & Jefferson Ave (stop 19), and Kroger/Clifton Woods Apartments on Main St (stop 20).



Mountain Express bus route map from radartransit.org

RADAR Transit buses operating on the Mountain Express route currently have bicycle racks mounted on the front of the vehicle that hold up to two bikes. Consideration should be given to creating materials to provide online and on the bus to demonstrate how the rack is used to limit user hesitation at bringing a bike on their trip. Also, provision of bicycle parking in the vicinity of the bus stops should be a priority for those using other modes of travel at their destination.

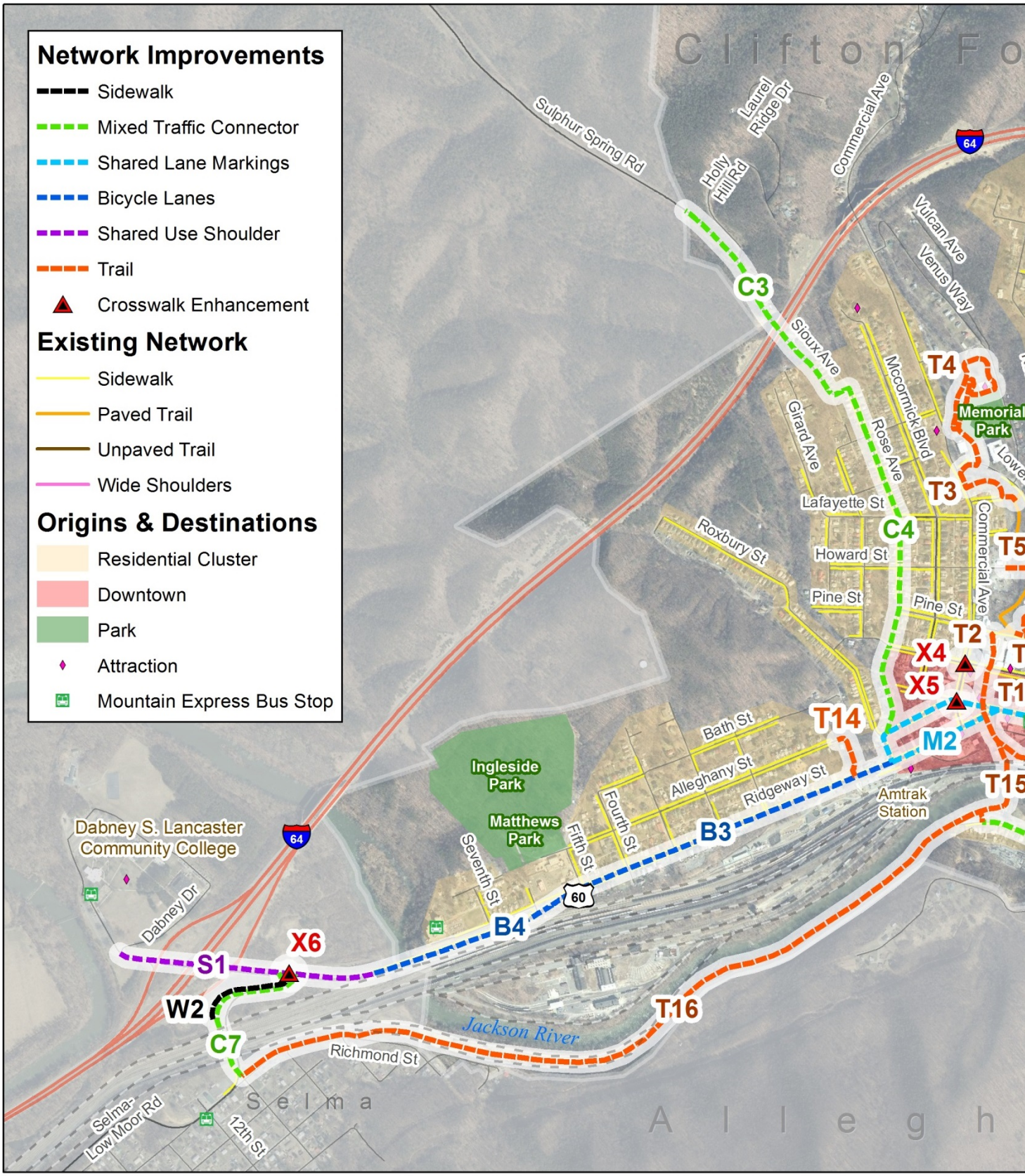
Summary of Proposed Network Improvements

In selecting improvement to fill gaps in bicycle and pedestrian network connectivity, consideration was given to the following:

- Existence and quality of existing network features
- Network connections proposed in previous planning efforts, through formal public input sessions, and through the Clifton Forge Parks & Trails Committee
- Cost of the proposed treatment type
- Appropriateness of a given treatment in the context of its surroundings
- Comfort level of the treatment for its anticipated users (preference given to accommodation of all bicycling skill levels)

- Locations of residential clusters and attractiveness of destinations accessible using the proposed connection
- Establishment of contiguous, looped recreational routes
- Topography
- Routes within town or state controlled rights-of-way or, in the absence of existing right-of-way for off-street trails, areas without privately owned structures and minimal property impact

The proposed network improvements map below summarizes the recommendations in the context of the origin and destination analysis and existing bicycle and pedestrian network features. The table that follows itemizes each project with a description of the improvement extent and treatment type. The design guidance section provides more detailed explanations for each treatment type.



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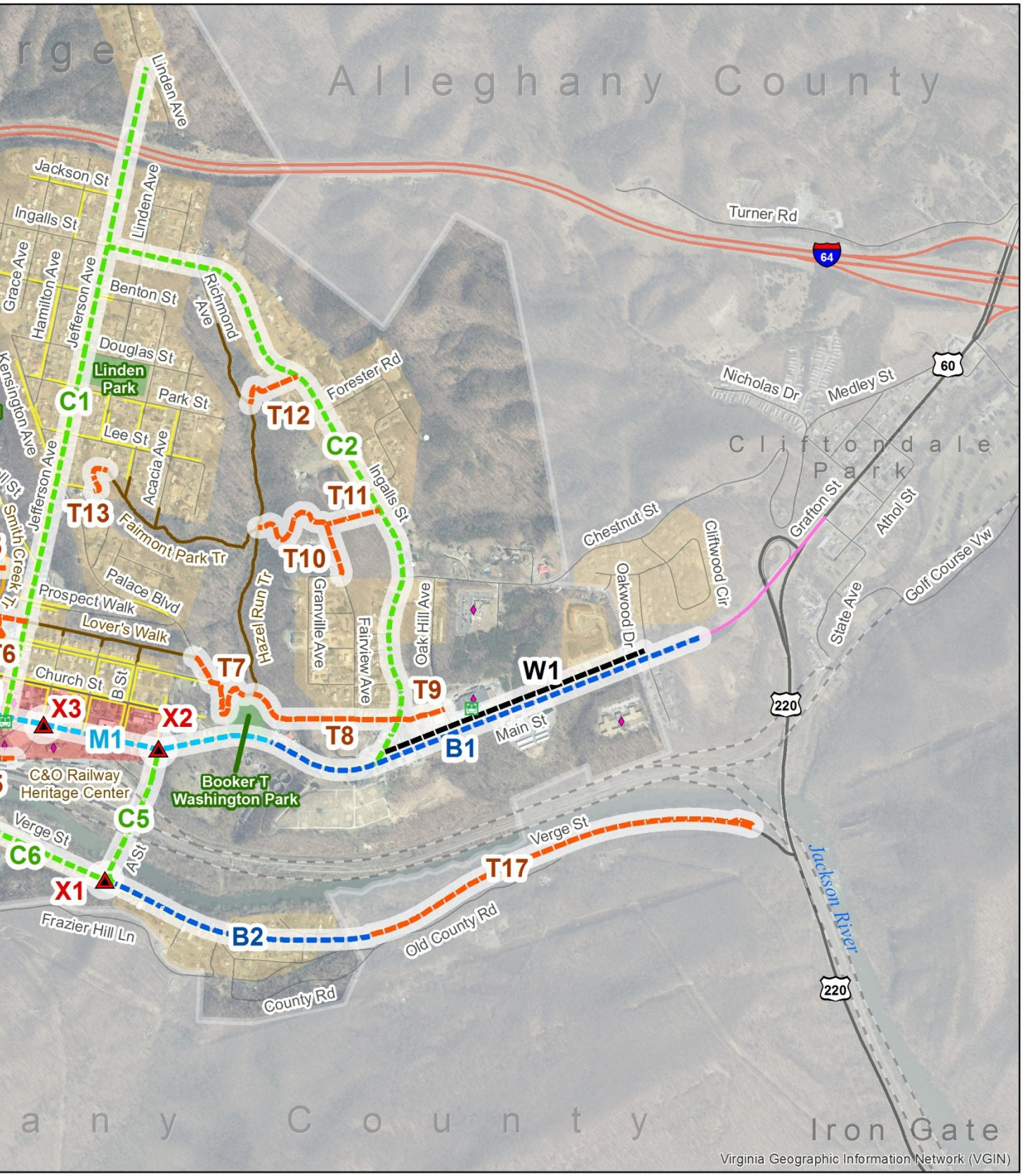
Proposed Networ

Clifton Forge Bicycle



rk Improvements

e & Pedestrian Plan

VDOT Virginia Department of Transportation

Table summarizing all proposed network improvements (distances are approximated)

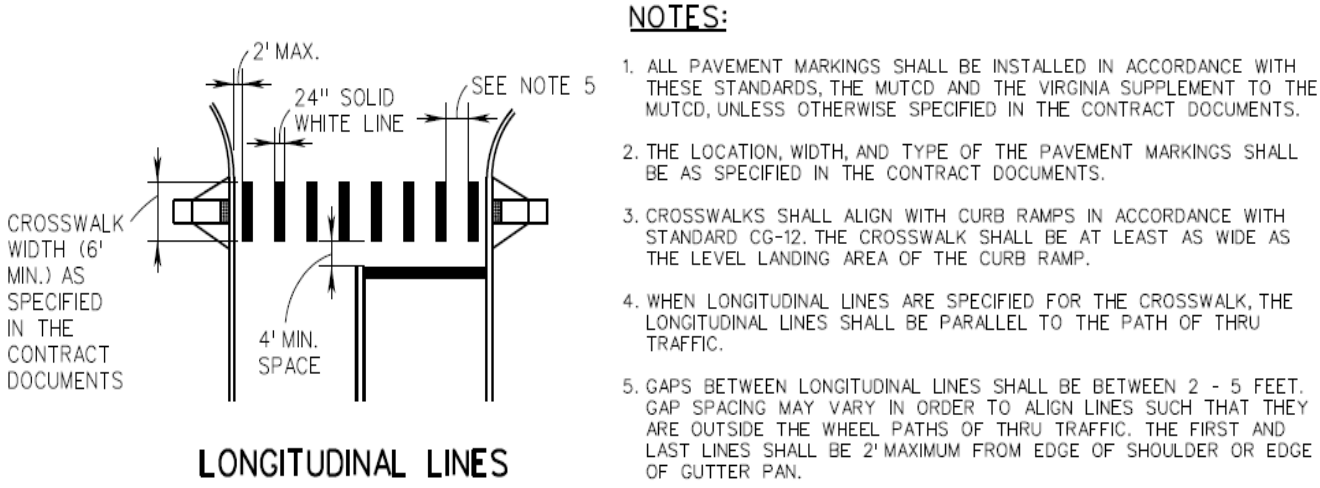
Project ID	Project Name	Improvement Type	Approx. Length (ft)
X1	Verge St & A St	Marked Crosswalk	-
X2	Main St & A St	Signalized Crosswalks	-
X3	Main St & D St	Signalized Crosswalks	-
X4	Commercial Ave & Church St	Signalized Crosswalks	-
X5	Main St & Commercial Ave	Signalized Crosswalks	-
X6	W Ridgeway St & Selma-Low Moor Rd	Marked Crosswalk & Median Refuge	-
W1	Main St (Ingalls St to Oakwood Dr)	Sidewalk	2500
W2	Selma-Low Moor Rd (W Ridgeway St to RR Bridge)	Sidewalk	900
C1	Jefferson Ave (Main St to Linden Ave)	Mixed Traffic Connector	6000
C2	Ingalls St (Main St to Jefferson Ave)	Mixed Traffic Connector	6150
C3	Tremont St/Sioux Ave (Rose Ave to N Town Limits)	Mixed Traffic Connector	2300
C4	Rose Ave (Keswick St to N Town Limits)	Mixed Traffic Connector	3250
C5	A St (Main St to Verge St)	Mixed Traffic Connector	1350
C6	Verge St (A St to western terminus)	Mixed Traffic Connector	1550
C7	Selma-Low Moor Rd (W Ridgeway St to Richmond St)	Mixed Traffic Connector	1650
M1	Main St/E Ridgeway St (Roxbury St to Park)	Shared Lane Markings	3800
M2	Main St/Keswick St/Roxbury St (E to W Ridgeway St)	Shared Lane Markings	1400
B1	Main St (Booker T. Washington Park to Ex. Shoulders)	Bicycle Lanes	4150
B2	Verge St (A St to E Town Limits)	Bicycle Lanes	2400
B3	W Ridgeway St (Fifth St to Roxbury St)	Bicycle Lanes	3000
B4	W Ridgeway St (Fifth St to Jackson River Bridge)	Bicycle Lanes	2050
S1	W Ridgeway St (Jackson River Bridge to Comm. College)	Shared Use Shoulder	2350
T1	Smith Creek Trail Segment 1 (C&O Depot/Amphitheater)	Trail	1200
T2	Smith Creek Trail Segment 2 (Pine St to Church St)	Trail	500
T3	Smith Creek Trail Segment 4 (Clay St to Memorial Park)	Trail	700
T4	Smith Creek Trail Segment 5 (Memorial Park Loop)	Trail	2500
T5	Smith Creek Trail Howard St Connector	Trail	250
T6	Lover's Walk to Smith Creek Trail Connector	Trail	600
T7	Lover's Walk to Hazel Run Trail Connector	Trail	1050
T8	Smith Creek Trail to Bryant St Connector	Trail	1000
T9	Bryant St to Oak Hill Ave Connector	Trail	850
T10	Hazel Run Trail to Fairview Ave Connector	Trail	1400
T11	Hazel Run Trail to Ingalls St (Fairview Ave Spur)	Trail	500
T12	Hazel Run Trail to Ingalls St Connector	Trail	600
T13	Oak St to Fairmont Park Trail Connector	Trail	400
T14	Alleghany St to W Ridgeway St Connector (Stairs)	Trail	450
T15	River St to Verge St Connector (Swing Bridge)	Trail	-
T16	Rail to Trail (Verge St to Selma-Low Moor Rd)	Trail	7850
T17	Verge St Scenic Loop (Town Limits Towards US-220)	Trail	3900

Design Guidance

What follows is general design guidance and resource references for each of the treatment types. This Bicycle & Pedestrian Plan proposes improvements at a master plan level in the absence of detailed engineering and environmental review. Further planning, public outreach, and engineering design for the improvements will be needed as projects are undertaken by the town, VDOT, or other entities. References to the resources used below can be found in the design standards and guidance documents section at the end of this chapter.

Crosswalks

All crosswalks installations should follow the guidelines set forth in VDOT's memorandum *IIM-TE-384: Pedestrian Crossing Accommodations at Unsignalized Locations*, which includes information about compliance with Americans with Disabilities Act requirements. Compliance with the latest editions of the *Manual on Uniform Traffic Control Devices (MUTCD)* and the *Virginia Supplement to the MUTCD* is required for crosswalks and associated signage. It is recommended that high visibility crosswalks be used following the guidance in the *VDOT Road and Bridge Standards*, which matches what Clifton Forge has installed at other locations. The same standards manual also includes guidance for the installation of curb ramps in various scenarios.



Standard PM-3 excerpted from the VDOT Road and Bridge Standards

Crosswalk enhancements are recommended at six locations, seen in the table below.

Project ID	Project Name	Improvement Type
X1	Verge St & A St	Marked Crosswalk
X2	Main St & A St	Signalized Crosswalks
X3	Main St & D St	Signalized Crosswalks
X4	Commercial Ave & Church St	Signalized Crosswalks
X5	Main St & Commercial Ave	Signalized Crosswalks
X6	W Ridgeway St & Selma-Low Moor Rd	Marked Crosswalk & Median Refuge

Project X1

A crosswalk and accessible curb ramps are proposed at the Verge St & A St intersection. Existing conditions include sidewalk across the A St bridge terminating on the north side of Verge St to the west of A St and sidewalks along the south side of Verge St east and west of A St. The proposed improvement includes a crosswalk across the western leg Verge St with curb ramps between these two sidewalk sections.

Projects X2-X5

As discussed in the walking barriers & countermeasures section, signalized crosswalks are recommended for all movements at all traffic signals. Projects X2-X5 include locations that do not currently have pedestrian signals, but are located within the downtown area where there is regular foot traffic. Marked crosswalks exist at each of these locations, but many of the markings are in need of a maintenance review to improve visibility. Given the high cost of the decorative stamped crosswalks used at several of these intersections, the town may consider remarking the white edgeline stripes to provide visibility until funds are available for rehabilitation of the full crosswalk. Thermoplastic is a common choice for crosswalk markings due to its resistance to wear and significant longevity when compared to paint.

4-way crosswalk markings at Main St & A St lack visibility for approaching vehicles

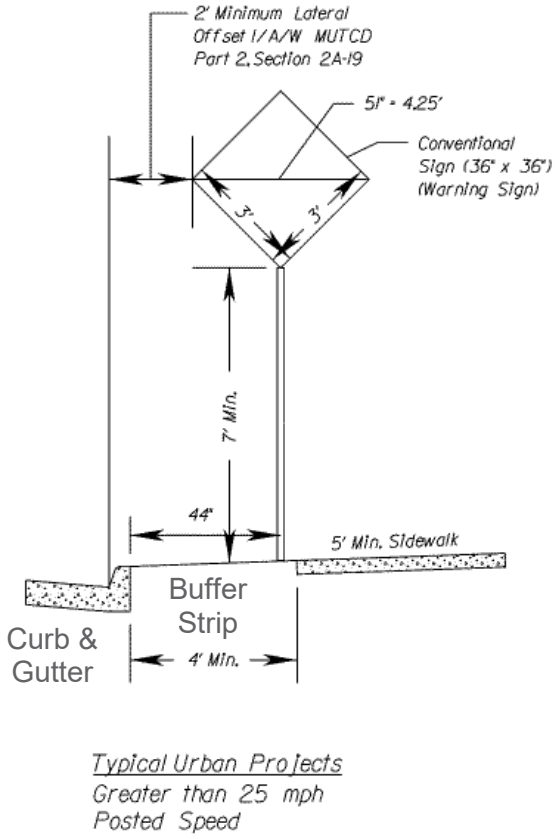
Project X6

A marked crosswalk with pedestrian median refuge and curb ramps is proposed at the W Ridgeway St & Selma-Low Moor Rd intersection. This improvement should be completed in tandem with project

W2 (Selma-Low Moor Rd sidewalk extension) after completion of the road diet to reduce vehicular travel lanes and provide a designated pedestrian walkway on W Ridgeway St (project S1).

Sidewalks

Sidewalk design requirements in the *VDOT Road Design Manual*, as seen below, are recommended. The VDOT typical section includes a 4 ft grassed buffer strip, which offers pedestrians physical separation from vehicle traffic for a more comfortable walking experience. The buffer strip is also a useful feature for road sign installation that prevents signs from being placed behind the sidewalk, which is closer to the edge of the motorist's cone of vision.



Sidewalk design standards from the VDOT Road Design Manual

Sidewalk installation is recommended in two locations, seen in the table below.

Project ID	Project Name	Improvement Type	Approx. Length (feet)
W1	Main St (Ingalls St to Oakwood Dr)	Sidewalk	2500
W2	Selma-Low Moor Rd (W Ridgeway St to RR Bridge)	Sidewalk	900

Project W1

The Main St project extends the existing sidewalk ending at Ingalls St eastward to Oakwood Dr at the eastern town limits. The connection provides pedestrian access to nearby commercial destinations

along Main St to Mountain View and Clifton Woods Apartment complexes, neighborhood residents, and the Alleghany Golden Living Center Nursing Home.

Sidewalk is proposed on the north side (right in photo) of this section of Main St beginning at Oakwood Dr

Project W2

The Selma-Low Moor Rd project extends the existing sidewalk on the bridge over the rail yard to Selma up to the wide shoulders on W Ridgeway St. This improvement lies outside of the town limits, but has been included in this plan because it establishes a logical connection between existing and proposed network improvements and nearby Clifton Forge. Additionally, the Jackson River, CSX rail yard, and steep topography all act as barriers to Selma's connectivity to Clifton Forge, making Selma-Low Moor Rd the only feasible access point for bicycle and pedestrian traffic between the two towns and from Selma to Dabney S. Lancaster Community College. Coordination with Alleghany County and VDOT will be needed to complete this proposed improvement.

Following completion of the road diet along W Ridgeway St (project S1), the Selma-Low Moor Rd sidewalk extension is proposed to connect to the north side of W Ridgeway St with a marked crosswalk and median pedestrian refuge (project X6). This completion order allows for a two-stage crossing over a single lane in each direction of W Ridgeway St, providing pedestrians with reduced conflicts and a more comfortable crossing when compared to the existing 4-lane section.

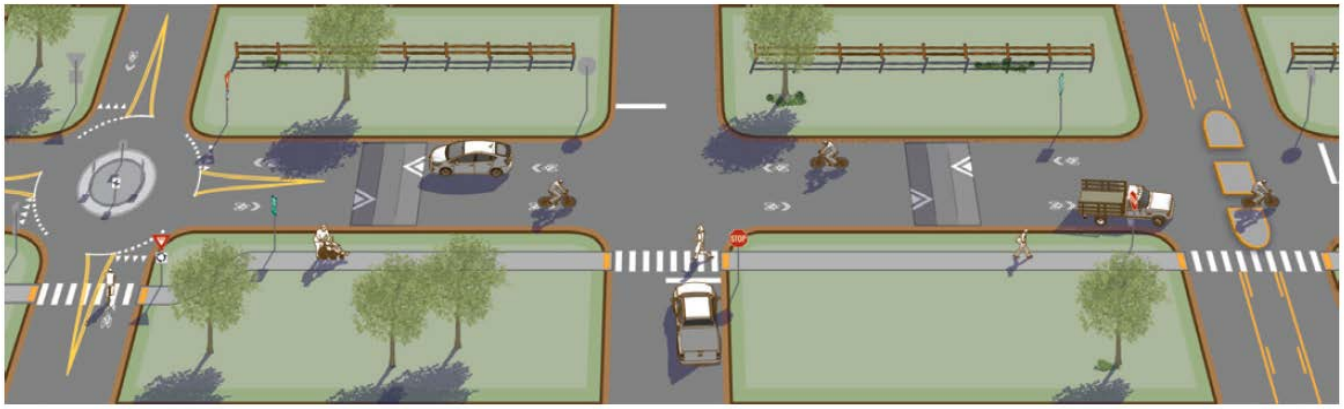
Mixed Traffic Connectors

A mixed traffic connector is a low speed, local classified street that comfortably accommodates the sharing of travel lane space between bicyclists and motorists. The locations of proposed mixed traffic connector designations are listed in the table below.

Project ID	Project Name	Improvement Type	Approx. Length (feet)
C1	Jefferson Ave (Main St to Linden Ave)	Mixed Traffic Connector	6000
C2	Ingalls St (Main St to Jefferson Ave)	Mixed Traffic Connector	6150
C3	Tremont St/Sioux Ave (Rose Ave to N Town Limits)	Mixed Traffic Connector	2300
C4	Rose Ave (Keswick St to N Town Limits)	Mixed Traffic Connector	3250
C5	A St (Main St to Verge St)	Mixed Traffic Connector	1350
C6	Verge St (A St to western terminus)	Mixed Traffic Connector	1550
C7	Selma-Low Moor Rd (W Ridgeway St to Richmond St)	Mixed Traffic Connector	1650

With the exception of Selma-Low Moor Rd, each of the proposed local street bicycle connectors is located in a residential environment with low traffic volumes and a posted speed limit of 25 mph. Since these characteristics alone typically provide bicyclists with a high comfort level without the need for physical changes such as signs or markings, physical improvements to mixed traffic connectors are not recommended in this plan. The town should monitor interaction between vehicles and bicyclists along these segments to determine if future improvements become warranted, as comfort levels will tend to decrease where free flow vehicle travel speeds exceed the speed limit. Traffic calming efforts to reduce speed may include simple education and outreach efforts to the public, regular police enforcement, or physical changes to the roadway such as speed humps or channelizing devices. More information on traffic calming principles and procedure can be found in the *VDOT Traffic Calming Guide for Local Residential Streets*.

Where bicycling demand is high and traffic volume and/or speeds are an issue, some communities have implemented a bicycle boulevard, which incorporates a variety of elements to increase bicycling comfort by controlling vehicular traffic flow. These elements may include some combination of road markings, traffic calming measures, bicycle route wayfinding signage, and intersection modifications. While bicycle boulevards are not proposed in this plan for Clifton Forge, principles from such streets may be borrowed if there is a community desire to invest in improvements on mixed traffic roadway.

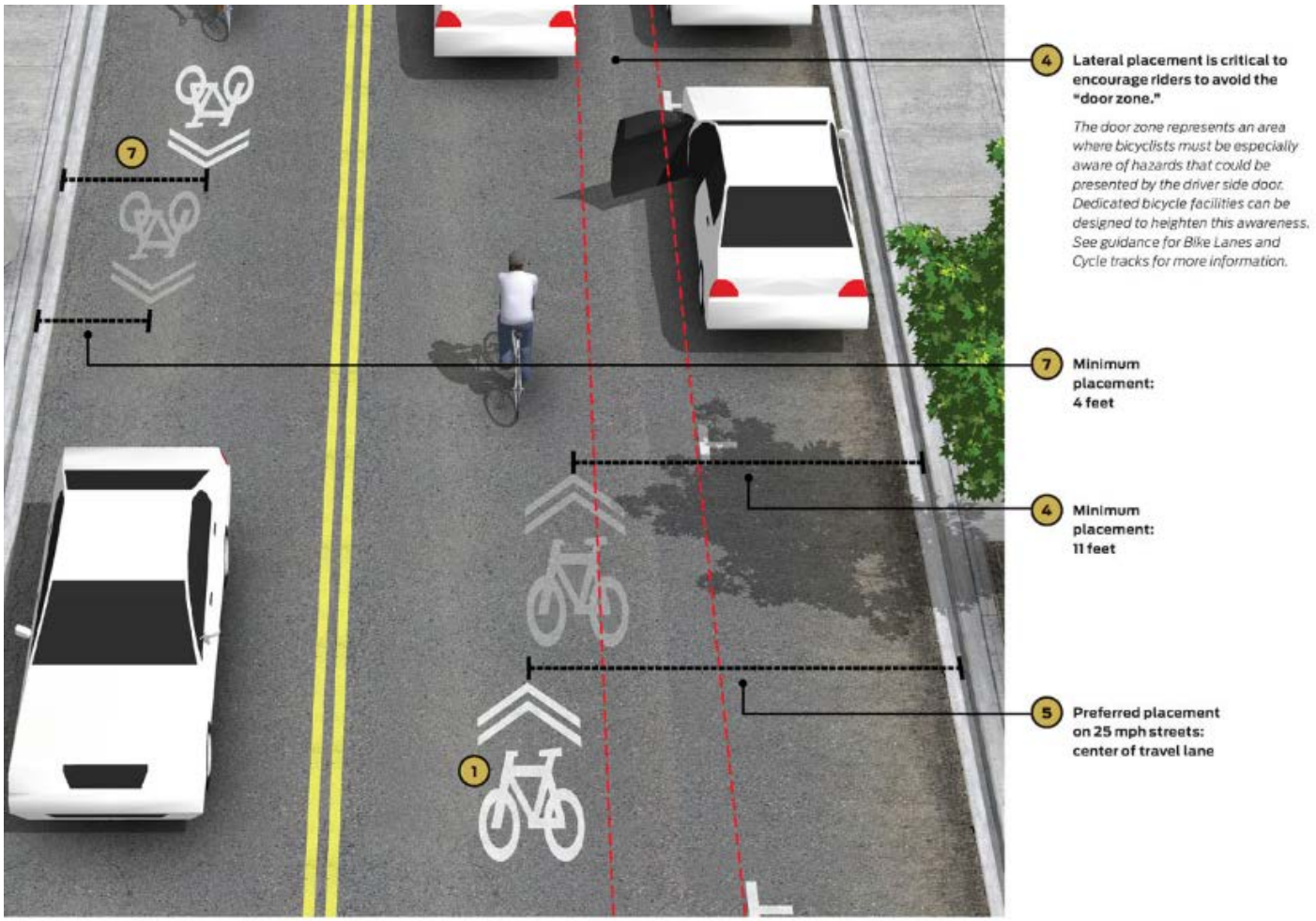


Demonstration bicycle boulevard from the FHWA Small Town and Rural Multimodal Networks Guide

Shared Lane Markings

Shared lane markings or "sharrows" are roadway markings installed within the travel lane to call attention to the presence of bicyclists and to clarify proper lane positioning for bicyclists in a lane that is too narrow for a vehicle and a bicycle to comfortably travel beside one another and physically separated facilities such as bicycle lanes are not feasible. Shared lane markings are not considered a bicycle facility type, as they are not a substitute for physically separated facilities such as bicycle lanes or a shared use path. Instead, shared lane markings are an element to support a bicycling network, preferably on streets with a posted speed limit at or below 25 mph and under appropriate circumstances. Some of the other applications of shared lane markings include:

- Guiding bicyclists outside of the "door zone" on streets with on-street parking
- Logically connecting physically separated facilities such as bicycle lanes through mixed traffic areas where bicyclists share lane space with motorists
- Guidance of bicyclists through challenging situations, such as through an intersection or over angled railroad tracks
- Wayfinding to guide bicyclists along a route with special accommodations, such as on a bicycle boulevard



Shared lane marking guidance from the National Association of City Transportation Officials (NACTO)

Lateral placement of shared lane markings is critical to guiding a bicyclist on the most appropriate riding path, particularly where on-street parking is present to avoid open doors from parked vehicles. The *Manual on Uniform Traffic Control Devices (MUTCD)* provides standards for shared lane marking size, placement, and frequency along a street. For additional guidance on appropriate placement in varied circumstances, reference are available from organizations such as the National Association of City Transportation Officials (NACTO) in their *Urban Bikeway Guide* and web-based materials, and the American Association of State Highway and Transportation Officials (AASHTO) in their *Guide for the Development of Bicycle Facilities*. More specific guidance for proposed applications of shared lane markings in Clifton Forge is provided below.

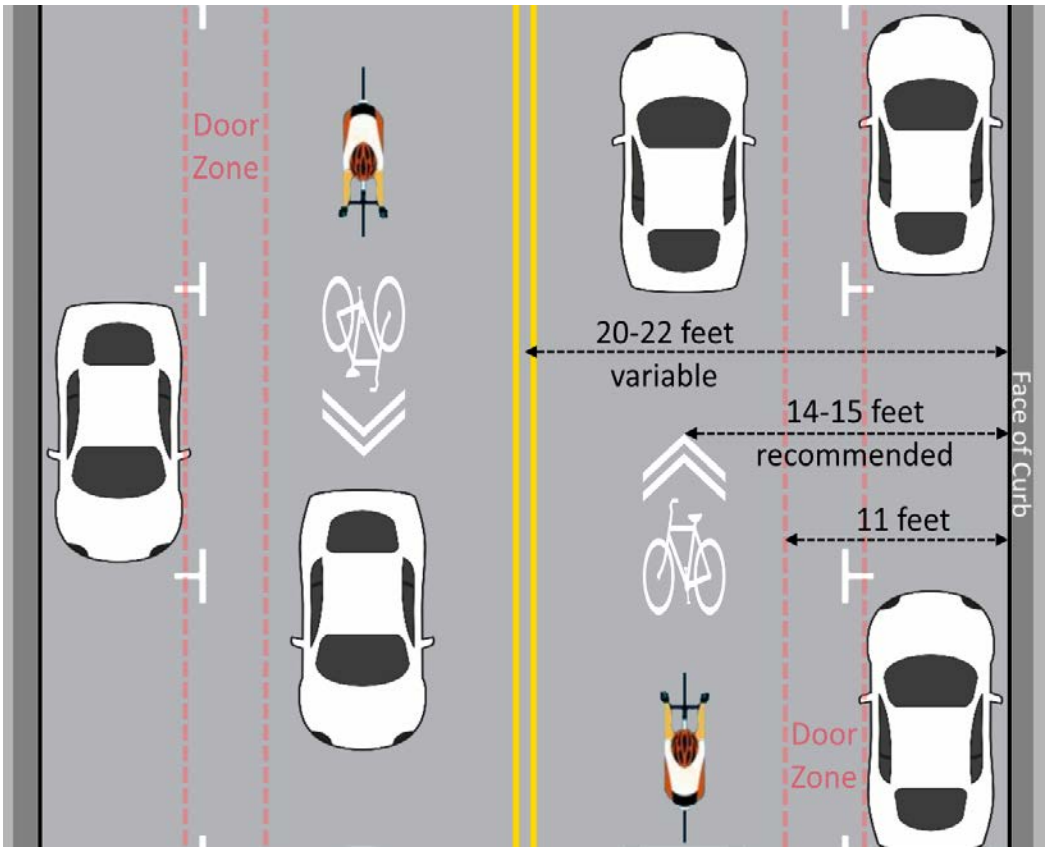
Shared lane markings are proposed in two locations within downtown Clifton Forge, primarily on US-60 Business:

Project ID	Project Name	Improvement Type	Approx. Length (feet)
M1	Main St/E Ridgeway St (Roxbury St to Park)	Shared Lane Markings	3800
M2	Main St/Keswick St/Roxbury St (E to W Ridgeway St)	Shared Lane Markings	1400

These proposed sections lack space for physically separated bicycling accommodations, but logically bind several other proposed network elements, including the bike lanes on either side of town on Main St and W Ridgeway St (projects B1 and B3), mixed traffic connectors to the north and south, and the Smith Creek and Hazel Run Trails. Both proposed applications are on streets characterized by a 25 mph posted speed limit, a downtown environment with narrow lanes that control vehicle speeds, and on-street parking along most sections. The highest traffic volume on either section is along W Ridgeway St at 7,600 vehicles per day.

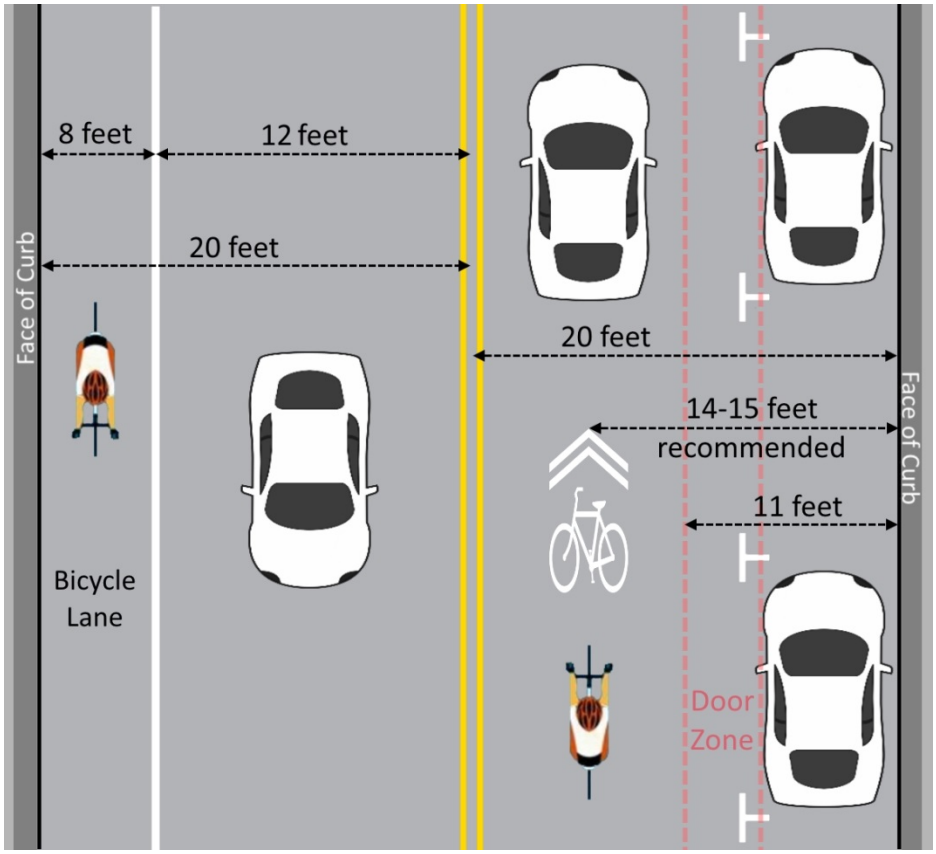
On Main St between A St and Booker T Washington Park, there is likely adequate space within the existing eastbound land to mark bicycle lanes in lieu of shared lane markings on that side. Shared lane markings could then be marked in the westbound direction beside the on-street parking lane.

Placement of the shared lane markings on both proposed street sections should be in the center of the travel lane. The two figures below illustrate how placement differs with and without on-street parking, and demonstrate the impact of the parked car "door zone" on bicyclists positioning. All measurements in these figures are given relative to the face of curb and are provided as a guide rather than an exact placement location due to variability of lane widths. Note that the recommendations provided here differ from the distance standards in the MUTCD, which requires a minimum distance of 4 feet from the face of curb to the middle of the marking in lanes without adjacent on-street parking, and a minimum distance of 11 feet in lanes with on-street parking.



Recommended shared lane marking placement on Ridgeway St (two-sided parking sections)

Ridgeway St at Roxbury St facing east – shared lane markings are recommended in both directions



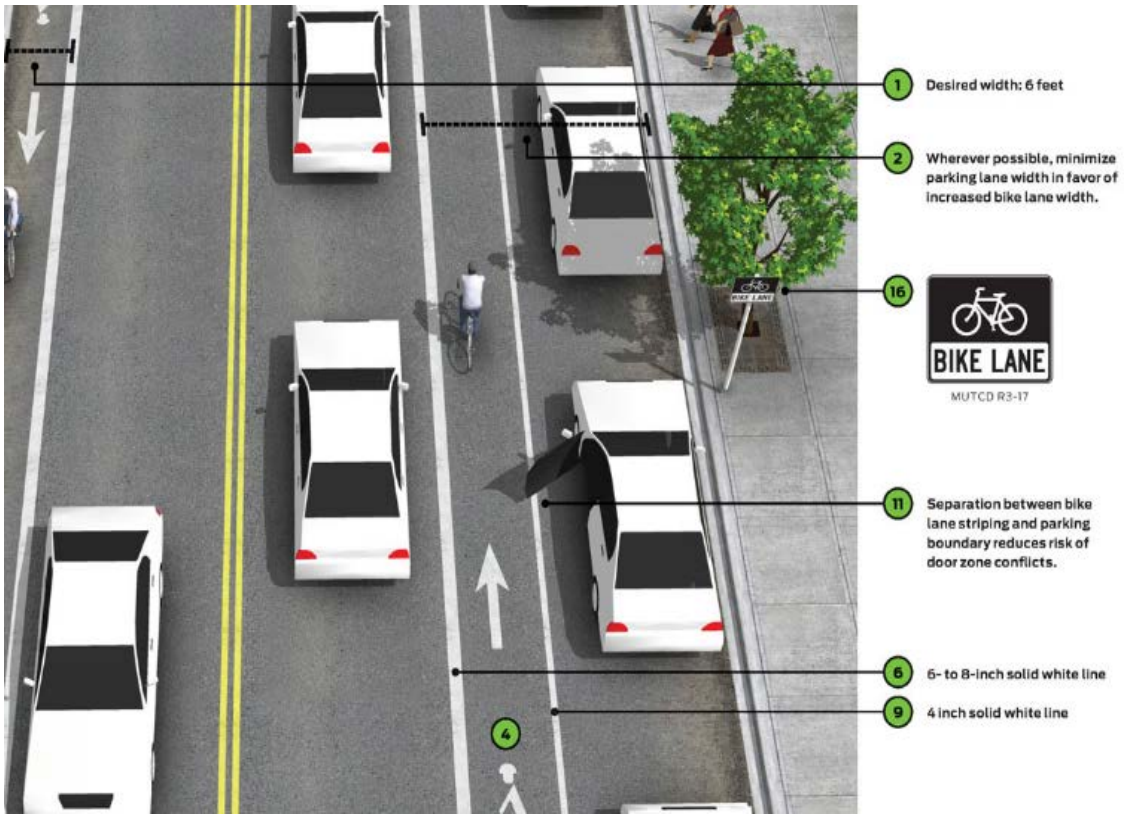
Recommended marking placement on Main St (one-sided parking sections)

Main St at Booker T. Washington Park facing west – shared lane markings are recommended in the westbound direction (right side in photo) with bike lanes in the eastbound direction (left side in photo) where space allows

Bicycle Lanes

Bicycle lanes, or bike lanes, provide an on-street bicycling space that is physically separated from traffic using road markings and accompanied by signage. With a separate space, bicyclists have an improved comfort level and more predictable behavior for passing motorists. Bike lanes are appropriate on roadways with posted speed limits at or below 35 mph with a low level of parking turnover and are typically considered helpful with a daily traffic volume > 3,000. Bike lanes are installed on both sides of the roadway and flow in the same direction as vehicular traffic in the adjacent travel lane. Bike lanes may be installed on only a single side on one-way streets and when intended as a climbing lane up a steep hill when there is insufficient width to support lanes in both directions.

The *Manual on Uniform Traffic Control Devices (MUTCD)* provides standards for bicycle lane markings and associated signage along a street, but not minimum widths. More detailed guidance on widths and appropriate installation in varied circumstances are available from organizations such as the National Association of City Transportation Officials (NACTO) in their *Urban Bikeway Guide* and web-based materials, and the American Association of State Highway and Transportation Officials (AASHTO) in their *Guide for the Development of Bicycle Facilities*. The minimum recommended width of a bicycle lane is 6 feet from the face of curb, with 4 feet of ridable surface. When on-street parking is present, the minimum ridable surface width is 5 feet in the absence of a marked buffer, with a minimum reach of 12 feet between the face of curb and the outer edge of the bike lane (inclusive of the parking lane, bike lane, and optional buffer between them). A reach of 14.5 feet is recommended for improved comfort and avoidance of the "door zone" of parked vehicles.



Bike lanes guidance from the National Association of City Transportation Officials (NACTO)

Bicycle lanes are proposed in three locations, each of which requires special considerations for modifying existing, marked roadway elements, such as removal of on-street parking or installation of paved shoulder:

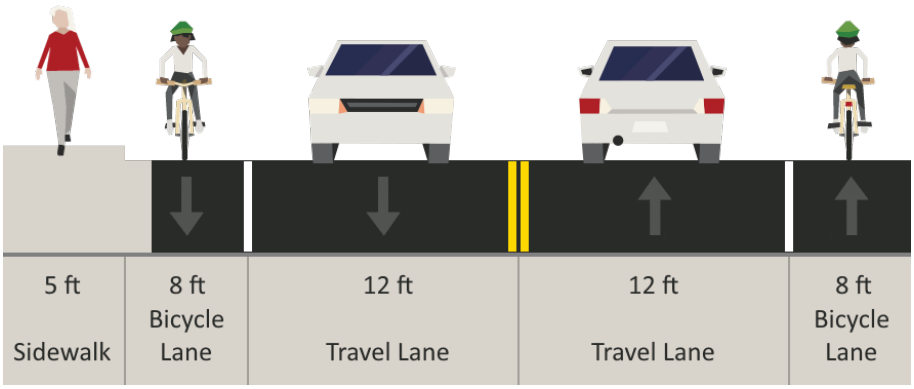
Project ID	Project Name	Improvement Type	Approx. Length (feet)
B1	Main St (Booker T. Washington Park to Ex. Shoulders)	Bicycle Lanes	4150
B2	Verge St (A St to E Town Limits)	Bicycle Lanes	2400
B3	W Ridgeway St (Fifth St to Roxbury St)	Bicycle Lanes	3000
B4	W Ridgeway St (Fifth St to Jackson River Bridge)	Bicycle Lanes	2050

Project B1

Bike lanes are proposed on Main St between the eastern terminus of the on-street parking in front of Booker T. Washington Park and the existing shoulders just outside the eastern town limits. This installation can be broken into two logical sections: Booker T. Washington Park to Ingalls St and Ingalls St to the shoulders at the eastern town limits.

On a 1,300 foot section of Main St between Booker T. Washington Park and Ingalls St bike lanes are proposed rather than shared lane markings because the posted speed limit increases to 35 mph. Since shoulder widening is not possible with the presence of curb and gutter, consideration should be given to whether the center turn lane can be omitted from this area and replaced with bicycle lanes after repaving occurs. The curve in this section may act as a blind spot for motorists approaching cyclists under current conditions and, if converted to bicycle lanes with no center turn lane, sight of stopped vehicles waiting to turn may likewise be impeded. Though there are only a few entrances on Main St that might be impacted by the removal of the center turn lane, a review of the frequency of turning movements is recommended, particularly at the two cemetery entrances which may host funeral processions with significant turn traffic. If funeral processions are escorted by police officers, this potential issue may not be significant.

The cross section below demonstrates the recommended cross section from the eastern terminus of the on-street parking at Booker T. Washington Park to Ingalls St.



Proposed bike lanes on Main St from Booker T. Washington Park to Ingalls St

Main St near Booker T. Washington Park facing west – bike lanes are recommended following a feasibility review of removing the center turn lane

From Ingalls St to the existing shoulder section past the eastern town limits, the curb and gutter terminates and the existing center turn lane becomes offers more utility with a high frequency of business entrances. Accommodating bicycle lanes on this segment of Main St would require installation of a paved shoulder during the next repaving operation. Shoulders already exist on most sections along the north side of Main St from the Family Dollar entrance to the Mountain View Apartments entrance. The existing shoulders on Main St begin approximately 600 feet outside the town limits, meaning coordination with VDOT and possibly Alleghany County will be needed to complete the connection. A minimum 4-foot shoulder is required to mark bike lanes. 12 foot travel lanes are recommended to accommodate tractor trailer truck deliveries to the Oakhill Ave commercial area.

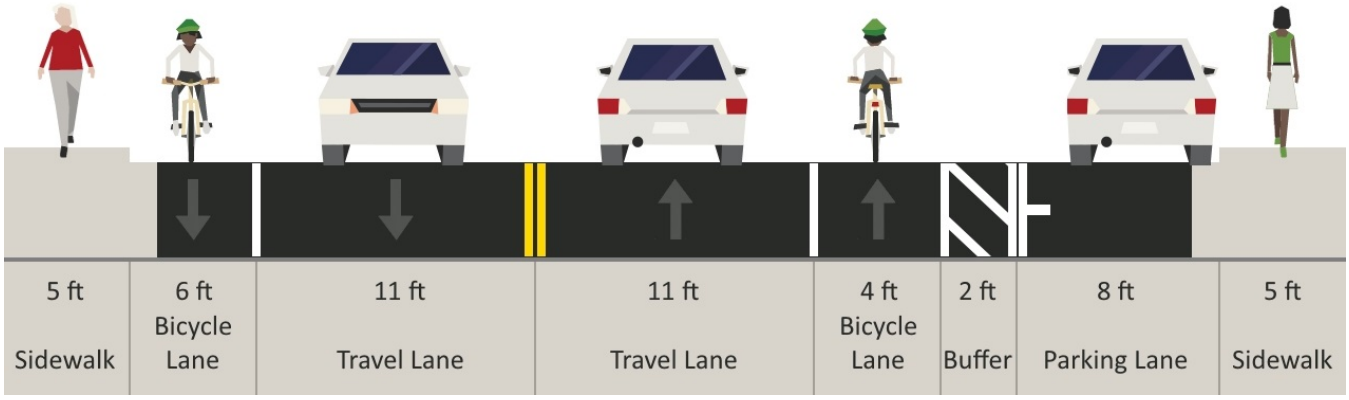
Project B2

Bike lanes are proposed on Verge St between the A St bridge and the eastern town limits where the street is approximately 38 feet wide. This section currently has two travel lanes, no center turn lane, and on-street parking only along part of the north side. It is recommended that the town review parking utilization in this section to determine whether adequate alternatives exists for those currently using the on-street spaces, as parking in a bike lane is illegal. If off-street alternatives do not exist but parking is rarely occupied, wide shoulders marked by a white edgeline may be a helpful alternative, providing a separated bicycling area that can also be used for parking. Caution should be applied with wide shoulders in the 35 mph section of Verge St beginning east of Spring St, as bicyclists will face a conflict when integrating into the travel lane to avoid parked cars. This may be less of a concern on the 25 mph section provided that traffic volumes are relatively low at about 2,000 vehicles per day. This volume is below the 3,000 vehicle per daily guideline for considering a separated facility, but mixed traffic situations are not preferred above 25 mph.

Project B3

Bike lanes are proposed along Ridgeway St between Fifth St and Roxbury St where the speed limit is 35 mph and the traffic volume is about 9,000 vehicles per day. It is recommended that the town review the usage level of the existing two-sided on-street parking on this segment with consideration given to omission of parking on one side to accommodate bike lanes when repaving occurs. Initial observations performed for this plan revealed a low level of parking utilization on the south side of Ridgeway St in the limited areas where it is allowed. Parking on the north side appears more regular and is currently striped along a much longer segment than the south side. Homes located on the south side appear to have off-street parking availability in the rear with access via alleyways, but this would need to be confirmed. Engagement with homeowners and business owners is recommended if removal of parking is undertaken by town staff.

If on-street parking is removed from one side, the cross section below is proposed to accommodate the added bike lanes and one sided parking where there is a width of 42 feet from curb face to curb face. The added buffer space adjacent to the on-street parking is not required, but provides a logical separation from parked vehicles that guides bicyclists outside of the "door zone". Exact pavement widths may vary slightly. With a 41-foot section curb face to curb face, the buffer space may be reduced by one foot to provide the minimum 5 foot rideable surface beside the parking lane. If a section is found during project review to narrow below 41 feet, the travel lanes would need to be reduced towards a recommended minimum of 10 feet in each direction to provide bike lanes.



Proposed bike lanes on Ridgeway St from Fifth St to Roxbury St with one sided parking

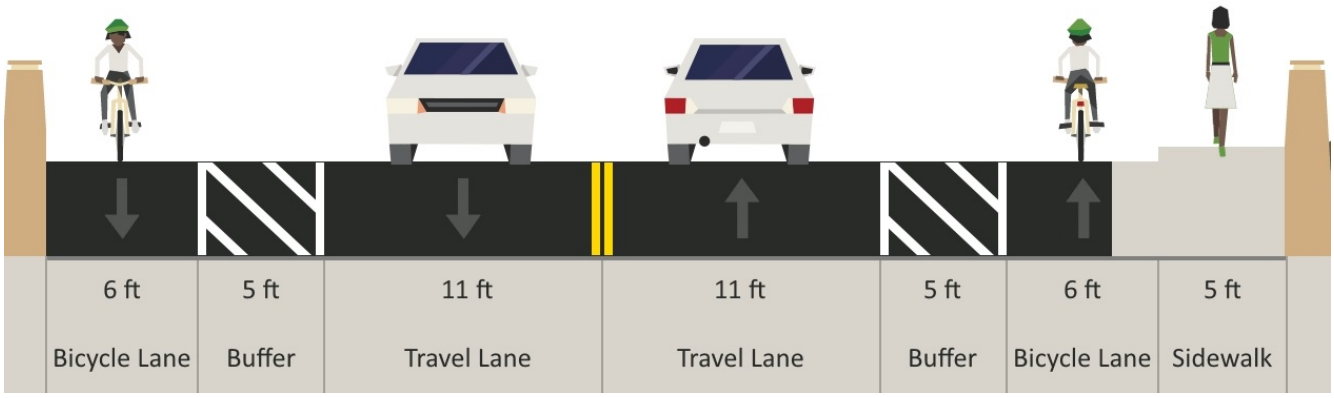
Ridgeway St at Fourth St facing west – bike lanes are recommended following a feasibility review of removing parking on one side

Project B4

The 4-lane variable width section of Ridgeway St between Fifth St and the west side of the Jackson River bridge carries about 8,700 vehicles per day, a volume that has been decreasing steadily since 2004. At this volume, there is adequate road capacity to handle traffic using one travel lane in each direction rather than two with no anticipated reductions in vehicle speed or travel time. Further, there are no minor approaches on this segment to interrupt the traffic stream. Given these characteristics, it is proposed to convert the width gained from the removal of a lane in each direction to establish bike lanes with a buffer to separate riders from traffic. This type of reconfiguration is commonly referred to as a "road diet" and would be completed following a repaving effort that removes all existing roadway markings. Additional information about road diets can be found in the FHWA *Road Diet Informational Guide*.

The illustration below demonstrates the proposed configuration between the end of the sidewalk just west of the Jackson River bridge and the beginning of the eastbound left turn lane onto Sixth St. The travel lanes will vary slightly between Sixth St and Fifth St as turn lanes are introduced, but the bicycle lane widths will remain 6 feet from the face of curb on either side. The 5-foot buffer space provides added bicycling comfort, making the accommodation more attractive to less skilled riders that may not otherwise be willing to ride if placed directly beside vehicles on a 35 mph roadway. This bike lane application is commonly referred to as buffered bike lanes.

Since markings on bridges are not typically altered due to sensitivity towards damaging the bridge deck, the typical section proposed below has been designed to avoid removal of existing markings. Existing lanes on the bridge are 11 feet wide with the centerline in the middle of roadway (22 feet in).



Proposed typical section from the Jackson River bridge to Sixth St

Ridgeway St at Jackson River bridge facing east – bike lanes are recommended in place of the outer travel lanes

Shared Use Shoulders

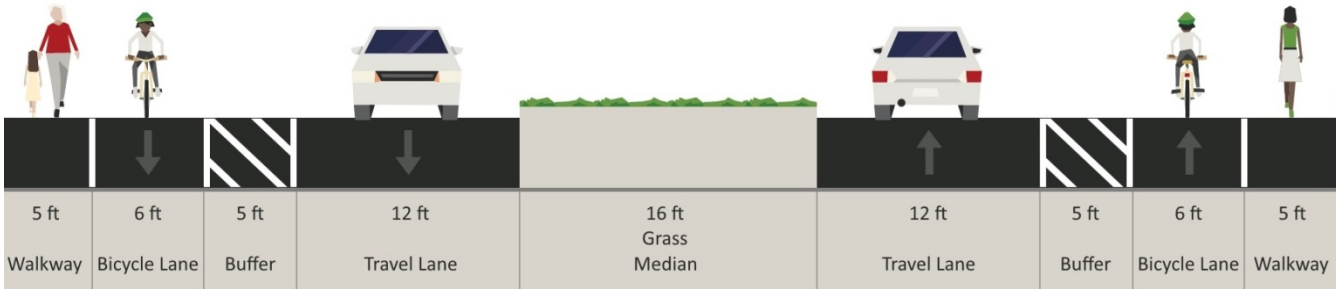
Shoulders are variable width sections of roadway that provide a bicycling and/or walking space that is separated from the travel lane using markings. In areas where there is no sidewalk, extra wide shoulders provide an opportunity to designate separate user space for bicyclists and pedestrians, but the space may just as well be left unseparated with lower volumes of bicyclists and pedestrians.

Example of a shoulder with designated bicycle and pedestrian spaces (https://rebuildingtherustbelt.org)

A similar treatment is recommended along Ridgeway St between the western town limits and Dabney S. Lancaster Community College, with markings potentially varying from those seen above. The full project section is summarized in the table below.

Project ID	Project Name	Improvement Type	Approx. Length (feet)
S1	W Ridgeway St (Jackson River Bridge to Comm. College)	Shared Use Shoulder	2350

The typical section illustrated below is recommended between the Jackson River bridge and the entrance to Dabney S. Lancaster Community College, which again involves a road diet with conversion of the outside travel lanes to non-motorized user accommodations. Additional delays for the minor street approaches at Selma-Low Moor Rd and the I-64 ramps is not anticipated with this conversion given current and projected traffic volumes and the presence of a median to facilitate two-stage left turns onto Ridgeway St when necessary. Since there is a variable width shoulder, the actual dimension of the pedestrian walkway may increase above 5 feet in some sections. Again, buffer space is provided for added bicycling comfort.



Proposed typical section from the Jackson River bridge to Dabney S. Lancaster Community College

Ridgeway St at Jackson River bridge facing west – bike lanes and a north side walking area are recommended in place of the outer travel lanes leading to Dabney S. Lancaster Community College

Where the roadway width narrows just west of the Jackson River Bridge, 13 feet on the outside of each travel direction could be converted to provide a 3 foot buffer, 5 foot bike lane, and 5 foot walkway (or simply a 10 foot shared use space).

Coordination with VDOT and possibly Alleghany County will be required to complete this proposed improvement. Additionally, public outreach efforts will be needed to ensure that the community understands and is supportive of the change, particularly since the proposal is part of a Clifton Forge rather than a county or regional plan, so has not undergone a public review period outside the town limits.

Trails

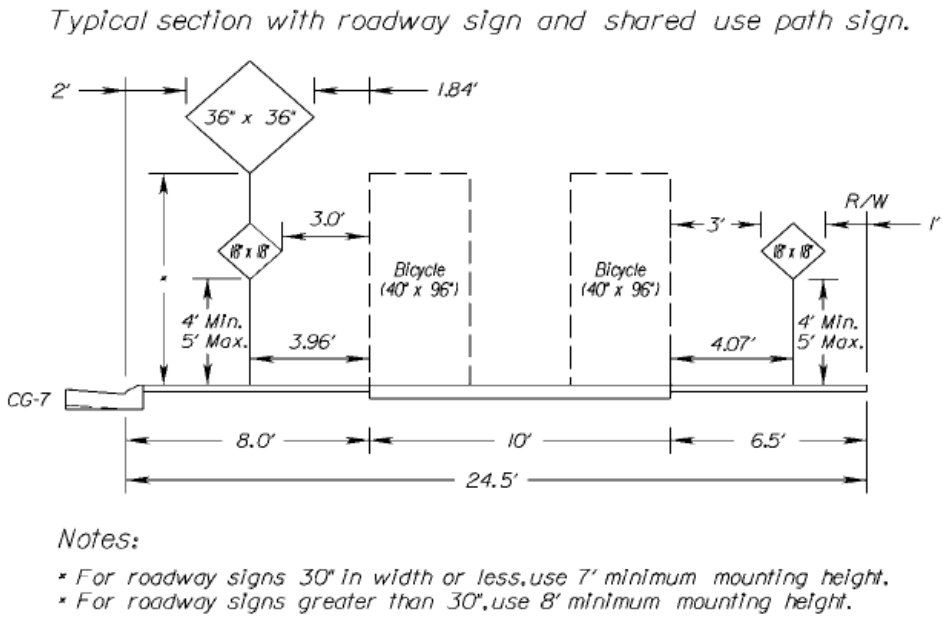
Off-street trails, or shared use paths, provide a high level of comfort for users with a two-way, separated facility removed from the fray of vehicular traffic. Trails are proposed at a number of locations to provide enhanced network connectivity in and around Clifton Forge:

Project ID	Project Name	Improvement Type	Approx. Length (feet)
T1	Smith Creek Trail Segment 1	Trail	1100
T2	Smith Creek Trail Segment 2	Trail	400
T3	Smith Creek Trail Segment 4	Trail	1100
T4	Smith Creek Trail Segment 5	Trail	2150
T5	Smith Creek Trail Howard St Connector	Trail	250
T6	Lover's Walk to Smith Creek Trail Connector	Trail	600
T7	Lover's Walk to Hazel Run Trail Connector	Trail	1050
T8	Smith Creek Trail to Bryant St Connector	Trail	1000
T9	Bryant St to Oak Hill Ave Connector	Trail	850
T10	Hazel Run Trail to Fairview Ave Connector	Trail	1400
T11	Hazel Run Trail to Ingalls St (Fairview Ave Spur)	Trail	500
T12	Hazel Run Trail to Ingalls St Connector	Trail	600
T13	Oak St to Fairmont Park Trail Connector	Trail	400
T14	Alleghany St to W Ridgeway St Connector (Stairs)	Trail	450
T15	River St to Verge St Connector (Swing Bridge)	Trail	-
T16	Rail to Trail (Verge St to Selma-Low Moor Rd)	Trail	7850
T17	Verge St Scenic Loop (Town Limits Towards US-220)	Trail	3900

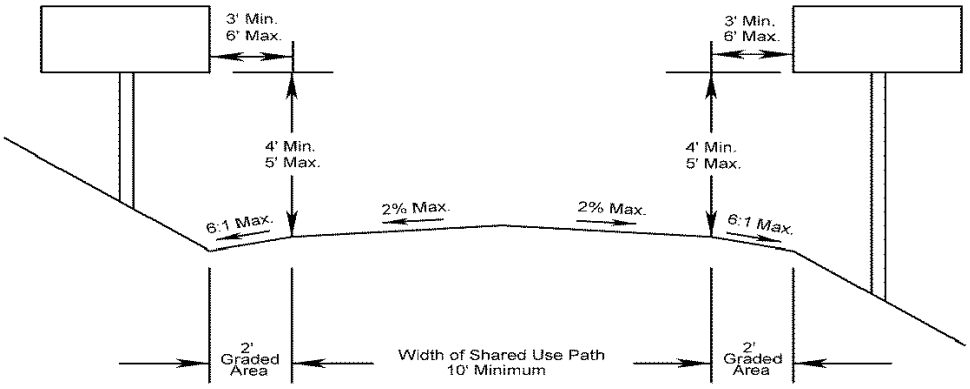
Depending on context, conditions, likely users, and constructability, as determined during project level planning, the surface material and width of each project will likely vary. Clifton Forge currently has a mix of trail surfaces, from unimproved, unpaved conditions on Lover's Walk, to a compacted base with crushed limestone on the Hazel Run Trail, to a paved, shared use path standard on the Smith Creek Trail. The paved shared use path provides the highest comfort experience for both bicyclists and pedestrians. Crushed limestone will slightly reduce bicycling comfort due to decreased tire grip and speed, likely making the trail undesirable to those riding road style bicycles with narrow tires. Unimproved, uneven dirt roads such as Lover's Walk may only provide an acceptable bicycling surface for those who own and are comfortable on a mountain bike with wider tires. Additionally, dirt surfaces are undesirable under wet conditions and are at a higher risk of being rutted or otherwise damaged by weather.

The VDOT *Road Design Manual* offers detailed design guidance for paved trails, which are commonly referred to as shared use paths. Per VDOT, the minimum width of a shared use path is 10 feet under typical conditions, but this may be reduced to 8 feet under one of more of the circumstances itemized in the manual. Additional guidance on the installation of trails and shared use paths can be found in

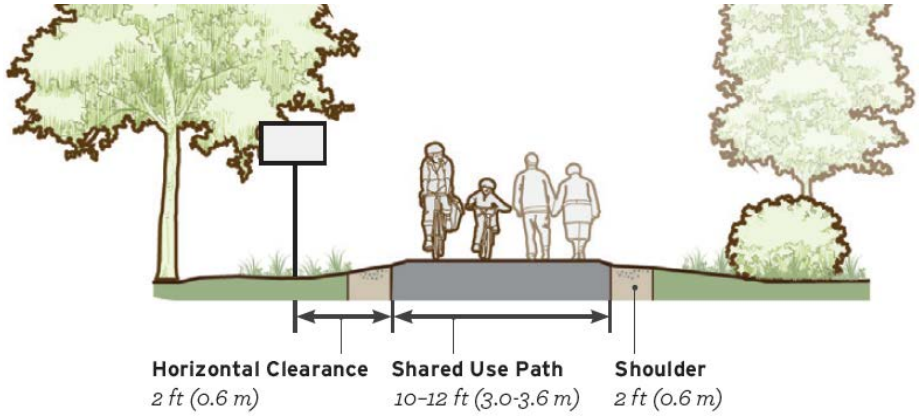
several different resources listed in the design standards and guidance documents section of this plan. Below are excerpts from VDOT and the *FHWA Small Town and Rural Multimodal Networks Guide*.



Shared use path standard drawing from the VDOT Road Design Manual (side path application)



Shared use path standard drawing from the VDOT Road Design Manual (off-street application)



Shared use path typical section illustration from FHWA Small Town and Rural Multimodal Networks Guide (note that VDOT standard calls for a 3 ft minimum horizontal sign clearance)

Projects T1-T4 are detailed in the *Smith Creek Corridor Action Plan*. Projects T5-T13 are short connectors between existing or proposed trail segments and residential or commercial destinations. In selecting the locations for these connectors, consideration was given to the most likely desire lines of non-motorized travelers, opportunities to bypass steep topography present in many areas, town-owned parcels and rights-of-way, and the locations of existing privately-owned structures. Negotiations with private property owners will be necessary to complete several of the connections. Defining the extent of private properties impacts for each project is outside the scope of this plan and will be evaluated further upon project selection by town staff.

Projects T14 and T15 both involve rehabilitation of existing connective features that are currently in disrepair and not in use. Both the Ridgeway St stairway and the CSX-owned swing bridge are described in the existing conditions overview section of this plan. The Ridgeway St stairway and connecting trail to Alleghany St are shown in the aerial image below. Formalizing this connection with repairs and wayfinding signage would shorten the walking route to downtown for neighborhood residents. Right-of-way may need to be obtained to complete the connection.

Existing stairs and trail from Ridgeway St to Alleghany St

Project T16 proposed a rail to trail conversion of an abandoned railway bed on CSX property along the south side of the Jackson River. The tracks have already been removed from this scenic area, making trail installation less costly than a typical rail to trail conversion. Negotiations between the town and CSX will be needed to pursue this project, with special consideration given to how the trail might safely bypass the CSX repair yard off of Richmond St in Selma. Partnership with VDOT and Alleghany County will also be needed to complete the connection into Selma to reach Selma-Low Moor Rd. This trail sets up an attractive loop when connected to W Ridgeway St, Verge St, and A St back into Clifton Forge, offering an attractive facility for both recreational and travel uses. Further, this section may be considered as a piece of the existing Jackson River Trail near Covington, creating an opportunity for a future regional connection.

Project T17 involves the installation of a wide shoulder along the north side of Verge St from the town limits to a small turnaround loop just prior to reaching US-220. US-220 between US-60 Business and Iron Gate is 2-lanes, 45 mph segment with significant challenges for installing bicycle and pedestrian accommodations due to inadequate existing width and steep topography on either side of the roadway. The trail loop on Verge St would offer a scenic opportunity along the Jackson River, reachable using relatively comfortable street connections from downtown Clifton Forge, particularly after implementing the proposed bike lanes on Verge St between A St and the eastern town limits. Since this section of Verge St lies in Alleghany County, coordination will be needed with VDOT and county staff. It is recommended that installation of the shoulder be coordinated with a repaving effort to reduce project costs.

Design Standards and Guidance Documents

VDOT References

IIM-TE-384: Pedestrian Crossing Accommodations at Unsignalized Locations
http://www.virginiadot.org/business/traffic_engineering_memoranda.asp

Access Management Regulations and Standards
http://www.virginiadot.org/info/access_management_regulations_and_standards.asp

Road Design Manual
http://www.virginiadot.org/business/locdes/rdmanual-index.asp

Road and Bridge Standards
http://www.virginiadot.org/business/locdes/vdot_road_and_bridge_standards.asp

Virginia Supplement to the MUTCD
http://www.virginiadot.org/business/virginia_mutcd_supplement.asp

Federal Highway Administration (FHWA) References

Manual on Uniform Traffic Control Devices
https://mutcd.fhwa.dot.gov/

Small Town and Rural Multimodal Networks
https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/small_towns/

Road Diet Informational Guide
https://safety.fhwa.dot.gov/road_diets/info_guide/

Private Associations with Published Guidance

National Association of City Transportation Officials (NACTO)
http://nacto.org

American Association of State Highway State Highway and Transportation Officials (AASHTO)
http://www.transportation.org/

The excepted list below from the FHWA *Small Town and Rural Multimodal Networks Guide* provides additional resources for reference under varying circumstances.

AASHTO Flexibility Guide 2004	American Association of State Highway and Transportation Officials, *A Guide for Achieving Flexibility in Highway Design*, 2004.
AASHTO Bike Guide 2012	American Association of State Highway and Transportation Officials, *Guide for the Development of Bicycle Facilities*, 2012.
AASHTO Pedestrian Guide 2004	American Association of State Highway and Transportation Officials, *Guide for the Planning, Design, and Operation of Pedestrian Facilities*, 2004.
AASHTO Pedestrian Guide 2017	American Association of State Highway and Transportation Officials, *Guide for the Planning, Design, and Operation of Pedestrian Facilities, 2nd Edition*, 2017.
AASHTO Green Book 2011	American Association of State Highway and Transportation Officials, *A Policy on Geometric Design of Highways and Streets*, 2011.
AASHTO Low Volume Roads 2001	American Association of State Highway and Transportation Officials, *Guidelines for Geometric Design of Very Low-Volume Roads, 1st Edition*, 2001.
AASHTO Low Volume Roads 2017	American Association of State Highway and Transportation Officials, *Guidelines for Geometric Design of Low-Volume Roads, 2nd Edition*, 2017.
FHWA Achieving Multimodal Networks 2016	Federal Highway Administration, *Achieving Multimodal Networks: Applying Design Flexibility and Reducing Conflict*, 2016.
FHWA Resurfacing Guide 2016	Federal Highway Administration, *Incorporating On-Road Bicycle Networks into Resurfacing Projects*, 2016.
FHWA MUTCD 2009	Federal Highway Administration, *Manual on Uniform Traffic Control Devices for Streets and Highways*, 2009.
FHWA Separated Bike Lane Guide 2015	Federal Highway Administration, *Separated Bike Lane Planning and Design Guide*, 2015.
PROWAG 2011	United States Access Board, *Proposed Guidelines for Pedestrian Facilities in the Public Right-of-Way*, 2011. Supplemental Notice of Proposed Rulemaking, *Shared Use Paths*, 2013.
PEDSAFE 2013	Federal Highway Administration. *Pedestrian Safety Guide and Countermeasure Selection System*, 2013.
BIKESAFE 2014	Federal Highway Administration. *Bicycle Safety Guide and Countermeasure Selection System*, 2014.

VI. Implementation

Strategies and Programs

While infrastructure improvements are a critical component of building user comfort, they only partially contribute to cultivating a pedestrian and bicycle friendly community. *The League of American Bicyclists* summarizes a holistic approach to building a culture around bicycling through the 5 E's framework, which includes engineering, education, encouragement, enforcement, and evaluation & planning. Here, focus is given to programmatic strategies for building a culture around bicycling and walking that run complementarily and concurrently to the high level engineering improvements detailed in earlier sections. The combination of these recommendations establishes an implementation approach for this Bicycle & Pedestrian Plan that addresses the 5 E's. Each of the strategy categories in the tables below is related to the plan's goals and objectives.

Goal 1 To expand and maintain a network of safe, well-connected walking and bicycling accommodations.

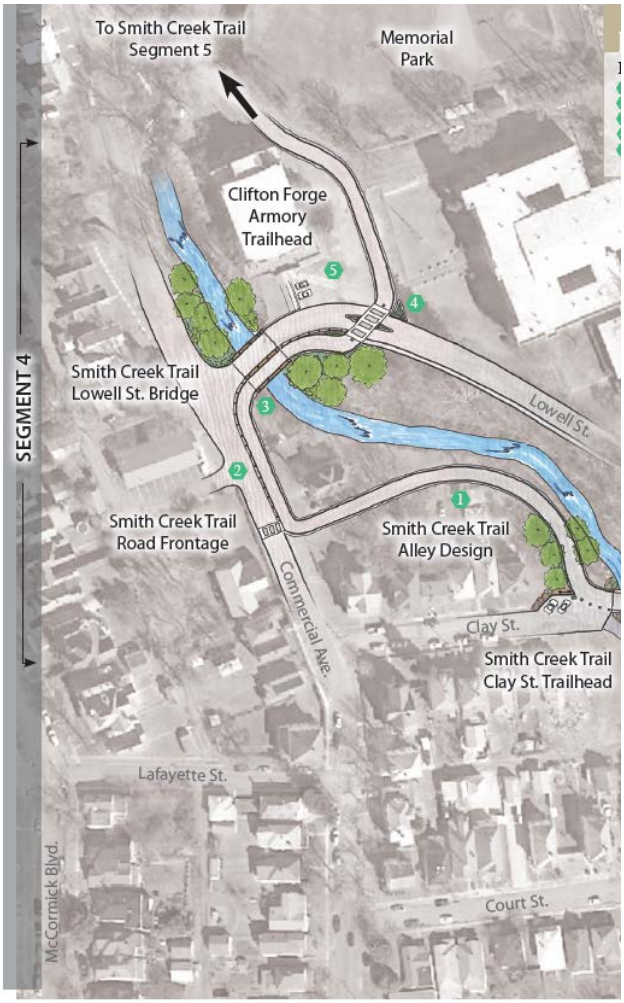
Objective 1.1 Ensure that maintenance efforts adequately address bicycle and pedestrian user accommodations.

Objective 1.2 Fill gaps in the on-street walking and bicycling network to provide convenient access between residential clusters and desirable destinations.

Objective 1.3 Ensure that the walking and bicycling network are supportive of all user ages and skill levels.

Objective 1.4 Provide recreational opportunities that take advantage of the scenic qualities of the Alleghany Highlands region.

Objective 1.5 Diversify funding opportunities for walking and bicycling accommodations.



Smith Creek Trail : Seg.4 "Lowell St. Bridge"
Smith Creek Corridor Action Plan 2013
Jackson Land Planning & Design : Ben Jackson

Objective(s) Addressed	Strategies
1.1 Maintenance	**S1**. Evaluate the town maintenance program to identify existing activities related to bicycle and pedestrian facilities.
	S2. Catalog existing hazards to pedestrians and bicyclists on public rights-of-way/properties, such as damaged or longitudinally positioned stormwater grates in the street, uneven sidewalk, and potholes, and identify an appropriate funding stream and plan to resolve those issues.
	S3. Identify opportunities to improve bicycling and walking facilities to comply with the Americans with Disabilities Act (ADA) Proposed Rights-of-Way Guidelines.
	S4. Evaluate snow & ice operations to determine whether bicycle and pedestrian facilities are being cleared in a timely manner.
	S5. Develop maintenance level of service standards for bicycle and pedestrian facilities, ensuring consistency in how degradation issues are addressed.
	S6. Evaluate the annual budget ensure that adequate funding is available to meet maintenance standards.
1.2 1.3 1.4 Network Improvements	**S1.** Construct the network improvements proposed in the Bicycle & Pedestrian Plan.
	S2. Seek opportunities to secure right-of-way for off-street trails that provide more direct connectivity to residential centers and desirable destination for pedestrians and bicyclists.
	S3. Design new facilities to meet or exceed VDOT standards and industry guidelines.
	S4. Design on-street and roadway adjacent facilities with buffer space between users and vehicles to maximize comfort level accommodate younger and less skilled users.
	S5. Catalog existing public and private bicycle racks and identify new locations at popular destinations, encouraging business owners to add racks to their property.
	S6. Provide bicycle parking at town sponsored events.
	S7. Provide bicycle parking at Mountain Express bus stops.
	S8. Consider freight mobility and commercial vehicle load zones that minimize conflicts with bicyclists.
1.5 Funding	**S1**. Explore opportunities for co-funding of new walking and bicycling accommodations through local tax dollars, federal and state programs, such as the Transportation Alternatives (TA) set-aside, Smart Scale, Revenue Sharing, and Bicycle and Pedestrian Safety (BPSP) programs.
	S2. Identify public and private partners that may be capable of providing financial or programmatic assistance for active transportation and outdoor recreation facilities.
	S3. Prioritize network improvements with local stakeholders and identify appropriate funding streams for project programming.
	S4. Identify opportunities to implement network improvements during maintenance and street projects to minimize cost.

Goal 2 To establish and foster programs and policies supportive of walking and bicycling.

Objective 2.1 Expand and continue town support of education and encouragement programs aimed towards bicycling, walking, active transportation, and outdoor physical activity.

Objective 2.2 Consider inclusion of walking and bicycling accommodations in all street improvement projects, maintenance efforts such as repaving, and other relevant public projects such as park renovations.

Objective 2.3 Revise the Code of Ordinances to facilitate implementation of the Clifton Forge Bicycle & Pedestrian Plan.

Objective 2.4 Ensure that local planning efforts reference and complement the Clifton Forge Bicycle & Pedestrian Plan.

Objective(s) Addressed	Strategies
2.1 2.2 Programs	**S1**. Expand and continue support of education and encouragement efforts to teach children safe riding habits, such as the Alleghany Highlands Bike Rodeo.
	S2. Expand and continue support of events that bring awareness to and encourage outdoor physical activity, such as the Alleghany Highlands Triathlon and the Gran Fondo Alleghany.
	S3. Include walking and bicycling accommodations in all street improvement projects, maintenance efforts such as repaving, and relevant public projects.
	S4. Support and advertise events and programs that provide helmets and other safety equipment at free or reduced rates.
	S5. Partner with major institutions and employers such as Dabney S. Lancaster Community College, Alleghany Regional Hospital, WestRock, and CSX to promote healthy transportation and recreation through outreach efforts, encouragement of active commute modes, and provision of on-site bicycle parking and shower facilities.
	S6. Develop a campaign with the Clifton Forge Police Department and Alleghany County Sherriff's Office to encourage safe walking and bicycling, educate the public about the laws related to pedestrians and bicyclists, and enforce relevant laws.
	S7. Work with RADAR transit and Mountain Express bus service partners to develop a user guide to bus-mounted bicycle racks, to be posted online and in printed form on buses.
2.3 Policies	**S1**. Modify the Code of Ordinances to include a site plan requirement that owners of developing and redeveloping properties of a certain type/scale shall construct sidewalk along the public street frontage(s) with ADA-compliant curb ramps where vehicles cross the sidewalk. In cases where insufficient right of way exists for sidewalk construction, right-of-way shall be dedicated by the property owner.

	S2. Modify the Code of Ordinances to include a site plan requirement that owners of developing and redeveloping properties of a certain type/scale shall dedicate right-of-way to support publically planned street improvements included in the Comprehensive Plan and Bicycle & Pedestrian Plan.
	S3. Modify the Code of Ordinances to include a site plan requirement that owners of developing and redeveloping properties of a certain type/scale shall include safe, clearly designated facilities to accommodate pedestrian movements within the development, with connection(s) provided between the public sidewalk and building entrance(s).
	S4. Modify the Code of Ordinances to include a site plan requirement that owners of developing and redeveloping properties of a certain type/scale shall install a bike rack near the building entrance that meets industry best practices, such as those published by the Association of Pedestrian and Bicycle Professionals.
2.4 Local Planning	**S1**. Incorporate walking and bicycling project and program priorities into the town's other relevant planning efforts, particularly the Comprehensive Plan.
	S2. Ensure that the town's messaging, including relevant vision statements and municipal goals, complement the Bicycle & Pedestrian Plan.
	S3. Identify opportunities to implement or further the goals of the Bicycle & Pedestrian Plan through existing public programs, committees, and inter-agency partnerships.
	S4. Update the Clifton Forge website, Facebook page, and other outreach materials to promote the Bicycle & Pedestrian Plan.
	S5. Develop a strategy for continued public engagement on walking and bicycling issues.

2015 Alleghany Highlands Bike Rodeo (from event YouTube video)

Goal 3 To physically and logically connect walking and bicycling in Clifton Forge to its surrounding communities and outdoor recreational activities in the Alleghany Highlands region.

Objective 3.1 Ensure that regional and state planning partners are aware of the Clifton Forge Bicycle & Pedestrian Plan and develop new plans in a complementary manner.

Objective 3.2 Engage in regional planning efforts to implement and expand upon network improvements and programs presented in the Clifton Forge Bicycle & Pedestrian Plan.

Objective 3.3 Promote local and regional tourism that highlights walking, bicycling, and outdoor recreation in Clifton Forge and the Alleghany Highlands region.

Objective(s) Addressed	Strategies
3.1 Regional Coordination	**S1**. Share the Bicycle & Pedestrian Plan with local and regional partners.
	S2. Incorporate the town's walking and bicycling project and program priorities into regional planning documents, such as the *Alleghany Highlands of Virginia Tourism Strategic Plan* and the *Rural Long Range Transportation Plan*.
3.2 Regional Planning	**S1**. Partner with state agencies, the Roanoke Valley Alleghany Regional Commission, and adjacent communities to develop a regional trail/bikeway plan that connects Clifton Forge to regional destinations, such as Douthat State Park, the Town of Iron Gate, and the City of Covington.
	S2. Partner with the George Washington and Jefferson National Forest to include Clifton Forge on trail wayfinding signage.
3.2 Tourism	**S1**. Partner with state and local tourism agencies, such as the Alleghany Highlands Chamber of Commerce and Tourism, to ensure that walking and bicycling assets in Clifton Forge are highlighted in tourism advertising efforts.
	S2. Update outreach materials to reflect new bicycling and walking network improvements in Clifton Forge.

Banner from visitcliftonforgeva.com tourism website

Planning Level Cost Estimates

Planning level cost estimates were developed to provide an understanding of the general magnitude of investment for each of the proposed projects in this plan. Cost information is beneficial as a financial planning tool so that the town can effectively allocate resources according to a desired implementation schedule. To facilitate cost estimation, anticipated baseline typical costs were created for each improvement type.

Activity	Unit	Typical Cost
Curb Ramp *ADA compliant*	**each**	**$4,000**
High Visibility Crosswalk *Thermoplastic material*	**each**	**$1,500**
Median Refuge *Includes 2 curb ramps and median sidewalk segment*	**each**	**$12,000**
Signalized Crosswalk *Per intersection leg*	**each**	**$15,000**
Shared Lane Markings *Markings spaced 250' apart, both sides of street*	**mi**	**$8,500**
Bicycle Lanes *Signs and markings only after repaving effort*	**mi**	**$20,000**
Trail *10 ft paved, assumes limited ROW acquisition*	**mi**	**$1,200,000**
Trail *10 ft unpaved, assumes limited ROW acquisition*	**mi**	**$300,000**
Shoulder *4 ft paved, per side*	**mi**	**$30,000**
Sidewalk *5 ft concrete, without curb & gutter installation*	**lf**	**$70**
Bicycle Rack *Inverted U design, parking for 6 bikes*	**each**	**$600**

Sources

- Bushell, M. A., Poole, B. W., Zegeer, C. V., & Rodriguez, D. A. (2013). Costs for pedestrian and bicyclist infrastructure improvements. University of North Carolina Highway Safety Research Center, University of North Carolina, Chapel Hill, 45.
- VDOT statewide planning level cost estimates, TMPD
- Research of historical estimated and actual project costs in the Staunton District

These cost estimates are intended for planning purposes only and may be impacted by project-specific factors, such as right-of-way acquisition, utility impacts, stormwater drainage, and other field conditions. Bicycle lane and shared use shoulder improvements are assumed to occur following repaving efforts funded through local and state maintenance programs. As such, estimates for these improvements do not include the cost of repaving.

Project ID	Project Name	Improvement Type
X1	Verge St & A St	Marked Crosswalk
X2	Main St & A St	Signalized Crosswalks
X3	Main St & D St	Signalized Crosswalks
X4	Commercial Ave & Church St	Signalized Crosswalks
X5	Main St & Commercial Ave	Signalized Crosswalks
X6	W Ridgeway St & Selma-Low Moor Rd	Marked Crosswalk & Median
W1	Main St (Ingalls St to Oakwood Dr)	Sidewalk
W2	Selma-Low Moor Rd (W Ridgeway St to RR Bridge)	Sidewalk
C1	Jefferson Ave (Main St to Linden Ave)	Mixed Traffic Connecto
C2	Ingalls St (Main St to Jefferson Ave)	Mixed Traffic Connecto
C3	Tremont St/Sioux Ave (Rose Ave to N Town Limits)	Mixed Traffic Connecto
C4	Rose Ave (Keswick St to N Town Limits)	Mixed Traffic Connecto
C5	A St (Main St to Verge St)	Mixed Traffic Connecto
C6	Verge St (A St to western terminus)	Mixed Traffic Connecto
C7	Selma-Low Moor Rd (W Ridgeway St to Richmond St)	Mixed Traffic Connecto
M1	Main St/E Ridgeway St (Roxbury St to Park)	Shared Lane Markings
M2	Main St/Keswick St/Roxbury St (E to W Ridgeway St)	Shared Lane Markings
B1	Main St (Booker T. Washington Park to Ex. Shoulders)	Bicycle Lanes
B2	Verge St (A St to E Town Limits)	Bicycle Lanes
B3	W Ridgeway St (Fifth St to Roxbury St)	Bicycle Lanes
B4	W Ridgeway St (Fifth St to Jackson River Bridge)	Bicycle Lanes
S1	W Ridgeway St (Jackson River Bridge to Comm. College)	Shared Use Shoulder
T1	Smith Creek Trail Segment 1 (C&O Depot/Amphitheater)	Trail
T2	Smith Creek Trail Segment 2 (Pine St to Church St)	Trail
T3	Smith Creek Trail Segment 4 (Clay St to Memorial Park)	Trail
T4	Smith Creek Trail Segment 5 (Memorial Park Loop)	Trail
T5	Smith Creek Trail Howard St Connector	Trail
T6	Lover's Walk to Smith Creek Trail Connector	Trail
T7	Lover's Walk to Hazel Run Trail Connector	Trail
T8	Smith Creek Trail to Bryant St Connector	Trail
T9	Bryant St to Oak Hill Ave Connector	Trail
T10	Hazel Run Trail to Fairview Ave Connector	Trail
T11	Hazel Run Trail to Ingalls St (Fairview Ave Spur)	Trail
T12	Hazel Run Trail to Ingalls St Connector	Trail
T13	Oak St to Fairmont Park Trail Connector	Trail
T14	Alleghany St to W Ridgeway St Connector (Stairs)	Trail
T15	River St to Verge St Connector (Swing Bridge)	Trail
T16	Rail to Trail (Verge St to Selma-Low Moor Rd)	Trail
T17	Verge St Scenic Loop (Town Limits Towards US-220)	Trail

	Approx. Length (ft)		Cost Estimate	Assumptions
	-	$	9,500	1 crosswalk, 2 ramps
	-	$	60,000	4-way signalized crosswalk
	-	$	60,000	4-way signalized crosswalk
	-	$	60,000	4-way signalized crosswalk
	-	$	60,000	4-way signalized crosswalk
Refuge	-	$	15,000	2 crosswalks, 2 ramps, sidewalk in median
	2500	$	175,000	5-ft wide concrete
	900	$	63,000	5-ft wide concrete
r	6000		-	Monitoring Only
r	6150		-	Monitoring Only
r	2300		-	Monitoring Only
r	3250		-	Monitoring Only
r	1350		-	Monitoring Only
r	1550		-	Monitoring Only
r	1650		-	Monitoring Only
	3800	$	6,500	Bidirectional markings
	1400	$	2,500	Bidirectional markings
	4150	$	16,000	Markings and signage only after repaving effort
	2400	$	9,500	Markings and signage only
	3000	$	11,500	Markings and signage only after repaving effort
	2050	$	8,000	Markings and signage only after repaving effort
	2350	$	9,000	Markings and signage only after repaving effort
	1200	$	341,000	Asphalt Paved
	500	$	142,500	Asphalt Paved
	700	$	199,000	Asphalt Paved
	2500	$	710,500	Asphalt Paved
	250	$	71,500	Asphalt Paved
	600	$	34,500	Unpaved
	1050	$	60,000	Unpaved
	1000	$	284,500	Asphalt Paved
	850	$	241,500	Asphalt Paved
	1400	$	80,000	Unpaved
	500	$	28,500	Unpaved
	600	$	34,500	Unpaved
	400	$	23,000	Unpaved
	450	$	50,000	Unpaved
	-	$	135,000	Preliminary estimate from CSX
	7850	$	2,230,500	Asphalt Paved
	3900	$	222,000	Unpaved
	TOTAL	**$**	**5,454,000**	

Funding Opportunities

A menu of the more common funding opportunities for infrastructure improvements, program support, and projec budgeting.

Funding Program	Managing Agency	De
SMART SCALE	**VDOT**	The SMART SCALE program uses a performance-based and operational transportation improvements selecti and pedestrian improvement being one of the core pr under the town's designated Urban Development Are improvements associated with Corridors of Statewide are funded up to 100% of their total cost. Funds may Improvement Program. The application cycle is now b in August 2018.
Bicycle & Pedestrian Safety Program (BPSP)	**VDOT**	An arm of the Highway Safety Improvement Program term, low-cost bicycle safety projects addressing non- financed at 90 percent, with the state or locality provi $1 million, but higher costs and phased projects over 100% of their total cost. The annual applications cycle
Transportation Alternatives Set-Aside	**VDOT**	This set-aside from the federal-aid highway program f travel choices and enhance the transportation experie aspects of the transportation infrastructure. This prog including Recreational Trails and Safe Routes to Schoo 20% local match. Proposal costs are generally compet projects over multiple years will be considered. The a November.
Revenue Sharing	**VDOT**	Locality funds are matched with state funds for qualif being designated by the Commonwealth Transportati $10 million in matching allocations. Selection priority received Revenue Sharing funding. The application cy
Federal Lands Transportation Programs (FLTP)	**FHWA**	This set of federal programs provides planning and co Federal Land Management Agency (FLMA) partners, i surrounding Clifton Forge. Transportation projects, el provides access to, adjacent to, or through Federal lan Program (FLAP). Projects are funded up to 100% of th
U.S. Department of Transportation Transit, Highway, and Safety Funds	**FHWA**	Provides funding that may be used by states and local and improve the conditions and performance of surfa bicycle and pedestrian projects. The matrix on the we funding programs by project and program type.
Rivers, Trails, and Conservation Assistance Program	**National Park Service**	Trail and greenway assistance is provided by the NPS t alternatives, stakeholder and community engagement Greenway Commission recently used this program for Botetourt Counties. The annual applications cycle clo
Regional Commission planning studies	**Roanoke Valley-Alleghany Regional Commission (RVARC)**	Planning funds can be assigned in the Unified Planning exploration of the recommendations proposed in this regional network. Coordination of Clifton Forge effor pedestrian programs and plans is recommended.

ct planning is provided in the table below. Other opportunities may be available, particularly through local

escription	Web Link
d prioritization framework to facilitate statewide capacity on by the Commonwealth Transportation Board, with bicycle roject types. Clifton Forge is eligible to apply for projects ea needs (which include bicycle-pedestrian needs) as well as Significance, including US-60B, US-220, and I-64. Projects not be available until the latter years of the state's Six-Year biennial, with the next round deadline being expected to fall	http://vasmartscale.org/
(HSIP), the BPSP provides funds for implementing short- motorized crashes and risks. BPSP projects are federally iding 10 percent match. Proposal costs should be less than multiple years will be considered. Projects are funded up to e typically closes at the beginning of November.	http://www.virginiadot.org/business/ted_app_pro.asp
funds community-based projects that expand non-motorized ence by improving the cultural, historical and environmental gram encapsulates several formerly standalone programs, ol. Projects are funded up to 80% of their total cost, with a titive when under $1 million, but higher costs and phased pplication cycle typically closes at the beginning of	http://www.virginiadot.org/business/prenhancegrants.asp
ying projects under a 50/50 split, with the allocation of funds on Board. Eligible projects may receive up to a maximum of is given to construction projects that have previously ycle typically closes at the beginning of November.	http://www.virginiadot.org/business/local-assistance-access-programs.asp#Revenue_Sharing
nstruction funding to improve transportation facilities for ncluding the US Forest Service located in the area ligible under Title 23, that are on the public network that nds. This program group includes the Federal Lands Access heir total cost.	https://flh.fhwa.dot.gov/programs/fltp/
lities for a wide range of projects and programs to preserve ce transportation, including highway, transit, intercity bus, eb site provides a comprehensive listing of non-motorized	https://www.fhwa.dot.gov/environment/bicycle_pedestrian/funding/funding_opportunities.cfm
for multi-jurisdictional planning, assessment of route t, and implementation strategies. The Roanoke Valley planning of the Tinker Creek Greenway in Roanoke and ses at the end of June.	https://www.nps.gov/orgs/rtca/index.htm
g Work Program (UPWP) of the RVARC for further plan, including tie-in of transportation improvements to the ts with the commission's multiple ongoing bicycle and	http://rvarc.org/

Town of Clifton Forge
Bicycle & Pedestrian Plan

2017

Roanoke Valley-Alleghany
REGIONAL
commission

Rural Bikeway Plan

PREPARED JULY 2020