



Trail Master Plan

Adopted On January 27, 2025

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Acknowledgments

The development of the Powhatan County Trail Master Plan for Powhatan County was a collaborative effort that involved numerous stakeholders, including the Parks and Recreation Department, Powhatan County Staff, and McGill Associates planners.

Powhatan County wishes to express its sincere appreciation to those individuals who contributed to the creation of the Trail Master Plan. Without the knowledge and expertise of these people, in both individual and team capacities, this document would not be possible.

Powhatan County Board of Supervisors

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Steve McClung
Megan Heatwole

Powhatan County Staff

Bret Schardein – County Administrator
Megan Heatwole – Parks and Recreation Director

Consultant

McGill Associates, PA



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Table of Contents

01		
Introduction		8 – 20
02		
Evaluating Current Conditions		22 – 44
03		
Facility Design Guide		46 – 70
04		
Bicycling Education and Encouragement		72 – 80
05		
Routes and Recommendations		82 – 98
06		
Implementation and Evaluation		100 – 109

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01 | Introduction



1.1 Plan Purpose, Scope, and Methodology

Purpose

The vision for the Powhatan County trail master plan is to create a unique trail system in the County that provides people access to outdoor recreation, celebrates the unique historical, cultural, and environmental locations and destinations throughout the County, and creates alternative transportation opportunities for residents and visitors. The focus of past planning efforts has been to protect the rural character of Powhatan County, preserve historical and cultural properties, protect existing wildlife management areas, and coordinate land use with the provision of transportation facilities and community facilities, all with an eye toward economic development and fostering a healthy lifestyle for Powhatan County. The trail master plan should protect, promote, and enhance existing facilities throughout the County—places where land connects to water, people connect to parks, residents connect to work, school, and shops, and the County connects to the countryside.



Trails provide opportunities for exploration and discovery

Scope

McGill Associates, PA., was contracted by Powhatan County to prepare a trail master plan to guide the identification and prioritization of safe pedestrian and cycling linkages. The goal is an inclusive and viable pedestrian and bicycle network.

The scope of services that Powhatan County requested is for the study to create the framework of a multi-use trail system that will accommodate walking, biking, paddling, and equestrian activities. The trail network should provide a safe and enjoyable experience for residents and visitors of all ages and abilities. The network should also provide access to the outdoors and promote an appreciation for all the County offers.

The Powhatan County Trail master plan will also look at ways to strengthen the local economy through recreational tourism. The multi-use trail network will make connections at key points of interest, support local businesses, and stimulate economic growth.

The study also discusses and identifies potential support facilities, including restrooms and water stops. Finally, the study touches on other important factors, like recreational access points, educational and historic features, scenic vistas, economic development, and green infrastructure. The study also discusses potential sources of funding.



Methodology

Many areas within the County limits could benefit from improved pedestrian and bicycle facilities. The County recognizes the need to plan for the future by continuing to develop a trail network that provides connectivity for its users. A proactive approach is imperative in establishing priorities for future facilities, reducing construction costs, and logically implementing facilities.

The study area broadly consists of the County limits and popular destinations within proximity by alternative transportation methods to the County. It is important to understand the area's existing pedestrian and cycling patterns and their destination points.

To better comprehend the existing conditions, identify user needs, and recommend appropriate improvements in the Trail master plan, the following processes were used:

- Inventory of the County's existing pedestrian / bicycle facilities
- Review of existing planning data and studies
- Collection and analysis of data via public meetings, surveys, stakeholder interviews, and direction provided by County staff
- Guidelines for developing future facilities, repairing existing facilities, and maintenance were created. Probable costs for all recommendations were provided
- Identification and prioritization of key Powhatan County trail segments
- Identification of possible funding sources for the County to pursue
- Identification of guidelines and implementation for current policies and existing pedestrian programs

Information gained from these processes was used to identify potential improvements and recommendations. Implementing all the proposed improvements at once or in a short time frame would be overwhelming. As the implementation of capital improvements begins, the most immediate needs must be recognized first. In addition to facility needs, forming an implementation plan is an important short-term goal in establishing long-term objectives.

1. Connectivity to the Powhatan County trail system was an important consideration of this plan.
2. Sidewalks should seek to link the trail network to common destinations.
3. The plan includes recommendations for, bike routes, multi-modal pathways, natural surface paths, equestrian use, and support facilities.
4. The improvements recommended in the Powhatan County trail master plan are intended to be implemented over 10-20 years and will require creative funding mechanisms. Three of the significant short-term goals are identifying improvement costs, funding costs, and project prioritization.

The primary goals of the trail master plan are:

- Providing connectivity for separate areas of the County
- Creating a walkable, bikeable community
- Providing potential for future economic development
- Adding support facilities
- Identifying potential destinations to link to
- Identifying and enhancing scenic views

1.2 History and Geographic Characteristics

Residents and visitors enjoy the region's rural nature and access to various historical and cultural locations to enjoy everyday life. The region's historic landforms and man-made historic features are important components of the area and should be protected and preserved whenever possible. During any future design of Powhatan County trails, it will be important to identify and enhance these historical, cultural, and natural resources.



Powhatan County's location allows convenient driving access to Richmond.

Topography

Powhatan County is in the central region of Virginia, directly to the west by approximately 30 miles from the Commonwealth's capital, Richmond. The County is approximately 130 miles south of Washington, D.C., via Interstate 95. According to the United States Census Bureau, Powhatan County has a total land area of approximately 262 square miles, with the James River along the northern border and the Appomattox River along the southern border. The land consists of rolling hills and shallow valleys typical of the Piedmont region of Virginia.

Existing Multi-use Facilities

The County has made efforts to accommodate pedestrians in the central village of Powhatan by implementing sidewalks along the central spine of Old Buckingham Road. There are also existing trails in the County, located at Fighting Creek Park and throughout Powhatan State Park along the northern boundaries of Powhatan County. These mixed-use nature trails can be used for hiking, biking, and horseback riding.

The existing trail network focuses on the Village district, State Park, and Wildlife Management Area. As the County continues to plan an integrated network, these central locations will provide areas to branch from as the trail system is integrated throughout the County, forming new connections to additional destinations.

1.3 Previous Planning Studies

2009 Virginia's Long-Distance Trail Network: Connecting our Commonwealth

The 2009 Virginia Greenways and Trails Task Force - Final Report, titled "Virginia's Long-Distance Trail Network: Connecting Our Commonwealth," was a strategic initiative by the Department of Conservation and Recreation. The task force was established in January 2008 to develop a comprehensive strategy for creating an interconnected system of long-distance trails across Virginia.

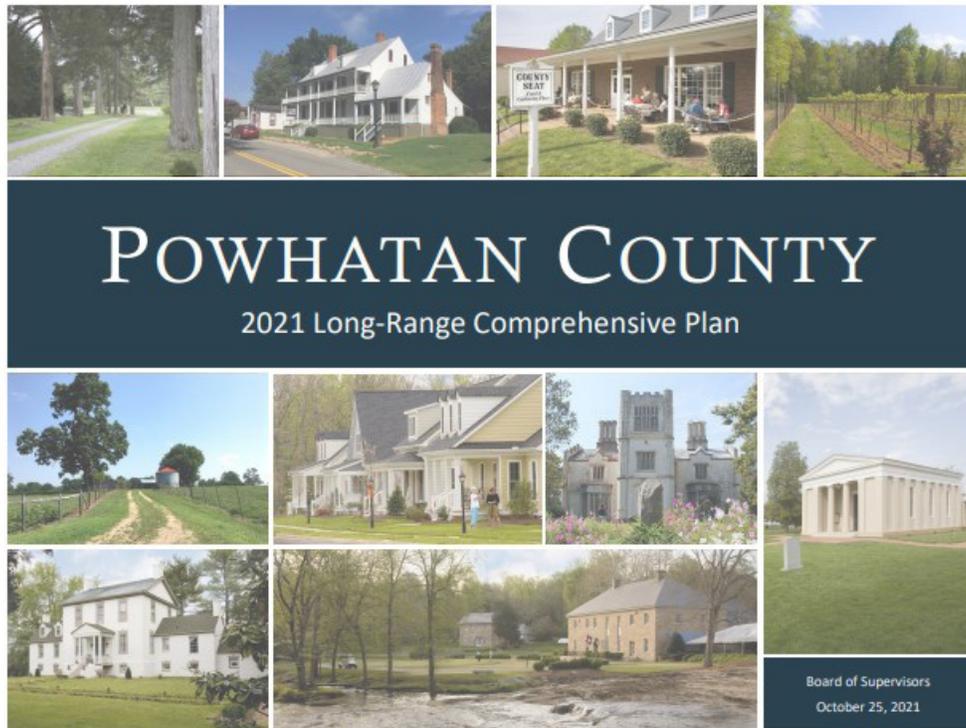
The report includes an inventory of existing conditions, a vision for the network, and a focused list of nine actions needed to accomplish the vision and link regional and community trail systems throughout the Commonwealth. The strategy focuses on the 2007 Virginia Outdoors Plan's call for the establishment of six major "trunkline" long-distance trails.

The strategy's goals include enhancing access to the outdoors, improving linkages between communities and key tourist destinations, and supporting long-term protection of Virginia's "green infrastructure." The report serves as a roadmap for developing a statewide system of interconnected open-space corridors, promoting healthy recreation, supporting local economies, and protecting Virginia's diverse open space and natural landscapes.

Powhatan County's efforts to develop a trail network align with the state's vision for a connected pedestrian / bicycle network. The report's focus on protecting Virginia's "green infrastructure" could influence the County's trail design and maintenance approach, which would ensure sustainability and environmental stewardship.

The 2009 Virginia's Long-Distance Trail Network plan included five goals to guide the planning and implementation of their recommendations:

1. Enhance outdoor access by developing a trail network that promotes healthy recreation and connects citizens, including children and families, to Virginia's diverse open space and natural landscapes.
2. Improve linkages between communities and key tourist destinations in both rural and urban areas to promote regional outdoor recreation and heritage tourism initiatives, support local economies, and provide economic stimulus for small business start-ups and entrepreneurial expansion.
3. Create the foundation of a statewide system of interconnected open-space corridors that has trails and supports the long-term protection of Virginia's "green infrastructure" and the ecological services it provides.
4. Integrate trails as a critical component in Virginia's transportation infrastructure in order to provide efficient and convenient non-motorized connections to neighborhoods, schools, community facilities, and employment centers.
5. Educate citizens about the trail network's social, ecological, transportation, and wellness benefits through environmental research, multi-cultural programs, and "outdoor classrooms."



2021 Powhatan County Long-Range Comprehensive Plan

This long-range comprehensive plan was designed to guide how the County will grow in the future. It addressed all of Powhatan County and was intended to positively influence all of the physical elements that make up the form of the County. The main purpose of the plan was to encourage the continued development of a safe and healthy community by offering a distinctive “vision” for the continued growth of Powhatan County. While the comprehensive plan represents an idea of what the County wants to become, it also provides realistic notes on the anticipated social, economic, and political constraints.

The 2021 comprehensive plan made several recommendations to maintain the community’s rural character, preserve open space, and increase outdoor recreation opportunities. These recreational opportunities included public access to the James and Appomattox Rivers and provided trails for walking, biking, and equestrian uses. The plan looked at these opportunities to improve the quality of life for residents, promote healthy habits, and strengthen the local economy.

Many strategies to support the parks and recreation goals involved expanding trails and creating a trail master plan that encourages connections to parks, open spaces, and historic sites. It highlights over 5,000 acres of public land throughout the County as important destinations for the trail master plan.

BikePedRVA 2045 (adopted 2022)

The BikePedRVA Plan aimed to promote bicycling in the greater Richmond area. This document served as an update to the original bicycle plan, adopted in 2004. The plan looked at ideas related to active transportation, establishing standards, a safe and accessible pedestrian sidewalk network, and incorporating bike boulevards and safe streets. It gives important safety information and recommendations for big regional ideas, of which Powhatan County is a part of the Far West End region.

Projects that may directly affect Powhatan County include the planning of the James River Heritage Trail, a statewide initiative to create a network of trails running along or near the James River. Connecting the Huguenot Trail / Route 711 corridor was discussed thoroughly.

1.4 Existing Policy and Regulatory Requirements

Commonwealth of Virginia

Based on the Federal Highway Administration's policy statement that calls for bicycle and pedestrian facilities on all new roadways, the Virginia Department of Transportation has developed policies for integrating bicycle and pedestrian accommodations.

The state policy documents provide procedures for incorporating bicycle and pedestrian accommodations in the construction, reconstruction, operation, and maintenance of the state's transportation network. The Virginia Department of Transportation (VDOT) Policy for Integrating Bicycle and Pedestrian Accommodations states, "Bicycling and walking are fundamental travel modes and integral components of an efficient transportation network. Appropriate bicycle and pedestrian accommodations provide the public,

including the disabled community, access to the transportation network, connectivity with other modes of transportation, and independent mobility regardless of age, physical constraints, or income. Effective bicycle and pedestrian accommodations enhance the quality of life and health, strengthen communities, increase safety for all highway users, reduce congestion, and benefit the environment. Bicycling and walking are successfully accommodated when traveling by these modes, which are efficient, safe, and comfortable for the public. A strategic approach will consistently incorporate the consideration and provision of bicycling and walking accommodations into the decision-making process for Virginia's transportation network."



VDOT will promote the inclusion of bicycle and pedestrian accommodations in transportation planning activities at local, regional, and statewide levels. These planning activities include corridor studies, small urban studies, regional plans, and the statewide multi-modal long-range transportation plan. VDOT will coordinate with local government agencies, regional planning agencies, and community stakeholder groups. In addition, VDOT will coordinate with the Virginia Department of Rail and Public Transportation (VDRPT) and local and regional transit providers to identify the need for bicycle and pedestrian access to public transportation services and facilities.

Benefits of Pedestrian Facilities

Pedestrian environments can be created through deliberate planning or just developed because of natural landscape characteristics with no forethought for the pedestrian. To better understand what makes a pedestrian-friendly environment, studying and analyzing the places where people travel most comfortably as pedestrians is necessary. For example, adding a random sidewalk may not encourage people to walk unless it connects pedestrians to places, they want to go.

A walkable community needs connecting pedestrian corridors conveniently located near homes, schools, entertainment/shopping areas, and places of employment. A “walkable” community is defined by its ability to enhance the lives of all its citizens through a variety of measures, which include the following:

- Community Health
- Transportation Alternatives
- Environmental Benefits
- Safety
- Community Identity

1.5 Benefits of Trails and Greenways

The State of Virginia recognizes the benefits of trails for pedestrians and cyclists. The state has a long track record of promoting and supporting trail projects. In January 2008, the Department of Conservation and Recreation (DCR) established the Greenways and Trails Task Force (GTTF) to develop an overall strategy for creating an interconnected system of long-distance trails in Virginia. The DCR states that “greenway efforts around the state are increasing rapidly. Examples include the Northern Virginia Greenways project, Metro Richmond Greenways, Loudoun County / Leesburg Greenways Plan, Charlottesville’s Rivanna River Greenway,

Historic Rivers Greenway initiative in the County of Williamsburg, James County, and York Counties, the Roanoke Valley Greenways Plan, the Giles County / New River Greenways Plan, and the Potomac River Greenways Coalition. Significant existing regional and state greenways include the Virginia Capital Trail, Washington and Old Dominion Trail, New River Trail State Park, and Virginia Creeper Trail.”

The Virginia Department of Transportation’s Community Trail Development Guide (Middleburg 2012) mentions, “Trail planning is becoming more prevalent in Virginia as communities recognize the social, economic, environmental, transportation, and health benefits of trails.”



Trails at Fighting Creek Park



Natural Surface Multi-use Trail

Support for Active Living

Having access to trails encourages an active lifestyle. The health benefits are available to many users, including the elderly, children, and persons with disabilities. Many people are experiencing increasingly busy lives. They are encouraged to seek fitness opportunities through access to unstructured recreation activities, such as walking, cycling, and jogging, all suited for outdoor trails.

Thirty minutes of brisk daily walking is all that is needed to improve fitness levels and health benefits. This plan seeks to provide better connectivity for residents to recreational, historical, and economic amenities throughout the County, increasing their opportunities to access these valuable resources.

Social Benefits

The following is a list of many of the social benefits typically associated with pedestrian and bicycle facilities:

- By linking shopping, entertainment, workplaces, and parks via trails and greenways, compact networks can be built in neighborhoods that will support alternative transportation and contribute to economically and environmentally sustainable communities
- Trails offer low-cost, unstructured recreational activities that can be enjoyed in solitude, by families, and as group activities. Trails are available to all ages, and the associated activities (e.g., bird watching, walking/hiking, road/mountain biking) can be relatively inexpensive in comparison to other recreation activities that have user fees and require expensive equipment
- With appropriate design, most trails can be made physically accessible to a wide range of skills and abilities
- Many trails can be used in all seasons through a variety of activities
- Trails offer leisurely opportunities to appreciate nature and the surrounding community
- Volunteerism and collaboration strengthen community bonds and foster interaction and partnerships with business and community organizations

- Sidewalks and bicycle facilities can help build the social fabric of a community, physically connecting neighborhoods and outlying communities and encouraging casual interactions

Community Health

There are numerous benefits to be derived from walking, the most prevalent being the acquisition of healthier lifestyles. Unhealthy eating habits, which are primarily due to the increased consumption of fast food, continue to contribute to rising obesity rates in Americans of all ages. Walking is a preventive measure for heart disease, cancer, diabetes, and mental health diseases. Walkable communities encourage people to walk, whether consciously or subconsciously, thereby increasing physical activity and decreasing television or computer time (which promulgates sedentary lifestyles).

By providing accessible, inviting pedestrian facilities, Powhatan County can provide equal opportunities for everyone to improve their health and prevent disease through routine or planned walking exercise(s). In turn, this saves governments and local employers money in health care costs and the loss of productivity due to sick days that would otherwise not have occurred.

Studies show that walking increases:

- Energy, stamina, and metabolism
- Wellness, fitness, and psychological well-being
- The reduction of risk factors like high blood pressure, anxiety, obesity, anxiety, coronary artery disease, some cancers, and some chronic diseases
- HDL - the "good" cholesterol
- Muscle development and bone density

Childhood Obesity

In the 21st century, children represent the largest cycling population. But thanks to several contributing factors, including sedentary lifestyles, busy or dangerous roadways, and electronic screen-oriented activities, fewer American children now play outside frequently, including riding bicycles.

Needless to say, most sedentary youths who do not walk or ride a bike regularly will grow up less inclined to do so than adults. Promoting and encouraging physical activity at a young age will add numerous health, economic, environmental, and social benefits for our communities. Today, one in five children is overweight or obese.

Childhood obesity is likely to persist into adult life and puts individuals at risk for several health complications, including stroke, hypertension, diabetes, and other chronic diseases. The magnitude of obesity is far-reaching:

Overweight children and adolescents are associated with being overweight during adulthood. Parental obesity more than doubles the risk of adult obesity among both obese and non-obese children under ten years of age.

Since 1980, the childhood obesity rates (ages 2-19) have tripled, with the rates of obese 6 to 11-year-olds more than doubling (from 7 percent to 17.5 percent) and rates of obese teens (ages 12-19) quadrupling from 5 percent to 20.5 percent. (NHANES, 2011-2014 data)

Physical education programs should include moderate-intensity activities and not focus exclusively on team-oriented sports activities to contribute to the public health goal of lifelong activity.

Emerging research underscores the significant impact of our living and working spaces on our overall health. The term “built environment” refers to human-made surroundings, encompassing elements such as homes, workplaces, schools, parks, industrial zones, agricultural lands, and extensive transportation networks.

The presence and accessibility of amenities like cycling and walking trails, fitness centers, and an environment’s general safety and aesthetic appeal are pivotal in shaping the nature and extent of physical activity individuals participate in. These features of the built environment can influence health-related behaviors and outcomes through various pathways, including promoting or discouraging exercise and recreational activities, determining access to nutritious foods and preventive health resources, and impacting stress and other psychosocial factors that may impact community health matters such as childhood obesity.



Conveniently placed bike racks help secure bikes at trailheads and destinations

Transportation Alternatives

Bicycling as an alternative mode of transportation is not for everyone, but it is a growing way folks choose to get around. Biking has environmental and health benefits, but economically speaking, biking shines. As of 2024, the annual maintenance cost of a bicycle is estimated to be around \$350. If ridden 2,000 miles, this averages to about 17.5¢ per mile. In driving a car or truck, however, we must account for additional operating costs (gasoline, vehicle maintenance, and tires) of approximately 67 cents per mile. The average daily driving distance in the U.S. is 37 miles, or about 1 hour of drive time, which shows that owning a car costs about \$12,182 annually. Owning a car is more than 34 times more expensive than operating a bicycle, mainly when you include the cost of the vehicle and insurance.

Walking also creates an alternative to vehicular transportation. Nationally, traffic congestion in urban areas is getting worse, and the cost of owning/operating an automobile is rising. Pedestrian facilities are necessary to provide a means for people who want to walk instead of drive, reducing the number of vehicles on the road.

Walking is a cost-effective means of transportation. No fees, taxes, or licenses are required compared to the average annual cost of operating an automobile, which can easily exceed \$5,000 per year. Economically speaking, walking is the most affordable mode of transportation available to anyone.

For some population segments, walking is the only means of transportation available. This cross-section of the community primarily includes people whose income prohibits them from purchasing/maintaining automobiles and senior citizens who eventually become unable to drive. These members of our society rely heavily on walking to work, shop, exercise, and participate in other social activities.

Environmental Benefits

Walking also has the least negative impact on the environment. Choosing to walk to instead of driving will reduce air pollution. Improving air quality is a major concern across the United States.



Boardwalks help users traverse environmentally sensitive areas

Walking, as opposed to driving vehicles, also positively impacts the availability and conservation of our natural resources. Reducing petroleum consumption (specifically in cars and asphalt) will be increasingly beneficial. Although sensitive populations should decrease walking during ozone-active days, an overall increase in regular walking could reduce mobile emissions. As more walking occurs, fewer emissions are produced, thus creating a natural and environmentally friendly cyclic phenomenon.

Some pedestrian facilities (such as greenways) are often developed along rivers and streams. Oftentimes, these facilities create “buffers,” which help mitigate drainage from new development, thereby improving the water quality for watersheds. As an added benefit, greenways help connect wildlife habitats and natural ecosystems.

Other environmental benefits include:

- Trails support urban and rural recreational lifestyles and can support broader environmental and ecological objectives by protecting green space corridors
- By rationalizing and re-routing random and informal paths, trails can keep users away from sensitive environmental areas
- Trail maps and interpretive signage can help enhance appreciation and awareness of ecology and promote stewardship

Tourism Benefits

As one of the most highly requested recreational amenities, pedestrian and bike paths promote a high quality of life for communities and indicate a desirable place to live and operate a business.

Sidewalks, trails, and bike lanes can connect key destinations such as natural parks, cultural heritage features, or other community amenities, encouraging visitation by residents and tourists.

One example of the economic benefits may be seen in the “Trail Towns” initiative along the Great Allegheny Passage. This initiative promotes businesses aiming to capitalize off the 700,000 annual trips taken along the rural trail corridor between Cumberland, Maryland, and Pittsburgh, Pennsylvania. Direct annual spending by trail users exceeds \$40 million.

Economic Benefits

Research has indicated that proximity to trails and greenways contributes to higher real estate values. Properties close to trails are often highly marketable with relatively more value stability than those without pedestrian or bicycle connectivity. Residential areas and businesses connected by trails and greenways benefit from dollars trail users spend.

While larger US population centers have proven that trail and greenway development can spur the economies of disparate communities linked via pedestrian / bikeable trails, the benefits of trail user dollars spent on neighboring communities is a sound example for any sized municipality.



Public access to natural areas encourages patronage of public recreation resources

Trails can create direct jobs through construction and indirect jobs through tourism and visitation. Indirect jobs might include restaurants, lodging, food and beverage, and other expenses.

Many trail users purchase local goods to support their trail activities (e.g., mountain bikes, jogging gear, hiking shoes). These purchases contribute to the local economy through jobs and taxes.

Salary Benefits

Pedestrian and bicycle facilities benefit residents and visitors by offering a safer option than walking or riding along busy, unimproved roads.

According to recent research, trails and greenways significantly contribute to the safety and livability of communities. They offer many benefits, including recreational, health, transportation, and environmental advantages, collectively enhancing communities' overall quality of life.

Trails and greenways provide people of all ages with attractive, safe, accessible, and low- or no-cost places to cycle, walk, hike, jog, or skate. They help individuals incorporate exercise into their daily routines by connecting them with places they want or need to go. The U.S. Centers for Disease Control and Prevention (CDC) recommends parks, trails, and greenways as infrastructure interventions that increase physical activity.

In addition to providing a safe place for people to enjoy recreational activities, greenways and trails often function as viable transportation corridors. Trails can be crucial to a seamless urban or regional multi-modal transportation system.

Contrary to some beliefs, greenways and trails do not increase crime rates. Studies have shown that crime rates are lower on trail networks than the overall crime rate for the region in which they are located. Greenways and trails can reduce crime by providing increased visibility to areas. Therefore, trails and greenways play a significant role in creating safer and more livable communities.

Greenways and shared-use paths are dedicated to pedestrian and bicycle users and support safer travel than mixed via entirely on-road routes. The absence of vehicular traffic on dedicated greenways and trails means there is less chance of vehicular / pedestrian accidents.

Enhancing Community Livability via Connectivity

The Powhatan County Trail Master Plan is designed to serve as a comprehensive guide that addresses route planning, standards for trail development, and the implementation of connectivity projects. The aim is to broaden the residents' ability to access various destinations throughout the County. While Powhatan County already has some existing sidewalks and trails, these facilities are not consistently connected to residential areas or popular destinations. The plan is to create a more accessible network connecting all parts of the County and linking it to other regional trail systems, thereby increasing opportunities for residents and visitors to engage in physical activity.

Well-connected and accessible pedestrian and bicycle facilities foster and enhance community interaction. An ideal pedestrian experience should be aesthetically pleasing and evoke a sense of comfort and enjoyment. Enhancing open spaces, parks, downtown areas, retail outlets, and other similar destinations can contribute to a vibrant pedestrian environment. Furthermore, the pedestrian environment should be equipped with amenities such as landscaping, benches, specialty paving, safety warning devices, and other elements that ensure pedestrians' safe and enjoyable experience.

It is recommended that Powhatan County prioritize the restoration of aging pedestrian amenities, such as existing trails and sidewalks, in addition to constructing new ones. Sidewalk connectors that link residential areas, shopping centers, workplaces, and recreational areas often serve as catalysts for activities such as walking, outdoor dining, window shopping, social interaction, business engagements, and tourism. Therefore, the County should encourage property owners to construct connector sidewalks that integrate with the overall pedestrian and bicycle system that the County intends to invest in.

“Well-connected and accessible pedestrian and bicycle facilities foster and enhance community interaction.”



Enjoying a scavenger hunt at Fighting Creek Park



02 | Evaluating Current Conditions

2.1 Overview

In Section 2, the existing bicycle and pedestrian facility conditions in Powhatan County are reviewed and evaluated. To begin this process, information was gathered from various sources, including stakeholder interviews, site analysis, a public questionnaire, community meetings, relevant planning documents, and direction from County staff. The information gleaned from this initial research was later used to develop the final Powhatan County Trail master plan.

In general, a bicycle and pedestrian-friendly environment indicates a strong and actively involved community. Improving bicycling access between destinations within Powhatan County not only supports bicycling as a safe and healthy alternative to driving but also enhances the vitality of the entire community.

A viable bicycle transportation network is essential to the economic and social welfare of a sizable population within the community.

Functional bicycle facilities strive to accommodate the following characteristics:

- Healthy lifestyles
- Alternative transportation
- Reduction of environmental impacts
- Safety
- Community identity

Physical Characteristics

A major component in creating a trail master plan in a rural setting like Powhatan County is accessing, preserving, and celebrating natural resources such as rivers, streams, woodlands, and open space. County residents, through public input, have recognized this rural heritage as a vitally important consideration in their quality of life.

Powhatan County is in the eastern part of the Piedmont region of Virginia, about 30 miles west of Richmond and 130 miles south of Washington, DC. The County has a land area of approximately 262 square miles. This results in a population density of approximately 116 people per square mile of land. Powhatan County is bordered by Cumberland County to the west, Goochland County to the north, Henrico County to the northeast, Chesterfield County to the southeast, and Amelia County to the south. The County does not have any local government municipalities. However, there are twenty designated communities. Powhatan Village is the County center, and most of the County offices and resources are located here.

The eastern edge of the County begins with the coastal region of Virginia. Prominent features include the James River, which forms the County's northern border, and the Appomattox River, which forms the County's southern border. The County landscape is predominantly rural and agricultural. US Highway 60, a major east-west travel route, runs through Powhatan County, bisecting the County in nearly half. Much of the County's population growth occurs along this corridor.

User Demographics / Current Usage

According to the 2020 Decennial Census, the estimated population for Powhatan County was 30,333 people. The American Community Survey's 5-year estimate gauged the County's population to be 30,503, resulting in a gain of approximately 170.

The age breakdown of Powhatan County's population informs that the "working class" population is by far the largest demographic for the County, with adults between the ages of thirty and sixty-nine supplying almost 58% of the population. It should be noted that a high percentage of the working-class population often utilizes bicycle and pedestrian facilities to promote their healthy lifestyle choices.

Age

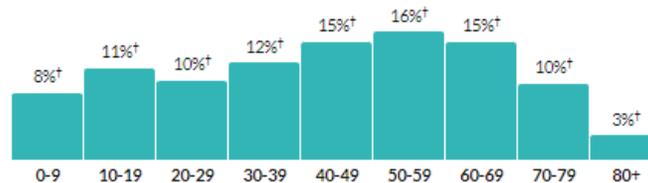
45.6

Median age

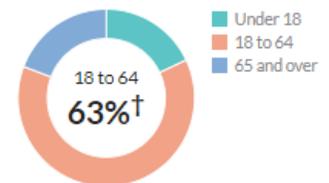
about 20 percent higher than the figure in Virginia: 38.7

about 20 percent higher than the figure in United States: 38.5

Population by age range



Population by age category



United States Census Bureau (2022) American Community Survey via CensusReporter.org
Source: <https://censusreporter.org/profiles/05000US51145-Powhatan-County-va>

The median household income for residents in Powhatan County is \$108,089, which is about 25% higher than the state median. People who have a higher discretionary income tend to desire to live in communities that support a higher quality of life.

Income

\$47,268

Per capita income

about the same as the amount in Virginia: \$47,210

about 20 percent higher than the amount in United States: \$41,261

\$108,089

Median household income

about 25 percent higher than the amount in Virginia: \$87,249

about 1.4 times the amount in United States: \$75,149

Household income

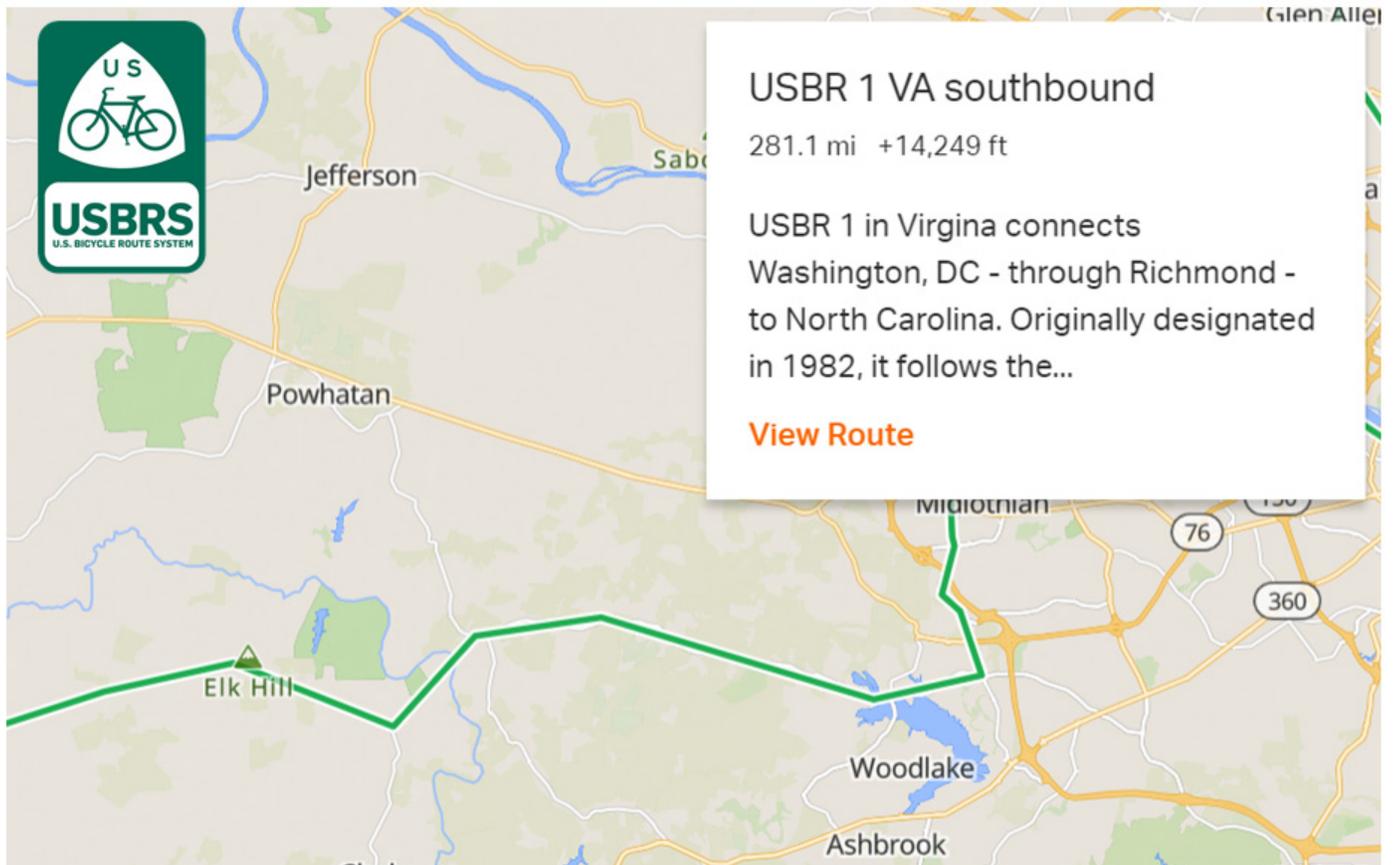


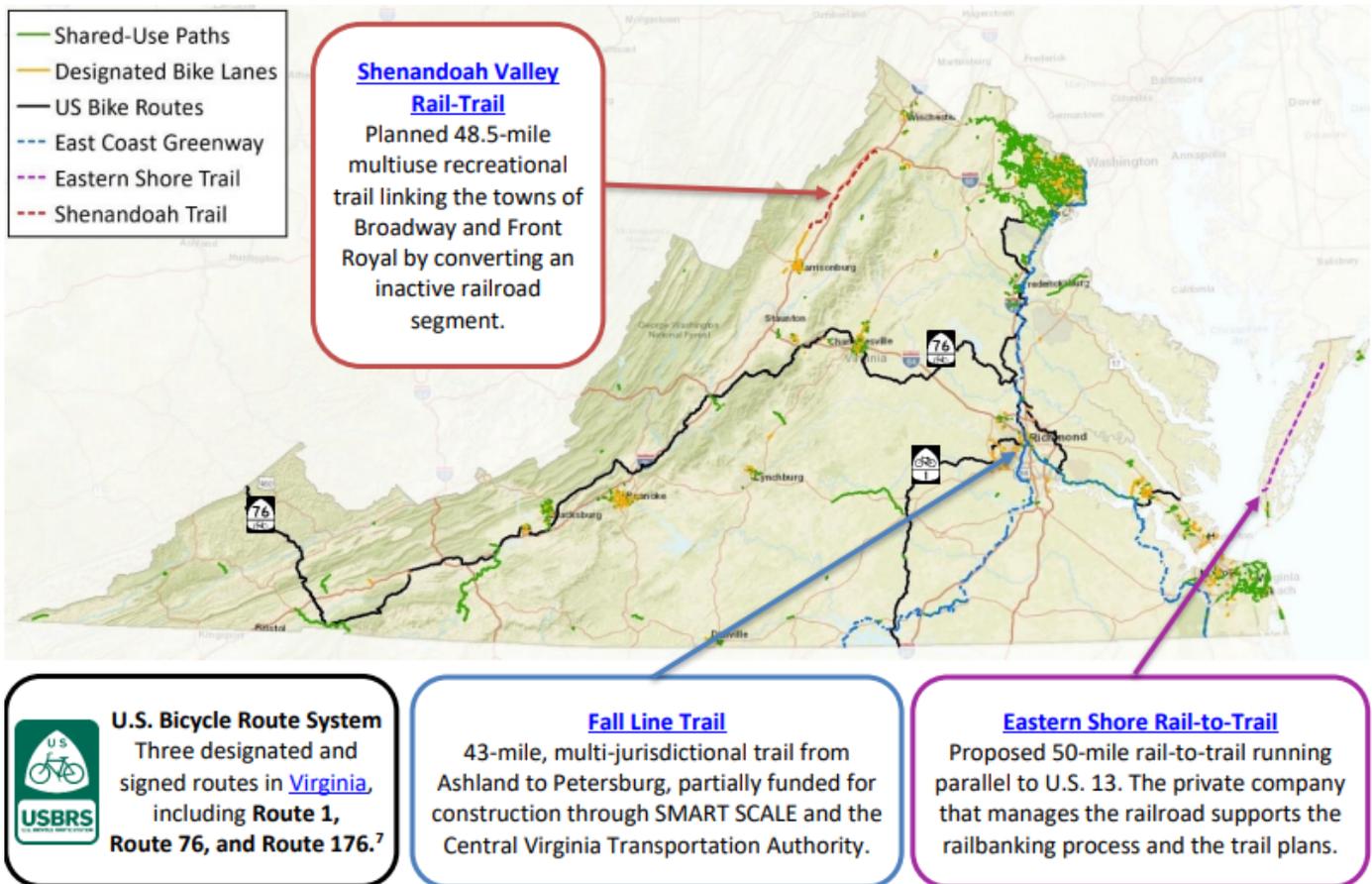
United States Census Bureau (2022) American Community Survey via CensusReporter.org
Source: <https://censusreporter.org/profiles/05000US51145-Powhatan-County-va/>

2.2 National, State, Regional, and Local Planning Context

The nationally significant US Bicycle Route (USBR) 1 runs along the southeastern board of the County along Highway 604 from approximately Genito and Dorset and beyond. This major cycling thoroughfare has a national following, similar to the Appalachian Trail hiking route. These national routes have a draw of national and, at times, international significance. This piece is even more exciting because this USBR connects to a trail of statewide significance, the Virginia Fall Line Trail.

Regional and State Significance: The Virginia Fall Line Trail intersects with USBR 1 in Richmond, enhancing its regional importance. The 2022 Virginia Multi-use Trails Initiative has significantly improved the distribution of multi-use trails across the state, making Virginia more accessible and enjoyable for outdoor enthusiasts. Furthermore, the Virginia Fall Line Trail is interconnected with the Virginia Capital Trail, adding to its network of trails. This connection to the Virginia Capital Trail enhances the state's trail system and elevates its national significance. This interconnected network of trails underscores Virginia's commitment to promoting outdoor recreation and active transportation.





Source: <https://rga.lis.virginia.gov/Published/2022/RD87/PDF>

Local Significance: The comprehensive 2021 Powhatan County, Virginia plan emphasizes the importance of walking trails and encourages their development. The plan suggests that these trails should ideally connect to regional trail networks. Notably, the National Trail route is operational in Powhatan County. The plan advocates for enhanced connectivity to this national trail, which links to other trails of statewide and regional significance.

In addition, the plan repeatedly recommends making communities more walkable through the development of trails, greenways, and sidewalks. Specific trails, such as the Huguenot Trail, are mentioned frequently and highlighted within the context of fostering areas that are appealing for new residential and commercial development.

The plan also underscores the significance of local trail amenities like Fighting Creek Park and state areas like the Powhatan Wildlife Management Area and Powhatan State Park. It supports the development of trails within these parks and encourages connectivity to these areas. Overall, the plan endorses the development of several trails and connection points, thereby promoting a more walkable and connected community.

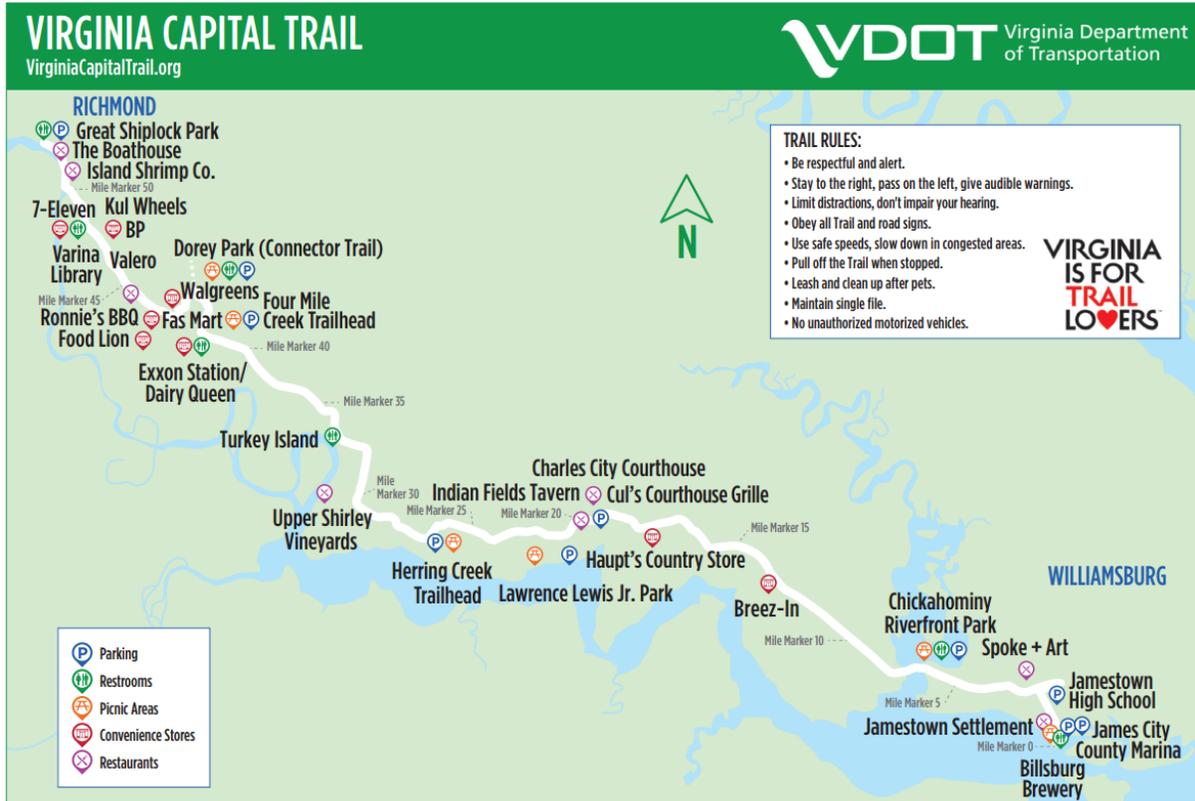


Table 19: Multimodal Connections

Short-Term Priorities (0—10 Years)							
Road Name	From	To	Length (mi.)	Description	Plan Reference	Cost	Map ID
Off-Road Trail	Powhatan Middle School	Fighting Creek Park	0.5	Construct a gravel trail from Powhatan Middle School to Fighting Creek Park near Powhatan YMCA.	Courthouse Village Pedestrian/ Bicycle Analysis (PlanRVA: 2020)	\$150,000	A
Old Buckingham Road	Mann Road	Powhatan Middle School	0.8	Construct a sidewalk on one side of Old Buckingham Road to connect to existing sidewalk.	Courthouse Village Pedestrian/ Bicycle Analysis (PlanRVA: 2020)	\$1,900,000	B
Skaggs Road	Old Buckingham Road	Tilman Road	0.2	Construct a sidewalk on one side of Skaggs Road to connect to existing sidewalk.	Courthouse Village Pedestrian/ Bicycle Analysis	\$475,000	C
Courthouse Village Park and Ride Lot	N/A	N/A	N/A	Construct a park and ride lot (approximately 25 spaces) adjacent to the VDOT Maintenance Facility on Old Buckingham Road adjacent to Anderson Highway.	Richmond Regional Park and Ride Investment Strategy (PlanRVA: 2019)	\$500,000	D
Old Buckingham Road	General Scott Boulevard	Little Fighting Creek Road	0.2	Construct new sidewalk on one side of Old Buckingham Road to connect to existing sidewalk.	Courthouse Village Pedestrian/ Bicycle Analysis (PlanRVA: 2020)	\$475,000	E

Source: Powhatan County, Virginia: 2021 Long-Range Comprehensive Plan. Pg. 148

2.3 Local Transportation Network Assessment

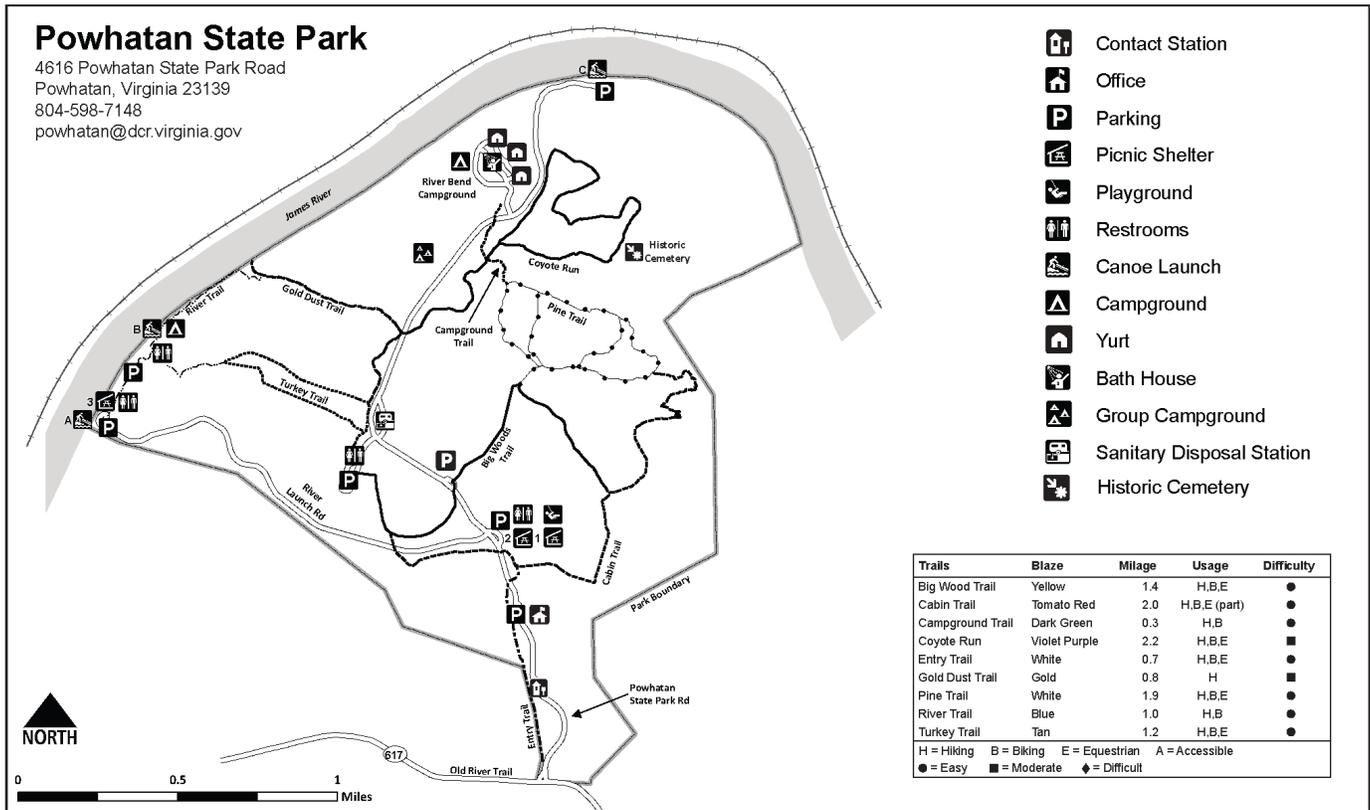
Sidewalks and walking paths are assets to areas with slightly more population density. Walking from your home to the park, the local school, restaurants, or a public location such as a library or cultural venue is highly sought after in communities. Powhatan Village is a hub of activity within the County. The access to local restaurants, public schools, Fighting Creek Park, the YMCA, and the County library creates a destination hotspot within Powhatan County. A network of existing sidewalks connects residential districts to the south near Three Crosses Distilling Company along Old Buckingham Road to the center of Powhatan Village and north to Mann Road and the library. This allows residents and visitors to walk from the village center to the library and Fighting Creek Park.



Fighting Creek Park Trail Map | Source: <https://www.powhatanva.gov/facilities/facility/details/Fighting-Creek-Park-5>

Near the library, the Goochland Powhatan Master Gardener Association maintains a native plant trail. This trail links to a walking path that provides access to the park and meanders through the adjacent woods back to the residential neighborhood, where the sidewalk begins. A trail user can access a walking loop varying from a quarter mile to two and a half miles.

Along the northern boundaries of the County lies the James River and Powhatan State Park. This regional park provides visitors access to about 2.5 miles of riverfront through picnic pavilions, canoe launches, and viewsheds. There are also a variety of camping options available for visitors to the park. These include primitive camping, full-service camping with hookups and a dump station, a group campground, and yurts. The state park has about 12 miles of multi-use trails that meander through fields, pine forests, and mature hardwoods. 9 miles of trail is available for equestrian use.



Powhatan State Park Trail Map | Source: https://www.dcr.virginia.gov/state-parks/Powhatan#park_trail_guide

Bicycling Trip Characteristics

Bicycling trips are characterized as short and long-distance trips made for exercise, transportation, or utilitarian purposes. Since residential areas within the County are without dedicated bicycling facilities, few trips are made for transportation purposes. Kids may bike on local streets, and residents may make short recreational trips. Richmond Area Bicycling Association members often brave long-distance recreational rides between the Powhatan Courthouse and Richmond via Highway 60.

The common idea shared by participants of the community meetings is that all the residential areas within the County should be safe to walk in and ideally connected to an overall County-wide network of trails or sidewalks. Despite the keen interest of some participants in having bike lanes from their residences to popular destinations, implementing dedicated bicycle lanes or bikeable shoulders is impractical in most residential areas due to constraints such as right-of-way, topography, and vehicular traffic. Consequently, it is advisable to establish a network of “shared lane markings” to enhance the visibility of bicyclists on future bike routes. State highways and other collector and arterial roads may accommodate bicycle lanes in the future and provide on-street connections to neighboring greenway systems and bike routes.

The County should consider developing a safety and signage system to begin shaping appropriate behavior and public expectations regarding how bicyclists and pedestrians can use the existing and future trails and bicycle facilities. As the population of commuters biking and walking to destinations continues to grow, a clear and easy-to-understand system of rules can help improve the safety and efficiency of the County’s bike / pedestrian network.

Understanding what destinations potentially have to attract bicycle traffic is an important step in the planning process. Below is a brief, non-exclusive, list of destinations considered:

- Powhatan State Park
- Powhatan Wildlife Management Area
- Breweries, distilleries, vineyards
- Country clubs and golf courses
- Area schools, parks, and libraries
- Retail locations
- Neighborhoods
- The James and Appomattox Rivers

Shopping destinations are scattered throughout the County, but the main shopping areas that currently generate or could potentially generate bicyclist traffic are:

- The Village (Powhatan Courthouse Area / Scottville) – This is predominantly the downtown center of Powhatan County. It boasts local restaurants and shopping, residences, and public civic facilities. This area is the County seat located in the heart of Powhatan County. It’s a charming place with a rich history and a hub for various community activities.
- Route 60 / Anderson Highway – In Powhatan County, Virginia, most shopping and retail locations are along Route 60, which runs east to west. This major artery connects Powhatan to more populated areas, such as Midlothian and Chesterfield, and even leads straight into Downtown Richmond. Notable shopping destinations along this corridor include Walmart and other popular retail destinations. Additionally, the Vintage Antique Shack on Route 60 offers a variety of refinished and handmade items and is a popular destination for tourist visitors to the County. Therefore, Route 60 serves as the main shopping and retail corridor in Powhatan County, providing residents and visitors with access to a wide range of retail and commercial businesses.

Busy roadways pose a major barrier for cyclists and pedestrians trying to bike or walk from one point to another. The roadways with the highest Annual Average Daily Traffic counts (according to VDOT 201# AADT) in Powhatan County are summarized in Table 2-1.

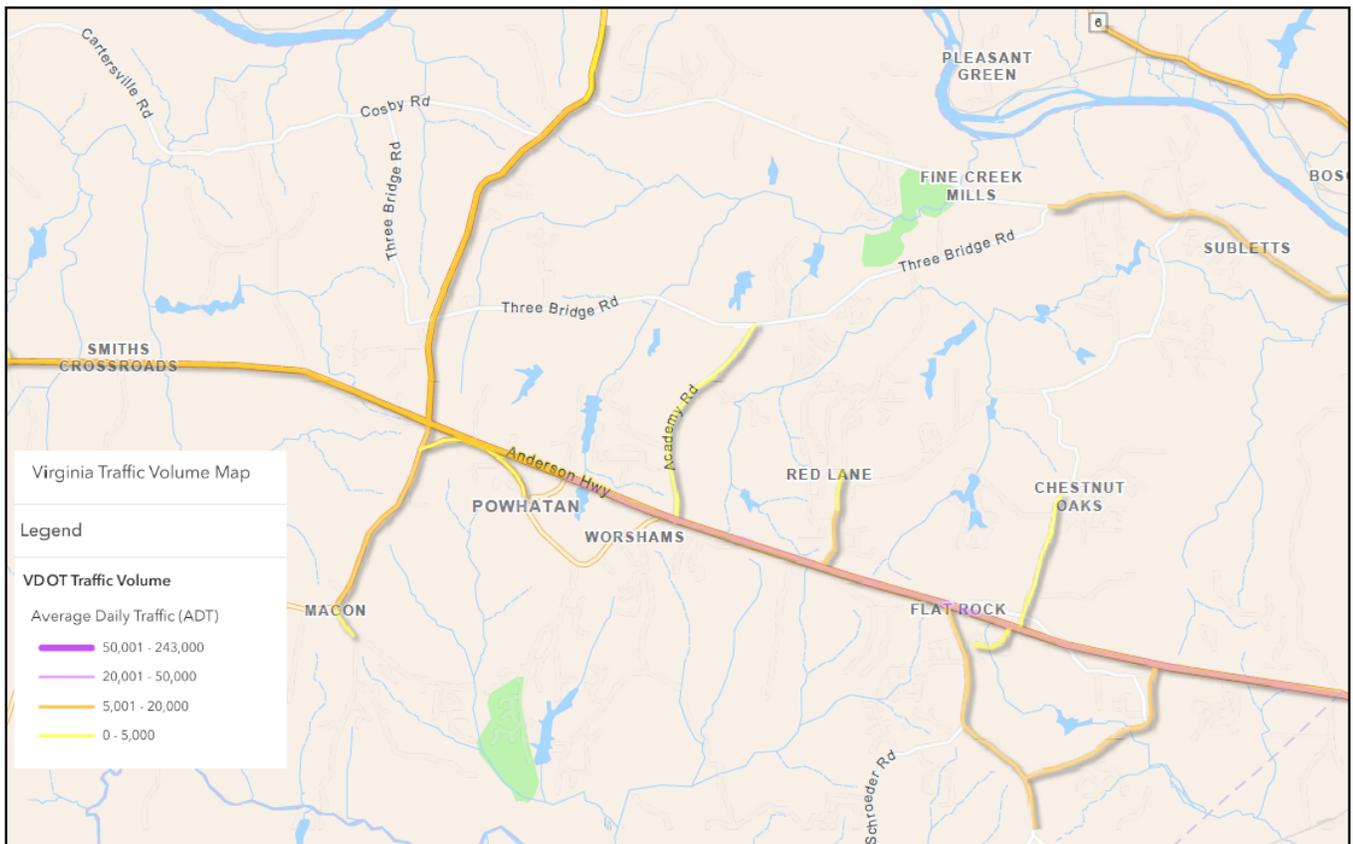
End Label	AADT
Goochland County Line	45000
72-711 Huguenot Trail	38000
Chesterfield County Line	31000
Stavemill Road	26000
72-622 Dorset Road	22000
SR 300 Scottsdale Road	17000
US 522 Maidens Road	9800
SR 288	7600
US 60, US 522	7600
72-605 Moseley Road	7500
72-1002 Emmanuel Church Road	7400
Chesterfield County Line	7200
72-629 Old Tavern Road, Trenholm Road	6700
72-635 Manakintown Ferry Road	6600
72-622 East, Dorset Road	6100

Table 2.1

Several intersections along these typically busy corridors seem unsafe because of the volume and / or speed of vehicular traffic that cyclists must navigate. Most of these intersections do not have signals or crosswalks.

To create a bicycle-friendly transportation system in Powhatan County, existing corridors must be strengthened to improve connectivity. One method to improve connectivity is to repair existing facilities such as sidewalks and provide safe and efficient paths across busy vehicular corridors where possible. Another improvement is to provide additional corridors to connect significant portions of the County (east to west and north to south) and to serve as neighborhood connectors. New connector paths or sidewalks must be provided to reach County-owned trails and important destinations, especially near public schools, parks, and popular commercial areas and may require partnerships with private landowners or ordinance language specifically requiring connectivity to adjacent trails and greenways.

Virginia Traffic Volume Map (Powhatan County)



2.4 Public Outreach Efforts

Community Concerns, Needs, and Priorities

To ensure a successful study, the public must be able to share their issues, needs, and desires. To better understand the needs of facility users, three different methods were used to identify specific concerns and demands of County residents. These methods included conducting County Staff discussions, public surveys, and public meetings. While the surveys and map exercises were good tools to record participant responses to specific questions, open discussion with citizens also provided information about the desires and concerns of local pedestrians and bicyclists.

County Staff Discussions

During an initial kick-off meeting to solicit input on the bicycle / pedestrian environment in Powhatan County, County staff were asked to discuss past planning efforts, list known deficiencies throughout the County, and discuss general pedestrian and bicycle network issues. Destinations and desired points of connection were also discussed. This information was transferred onto County maps, and the group checked the maps for inaccuracies. Additional cycling destinations, problem areas, and gaps in the current network were then identified. The results of this exercise - and those from the community workshops - are recorded in the following paragraphs.

Community Meetings

Public input was sought during the four advertised public outreach opportunities. The first two meetings were held on February 15th. The first meeting was from 9 am to 1 pm at the Pocahontas Landmark Center/Powhatan Recreation Department (4290 Anderson Highway). This meeting attracted 20 participants. An evening opportunity was provided at the Crazy Rooster (1560 Oakbridge Road from

4:30 pm to 7:30 pm, which included an additional eight participants. The third meeting was held at the County Seat Restaurant on Sunday, February 18th, from 9 am to noon, and an additional eight participants provided input. After the February 18th event, a public bike ride occurred. Unfortunately, only two bicyclists joined the ride due to inclement weather. These sessions were designed to provide drop-in service for residents and visitors who wished to attend and participate in either visual preference exercises identifying preferred trail elements, map review to identify potential trail corridors and destinations, and open discussion to talk about needs, desires, opinions, and concerns.

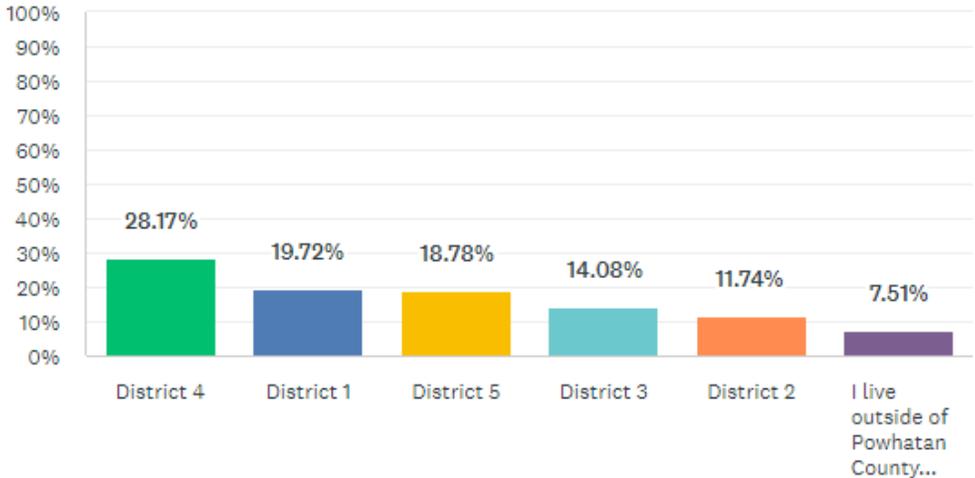
Participants were invited to fill out a survey questionnaire and participate in mapping analysis and a visual preference exercise. An open discussion was encouraged, and comments were collected via a whiteboard for all to see and expound upon. The mapping exercise included discussions about existing pedestrian and cycling corridors, needed facilities, and perceived dangerous walking conditions in Powhatan County.

Participants agreed that the County should seek safe trails for residents near existing parks, such as at Fighting Creek Park to the courthouse area. Participants also want trails or sidewalks between neighborhoods and common destinations on Highway 60. Participants asked about having equestrian access on public trails or dedicated equestrian trails that would serve both typical trail riding and carriage use. improved lighting, signage, and "safety improvements."

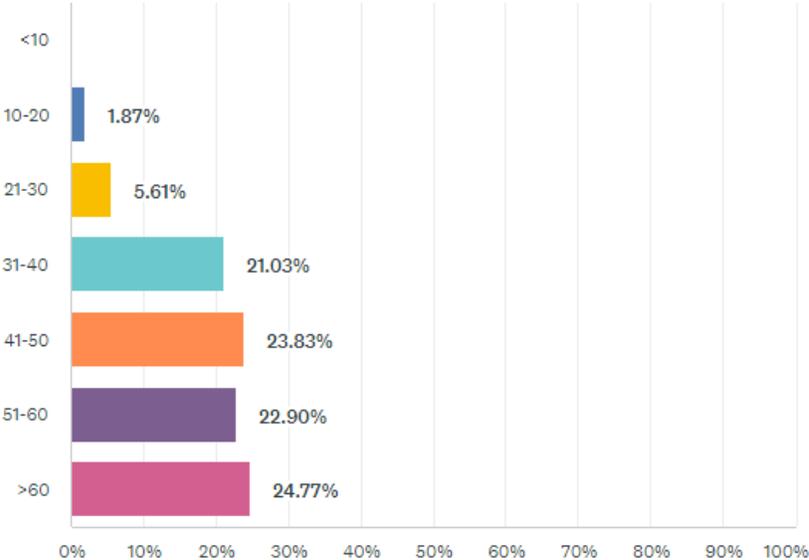
A fourth community meeting was held during the St. Patrick's Day Leprechaun Scavenger Hunt Event on March 15th from 3:30 to 6:00 PM. Approximately 76 participants participated. The overall sentiment was for safer places for children and families to walk, push a stroller, or enjoy exercise together. Many participants were excited about the County's efforts to improve the trail mileage available to residents.

Public Survey

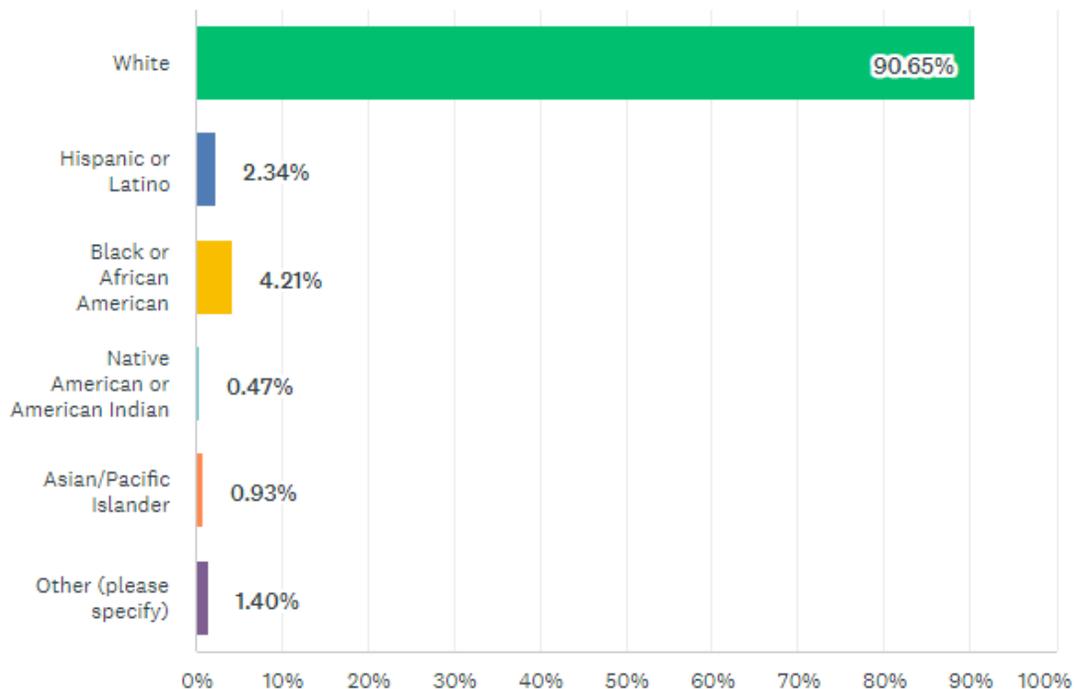
A public survey was conducted using a questionnaire to solicit further input from the public about the current trail use and expansion opportunities in Powhatan County. The questionnaire was available to residents via community meetings, pick-up at County Parks and Recreation, and the County’s main web page. The survey in Appendix B was designed to solicit opinions on both general and specific concerns in Powhatan County. Approximately 217 surveys were received representing all electoral districts and some folks living outside the County but working or owning property there. Some responses are provided below, but please see the complete summary report in the appendix.



Obtaining survey responses from each of the five electoral districts is beneficial as it ensures representative sampling, which is crucial for the accuracy and reliability of the survey results. By obtaining geographically dispersed feedback from all districts, the survey results capture diverse opinions and experiences. This approach also helps to avoid sampling bias, ensuring that no single district’s perspective is overrepresented or underrepresented. Therefore, it contributes to a more comprehensive understanding of the population’s views and increases the validity of the survey findings.



Survey results represent all those living in a participant’s household. Participants’ households represented users aged 10 to 60+. The participant data’s wide range of ages is beneficial for several reasons. First, it ensures diversity in the responses, capturing the needs and preferences of different age groups. Second, it provides a comprehensive understanding of the recreational needs of the entire community, not just a specific age group. Third, it helps plan and design recreational facilities and programs catering to all age groups. Fourth, it increases the validity of the survey results, making them more representative of Powhatan County’s needs. Lastly, it promotes inclusivity, ensuring that the voices of all age groups are heard and considered in the master plan.



The accuracy of the survey results can be assessed by comparing the ethnic distribution of the survey participants with the actual ethnic distribution of Powhatan County, Virginia. According to the U.S. Census Bureau and other sources, the ethnic distribution in Powhatan County is approximately as follows:

- White (Non-Hispanic): 85.2%
- Black or African American (Non-Hispanic): 8.6%
- Hispanic or Latino: 2.7%
- Asian: 0.7%
- Native American or American Indian: 0.4%
- Two or More Races: 1.8%

The representation of White respondents is slightly higher (90.65% in the survey as opposed to 85.2% in the population). Conversely, the representation of Black or African American respondents is lower (4.21% in the survey compared to 8.6% in the population). The proportions of other ethnic groups in the survey align relatively closely with their actual population percentages. While these survey results offer valuable insights, they may not comprehensively represent the perspectives of all ethnic groups in Powhatan County. It is crucial to aim for a sample that accurately mirrors the population’s ethnic and demographic composition to ensure the validity of the survey results, notwithstanding the traditionally lower response rates among certain ethnic groups.

Survey participants reported using several existing trail facilities from those at Powhatan State Park, Fighting Creek Park, the James River, and Wildlife Management Area, among others.

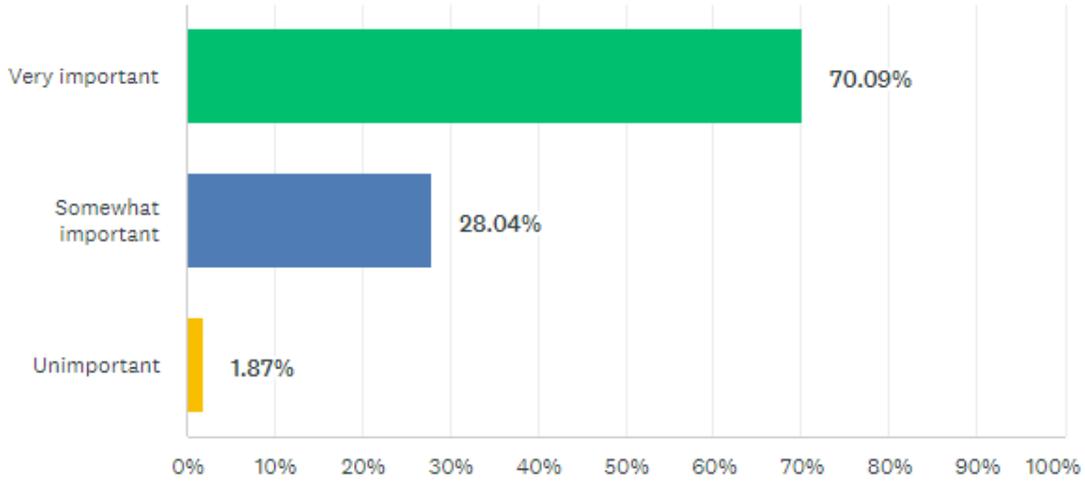
If you or someone in your household currently uses any greenway or trail, please provide the name of the greenway or trail in the space below.



Survey participants reported several destinations to which they desired pedestrian and bicycle access, including but not limited to those at Powhatan Village, area schools, the James River, the Courthouse area, and Parks.

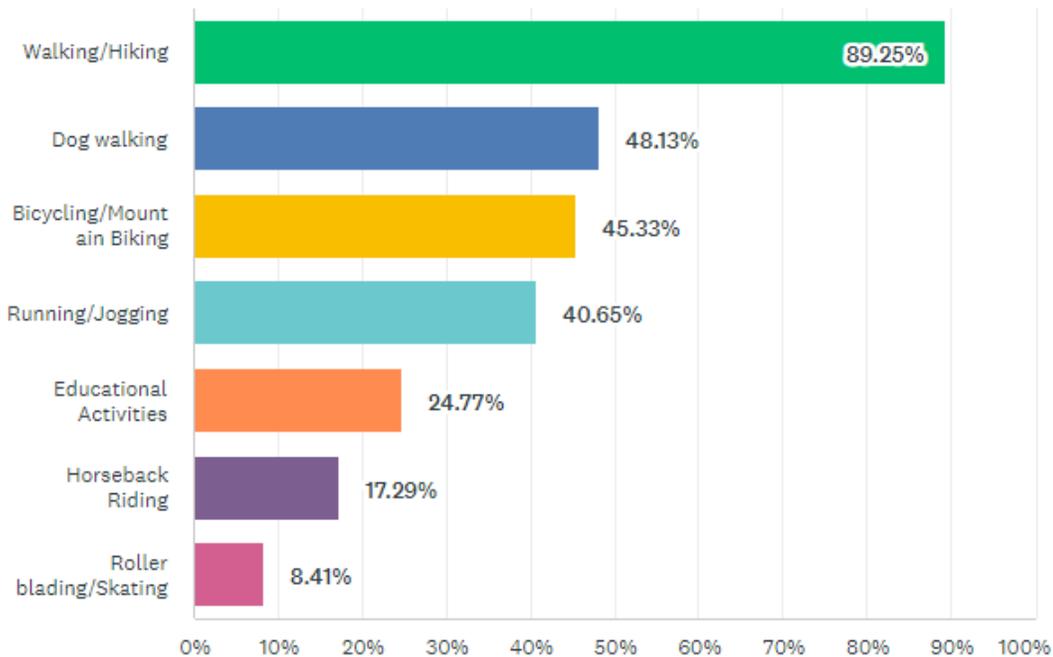


Survey participants largely feel access to trails is very important for them and their families.

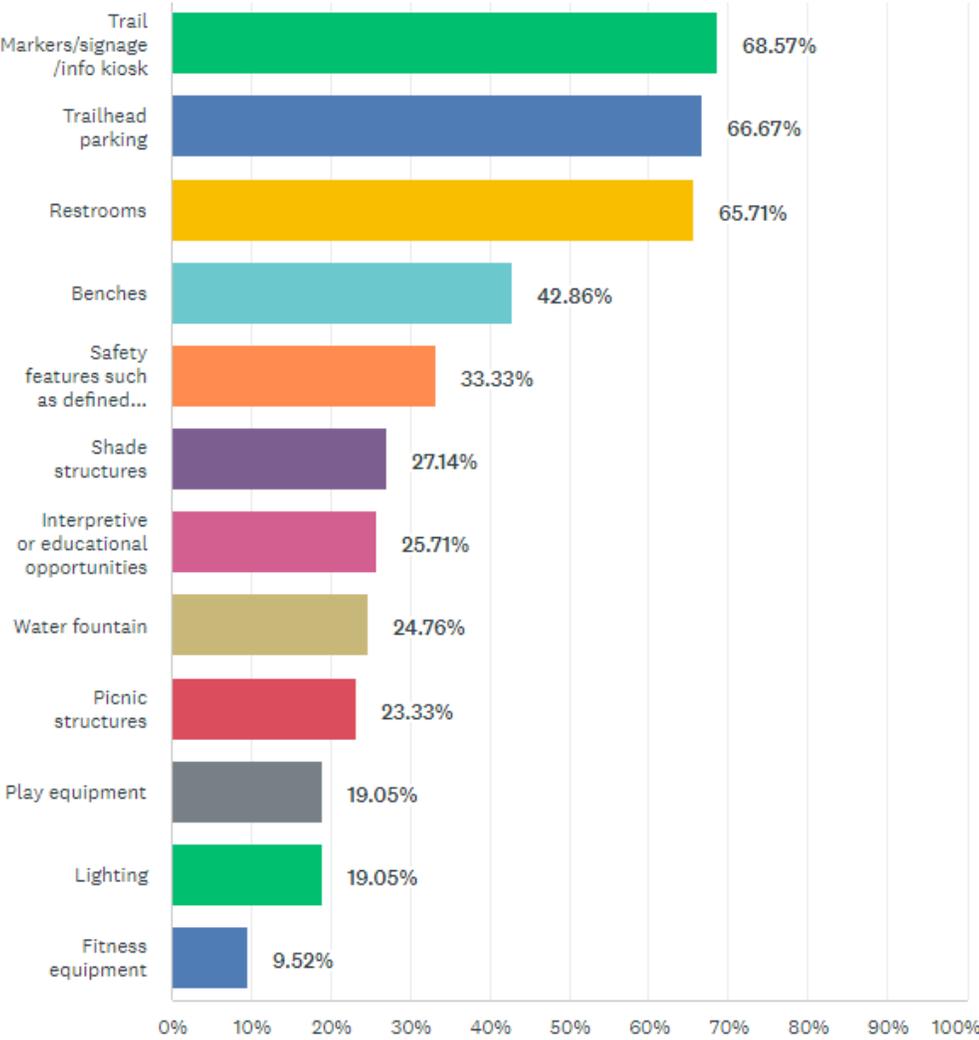


The survey data indicates the preferred activities of the 217 respondents when using a public trail or greenway. Most respondents (89.25%) prefer walking or hiking, making it the most popular activity. Dog walking and cycling or mountain biking are also popular, chosen by 48.13% and 45.33% of respondents. Running or jogging was selected by 40.65% of respondents. Fewer respondents chose educational activities (24.77%), horseback riding (17.29%), and rollerblading or skating (8.41%).

This data suggests that most users of public trails or greenways prefer relatively easy activities and require minimal equipment, such as walking or hiking. Activities requiring more specialized equipment or skills, such as horseback riding and rollerblading, are less popular. This information can be useful for planning and managing public trails and greenways to meet the needs and preferences of most users.



These results indicate that trail users in Powhatan County value clear information, accessibility, comfort, and safety along trail facilities.



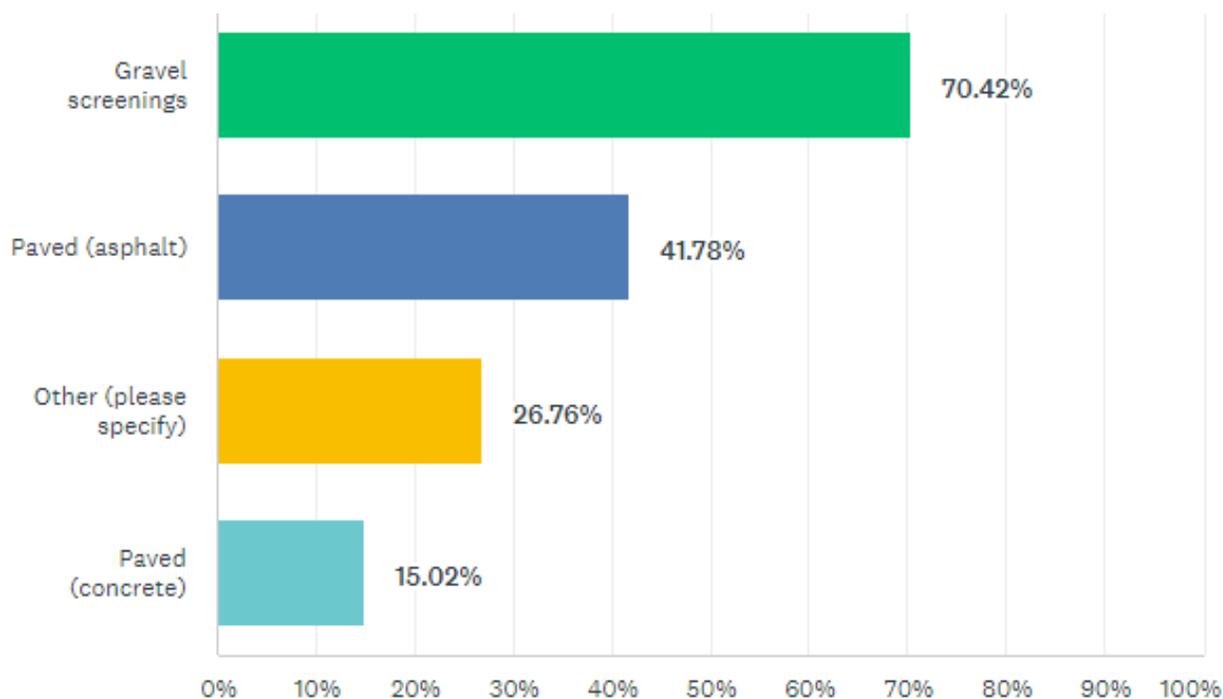
Gravel Screenings is the most preferred trail surface, with 70.42% of participants favoring it. This indicates a strong preference for natural yet stable and well-drained trails. Paved Asphalt Trails are the second most preferred, with 41.78% of participants liking them. These trails are typically smooth and easy to navigate, making them suitable for various activities, including biking, rollerblading, and wheelchair use. Packed Dirt or Grass trails are preferred by 26.76% of participants. These trails offer a more natural and potentially softer surface for walking and running. Paved Concrete trails are the least preferred, with only 15.02% of participants favoring them. While these trails are durable and low maintenance, they may be perceived as less natural than other options.

In terms of future trail development, this information can be beneficial. Here are some important considerations:

Given the strong preference for gravel screenings, future trails could prioritize this type of surface where possible. This could increase user satisfaction and trail usage. Despite the lower preference for paved concrete, it's important to note that concrete trails can be beneficial in certain contexts, such as urban areas or for accessibility purposes. Balancing user preferences with each trail's specific needs and constraints will be key.

Offering a variety of trail surfaces could cater to trail users' diverse preferences and needs. For instance, a trail system could include sections of gravel, asphalt, and packed dirt/grass trails.

Regular user surveys and feedback collection can help ensure that trail development aligns with user preferences over time. Remember, these are just insights based on the given data. The implementation should consider various factors like budget, environmental impact, maintenance requirements, and local regulations. It's always a good idea to engage with the local community and stakeholders in the planning process to ensure the developed trails meet the needs and expectations of its users.



Analysis

The survey generally indicates that residents desire places to walk, run, bike, or ride in the County. Many participants feel that trail access is an important aspect of the community. Still, survey participants feel there exists a lack of connectivity to common destinations within the County and insufficient support facilities for pedestrians. The survey indicated strong support for expanding the current pedestrian/bicycle system in Powhatan County, improving the existing park trails, and expanding cooperation with the state at Powhatan State Park and the Wildlife Management Area representatives. Support facilities like restrooms, water fountains, informational kiosks, seating, and shade were other desired additions that survey participants mentioned.

Healthy living and fitness trends improve quality of life, and many comments showed that the community wants more pedestrian and bicycling facilities to support this lifestyle choice. Access to facilities and safety concerns were another common theme in the responses.

Key Points from the Public Survey:

- County districts 1 and 4 had the most survey responses
- Fighting Creek Park, Powhatan State Park, Maidens Landing, all public parks, area businesses, courthouse area, YMCA, Powhatan library, the rivers, the village area, and densely populated neighborhoods are points of interest
- Trail marketing needs to improve to inform residents about all the recreation resources available to them, including where they can walk, run, bike, and ride
- Safety is a concern when riding close to roadways
- People want longer trails
- Nature trails can support environmental education efforts
- Trail connectivity between trails and destinations is important
- Trails that go through rural areas should be naturally surfaced to cut down on the cost of development
- There is significant support for general funds, grants, and developer-funded projects
- Out-of-town trails to seek precedence (see the Capital Trail graphic on the next page)

Focus Group Meetings

The insights of focus group participants have enriched the Powhatan County Trails Master Plan effort; each brought a unique perspective. Groups representing environmental issues, history, recreation, planning, and general residents/project steering committee members provided personal perspectives on how trails may impact their lives and the quality of life for all residents.

Additional input was received via other channels, highlighting the need for a County recreation community center, trail project funding, a trail map/information website or downloadable app, restrooms at both park and trailheads, and trails with various surfaces.

The focus groups and additional inputs have provided comprehensive insights and recommendations for the Powhatan County Trails Master Plan. A summary of key points discussed by each group is below:

Environmental Focus Group February 29, 2024

- Watershed protection is important
- It is important to the area's agriculture
- Population growth is a significant item of opportunity and concern
- Blueways and paddling are important; the longer, the better
- Bat Festival and Pocahontas State Park
- Mapping is needed
- There is a draw from companies based in Richmond to come to the area
- Shoreline protection is important
- Connectivity to Lynchburg would be a positive
- Tourism draws from attractions

- Increase the number of access points on Blueways.
- Proper trail maintenance will be important in protecting sensitive areas
- ADA compliance is important
- Cost escalation will be a barrier the later that things are delayed

Historical Focus Group February 29, 2024

- Drexel Morrell-Center (DMC) has 57 Acres near Rosemont (possible point of interest)
- Consider seeking tribal consultation (Monacan Indians)
- Historic trails and nature preservation are key considerations
- Varied levels of difficulty are needed for the trails
- Key partners
 - James River Naturalist
 - Parks and Recreation Department
 - African American population
 - Non-profit organizations
 - Black History Trails / railroad routes research is important
- Key Destinations: Belmead, Drexel Morell, WMA, State Park, Village/Courthouse urban area, the two rivers, area creeks, and churches

Outdoor Recreation Focus Group February 29, 2024

- There is a need for equestrian trails and parking
- Sustainability is critical, and the state of the trails right now needs improvement
- It would be good to obtain the property from the Beaumont Facility
- Formal parking lots are important, especially to manage peak attendance times
- Collaborative agreements with partners that have trails are essential
- Trail connectivity helps with economic development
- Key Destinations: Maiden's Landing, Country Club, Fines Creek Brewery Goochland Railroad Track Neighborhoods such as Tilman's Farm, The Y, Fighting Creek, Fountain, Quartermil, Porter, and Westlake, explicitly mentioned
- Long routes are important for biking, in particular.
- A true trail network and loops are vital
- Blueways are essential

Planning Focus Group February 29, 2024

- Accessibility is important
- Programming can be built around and support the use of trails
- Seek trail connectivity with trails in neighboring counties and those that lead into the Richmond urban area
- Monthly rides come to the area from Richmond
- Many roads are too unsafe for many to ride on and will require calming efforts
- Restrooms that are ADA-compliant, as well as trailheads, are essential.
- Trails of different surface types would be good

- Trails for various skill levels (novice / family, intermediate / fitness seekers, advanced / competitive runners, cyclists).
- Trail ambassadors should be named to promote a positive trail use culture.

Steering Team Focus Group February 29, 2024

- Expand Trails at Fighting Creek Park, County Park, Town Center
- Consider trail connectivity between Route 13 and 522
- Connecting the two rivers (Appomattox and James) would be ideal
- Getting developers on board with the trails network would be an idea
- The Belmead property was mentioned as once a popular destination but may now be inaccessible to the public
- Unified wayfinding is essential
- Partnerships are important. (schools, NGOs, municipalities, businesses)
- Grant funding was mentioned as desired to ease development costs
- OHV Trails were noted as an interest but understood to be outside the scope of this plan

Focus Group List of Critical Points

- Blueways and paddling are important; the longer, the better
- Bat Festival and Pocahontas State Park (Tourism Draws)
- Increase access points on Blueways
- History and Cultural considerations factored into trail routing
- Desire for equestrian trails and trailheads with suitable horse trailer parking
- The County should consider buying the Beaumont Facility
- Collaborative agreements with partners that have trails are important
- Trail connectivity helps with economic development
- Long routes are important for biking
- People want a true trail network with looping routes
- Accessibility is important, and the County needs to seek to make all routes accessible
- The roads are unsafe for many to ride on
- Restrooms that are ADA-compliant at trailheads are welcome
- Expansion of trails at Fighting Creek Park, Tan County Park, Town Center
- Unified wayfinding is essential

Stakeholder Telephone Interviews

McGill conducted telephone interviews with representatives from area businesses and recreation/trail-minded residents to solicit stakeholder further input. The project team received an email list from County staff of potential stakeholders interested in providing guidance and input into the planning process. County staff provided the names of possible interviewees. Email correspondence resulted in scheduling telephone interviews. The team conducted stakeholder interviews in February of 2024. The interviews identified ideas, opportunities, needs, and concerns related to trail types, routing locations, desired destinations, safety, etc., and possible future connections to those destinations. Interviews were conducted via telephone by McGill staff and typically lasted for an hour. Interviews were conducted early in the master planning process to ensure the team understood stakeholder views and opinions before developing the recommendations, including the routing map and determining appropriate trail types. The project team will use interview results to inform the master plan and positively reflect the community's desires.

Summary from Four Telephone Interviewees

- A community center planning effort is ongoing; will residents understand the two separate County planning efforts?
- Funding is seen as a barrier (grants-wise) to trail development
- A website / app that pulls trail information together would be helpful to residents and especially visitors.
- Destinations: The rivers, the community center, the courthouse, neighborhoods, schools, and the State Park were mentioned as important places.
- Restroom stations are welcome at trailheads

- Proximity to Richmond should be considered as visitors coming to Powhatan County may seek parks and trails
- 5K's and special events will benefit from more trails
- Participants felt that County trails would support positive economic development changes
- Trails with different types of surfaces are desired
- Participants felt that a County-owned trail system may help build a stronger sense of community

Input from Visual Information Submitted by Interviewees

- Destinations and key locations:
 - Powhatan Middle School
 - Powhatan High School
 - Swiftwood Subdivision
 - Fighting Creek Park
 - YMCA (adjacent to Fighting Creek Park)
 - A connecting Fighting Creek Park and the area behind Powhatan United Methodist
 - Equestrian Trails needed in Powhatan
 - Travers Highway 60 at Sallee Creek Overpass
 - Add sidewalk along Skaggs Road
 - Three Crosses Distilling Company
 - 1933 Public Houses
 - County Library
 - Multi-use paths should be along major road corridors where possible
- Utilize existing easements to expand trails; look for powerline easements
- Utilize rails to trails, when possible, despite the area's lack of existing rail corridors

Summary of Critical Considerations Mentioned by Telephone Interviewees

- There should be educational components along the trails
- There should be multi-use paths along major road corridors
- The existing easements should be used to expand the trails

Key Destinations to Consider According to Telephone Interviews, Focus Group Participants, and Staff Interviews

- Drexel Morrell-Center (DMC):
57 Acres near Rosemont
- Belmead (now privately owned)
- Powhatan Wildlife Management Area (WMA)
- Powhatan State Park
- Village
- Courthouse
- Two Rivers: Having a connection between the two rivers was mentioned multiple times
- Side creeks
- Old churches
- Maiden's Landing
- Country clubs and golf courses
- Fines Creek Brewery
- Goochland Railroad Track Neighborhoods:
Including Tilmans Farm, The Y, Fighting Creek Park (the natural center of the hub), Fountain, Quartermil, Porter, Westlake
- Powhatan Middle School
- Powhatan High School
- Swiftwood Subdivision
- Fighting Creek Park
- Connector: Between Fighting Creek Park and the area behind Powhatan United Methodist
- Highway 60: Traverse at Sallee Creek Overpass
- Skaggs Road.: Addition of sidewalk
- Three Crosses Distilling Company
- 1933 Public House
- County library(s)
- Huguenot Historic Trail Route (vehicular scenic route)
- Virginia Capital Trail
- Robious Landing Park (Richmond)



Visual preference exercises provided multi-generational input opportunities



03 | Facility Design Guide

3.1 Design Considerations and Guidelines

Properly implementing the key elements that make up bicycle and pedestrian facilities is essential to providing a safe and enjoyable experience. Some of the key elements are infrastructure type selection, design appropriateness for user groups, surface types, and wayfinding signage. Other important design elements include amenities like shade stations, benches, trash cans, bike racks, lighting, and safety call boxes. This section provides guidelines and ideas to provide users with a safe, enjoyable, and memorable experience.

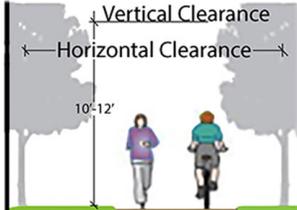
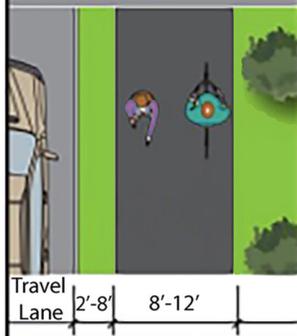
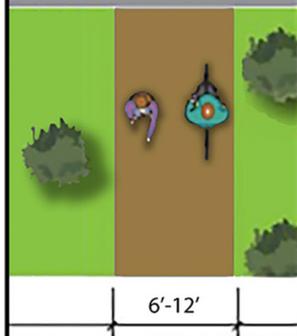
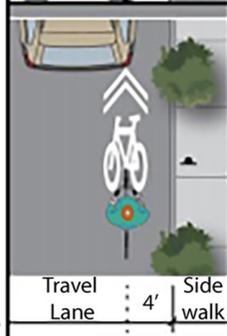
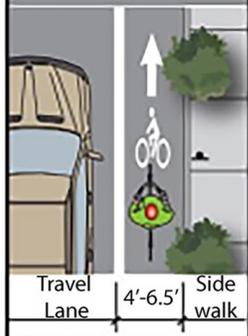
The following descriptions are intended to be used as design guidelines and alternative treatments for pedestrian and bicycle facilities. All facilities in the County should be designed and constructed to meet the minimum standards for implementing safe pedestrian / biking and vehicular facilities. Since many of the local streets are VDOT roadways, the proper approvals and permits should be obtained before implementing projects on such roads.



Serene nature scene along natural surface path

Below are examples of recommended route types. Additional information on these pedestrian / bicycle facilities are on the following pages.

PEDESTRIAN + BICYCLE ROUTE TYPES

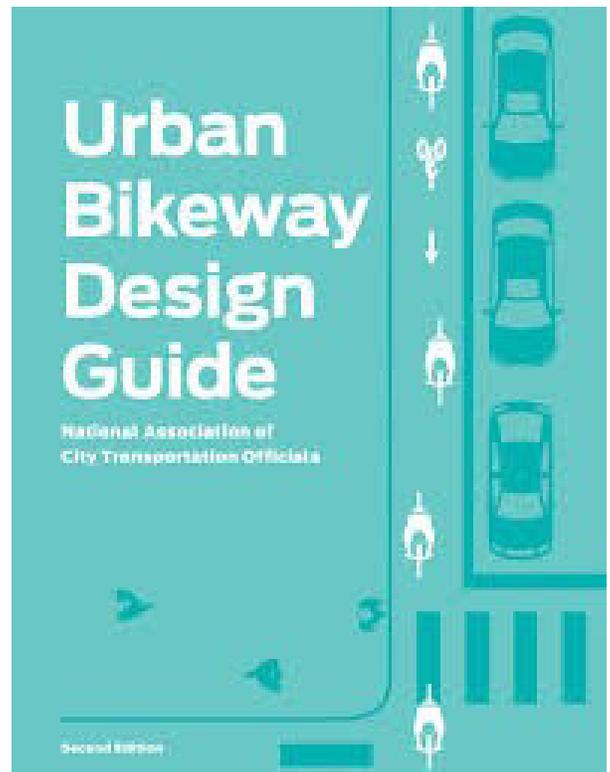
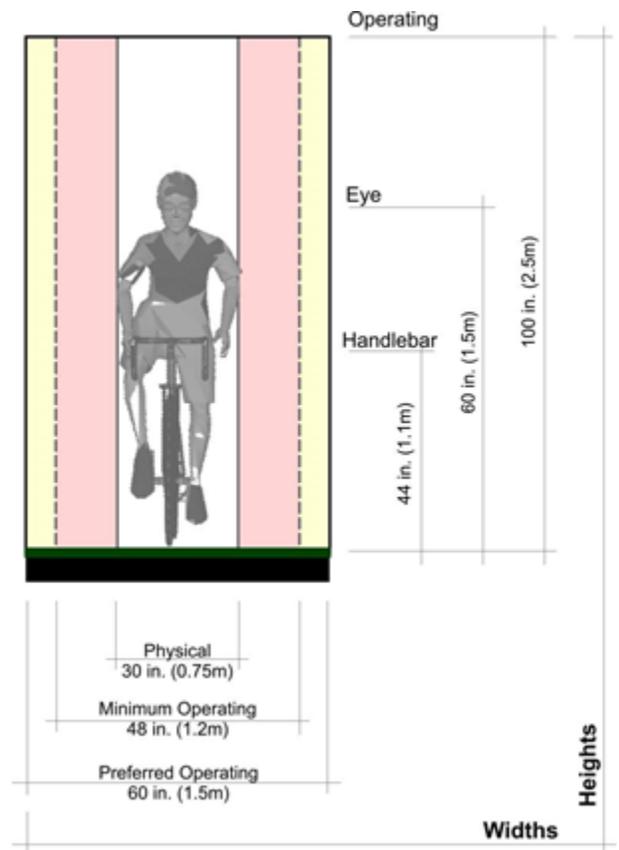
Sidewalks	Multi-Use Trails / Sidepaths	Natural Surface Trails	Shared Lanes	Bike Lanes
				
				
				
<p>Sidewalks provide dedicated, delineated routes for use by pedestrians. They are physically separated from the roadway by a curb or unpaved buffer. Sidewalks are accessible to all users, including those with disabilities. A minimum width of 6 feet allows two pedestrians (including wheelchair users) to walk side-by-side comfortably. Additionally, a planting strip of 2-8 feet provides separation from motor vehicles and enhances aesthetics.</p>	<p>A multi-use path/trail, can be located immediately adjacent to a public road or within parks, riversides, or in urban environments. Unlike typical sidewalks in heavily trafficked areas, these wider paved routes offer a safe walking or biking experience suitable for users of all ages and abilities. They promote reduced vehicle interaction and foster a sense of community character. The recommended minimum width for these paths is 8-12 feet in most situations, accommodating various users and activity levels effectively.</p>	<p>Natural Surface Trails are typically 6' to 12' wide, unpaved paths designed for two-way travel.</p> <p>Tread surface is commonly compacted earth or mulch. Cross-slope on a trail alignment is 2-4% to assist in drainage.</p> <p>Trail maintenance should keep the horizontal clearance (limits of trail corridor) free from hazards. The Vertical clearance should remain free of obstructions within a 10' to 12' height.</p> <p>Primarily for pedestrians, these trails cater to a variety of users, including walkers, hikers, runners, mountain bikers, horseback riders, and are often accessible to people with disabilities.</p>	<p>Shared Lane Markings (SLMs), also referred to as "sharrows," are road markings used to establish shared travel paths for bicycles and automobiles. Among other benefits, SLMs enhance the predictability of bicycle traffic on the street, recommend proper bicyclist positioning, and can include directional and wayfinding guidance. SLMs are recommended only in areas where space constraints are present and traffic speeds are 35 MPH or less. For higher speed roads, a bike lane is more appropriate.</p>	<p>Bike lanes, located next to vehicle lanes, provide a specific area for cyclists. Ideally, they should be 6.5 feet wide to allow side-by-side riding or passing. However, the minimum width is 4 feet without a curb or gutter, and 5 feet when next to a curb, guardrail, vertical surface, or parking spaces.</p> <p>Buffered Bike Lanes include a designated buffer space, as a visible barrier, that creates a safe distance between cyclists and motor vehicle traffic. Along routes with on-street parking, the buffer can help keep cyclists out of the "door zone," where parked car doors can open unexpectedly.</p>

3.2 Designing for Bicyclists

Designing for bicyclists is very different than simply designing facilities for bikes. A bicycle is an inanimate object incapable of movement without human power. Properly designed facilities are constructed in a manner that indicates the designer understands what it is like to be a bicyclist moving through space. Due to the physical exposure a bicyclist has compared to a motorist, it is important to acknowledge the physical characteristics of a bicyclist. AASHTO notes that “understanding bicyclists’ operating characteristics is essential to design facilities that minimize the likelihood of injury.

For the same reasons that motor vehicle travel lanes are made wider when truck traffic is higher, the design for bicyclists should also reflect the type and volume of bicyclists. People for Bikes, a nationwide advocacy organization, unveiled a new approach to designing bicycling facilities in 2014 with their “Build it for Isabella” campaign. In traditional traffic engineering parlance, the “design vehicle” determines how a street is designed. “Isabella” is a twelve-year-old girl who is ready to explore her neighborhood by bike and is the design user for bicycling facilities.

The “Build it for Isabella” approach builds upon the growing knowledge base of bicyclist types, which acknowledges there are at least four distinct types of attitudes people have toward bicycling that were identified in an Oregon study (“Four Types of Transportation Cyclists,” Portland Bureau of Transportation, <http://www.portlandoregon.gov/transportation/article/158497>).



The four distinct types of people are:

1. **Strong & Fearless:** These bicyclists often ride regardless of roadway conditions, and riding is a strong element of their identity.
2. **Enthusied & Confident:** These riders are comfortable sharing the road with automobile traffic but prefer to do so while riding in their facility (e.g., bike lanes).
3. **Interested but Concerned:** They are curious about riding a bike but are reluctant to ride where they feel unsafe. They may already mountain bike or use greenways.
4. **No Way, No How:** This group is not interested in bicycling due to a lack of interest, inability to ride, or concerns about topography and safety. How can we introduce them to bicycling?

We must assess the needs of bicyclists from each of these four perspectives when considering how we design for Isabella. A safe bicycling network allows bicyclists in one category to potentially move up into a category of more confident riders. Some bicyclists' attitudes may float between these categories based on their unique situation. Bicyclists who are strong and fearless when riding alone "may be interested but concerned" about riding a bicycle with their child.

Strong and fearless" or "enthused and confident" riders may have a "no way, no how" attitude if it means they must travel along a section of highway that is either off limits to bicyclists or where no facilities exist next to high-speed traffic. This does not mean that every facility on every street must accommodate Isabella; rather, we should strive to build a bicycling network that provides parallel routes to major streets where less confident riders can still feel safe. There will also be constraints and traffic conditions that inhibit a bicyclist's willingness to ride in certain situations.

BUILD IT FOR ISABELLA

ISABELLA: 12 YEARS OLD AND READY TO RIDE

Isabella is ready to travel her world by bike, but is the network ready for her? What does Isabella need to ride safely around her world?

- ◆ Are we planning low-stress, connected networks that work for Isabella?
- ◆ What if every project was designed with Isabella in mind?
- ◆ If we build for Isabella, wouldn't it work beautifully for the rest of us too?



Environmental Review

Any project that utilizes federal funding will require an environmental analysis. Recommendations must include statements about the purpose and need for active transportation facilities along these routes during the early stages of the project, so they are not eliminated during the environmental review process (if major upgrades occur).

If using federal funds, projects along the rivers may require an environmental review, and it is equally important to include bicycling and walking facilities as part of the purpose and need.

VDOT's Bicycle Policy

VDOT operates under a Bicycle Policy Plan that was published in 2011. This plan was developed based on the Commonwealth Transportation Board's 2004 adopted Policy for Integrating Bicycle and Pedestrian Accommodations. For more information visit: https://www.vdot.virginia.gov/media/vdotvirginiagov/about/programs/biking-and-pedestrian/VDOT_Bicycle_Policy_Plan.pdf.

Some important elements to remember about the Bicycle Policy Plan for Powhatan County are:

- Bicycle compatibility should be a goal for state highways to provide reasonably safe bicycle use, except on fully controlled access highways where bicycles are prohibited.
- All bicycle facilities shall conform with the state-adopted design guidelines for bicycle facilities on State-funded projects and with guidelines published by the American Association of State Highway and Transportation Officials (AASHTO) on federal aid projects.

3.3 Design Guidance for Bicycling Facilities

As prescribed in VDOT's Bicycle Policy, most of the prevailing guidance on the design of bicycling facilities stems from AASHTO. In 2012 the organization published its Guidelines for the Development of Bicycle Facilities, which serves as the foundations for the design guidance contained in this chapter. Powhatan County should have a copy of this document available for future discussions with VDOT and other interested parties.

The other prevailing design guidance for transportation engineers is the Manual on Uniform Traffic Control Devices (MUTCD), which sets the standards for traffic control practices across the United States. The application of MUTCD is why speed limit signs look the same in most states and the striping and signage along highways and streets is consistent. The most recent MUTCD was adopted in 2009 (and was amended in 2012) and includes the most comprehensive set of considerations for bicyclist signage and pavement markings. In most cases, engineers are hesitant to deviate from its guidance due to fears of litigation.

In some instances, VDOT's own design guidelines have identified more bicycle-friendly features, like determining the appropriate bikeable shoulder width based on the speed of adjacent motor vehicle traffic. Where appropriate, these design elements are incorporated below.

Bicycling culture is changing in America, the design standard is rapidly changing, and new guidance is published frequently.

This section is intended to be a high-level primer on bicycle facility design as much more detailed information is available through AASHTO's guidance, the Manual on Uniform Traffic Control Devices, and other state and federal publications.

The important thing to note is that as the bicycling culture is changing in America, the design standards are also evolving rapidly, and new guidance is being published frequently. It is important to check with VDOT's Division of Bicycle and Pedestrian Transportation to learn about new standards and how they are being used within VDOT.

Bicycling speeds are also important as many improvements, particularly at intersections, may not fully consider the speed it takes the common user or bicyclist type to get through that intersection. It also influences how greenways are designed regarding curb ratio as they meet the street. Common bicycle speeds are shown in Figure 3-1.

Applying Shared Lane Markings / Sharrows

Do this....



Place markings so bicyclists avoid the door zone of parked cars.

Not this...



This shared lane marking conflicts with the door zone of parked cars.

Bicyclist Type	Feature	Value
Typical Upright Adult Bicyclist	Speed, paved level terrain	8-15 mph
	Speed, downhill	20-30 plus mph
	Speed, uphill	5-12 mph
	Perception reaction time	1.0-2.5 seconds
	Acceleration rate	1.5-5.0 feet per second
	Deceleration rate on dry level pavement	8.0-10.0 feet per second
	Deceleration rate for wet conditions	2.0-3.5 feet per second
Recumbent (lying down bicyclist)	Speed, level terrain	11-18 mph
	Acceleration rate	3.0-6.0 feet per second
	Deceleration rate	10.0-13.0 feet per second

Bicycle Lanes

A bicycle lane is defined by AASHTO as a “portion of roadway that has been designated for preferential or exclusive use by bicyclists by pavement markings and signs. It is intended for one-way travel, usually in the same direction as the adjacent traffic lane.”

The bicycle lane is the most common application for dedicated bicycling facilities and typically ranges in width from four feet to six feet adjacent to a motor vehicle lane (this width does not include the width of the gutter pan as it is not usable space for a bicyclist).

Four-foot-wide lanes are most appropriate on low-speed streets such as collectors, where there is less discrepancy in the bicyclist’s speed versus the motorist’s speed. On higher-speed facilities, the width should be greater (five feet on 35 mph to 45 mph streets; six feet on streets with speed limits greater than 45 mph). See page 50 for more information on bike lanes.



Shared lane markings

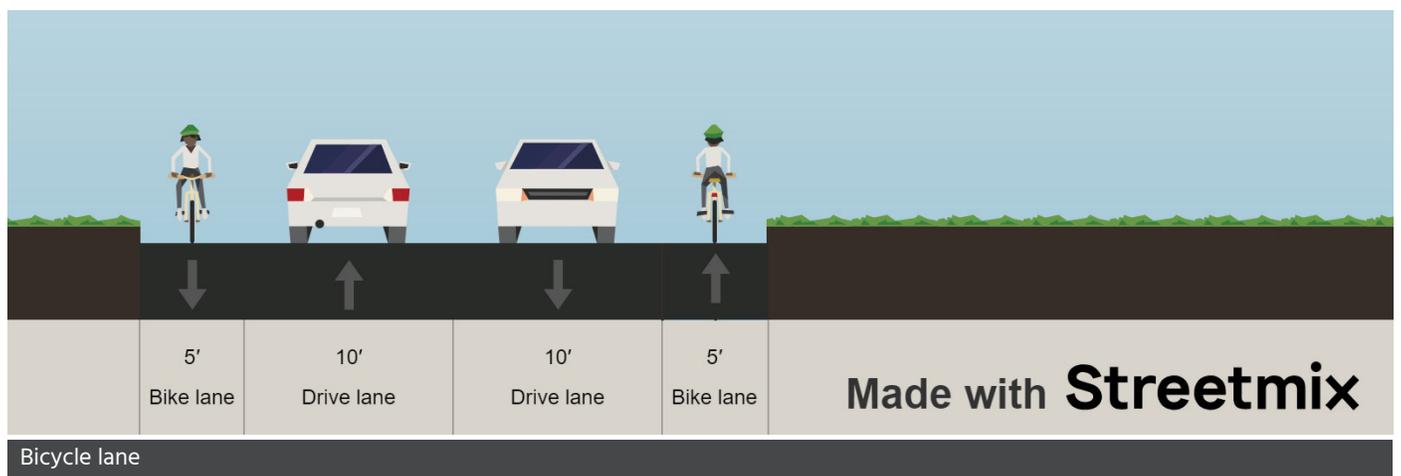
Shared Lane Marking (or Sharrow)

Shared lane markings have become more popular on streets where adding a bicycle lane or shoulder is not feasible or planned. AASHTO defines a shared lane marking as a “pavement marking symbol that indicates an appropriate bicycle positioning in a shared lane, which is a lane of traveled way that is open to both bicycle and motor vehicle travel.”

Shared lane markings send other messages to bicyclists and motorists:

- That a bicycle has a right to use the lane, and the lane should be shared
- Positions bicyclists in a travel lane with on-street parking in a location where they can avoid opening car doors
- Positions a bicyclist in a travel lane without on-street parking in a location where they are not squeezed out or riding along the right edge of pavement

Special care should be taken when marking a shared lane. When on-street parking is present, MUTCD recommends a ten-foot or eleven-foot distance from the center of the marking to the curb face. However, local conditions may vary and necessitate placing the marking further out into the travel lane or in the middle of the travel lane. See page 50 for more information on shared lanes.



Multi-use Paths

Common design principles for multi-use pathways and sidepaths are covered elsewhere in this plan. For bicyclists' needs, however, there are some special considerations when designing and building multi-use trails. A pathway that accommodates bicycling should be ten feet wide at minimum (eight feet is allowed in short, constrained sections), but twelve-foot or fourteen-foot-wide pathways are preferred in high-volume areas or near parks and schools.

A common response to building greenways is that some residents and officials feel that giving bicyclists a separate trail will "get them off the road." This may be true for less confident riders, but a trail should not be seen as a substitute for on-road facilities, as some bicyclists will prefer to be on the road in most situations.



Dedicated and separate multi-use path

Some special considerations on shared pathways include:

- A firm and stable surface that can accommodate various bicycle types. Narrow tires on road bikes can make travel unsafe on gravel or sand paths
- Sidepaths should be placed in areas with few driveway cuts or low potential for future driveway cuts. Motorists do not expect two-way bicycle traffic on a pathway crossing a driveway
- Curb ramps and crosswalks at intersections of greenways and other pathways should be a width that conforms to the width of the pathway



Widened street shoulder serves as pedestrian / bike sidepath

3.4 Other Bicyclists Accommodations

Bicycle Parking

Bicycle parking racks come in a variety of shapes and styles, thanks to some vendors catering to special markets for event centers, universities (with specific mascots), municipal icons, and artists.

However, the basic rack styles are still a variant of the “post-and-loop” design like those shown in green below. These styles are easily recognizable as usable bicycle racks instead of works of art and help prevent two bicycles rubbing up against each other.

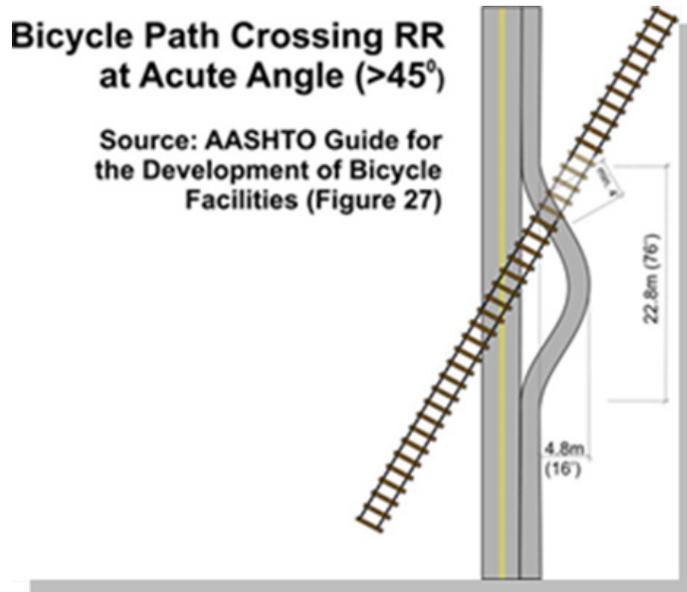
In contrast, the popular “wave” rack style at far right generally only supports the bicycle at one point, as does the comb rack (second from right), often seen at public schools. Regardless of the specific style, a thick (ten inch) concrete base should be constructed for each bicycle parking station. Note also that bicycle parking areas should have minimum six-foot horizontal clearances on all sides and at least a seven-foot vertical clearance to ensure that each rack can be used properly. A shorter horizontal clearance (minimum: four foot) may be used behind the rack - note that bicycles are to park parallel to the rack, not “through” them for post-and-loop designs.



Railroad Tracks Crossing

Most railroad tracks and on-road bicycle paths will cross at a near 90-degree angle. Bicycles crossing tracks at less than a 45-degree angle should consider the treatment shown at right, which calls for a realignment of the bicycle path to create a more perpendicular approach angle.

Some communities have begun using shared-lane markings (sharrows) to indicate to bicyclists the most suitable way to cross a railroad track within an urban street where improvements such as those shown at right are not feasible.



Drainage Grates and Utility Covers

Drainage grates can pose a serious hazard for bicyclists, particularly on older streets where the design and placement of drainage grates did not consider the potential bicyclist use. Grates with openings parallel to the curb cause bicycle wheels (particularly those with narrow tires) to fall into the grates, resulting in a crash.

For new construction projects, grates should be placed only within the gutter pan of the street, with grate openings perpendicular to the curb and the direction of travel. On older streets, the jurisdiction in control of that street should be requested to retrofit the grates with new grates with openings perpendicular to the curb. Another retrofit treatment is welding straps across the grate perpendicular to the direction of travel, which narrows the grate's opening to prevent the bicycle wheel from falling into the opening.

Grates and utility covers ("manholes") create different problems for bicyclists as roadways sink or are re-surfaced. Grates and utility covers should be flush with the pavement and replaced or reconfigured when VDOT or a municipality resurfaces a street.

Utility covers can pose problems on greenways as many are constructed along sewer easements. As with roadways, the utility covers should be flush with the trail surface and (where possible) outside of the travel way.

Rumble Strip

The addition of rumble strips along highways causes great concern among bicyclists because they are placed on the shoulders of high-speed roadways. Due to the speed differential, the shoulders are the only suitable area for bicyclists to travel.

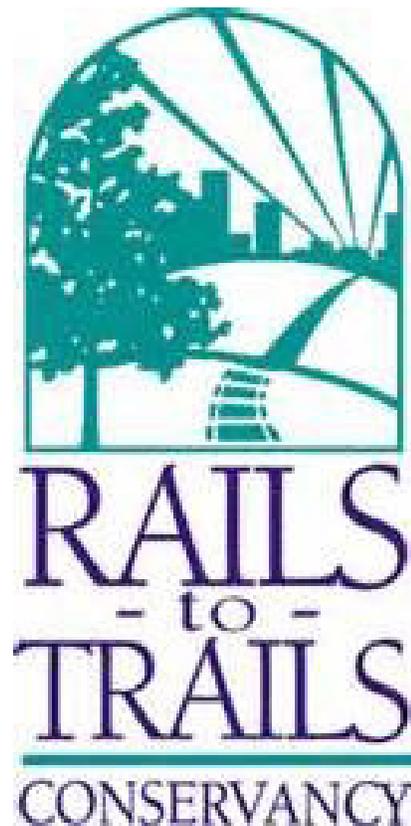
To account for the needs of bicyclists, rumble strips should be placed as close to the edge line or fog line of the highway to maximize the space available for the bicyclist along the highway. Design standards for most four-lane highways leave enough room along the shoulder (typically five feet or greater) for the bicyclists to operate outside the area of the rumble strips.

3.5 Rails with Trails

Rails with trails are multi-use trails placed alongside active railroad lines and within the right-of-way. There are nearly fourteen thousand miles of rails with trails in the United States, with 39% of the mileage along active rail lines.

The common design elements of rails with trails are:

- A vertical barrier, such as a fence, between the pathway and the railroad tracks
- Eliminating or reducing opportunities for trail users to cross the railroad restricted where other roadways cross or at the trail's terminus



Across the United States, rails with trails are very safe. The Rails to Trails Conservancy 2012 report found only one recorded fatality involving a rail-with-trail user and just two reports of injuries over twenty years. This includes one hundred and sixty-one rail-with-trails facilities in forty-one states. The Conservancy notes that “trail builders and advocates need to be equipped with risk management tools and compelling examples of successful rails-with-trails to help assuage concerns about safety and liability often expressed by the railroad.” The Conservancy has several online resources available for communities wishing to pursue rails-with-trails. (www.railstotrails.org).

3.6 Emerging Trends

The Powhatan County Trail Master Plan is a ten-year document. As noted earlier, the rapid evolution of bicycling culture is changing how design professionals consider bicyclists. Design guidance that is current as of early 2024 will likely be outdated when some of this plan’s recommendations are implemented.

Prevailing design guidelines will always be a step or two behind the prevailing needs of bicyclists, and it is difficult for designers to justify treatments that are not part of adopted design guidelines due to liability concerns. This section summarizes some emerging trends in bicycle facility design and organizations addressing them.

Signed Bicycle Routes

Neighborhood bicycle routes with bicycle wayfinding signage are becoming more popular on streets where there is no need for dedicated bicycling facilities. Signage is a simple yet effective way to provide users with an accessible route for biking. Signs can designate a neighborhood bicycle route or historic bicycle tour of Powhatan County through pavement markings and / or street signage.

Bicycle Boulevards

Bicycle boulevards are street segments, or a series of contiguous street segments, that are modified to accommodate bicycle traffic and minimize motor vehicle traffic. Bicycle boulevards are best suited for street sections that link major destinations like a park or school to a greenway or other major bicycling facility where a dedicated greenway connection is infeasible or a bicycle lane is not practical due to the low-speed, low-volume nature of the street. Bicycle boulevards typically consist of special signage and pavement markings that denote them as spaces for prioritizing bicyclist movement.

Green Lanes

Painting a bicycle lane or sections of a bicycle lane with green paint is becoming a more popular treatment to help visually offset the bicyclist’s space of the roadway to improve safety and visibility. The most common treatment of green bicycle lanes is applying the paint when a motorist merges across a bicycle lane, either at an intersection to reach a right-turn-only lane or at a freeway interchange. Green lanes require special permission from the Federal Highway Administration, as they are not yet universally accepted in prevailing design standards.

Cycle Tracks

The applications of cycle tracks, separate dedicated facilities for bicyclists within a street right-of-way, are increasingly popular on urban streets. Think of it as a multi-use trail located within the street. Another example is a bicycle lane placed between an on-street parking lane and the curb rather than on the motor vehicle travel lane side of the parking lane.

NATCO Urban Bikeway Design Guide

The National Association of County Transportation Officials (NACTO) has recognized that prevailing guidance from AASHTO is not well-suited for bicycle mobility in urban areas. They developed this design guide to account for those unique needs. The NACTO guide is available online for free and includes several innovative treatments, many of which are acceptable applications within what MUTCD allows.

Cycle tracks and colored bicycle lanes are prevalent in the design guide, as are various treatments for bicycle boulevards and how to accommodate bicyclists at intersections.

MUTCD Updates

The Manual on Uniform Traffic Control Devices is updated periodically; the last update was in 2009. Previous updates occurred in 1988, 2000, and 2003; therefore, we are in a phase where another update is likely to occur before 2020. The growing trend for more inclusive bicycling facilities is likely to lead to the incorporation of more specific guidance on accommodating bicyclists and changes to some existing treatments.

3.7 Designing for Pedestrians

Pedestrians make up a large user group of people. To encourage walking and running, either for recreation or transportation, pedestrian facilities must be safe, usable, and comfortable. The following are various types of facilities that pedestrians can use.

VDOT Pedestrian Policy

The Virginia Department of Transportation (VDOT) State Pedestrian Policy Plan aims to improve pedestrian safety, mobility, and connectivity in Virginia. Here are the key points:

- **Vision and Goals:** Establish a vision for the future of walking in Virginia, with goals to enhance pedestrian safety, comfort, and network connectivity.
- **Existing Conditions:** Analyze current walking conditions, identifying opportunities and constraints to pedestrian safety and comfort.
- **Plan Recommendations:** Provide detailed recommendations organized under four core elements: policy clarification, staff resources, outreach and coordination, and progress measurement and evaluation.
- **Implementation:** Set priorities for the recommendations with a timeline categorized into immediate (0-1 year), short-term (1-2 years), mid-term (2-5 years), and ongoing actions.

The plan emphasizes the importance of a multi-modal transportation system and the economic, environmental, and health benefits of walking. It also outlines the roles of various stakeholders in implementing the policy. For more information, please visit this link: [SPPP_FINAL_OnLine_LowRes.pdf](#) (virginia.gov).

Sidewalks

Powhatan County's public pedestrian facilities currently include: sidewalks near schools, the village area, and Fighting Creek Park and additional trail resources at state-run facilities. While these paths effectively serve recreational purposes, sidewalks are often a more efficient solution for facilitating pedestrian movement within busy areas like what might be found along Old Buckingham Road or in areas between residential communities, workplaces, schools, and recreational areas.

Sidewalks connect various points of interest, such as homes, workplaces, schools, parks, and shopping centers, facilitating easy and safe access. They also promote physical activity and contribute to a community's overall quality of life.

This plan acknowledges the need for a comprehensive pedestrian network in Powhatan County, encompassing trails (paved and natural surfaced), bike lanes, and shared routes (motorized vehicles and bikes). However, sidewalks may be used to move pedestrians from where they are, such as parking areas, destinations, etc., to the actual trail or multi-use paths that make up the trail network. The primary purpose of sidewalks is to provide a safe and convenient path for pedestrians to travel. They serve as a dedicated space for people to walk, jog, or run, separate from the roadway, reducing the risk of accidents with motor vehicles.

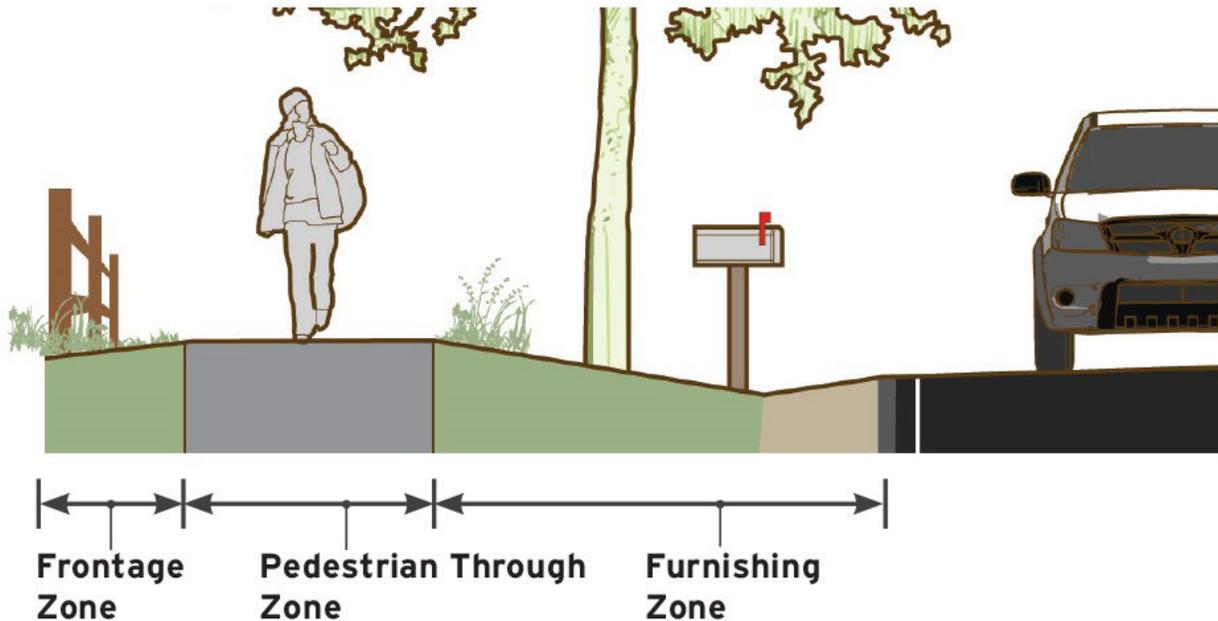
In urban planning, sidewalks are an essential component of pedestrian-friendly infrastructure. They also play a significant role in enhancing the aesthetic appeal of residential and business areas. Sidewalks are crucial for pedestrian safety, mobility, and community well-being. At present, sidewalks are predominantly constructed when required by new construction permits. However, County staff should consider efforts to integrate new sidewalks with planned trails. Areas where the existing sidewalk is installed may consist of missing segments or gaps where a property owner doesn't have a sidewalk but each adjacent neighboring property does. These occurrences may be considered barriers to the accessible use of said sidewalk, rendering the route for able-bodied patrons only. The County should seek such gaps in connectivity among sidewalks and plan to work with either VDOT or property owners to remedy the gaps. Other conditions, such as damaged or lifting sidewalk segments, present the same challenge to less ambulatory patrons and require the same regular assessment of sidewalk conditions and plans to fix identified issues.

Future sidewalks should comply with all ADA requirements. Their purpose should be to not only assist in moving people from parking lots to the buildings they are going to but also should be built to link people to the planned trail network. This approach will take time to develop but will ensure a cohesive and efficient pedestrian network within Powhatan County.

In general, sidewalks in Powhatan County should be a minimum of five feet in width and meet the requirements of the Americans with Disabilities Act (ADA). Sidewalks should provide an ample pathway for pedestrians to walk to their destinations. Where adequate right-of-way is available, a buffer can be used to separate the sidewalk from the roadway. Typical 5' buffers allow for vertical landscaping, signage, and utilities. Where possible, buffers between sidewalks and roadways separate pedestrians and vehicular traffic, increasing the actual and perceived safety of the path. Sidewalk areas within and leading to busier areas in Powhatan County should be wider to allow for a denser population, street furniture, street trees, and other amenities.

Sidewalks should be constructed within the street right-of-way according to VDOT and County standards. When the sidewalk is not within the dedicated street right-of-way, the County should obtain a sidewalk easement dedicated to Powhatan County. Sidewalks should be installed during roadway construction or widening unless otherwise approved by the County. Sidewalks should be provided along streets within new and expanding developments.

Concrete is an extremely durable and long-lasting trail surfacing material. However, in the context of many greenways, it can easily be mistaken as an extra-wide sidewalk. Concrete should be installed to minimize jointing, as jointing can make for an uncomfortable travel surface.



Sidewalk graphic from the FHWA Small Town and Rural Multi-modal Network Design Guide

Pros

- Longer lasting material
- It can be a lower cost than using concrete headers
- It can be installed later in the season than asphalt

Cons

- Typically, it is a higher cost than asphalt
- Expansion and control joints create a bumpy trail surface that is undesirable to users
- It has a sidewalk appearance and is less recognizable as a multi-use trail
- Concrete has a higher-quality layout and tolerances for finished grading

Considerations

- Fiber reinforcement will be specified at a dosage rate per the manufacturer's recommendation and verified by the engineer. When coordinating with the manufacturer, note the need for surface finishing
- Saw-cut control joints are preferred
- Expansion joints are to be placed at regular intervals. Joints to be sealed
- No control or expansion joints are to be placed parallel to the path of travel except where needed at intersections
- Concrete should be reserved for ramps, aprons, approaches, and trail amenity areas due to cost considerations or special site requirements

Multi-use Trails

As sidewalks have different standards for various applications, greenways vary due to space, existing conditions, and usage. A greenway can be a multi-use facility located off-street, offering multiple opportunities for users, such as walking, in-line skating, and biking. Special safety considerations should be made when these facilities are near a roadway. Adequate separation or barriers should be implemented between the roadway and the multi-use path.

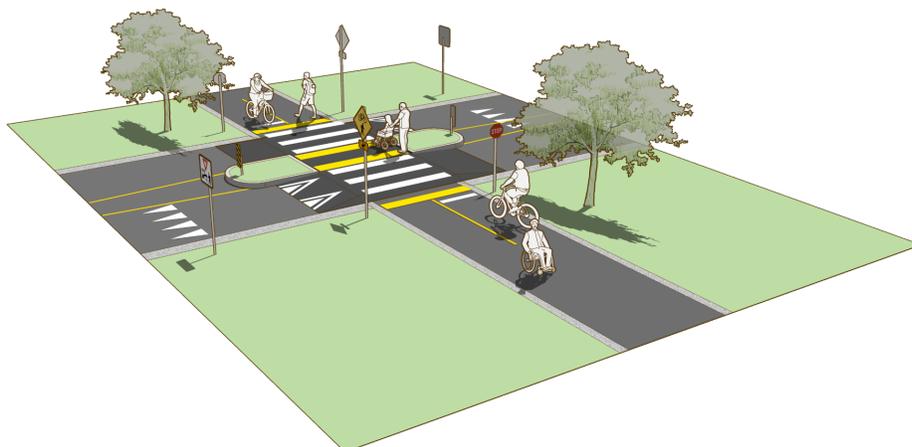
A greenway is a trail corridor on primarily undeveloped land, along a river or between urban centers, reserved for recreational use or environmental preservation. The greenway movement has experienced positive popularity. These types of trails have been traditionally developed on abandoned railroad beds, stream/creek easements, utility corridors, and through residential communities. Most multi-use trails, like greenways, are wider than sidewalks. The typical minimum width for a two-directional trail is 8'-10'; however, 12'-14' widths are preferred where heavy pedestrian traffic is anticipated. Due to many greenway facilities being off-road, the larger width provides access for maintenance and emergency vehicles. Most greenways are constructed using asphalt as the surface. This application is mainly used because it is cheaper than concrete, which is used for sidewalks.

Design techniques should be considered to create an aesthetically pleasing greenway. Clearing vegetation should be limited to clearing for construction, increasing sight lines, and ensuring the safety of the trail user. Winding the greenway can help create opportunities for landscaping areas and improve sight lines, especially along long, straight sections.

The typical pavement design for a paved, off-road, greenway trail should be based on each project's specific loading and soil conditions. These asphalt or concrete trails should be designed to meet loading requirements, including maintenance and emergency vehicles.

Concrete surfaced trails should be used in flood-prone areas because of their durability compared with asphalt, which can be washed away, swell, heave, and eventually crack. In addition, concrete trails can better withstand sub-grade failure and root intrusion than asphalt surfacing.

Asphalt paving is predominantly used on greenway trails because of its cost, but it requires more maintenance than concrete due to its flexibility, which can cause the trail to move. It is also important to construct a 2' stone shoulder on both sides of the asphalt edge to help prevent failure and erosion of the edges.

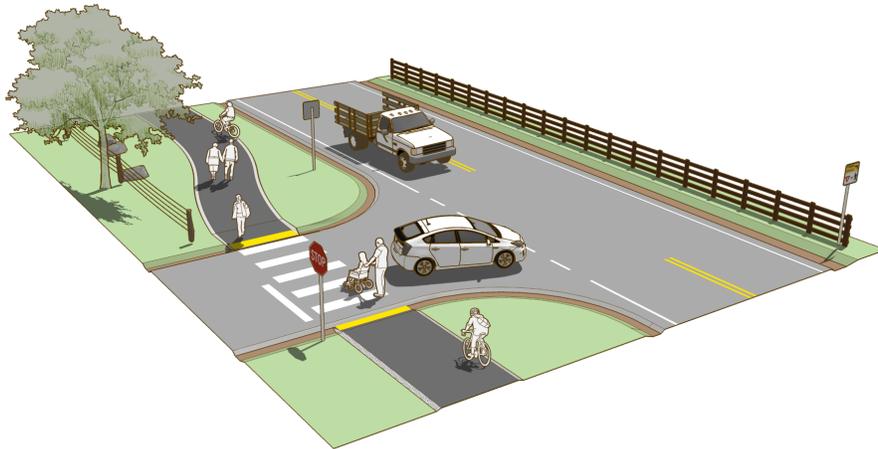


Graphic from the FHWA Small Town and Rural Multi-modal Network Design Guide

Sidepaths

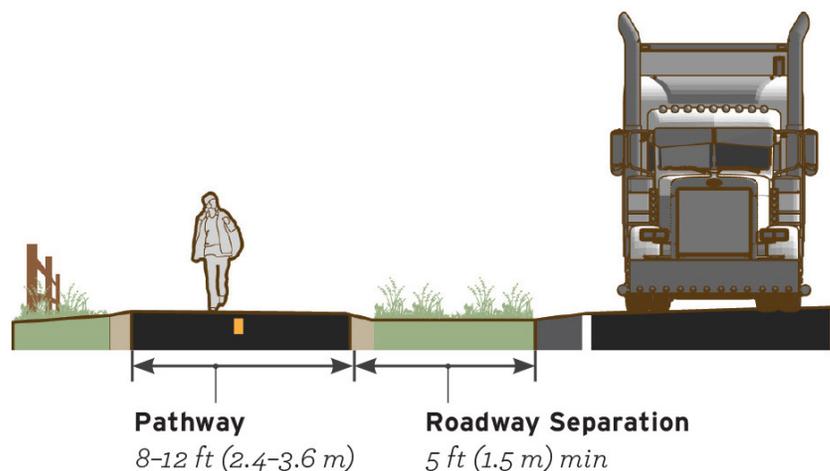
A sidepath is essentially a greenway or multi-use path oriented parallel to a road but separate from it. The AASHTO Guide to the Development of Bicycle Facilities cautions those contemplating a sidepath (or widened sidewalk) facility to review all the various elements of the roadway corridor environment and the right-of-way before deciding to implement one. Sidepaths should only be constructed along corridors with relatively few intersections and driveways, reducing possible conflict points.

There are certain roadways with high traffic volume and vehicle speeds where sidepaths are the only bicycle facility that can be considered without radical changes to the existing roadway design. In these cases, a sidepath could be a possible treatment to accommodate bicycle traffic. The possibility of intersecting driveways and roadway conflicts should be carefully considered. If possible, sidepaths should be provided on both sides of the roadway to encourage bicyclists to ride in the same direction as parallel traffic. Future solutions should include widening the roadway or providing narrower travel lanes to accommodate bicycle lanes.



Graphic from the FHWA Small Town and Rural Multi-modal Network Design Guide

According to the FHWA Small Town and Rural Multi-modal Network Design Guide, "...a sidepath is a two-way shared-use path situated directly next to and running parallel to a roadway. Compared to facilities on the roadway in areas with heavy traffic, sidepaths can provide a superior experience for users of varying ages and skill levels. They can decrease the distance needed to cross roadways and help preserve the character of rural areas and small towns."



Graphic from the FHWA Small Town and Rural Multi-modal Network Design Guide

Natural Surface Trails

Natural surface trails are the most common type of trail. They are typically created by removing plants and a layer of the topsoil to expose a firmer subsurface. These trails are suitable for mountain biking, hiking, and trail running and may include space for bridle use.

Natural surface trails should be considered when there is a desire for a more natural experience, when the aesthetics or preservation of the immediate environment is a priority, and when there is a need to save more trees and lessen the environmental impacts of trail development. They are also preferred when there is a need for softer surfaces to run on, as natural surface trails are believed to be easier on joints than paved paths.

The location of a natural surface trail is very important to consider. If portions of the trail are to be in a vulnerable area like an often-saturated floodplain or a busy, well-traveled corridor, it might make more sense to pave portions to mitigate erosion and maintenance requirements.



10' - 12' vertical clearance on a natural surface trail corridor

When building natural surface trails, it's essential to consider the following steps:

- **Mark the Trail:** Mark the centerline of the trail, keeping your design standards in mind. Markers should be evenly spaced, from 20 feet apart in dense vegetation to 100 feet in open terrain
- **Clear the Alignment:** Ensure the trail alignment respects the natural environment and avoids tree removal where possible
- **Construct the Tread:** The tread is the trail's surface that people will walk on. It should be durable and able to withstand the expected amount of traffic. Public input for this study indicates a preference for natural surfaced tread, with a particular emphasis on dirt / mulch
- **Install Safety and Wayfinding Signage:** Proper signage is important for directing trail users and providing information about the trail

3.8 Equestrian Trails and Facilities

Equestrian trail rider's needs are unique and should be considered separately when designing trails for the general public. The safety and support of horses, their riders, and non-riding pedestrians must be the focus of any effort to improve or implement new bridle trails. The U.S. Forest Service's "Equestrian Design Guidebook for Trails, Trailheads, and Campgrounds" provides practical guidelines for developing safe recreation environments that are sensitive to the needs of riders and their stock.

While existing bridle trails are available at state-owned sites such as Powhatan State Park and the Powhatan Wildlife Management Area, the County may opt to allow limited use of planned natural surface corridors, such as those utilizing long utility easements. Understanding the slight differences in riders' needs compared to other trail users will help mitigate potential conflicts between the user groups.

Powhatan County staff should consider this the most up-to-date resource for public equestrian trail design and guidance. Here is a link to the U.S. Forest Service's public guidebook: <https://www.fs.usda.gov/t-d/pubs/htmlpubs/htm07232816/toc.htm> Several chapters of this comprehensive resource educate and illustrate bridle trail concepts, and it provides illustrative details on horse trail designs suitable for public equestrian trails, with special emphasis on trailhead needs which differ from pedestrian/bicycle trailheads. Trail riding trends include camping as part of the experience, and the U.S. Forest Service guide also assists with designing for those needs. Below are brief summaries of the sections presented in the guide:

- **Understanding Horses and Mules:** This chapter provides an evolutionary perspective on horses and mules, discussing their physical characteristics, basic needs, and behavior.

- **Planning Trail Systems:** This section emphasizes the benefits of trail system planning, user involvement in trail planning, and the land use and regulatory framework. It also outlines the planning process, including initial project organization, inventory and data collection, analysis, conceptual planning, plan adoption, and implementation.
- **Designing Horse Trails:** This chapter discusses trail settings, riders' needs, conflicts, trail hierarchies, trail scenarios, and designing for shared-use trails.
- **Designing Trail Elements:** This section covers trail terms, length, sight distance, clearance, tread, alignment, grade, steps, out-slopes, trail-bed construction, trail drainage, curves, turns, passing areas, and switchbacks.
- **Designing Trail Crossings and Structures:** This chapter provides guidelines for designing at-grade road crossings, railway corridors and crossings, water and wet area crossings, above-grade crossings (bridges and overpasses), and below-grade crossings (culverts and underpasses).

This guidebook is a comprehensive resource for anyone designing and planning equestrian trails, trailheads, and campgrounds.



3.9 Safety

Marked Crosswalks

Trails and greenways, like sidewalks, are part of an alternative transportation system. Safe and marked crossings must be formed where this system intersects with the traditional vehicular road system. Pedestrians and cyclists must be able to traverse the local transportation system as easily and safely as people in vehicles. Providing marked crosswalks is one of many ways to facilitate the safe crossing of streets and parking lots.

A marked crosswalk is any crosswalk delineated by white markings on the pavement. The white markings may be made from a bright paving material or paint. Crosswalks consisting of textured, colored, or otherwise contrasting materials are considered 'unmarked' unless white markings are also present.



- Crosswalks should consist of two (2) twelve-inch white lines with a separation of six feet
- Pedestrian & Bicycle crossing zones should have a width of at least six to eight feet
- All marked pedestrian traffic crossings should be approved by the County or VDOT traffic Engineer before installation
- All mid-block pedestrian traffic crossings should be designated as crosswalks with pavement markings and signage per MUTCD and should be approved by the County or VDOT traffic engineer before installation

Alternative materials to paint include thermoplastic materials, plastic tape, or other VDOT-approved materials.

To ensure the public understands traffic control devices, there needs to be consistency. All traffic devices, including crosswalk markings and signs, must conform to all state and federal standards and regulations for dimensions, colors, workings, and graphics. Legal crosswalks usually exist at all public street intersections, whether marked or unmarked. However, a crosswalk can only exist at a mid-block location if it is marked. It is recommended that mid-block crossings are no less than 200 feet from an adjacent signalized intersection.

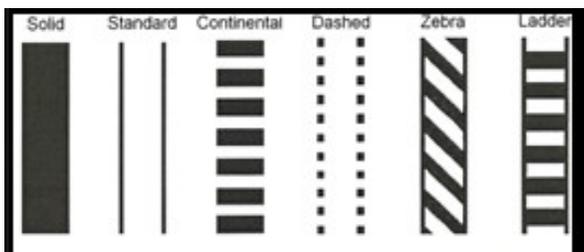
Crosswalks do not guarantee pedestrian safety. State laws require motorists to yield to pedestrians in a marked crosswalk. However, drivers seldom comply on roads with moderate to higher speeds and traffic volumes. More vehicle/pedestrian collisions occur at marked crosswalks on multi-lane streets with high vehicular traffic than at unmarked crosswalks. This may be partly explained by the observation that older adults cross at marked crosswalks rather than unmarked areas. Adding warning signs and lights for drivers greatly decreases the risk to pedestrians.

There are safety concerns on multi-lane roads that have crosswalks. If the driver nearest the curb stops for a pedestrian, but the driver in the next lane cannot see them and continues through the crosswalk, the driver in the adjacent lane may likely be at risk of striking the crossing pedestrians.

Pedestrians should not be dependent on crosswalks, but they should consider them a means of assistance and direction along the safest route rather than a means of stopping traffic.

Crosswalks should be marked at intersections where there is substantial conflict between the vehicles and pedestrian activity, where there are concentrations of pedestrians (otherwise pedestrians could not find the proper place to cross), and where traffic movements are controlled. Examples of such locations are:

- Approved school crossings
- Signalized intersections
- Four-way stop intersections
- Mid-block crossings



A change of materials is not always sufficient to clearly mark a crosswalk. The white border makes the crosswalk much more visible to drivers.

Mid-Block Crossings

A mid-block crossing is any crosswalk that is not located within an intersection. Mid-block crossings should be signed and marked in compliance with the Manual on Uniform Traffic Control Devices (MUTCD) and the current VDOT roadway standard drawings.

Crosswalks at mid-block should not be installed within 200 feet of another signalized crossing point. Therefore, if a signalized crossing is in place at an intersection, another crossing at the mid-block must be farther than 200 feet from the intersection crossing location.

Advanced warning signs are needed when mid-block crossings are present.

Raised crosswalks are typically used on two-lane streets with less than a 35 MPH speed limit.

Additional Guidelines for Crosswalks:

The following guidelines are taken from the USDOT Federal Highway Administration's Pedestrian Facilities Users Guide – Providing Safety and Mobility (2002) and the Association of State Highway and Transportation Officials' Guide for the Planning, Design, and Operation Pedestrian Facilities (2004).

- Crosswalks should not be installed where speeds exceed 40 miles per hour. As noted above, crosswalks should be used with other traffic control devices in some areas to increase pedestrian safety. This is especially important on roads with daily traffic exceeding 10,000 vehicles.
- When placing crosswalks, VDOT recommends pedestrian facilities (sidewalks) on both sides of the roadway.
- The MUTCD requires the width of crosswalks to be at least six (6) feet wide. It is recommended that the crosswalks be at least ten (10) feet wide in areas of high vehicle and pedestrian traffic.
- Pedestrian access to the crosswalks via curb ramps and other sloped areas should be fully contained within the crosswalk markings.
- Markings for the crosswalk should extend across the entire roadway width.
- The MUTCD recommends all crosswalk markings be white. The continental and ladder patterns for crosswalk markings are more easily seen and understood by motorists.
- All lines should be twelve inches to twenty-four inches wide and spaced one foot to five feet apart, depending upon the location and width of the roadway.
- Additional devices such as traffic signals and beacons should be added where vehicle speeds and traffic are higher.

Many factors must be analyzed before deciding the location and type of crosswalks to be installed. Some of them are:

- The number of pedestrians that will be served
- The function of the highway
- The volume and speed of vehicles
- The width of the road
- Current and future predicted conditions
- The typical abilities of the pedestrians that would use the crosswalk
- How they will be initially funded and maintained

School Crosswalks

This guide proposes trail connectivity with schools in Powhatan County, which may encourage more walking trips made by children. With the elevated concern for the safety of children walking to school, the criteria for placing marked crosswalks along the route are generally a bit different. Crosswalks should be marked at all intersections along the suggested route to school, where the volume of children reaches about 40 in two hours.

Section 7 of the MUTCD is entirely devoted to "Traffic Controls for School Areas" and is the primary guidance available to municipalities for installing signs and markings in school zones. The section provides valuable additional guidance for school crossing treatments that can be utilized for the planning and designing of schools that should be considered when making safety improvements.

School crossing signs should mark all school crosswalks on the suggested route and be placed at crosswalks within the school zone. Busy intersections children cross should include traffic control devices like signals and signs.

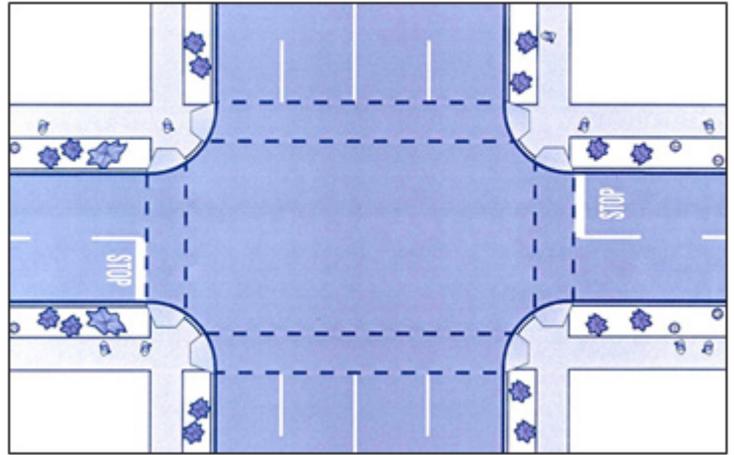
Curb Ramps

Curb ramps provide access between the sidewalk and the street for people who use wheelchairs and other motorized mobility devices. They are usually found at intersections but may also be used at other locations, like street parking, loading zones, bus stops, and mid-block crossings. The implementation regulations under Title II of the ADA specifically identify curb ramps as requirements for existing facilities and all new construction.

According to Title II implementation regulations, priorities for installing curb ramps in existing facilities include access to government facilities, transportation, public accommodations, and employees at their place of employment (U.S. Department of Justice, 1991a).

For many people with mobility impairments, curb ramps make it more difficult to navigate the pedestrian corridor. Crutches and canes are sized per user so that the energy required for walking is minimized on a hard, level surface. The use of these types of walking aids is more difficult on sloped surfaces, such as curb ramps. Widening the crosswalk to allow people to use either the curb or the curb ramp will ease access for cane and crutch users, who are uncomfortable traveling on a sloped surface.

People with vision impairments rely on the “curb” to identify the sidewalk and street transition. Installing curb ramps removes this cue and replaces it with a ramp that is much more difficult to detect. Therefore, curb ramps must be installed to create access for people who use wheelchairs; they are installed to maximize detectability for people with vision impairments. The ADA requires the addition of a detectable warning on all curb ramps. This consists of truncated domes extending across the entire width of the ramp, and they must be in a contrasting color to the surrounding paving - either dark to light or light to dark.



Lighting Improvements

Proper lighting quality, placement, and sufficiency can enhance the nighttime user experience and create a safer pedestrian facility. Two-thirds of all pedestrian/vehicle fatalities occur during low-light conditions. Crosswalks should have adequate lighting so motorists can see pedestrians or cyclists.

Street lighting is often implemented along roadways to light the roadway and the sidewalk, allowing adequate lighting for motorists and pedestrians. Low-level lighting can be implemented in urban areas through decorative streetlights, which offer pedestrian-scale lighting. This type of lighting should be placed where there are high pedestrian volumes to offer improved aesthetics at popular greenway nodes.

Various streetlight choices include mercury vapor, incandescent, high-pressure sodium, and newer LED systems. Traditionally, high-pressure sodium was more cost-effective but did not have the best light quality. The Light Emitting Diode (LED) technology is now considered the most efficient type of street lighting. LED streetlights are more efficient and cost-effective than traditional street lighting. Here are a few reasons why:

- **Energy Efficiency:** LED lights use less energy than traditional lighting systems like High-Pressure Sodium (HPS) bulbs. This makes them a great choice for anyone looking to reduce energy consumption.
- **Longevity:** LED lights last significantly longer than traditional light bulbs. This reduces the need for frequent replacements, leading to lower maintenance costs.
- **Light Quality:** LED lights offer comparable or even better light quality than other types of lighting. They generate less heat and provide plenty of light.
- **Cost-Effective:** Although the initial cost of LED lights can be higher than traditional bulbs, they are more cost-effective in the long run due to their energy efficiency and longevity.

Roadway streetlights can range from 20 to 40 feet in height, while pedestrian-scale lighting is typically 10 to 15 feet.

Support Features and the Walking Environment

Bicycle and pedestrian facilities are part of a network that provides access to businesses, parks, and residential areas. Site furnishings like benches, trash cans, and drinking fountains can enhance well-designed walking environments. However, they should be kept clear of poles, signposts, trash cans, and other obstacles that could block the path of pedestrians or cyclists. Benches, water fountains, bicycle racks, and other amenities should be carefully placed to create an unobstructed path for users. Such areas must also be properly maintained and kept clear of debris, overgrown landscaping, tripping hazards, or areas where water accumulates and causes problems for pedestrians. Quality site furnishings should be used to show that the community values its public spaces. In the long run, high-quality site furnishings will be more cost-effective.

Restrooms in key locations are also essential to providing a comfortable experience for users throughout the bicycling and walking network. Providing the necessary facilities at other planned locations, such as parks and other public facilities, relieves the local businesses from having to provide access to restrooms.

Bicycle and pedestrian facilities should interest users and provide a secure environment. Shade structures, well-placed seating, and lighting can help users rest during exercise and hot days. By placing support features throughout the bicycle and pedestrian network, users will have wayfinding cues and a place to break from their trip.

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04 | Bicycling Education and Encouragement

4.1 Education and Bicycling

The educational programs that should be offered to residents and visitors of Powhatan County vary by the intended audience, notably the age and abilities of the bicyclist. No matter what improvements are made to the roadways, if bicyclists and motorists are not adhering to the rules of the road, crashes will occur, and the bicyclists will suffer worse injuries due to their lack of the protective shield that motorists have. It is extremely important to have ongoing training programs for both children and adults. It is also important to continue efforts for the trail system so children and novice riders have places to ride and learn.

Reaching out to adults helps build behavior patterns that can help children become more aware of bicycling. Teaching children about bicyclists also helps develop safer drivers in the future and can serve as a motivating influence on parents.

The recommendations developed in this chapter have been organized by the various user types based on age groups rather than detailing specific educational programs, for which there are various online sources.

Organizations such as the League of American Bicyclists, Safe Routes to Schools National Partnership, National Highway Traffic Safety Administration (NHTSA), and several state-level bicycle advocacy organizations have online materials and videos that can be distributed to students and parents.

Young Children

Any educational program must consider children's cognitive ability. Young children are unable to determine the speed of a vehicle. Children under eight use bicycles on sidewalks, greenways, or low-volume streets. Therefore, their actions are mostly like pedestrians'. They do not always understand how to determine when or where it is safe to cross the roadway, and they are so small that motorists may not see them until it is too late.

Children under third grade should learn to get off their bikes and cross the road hand-in-hand with an adult. The most common crashes involving young children occur because they dart out into the roadway without looking while crossing alone. This usually happens because they concentrate on an object they are interested in, such as a dog. Children of this age may not think they are entering a roadway and do not sense or understand the dangers.



Teaching children safe riding habits helps build a strong bike riding culture in the community

Learning to come to the edge of the roadway, then stop and look about before entering the road, is a fundamental lesson. Young children need to learn where to bike and walk along a road safely and how to share the sidewalk with others.

When dealing with bike skills, the target should be the awareness that driveways are where cars travel. They must stop and look both ways for cars entering and exiting the drive before proceeding.

- Educational methods to target children of this age group should include:
- Joint parent/child programs to teach proper skills
- Instructional videos, such as Willie Whistle, which is available from the National Highway Traffic Safety Administration (NHTSA)
- Participation in Safe Routes to Schools programs such as bicycle trains and walking school buses
- Coloring books designed specifically for bicycle education of young riders
- How-to booklets on proper bicycling sizing and riding on two wheels

Third Grade to Fifth Grade Children

By the time children are in third, fourth, or fifth grade, their cognitive skills have developed to where they can begin to determine when it is safe to dismount their bicycle and cross the street without holding an adult's hand. This age group still needs to be reminded about looking both ways, as there is a tendency to dart into the roadway. This occurs because they assume it is safe to enter the street. After all, the first person in the group made it through. They forget to look for themselves.

Children of this age who are self-taught or have spent most of their time riding in their driveway or on residential streets are more likely to ride facing traffic, either because their parents told them to do so or they confuse the walking against traffic rule with the bicycle rules that specify riding with the

flow of traffic. Parents and children falsely believe that if they see cars eye-to-eye, they can get out of the way to avoid a crash; however, the motorist has no time to wait until it is clear to pass them and must react more quickly.

This is the key message for children of this age, as they can now begin to judge speed and understand dangers before they occur. Their hearing is more defined, and they can start making judgments about proper ways to maneuver on the street.

Therefore, this is the age when they should be learning hand signals and bike handling skills, such as starting and stopping under control and making turns. Children at this age can perfect their balance and avoid hazards. Riding a bike on a quiet road with a parent is acceptable, and a parent may want to begin talking with this child about what they are doing and observing while driving to begin understanding cause and effect and how traffic rules are applied.

Educational Methods for Children Should Include:

- Riding skills taught in elementary schools
- Bicycle rodeos at schools or at special events
- More advanced options, such as "Ride Smart: It's Time to Start," are available through NHTSA
- Participation in Safe Routes to Schools Programs such as Bicycle Teams and Walking School Buses

Middle School Age Children

By the time a child has reached middle school age, the parent should be taking advantage - when driving with the kids in the car - to talk about what they are doing while driving, what they see as problems that could occur on the road, and what decisions they are making. This provides children with a foundation for understanding the road rules, sharing the road concepts, and how to handle various situations.

Children are great observers of their parents' behavior. At this age, kids begin to think about doing things independently; they crave independence and are willing to travel anywhere and everywhere they can on their bicycles. With that, they need good judgment and experience to understand how their behavior and actions will affect what happens on the road. This is also when kids become more courageous about riding at night or dusk, necessitating lights, reflectors, and reflective clothing for safety.

They need experience in a safe environment to practice and perfect their skills as they build upon skills learned at the elementary school level and increase their cognitive abilities to make judgments about potentially hazardous situations. Specific on-road skills, such as signaling before turns and rear gazing before turning while practicing on a simulated streetscape, along with opportunities to interact with other types of traffic, will give them more experience to be safe and prepare them to be good drivers who can interact safely on the street.



At this stage, specific educational opportunities should include:

- Full-length bicycle rodeos
- Reading and writing assignments related to bicycle safety
- Poster contests
- Use of more advanced instructional videos such as "Bike Safe. Bike Smart"
- Traffic Skills 101 courses with adults or parents for more advanced or experienced riders
- After-school riding clubs

Adults

Once children have progressed beyond middle school age, they can be included in many adult-specific educational and outreach modules. Most adult bicyclists have not been trained in appropriate riding behaviors, even though most have had driver's education training and possess a driver's license.

Providing training for adults is important because their fears often keep them from trying to use a bicycle for transportation or recreation. The most common behaviors for adults are riding too close to the road edge, not being predictable, or not letting others know their intentions. Some adults still adhere to the "ride against traffic" dictum from childhood. They may also be riding on sidewalks or not watching where they are going when operating in mixed traffic or along a greenway.

The most direct method of adult education is the Traffic Skills 101 course developed by the League of American Bicyclists. The course, along with associated Traffic Skills 201 and Commuter Skills courses, is taught by certified League Cycling Instructors to give adults the skills and confidence to ride comfortably in traffic.

Offering these classes should be part of any total education program. Courses typically last six hours and include classroom discussion, parking lot skills, and a short ride on the road. Discussions include how road rules apply to bicyclists, how and where to ride in specific traffic situations, how to be predictable, and skill practice in avoiding collisions. The League of American Bicyclists also develops a video for adults available through the League or an NHTSA video, “Bicycle Safety Tips for Adults.”



Other adult specific educational programs should include:

- Organized rides for novice riders
- Integration of bicycle-related questions on driver’s license exams
- Take-home handouts to children who participate in bicycle rodeos and other programs
- Parent-specific outreach while children are participating in the bicycle rodeos
- “Silver wheels” programs to encourage older adults to ride their bicycles
- Educational outreach with law enforcement officials
- Outreach at community events like downtown and music festivals
- Promotion of safe riding skills through materials distributed as part of organized rides or special events



Motorists

It is almost impossible to change the behaviors of motor vehicle drivers once they have been behind the wheel for a few years. Even in the most advanced bicycling cultures in the United States, motorists who feel they own the roadway pose a challenge to bicyclists.

The increased use of mobile phones for purposes other than making phone calls has created new problems for bicyclists. Virginia banned texting while driving, but it remains a problem and a concern for bicyclists.

The most influential way to impact the population is to reach new drivers through driver's education classes. The present driver's education programs do not spend much time on bicycle and pedestrian safety or how to maneuver a car with other roadway users. Driver education teachers in Virginia are under contract through an independent company, not the Department of Education or Department of Transportation.

Involvement from the law enforcement community can also contribute to the advanced education of motorists and bicyclists. Involving law enforcement officers in Traffic Skills 101 courses to review applicable traffic laws and teach participants nuances in Virginia laws can be more effective than an instructor simply reciting state code.

League Cycling Instructors (LCI)

The cycling community in Powhatan County should consider developing a bicycle education program for children and adults. Having individuals with this certification gives a community many advantages, the first being a first-rate curriculum from the League of American Bicyclists that has been tested across the United States and provides age-appropriate materials.

Another important component of this certification is insurance coverage provided to LCIs through the League. Participants in traffic skills classes and parents whose children participate in a bicycle rodeo are concerned about safety during the event, and organizers are concerned about liability.

Documentation

Documenting the work in this area will help improve programming, justify future funding, assist in grant applications, and provide a barometer for progress in creating a bicycling culture in Powhatan County. Simply documenting the number of children and adults engaged in these educational programs also provides government staff and elected officials with justification for continued support throughout the community.

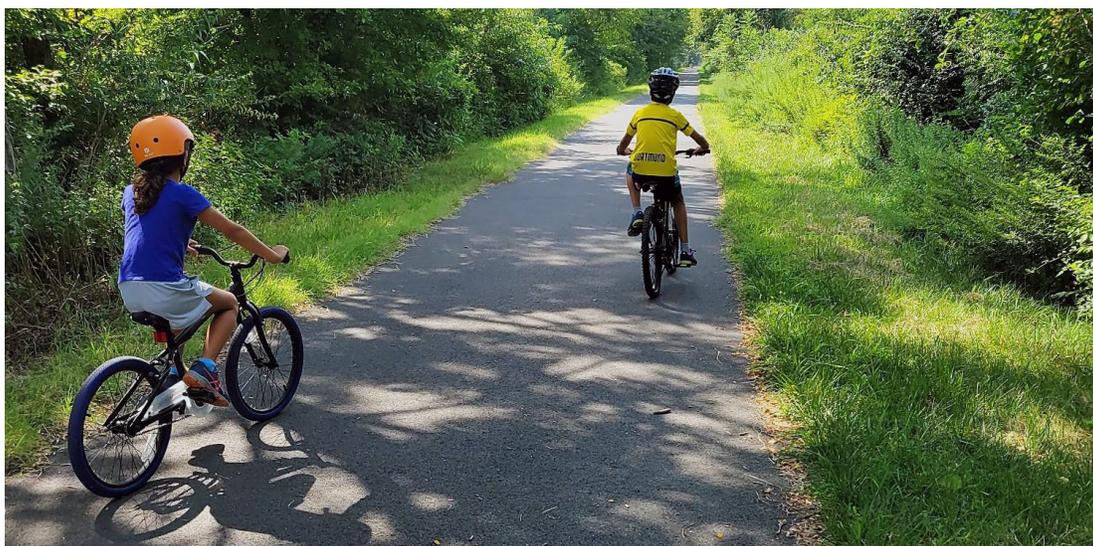
It is also important to develop pre- and post-tests when conducting classes in public schools to help gauge student retention and improve the program. Test questions must be the same to determine what has been learned and what the children remember from the class. It is also important to document the number of children involved in educational programs and their age. This information is essential when applying for Bicycle Friendly Community status through the League of American Bicyclists.

4.2 Encouraging Bicycling

Developing encouragement programs to complement educational efforts and engineering investments helps promote system usage and makes people feel safer when they decide to try bicycling. Making it easy and fun to ride for transportation can increase bicycle mode share.

Building upon these encouragement programs is critical to building awareness of bicycling. Encouragement efforts can also provide a highly visible outreach mechanism to showcase Powhatan County's accomplishments and local advocates' accomplishments as they pursue more long-range facilities investments.

This section outlines some major encouragement programs and recommendations. Many recommendations include a pedestrian element to promote active living through both bicycling and walking.



Safe Routes to School (SRTS)

In 1969, about half of all students walked or bicycled to school. Today, more than half of all children arrive at school in private automobiles, and only 15% of school trips are made by walking or bicycling.



Designed to address these dramatic statistics, the Safe Routes to School Program was organized to create and promote safe walking and bicycling, improve safety near schools, promote active lifestyles, and reduce pollution and congestion caused by school traffic during arrival and departure times. The first Safe Routes to School program debuted in Europe in the 1970s, and the first program in the United States began in the Bronx, New York, in 1997. Less than fifteen years later, the Safe Routes to School Program has become a federally funded and grassroots national movement.

An SRTS program is a school-based effort that involves young students, teachers, law enforcement officers, and parents in the development of school safety and encouragement initiatives such as Walk to School Day, bicycle trains, Walking Wednesdays, pedestrian safety assemblies, and bicycle rodeos. SRTS funding is also available for various facility investments and other activities.

These programs can help engage children in safe walking behaviors and encourage more bicycling and healthier lifestyles. Common steps to creating a successful program are to kick off with an event on International Walk-to-School Day, then subsequently work with PTA members, teachers, and students to identify needs and program ideas while incorporating encouragement measures and education into the school curriculum for students to learn safe walking and bicycling skills and the benefits of an active lifestyle.

Themed Rides

Organizing themed rides can be a fun experience and add to the comfort of riding bicycles. Options for Powhatan County and the area include organizing some bicycle-based history or culinary tours. This could be organized in cooperation with restaurants throughout the area that offer bite-size samples of their food in exchange for a small promotional fee.

Similar rides to coffee shops or other unique destinations could be incorporated into the ride. Holding group rides where participants dress in costumes or celebrate holidays can promote group camaraderie and encourage riders to enjoy the spirit of riding.

Bicycle and Pedestrian Wayfinding Systems and Route Maps

More and more communities use pedestrian and bicycle wayfinding systems to provide visitors and residents with directional and distance information to major landmarks, parks, and other local attractions.

Depending on the distances between attractions, it is advisable to combine bicycle and pedestrian wayfinding systems, recognizing that some bicycle-based destinations may only be accessed from on-street routes and must be combined with auto-oriented wayfinding.

Bicycle and pedestrian wayfinding signs should be at least seven feet tall, with a font and orientation appropriate for viewing by those traveling at the speed of a pedestrian or bicyclist. Distance information should be provided in blocks or miles, and kiosks with maps can be useful for visitors. Such a system could incorporate local themes, allowing area artists an opportunity to design sign templates. Opportunities for private-public partnerships exist, like working with area retailers or B&Bs along the route to sponsor signage and/or complementary brochures in exchange for a mention in the guide.



Healthy Living Initiatives

One of the major characteristics of a bicycle-friendly community is having citizens, municipal staff, and elected leaders who are engaged in and educated about its economic, health, and general quality of life benefits. The health-related workshops for this plan included discussing possible partnerships to promote a healthier Powhatan County community.

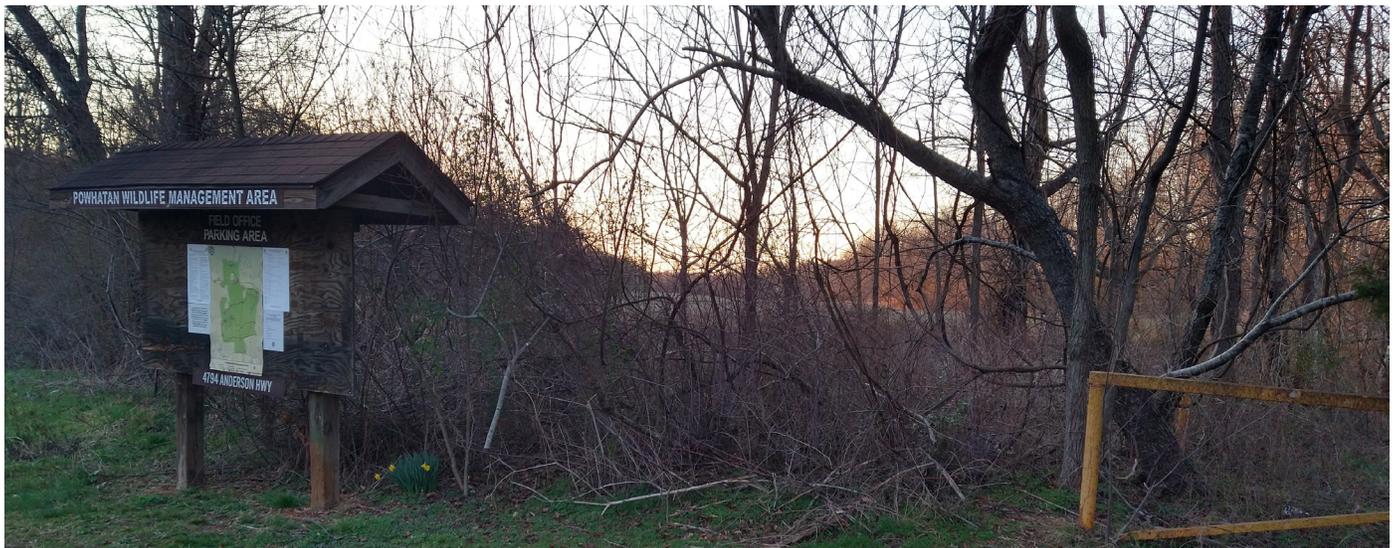
Additionally, educational activities could be held at the County Hall, such as presentations on pedestrian and bicycle friendliness, to learn about the projects, programs, and policies that can encourage a more bicycle—and pedestrian-friendly County.

Several national organizations, including the National Center for Bicycling and Walking (www.bikewalk.org), Walkable Communities, Inc. (www.walkable.org), Complete Streets initiative (www.completestreets.org), and Safe Routes to School National Partnership (<http://saferoutespartnership.org/>) provide resources such as speakers, handouts, guides, and publications which can be used for the education and encouragement component of the event. Local businesses might be asked to encourage employee participation in workplace walking clubs and events and promote a local walking route and corresponding map.

Bike to Work Day

Bike Month is each May, and National Bike to Work Day is usually held on the third Friday of May. The League of American Bicyclists has a packet to assist in starting a bike-to-work event in your town. It can be accessed through their website.

Encouragement programs can also be developed locally as well. One example is a program that provides awards like the Golden Sneaker (for walkers), Golden Spoke (for cyclists), and Golden Wheel (for carpoolers and bus riders) who choose non-single occupancy vehicle rides. Programming usually includes breakfast stations with free coffee and treats on the specific day and education classes to give people more confidence to try a new travel mode that day. Some communities have awards for the most creative commute and most decorated bicycle.



Trailheads help orient trail users by providing valuable safety information

Other Encouragement Activities

- **Bike and Walk to School Days:** October is an international walk and bike-to-school month. The premise of this program is to encourage children to walk and bike to school to increase physical activity, help children understand their environment, and become healthier and more independent. When it is safe to walk and bike to school, this is an encouragement program; when it is not already safe, it is essential to hold a safety workshop and audit with a variety of community leaders, school officials, and parents to develop an understanding of the needs, concerns, challenges, and opportunities to make it safe.
- **Valet parking through bike corrals:** Organized community festivals are a way to develop secure parking, educate the public about your programs, and get feedback from the public. They also add a fun element to the festival. Besides providing the service, you want to use this opportunity to educate the public about your programs and collect email addresses. Make colorful posters and laminate them for durability. It is also important to document how many bikes are parked each time this service is provided and how many volunteers have worked, including their hours.
- **Documentation:** An important component of any of these programs is documenting the number of people they serve. Tallying comments about why people participate, what works, and what does not is all-important to expanding bicycle-related encouragement programs. Knowing how groups and individuals achieve their goals helps understand the community from a bicycling perspective and can help groups and other partners determine its effectiveness. Documentation also helps with future funding pursuits.



Cycling events encourage ridership

In conclusion, to promote bicycling within Powhatan County, the County should periodically re-examine its goals and requirements within the UDO as part of future updates. The County should also consider developing a Bike and Pedestrian Advisory Committee (BPAC) to assist staff and council with future endeavors. The BPAC can also work closely with local businesses to regulate and / or encourage more bicycle ridership.



05 | Routes and Recommendations

5.1 Pedestrian Design Considerations and Guidelines

The guidelines in the Powhatan County trail master plan were developed through assessment and documentation of practices (observed or informed) documented by site observation, community input, and County staff comments. National and state design standards defined by the Virginia Department of Transportation (VDOT), the Manual of Uniform Traffic Control Devices (MUTCD), the American Association of State Highway Transportation Officials (AASHTO), the Americans with Disabilities Act (ADA), and the Federal Highway Administration (FHA) directly influenced the formation of these guidelines. The cost estimates found in Appendix D, provided for the proposed improvements, are only relevant when this document was prepared. Current cost estimates for proposed work should be obtained from a qualified landscape architect and / or engineer before submitting the work for bid.

These recommendations mainly consider facility types in relation to setting suitability and intended function. For example, some trails are recreational, while others are specifically for alternative modes of transportation.



Pedestrians frequent the Village area

5.2 Sidewalk Projects

County and State Park trails comprise most of Powhatan County's existing pedestrian facilities. They are an integral part of the pedestrian network that provides limited recreation trails, mostly natural surface paths. Connector sidewalks are also a primary link for residential areas, shopping centers, and businesses where they exist (limited). The master plan recognizes that Powhatan County deserves a cohesive pedestrian network and recommends trail improvements to connect common destinations, neighborhoods, and businesses. Ongoing efforts to add sidewalks within new developments should continue to bring users to future trails and greenways.

Where space is available, sidewalks should have a vegetated buffer. It should be a minimum of 5' in width; however, circumstances may require buffers to be smaller depending on the amount of right-of-way available and other limiting factors like topography and safety.

All sidewalks should be constructed following the standard details found in the VDOT construction manual. These resources will provide guidance, including varying sidewalks and buffer widths. Other general guideline areas are as follows:

- The minimum thickness of a sidewalk should be 4 inches. At locations where driveway crosses a sidewalk; the sidewalk should be 6 inches deep.
- All paved sidewalks should be constructed with concrete unless intended for historic areas, which require brick to match existing materials and colors unless otherwise approved by the County. Where feasible, sidewalks should be at least 5 feet off the back of the curb with a minimum width of 5 feet. Due to the right of way and other constraints, it will often be necessary to install sidewalks adjacent to the curb.

- The sidewalk design should provide safety for pedestrians and not affect a user's ability to use the sidewalk.
- Sidewalks should have a uniform slope toward the roadway of ¼ inch per foot.
- If a 5-foot-wide buffer or planting strip is provided between the sidewalk and back of the curb, the slope should not be less than ¼ inch per foot nor more significant than 18 inches toward the roadway unless approved by the County.
- If a road that requires sidewalks does not have curb and gutter, the County may require curb and gutter installation in addition to the sidewalk installation.
- Wheelchair ramps should be installed per ADA and County standards where sidewalks and/or greenways intersect any curb/gutter or street section.
- The sidewalk design and construction should conform to ADA standards.
- All pipes, drains, and / or other such concentrated stormwater devices should not discharge across a sidewalk but be piped or drained by flume under the sidewalk.

Typical Sidewalk / Walkway Costs

In 2024, a 5-foot-wide concrete sidewalk costs approximately \$10.59 - \$12.93 per square foot. The cost of curb and gutter is roughly \$56.03 - \$68.58 per linear foot. Asphalt walkways have lower construction costs, approximately \$8.04 - \$9.83 per square foot, but they can be more difficult to traverse and potentially more expensive to maintain. Please note that these costs can vary significantly depending on the project size, the type of material used, and the region where you live. Getting accurate cost estimates from a contractor based on construction documents is recommended before the implementation of any project.

Recommended Sidewalk Projects

Sidewalks serve as a crucial element in establishing connectivity within the urbanized regions of Powhatan. Multiple sidewalk improvement initiatives should be considered to identify necessary enhancements to the overall trail system infrastructure. An inventory and comprehensive analysis of existing sidewalks across the County is recommended as a component of the overarching County transportation strategy. Although this plan primarily concentrates on trails, sidewalk connectors should be contemplated during the planning phase of trail construction projects. This approach ensures a seamless integration of trails and sidewalks, enhancing overall accessibility and user convenience.

5.3 Bicycle Projects

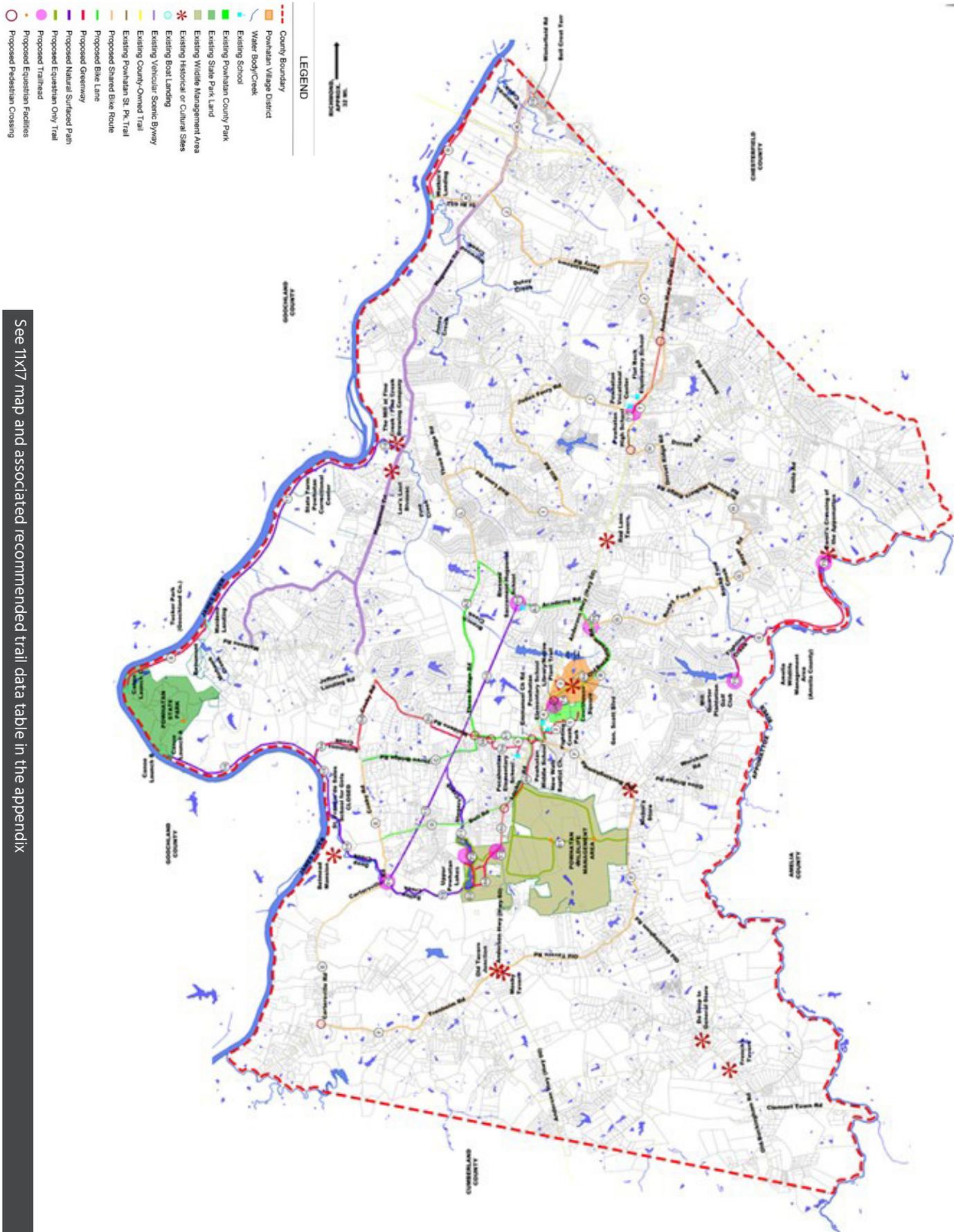
Bicycle Routes and Types

A bicycling network in Powhatan County are comprised of a combination of both long-range infrastructure upgrades and short-term pavement marking or signage projects that link users throughout the County or provide on-street linkages between destinations on low-volume, low-speed streets is another way to provide the community alternative transportation methods and recreational opportunities.

The terms used to describe recommendations outlined in this section are listed below:

- **Shared-Lane Marking (or Sharrow):** A pavement marking symbol that indicates an appropriate bicycle positioning in a shared lane, which is a travel lane that is open to both bicycle and motor vehicle travel.
- **Bicycle Lane:** A portion of a roadway designated for preferential or exclusive use by bicyclists by pavement markings and signs. It is intended for one-way travel, usually in the same direction as the adjacent traffic lane.

Recommendations for each of these corridors and a map showing each trail are provided in Appendix A. The routing map on the next page illustrates the recommended routes and locations for each pedestrian or bicycle trail. This map provides the locations and trail types (multi-use paved, natural surfaced, bike lanes, etc.) recommended for each corridor and locations for trailheads and crossing locations. To fully understand each route, a priority calculator and opinion of probable project costs were developed, indicating each recommended trail type, length, width, typical supporting elements, and what side of the road is recommended for trail development. The guidance provided in this report, along with the routing map, priority calculator, and opinion of probable costs, are intended to be “planning level” guidance to assist Powhatan County’s quest to develop a public trail system. This master plan for Powhatan County trails should be used when creating construction documents for associated trail projects and when funding is sought to help facilitate each project’s implementation.



See 11x17 map and associated recommended trail data table in the appendix

Shared Lane Marking Routes

The easiest and least costly short-term improvements in Powhatan County consist of installing shared lane markings, or “sharrows,” along several road corridors. A shared lane marking can be painted in the travel lane of a roadway (The US DOT Manual on Uniform Traffic Control Devices recommends that Shared Lane Markings should be “...spaced at intervals not greater than 250 feet...”) to mark it as a shared space and raise the awareness of the presence of bicyclists. Below are the connections from the parks to the proposed trail network.

The MUTCD recommends that shared lane markings be installed every two hundred fifty feet along a route and at intersections. The MUTCD also states the purpose of shared lane markings to:

- Assist bicyclists with lateral positioning in a shared lane with on-street parallel parking to reduce the chance of a bicyclist impacting the open door of a parked vehicle
- Assist bicyclists with lateral positioning in lanes that are too narrow for a motor vehicle and a bicycle to travel side by side within the same traffic lane
- Alert road users of the lateral location bicyclists are likely to occupy within the traveled way
- Encourage motorists to safely pass bicyclists
- Reduce the incidence of wrong-way bicycling

Sharrows are typically applied using thermoplastic marking kits that can be purchased and installed by County Public Works personnel or contracts. The following are highly recommended shared lane projects connecting users to important destinations throughout the County. See page 50 for more information.

High Priority

- (SBR-I) Shared bike route within the Judes Ferry Road, Mill Road and Red Lane Road Corridor. This route is approximately 10.75 miles long and begins to connect residential areas north of Highway 60 with many high-priority multi-use path areas.

Medium Priority

- (SBR-E) 7 miles of shared use within the Cartersville Road The corridor runs between the intersection of Trenholm Road Cartersville Road and Three Bridges Road
- (SBR-J) 10 miles of shared use within the Manakintown Ferry Road corridor between Powhatan High School and Watkins Landing.
- (SBR-F) 13.75 miles of shared use within the Trenholm Road Corridor that runs between the intersection of Trenholm Road and Cartersville Road to Old Buckingham Road at New Walk Baptist Road.
- (SBR-G) 4.25 miles of shared use within the Rocky Ford Road Corridor that runs from the Trailhead at Old Buckingham Road/Rocky Ford Road to Moyer Road.
- (SBR-H) 5.75 miles of shared use within the Back Roads Corridor from the Moyer Road and Rocky Ford Road intersection to the CVS on Highway 60.

No low-priority routes are planned for this type.

Bike Lanes

More costly investments involve adding pavement width to many of the area's roadways to link streets within Powhatan County to nearby communities and destinations. Adding five-foot shoulders marked as bicycle lanes is the primary recommendation along most routes. The advantage of marking them as a bicycle lane is that it indicates to motorists and bicyclists where they can be positioned on the roadway. The dedicated space can make bicyclists feel more comfortable along the highway if adequate width is given regarding traffic speed. The advantage of not marking them as bicycle lanes is that bicyclists may use the vehicular travel lane in the event of debris or deteriorating pavement without motorists expecting them to stay in the bicycle lane strictly. The addition of shoulders can generally accommodate \$3000,000 to \$350,000 per mile. Typically, the addition of shoulders is done as a standalone project or as part of a significant roadway resurfacing project.

Corridors within Powhatan County recommended for bike lanes are:

High Priority

- (BL-B) Along the Old Buckingham Road corridor, this bike lane will run from the intersection of Highway 60 and Anderson Highway to the intersection near New Walk Baptist Church. This 3.6-mile bike lane begins the backbone of cycling opportunities for safe passage through a heavily used corridor serving residential and commercial areas, schools, and other public offerings.

Medium Priority

- (BL-A) 7.6 miles within the Three Bridge Road corridor from Red Lane Road to Highway 60.
- (BL-C) 3 miles within the Three Bridge Road corridor from Maidens Road to Cosby Road
- (BL-D) 5 miles within the Locklin Road/Bell Road corridor from the Intersection most near New Walk Baptist Church and going to Cosby Road.

No low-priority routes are planned for this type.

5.4 Multi-Modal Pathways

The Powhatan County Trail Master Plan includes recommendations for several multi-modal projects connecting many users to multiple destinations throughout the County, such as schools and parks. A multi-modal pathway is a shared-use path wider than a typical sidewalk, between ten and fifteen feet wide. It provides many types of human-powered transportation, including walking, running, wheelchairs, bicycles, rollerblades, and skateboards. This plan recommends a standard width of 12' for all new multi-modal paths. They can be located either along a utility easement through a more natural area or near an existing or proposed roadway. If located within proximity to a roadway, it is recommended that there be at least five feet of separation between the roadway and the pathway. The following are highly recommended projects that will better allow community members to destinations throughout the County.

High Priority

- (MM-7) Side path along Anderson Highway, generally running from Powhatan High School and Flat Rock Elementary School. This ½-mile route creates safe passage for students, visitors, and others to have safe passage between the two schools.

- (MM-4) Side path as part of the Old Buckingham Road corridor from Mann Road to Emanuel Church Road. This 1-mile route provides a critical pathway connecting Powhatan Middle School, Fighting Creek Park (its trails), the YMCA, the Library, and several area businesses.
- (MM-4a) Side path that is part of the Old Buckingham Road corridor. This approximately 1.5-mile route connects users to multiple residential neighborhoods.
- (MM-3) Side path along the Skaggs Road corridor from Highway 60 to Old Buckingham Road. This ¼ mile route connects users to residential neighborhoods.
- (MM-4b) A Side path along the Lockin Road corridor from Emanuel Church Road and Bell Road. This 2-mile route is a major thoroughfare connecting residential developments in an area projected to be highly attractive for future growth.
- (MM-5) Side path within a utility easement generally connects Highway 60 and Pocahontas Elementary School. This ½ mile route begins a critical connecting point of the elementary school and other planned corridors.

Other recommended medium or lower-priority multi-modal projects include:

- (MM-1) ½ mile trail within the Fighting Creek Corridor and is an addition to the Fighting Creek trail offerings.
- (MM-2) ¾ mile trail within the Fighting Creek Corridor connecting Fighting Creek Park with Old Buckingham Road
- (MM-4c) 1 mile of trail within the Highway 60 / Lockin Road Corridor that connects Bell Road with a new recommended trail head within the Wildlife Management Area.
- (MM-5b) ¾ mile trail within the Maidens Road Corridor that connects Maidens Road to a utility area substation and utility easements. (MM-5c) 2.5 miles of trail within the from the Utility Substation to Maidens Road / Crosby intersection (see before / after pictures on page 88).
- (MM-5d) 1.7 miles of trail within the Crosby Road Corridor that runs generally from the intersection of Maidens Road / Crosby Road and the Solomons Creek area.
- (MM-5a) .8 miles of trail within the Utility Easement Corridor that runs from Pocahontas Elementary school and Maidens Road.

Low Priority route information please reference the priority matrix within the appendix (MM-6, MM-8, MM-4d, MM-5e and MM-9).

Natural Surface Trails

Natural surface trails and paved multi-use trails are designed for multi-modal use but differ in their construction, maintenance, and typical uses.

Natural surface trails are typically made of dirt, gravel, or other natural materials. They are often found in parks, forests, and rural areas and are popular for hiking, mountain biking, and bridle trail riding (equine use). These trails are designed to blend with the natural environment and can be more challenging to traverse due to uneven surfaces and natural obstacles.



On the other hand, paved multi-use trails are constructed with asphalt, concrete, or other hard surfaces. They are commonly found in urban and suburban areas and used for various activities, including walking, running, cycling, and in-line skating. These trails are typically more accessible, easier to maintain, and can accommodate users of all abilities, including those with mobility aids such as wheelchairs.

Despite their differences, both trails serve multi-modal uses, providing safe and enjoyable active bicycle and pedestrian transportation and recreation routes. They both contribute to the health and well-being of communities by promoting physical activity and connecting people with the outdoors.

The natural surface trails proposed in this planning study are essentially across rural or less developed areas. For this reason, these recommended routes score lower in the plan priority calculations, with most of these recommended routes coming in as medium-priority projects. However, these routes offer good connectivity across Powhatan County, provide scenic views, and lend a satisfying user experience, meaning that some of these projects should be considered for development over more highly prioritized paved trails if funding and politics will support them.

Medium Priority

- (NS-10) 3.3 miles of trail within the Utility Easement Corridor serving the Blessed Sacrament-Huguenot School area
- (NS-17) 6.2 miles of trail within James River Corridor serving the Fines Creek area (at Natural Surface Trail 18)
- (NS-18) .6 miles of trail within the Fines Creek Corridor serving the Mill at Fines Creek

For low-priority route information, please refer to the priority matrix in the appendix (NS-14, NS-15, NS-16, NS-11, NS-12, and NS-13)



Photo realistic rendering of pedestrian crossing on Maiden and Fariss Roads (before)



Photo realistic rendering of pedestrian crossing on Maiden and Fariss Roads Maiden's Road (after)

5.5 Equestrian Projects

Benefits of equestrian trails in Powhatan County::

- **Promotion of Equestrian Activities:** Powhatan County has several equestrian centers such as Hunters Ridge Equestrian Center, Oakdale Farm, and Level Green Riding School. These facilities provide various services, including riding lessons, boarding, and training. Adding County-owned and maintained equestrian trails would complement these services and provide additional opportunities for horse riding.
- **Tourism and Recreation:** Equestrian trails can attract tourists and locals who enjoy horseback riding. For instance, the equestrian trails at Powhatan State Park are considered a must-ride in central Virginia. These trails offer a mix of shaded, woody, and open, primarily flat, well-manicured trails.
- **Economic Benefits:** Trail riders, like most trail users, are tourists who want to explore the surrounding area and other recreational opportunities. This can increase spending in local businesses and contribute to the local economy.
- **Conservation and Stewardship:** The Equestrian Land Conservation Resource promotes access to and conservation of land for equestrian use. Equestrian trails preserve natural landscapes and promote responsible use of public lands.
- **Health and Wellness:** Horseback riding is a physical activity contributing to overall health and wellness. It provides exercise, reduces stress, and improves mental well-being.



Below are equestrian trail projects that the County could encourage or partner with the State to implement at the Powhatan Wildlife Management Area. However, the County should also consider allowing equestrian use of some or all of the planned natural surface trails, such as those along long, wide corridors of the utility easement routes (planned routes 10-18 – see priority matrix table in the appendix).

Medium Priority

- (ET-E1) 8.7 miles of trail within the Powhatan Wildlife Management Corridor from the Wildlife Management Area south of Highway 60 to Old Buckingham Road
- (ET-E2) 3.5 miles of trail within the Powhatan Wildlife Management Corridor from Wildlife Management Area north of Highway 60 to the Upper Powhatan Lakes

No high or low-priority routes are planned for this trail type.

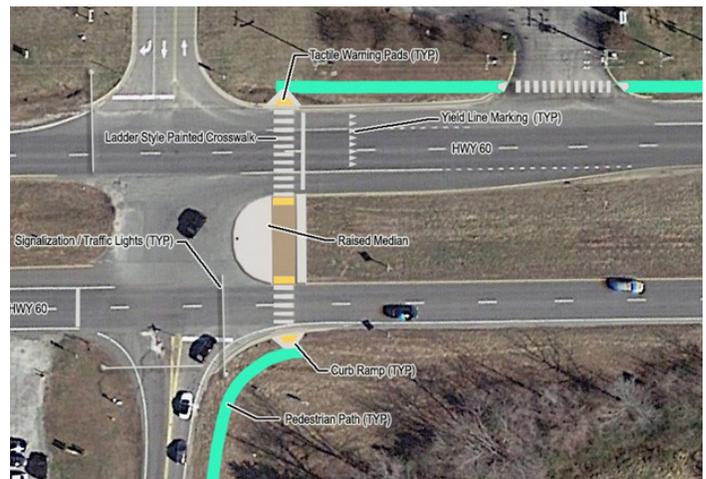
5.6 Support Facilities

The success of the future Powhatan County trail system will depend on the interconnectedness of the entire County trail network and user experience. This interconnectedness will grow over time as projects are completed. This document has provided thoughtful guidance on how best to connect users to multiple common destinations throughout the County and has proposed the types of paths to implement. This system's interconnectedness will rely on both public and private connector sidewalks and the existing pedestrian/bicycle infrastructure that was in place at the time of this study. Accessibility, facility condition, patron safety, and completeness of existing facilities will affect how Powhatan County residents utilize the trail system now. Still, new trail projects will expand the resident user experience over time. Improving the existing sidewalks and crossings at intersections and

mitigating known hazards to pedestrians and bicycle travel will play a key role in how proposed projects link up with existing facilities.

Signalized Pedestrian Crossing

Some areas in the County have historically been seen as impossible for safe pedestrian crossings. Such corridors include the busy Highway 60/Anderson Highway. This corridor is currently a barrier to pedestrians, but this situation can be mitigated by following VDOT recommendations. Likely, crossing locations have been pointed out in this plan's routing map (see appendix). See the example below for an example of a typical crossing of a divided highway. Crossings of this scale may require the addition of vehicular traffic signalization, pedestrian-activated signals (ped-heads), painted crosswalks, safety signage, and ADA accommodations.



Proposed signalized pedestrian crossing on Highway 60

When planning a new signalized pedestrian crossing on a divided highway, it's important to contact the Virginia Department of Transportation (VDOT) at the earliest stages of the planning process. This allows for a comprehensive assessment of the proposed location and ensures that all safety and design standards are met.

VDOT provides technical guidance on these initiatives, including base expectations and requirements. It also has a specific process for determining whether a marked crosswalk should be provided, whether other countermeasures are needed, and what type of marking pattern is used.

The most recent version of the VDOT Road Design Manual, which includes guidelines for such assessments, was last revised on May 1, 2024. Therefore, it's crucial to consult this manual and work closely with VDOT to ensure the proposed crossing adheres to the latest standards and best practices. VDOT Road Design Manual - (<https://www.vdot.virginia.gov/doing-business/technical-guidance-and-support/technical-guidance-documents/road-design-manual/>)

Other supporting elements impact the user experience of planned trails, which are discussed below:

Trailheads

Trailheads provide parking, signage, and other facilities, including benches, trash receptacles, drinking fountains, picnic tables, shade structures, and/or restroom facilities. Parking should be provided at major trailhead locations and close to public access roads for visibility and convenience for trail users. Accessible parking should be provided following the latest edition of the ADA Standards for Accessible Design (US Department of Justice).



A pedestrian trailhead is a designated public access point to a trail, often located at its terminus points. Trailheads begin or end the pedestrian's journey and help them get oriented to the trail network. Trailheads usually provide amenities like parking, signage, information kiosks, restrooms, drinking fountains, bike racks, bike repair stations, seating, art, landscaping, and trash receptacles.

Restroom Facilities

Participants in the stakeholder interviews, at public events, and in some survey responses desired restrooms be made available along trails. Restroom facilities are recommended at all trailhead locations, but once the final locations for such amenities are located, further analysis of the practicability of construction is required. Proper surveying should be conducted as part of every project's due diligence, and it is understood that not all trailheads will have the opportunity to have restrooms. Where this may occur, consider portable restrooms or pumpable, vault-style facilities.

Interpretive Facilities (signage and / or art installations)

To provide County residents with information about important natural features, landmarks, historically significant locations, or events that may be present along planned trails, interpretive facilities should be introduced at various points along planned routes, especially at wetland areas, along portions of the trail leading to the Courthouse area, State Park and Wildlife Management Area. Supplemental amenities for the interpretive elements could be as simple as a widened boardwalk area with signs and limited seating. The design of such facilities should be responsive to the featured subject but should incorporate the design standards already established by the existing trail sections.

Guidance on selecting type and locations for installations:

- Form a review board to vet ideas and planning
- Consider the surrounding environment
- Consult a graphic designer / sign designer
- Locate interpretive signage from the edge of the trail

Powhatan County's Trail system signs, pavement markings, and traffic signals should include the following types: identification, regulatory, and way-finding signs (including mile markers).

Nine trailheads are recommended for the system; their locations are generally noted below. Please see the priority matrix and cost estimates in the appendix for additional information about the trailheads.

- Cartersville Road / Deep Creek / Sallee Creek
- Upper Powhatan Lake
- Highway 60 at Powhatan Wildlife Management Area
- Fighting Creek Park
- Blessed Sacrament - Huguenot School
- Old Buckingham Road / Rocky Ford Road
- Powhatan High School
- Mill Quarter Plantation Golf Club
- Ewell's Crossing of the Appomattox

Other Ancillary Trail Features

Wayfinding and Information Signage

Signage should be spaced along the trails to notify trail users of the rules for community trails and associated amenities and provide trail distances. These include regulatory and warning signs, maps and directional signs, mileage markers, and location characteristics for emergency service responders. All proposed signs should follow the established look and design typified by established County brand standards.

- Place regulatory signs at trailheads, parking lots, and designated gathering spaces along the trail
- Place warning signs appropriately at the specific hazards that they refer to, such as at road crossings, steep terrain, trail narrowing, and stop signs

- Maps and directional signage should be placed at trailheads, public gathering spaces, and key trail access points to help people entering the trail determine their next destination and identify their locations should they need emergency assistance
- Place specific identification signs at trailheads
- Place mile markers 3' from the trail's edge and at approximately one-mile intervals beginning at the end of the trail system—consider ¼ and ½ mile trail markers for shorter trails

Typical Types of Trail Sign

Informational signs are used to direct and guide users along trails in a simple, direct manner. Signs include, but are not limited to, the following:

- Identification of trailheads and access points (trailheads may have unique names or color coding for emergency responders)
- Identification of cross streets
- Trail maps
- Descriptions of surface type, grade, cross-slope, and other trail features



Trailhead signage should be updated and clearly legible

Directional signs notify trail users where they are along the trail corridor and provide distances to destinations. They include, but are not limited to, the following:

- Trail names
- Direction arrows
- Mile markers to be posted evenly in one-mile segments
- Distance in miles to points of interest
- Crossing street or trail names

Interpretive/Educational Signs

- Cultural resources
- Natural resources
- Historic resources
- Points of interest

Kiosks

Kiosks should be installed to provide visitors with information to orient themselves, learn of site opportunities, read the site's rules and regulations, find the hours of operation, and read about local events like activities programmed for the greenway or seasonal festivals.

- Install kiosks at each trailhead
- Coordinate kiosk design with the character of the entire trail sign system
- Keep the style of the kiosk simple and readily identifiable by trail users as an information contact station
- Bulletin boards, trail maps, rules and regulations, and accessibility advisories should be designed as part of the kiosk

Bollards

Bollards are used to increase trail safety by providing separation between motorized vehicles and trail users. Installing removable bollards allows emergency and maintenance vehicles to access the trail.

- Organize bollard locations with road crossings and significant trail access points
- Bollards are available in various shapes, sizes, and colors

Lighting

Lighting should be considered in high-traffic areas such as park trails, paths near the Village, etc. This would allow certain areas of the trails to be used in low-light hours and provide safety for trail users.

There are various lighting fixtures, including solar light fixtures. To determine appropriate lighting fixtures, consider the character of the specific site. A professional lighting engineer can also help determine lighting options like appropriate light levels and security lighting considerations.

Lighting should be installed in the following locations:

- Trailheads
- Parking facilities
- Bridges
- Road crossings
- Designated gathering areas

Benches

Sections of trails near common destinations support a range of users with different abilities and levels of fitness. Benches along trails near schools, medical facilities, parks, and retail destinations should be stationed to provide places for trail users to rest. It should be noted that benches can be designed to create identity in a specific location. No matter where seating is placed along a trail, safe and secure implementation of this amenity should consider the following best practices:

- Locate benches (and other site furniture) a minimum of 3' from the edge of the trail
- Locate benches at all trailheads, picnic areas, and at regular intervals along the trail
- Locate benches in areas that provide interesting views and are close to an educational or historical trail element, shade, or shelter from seasonal winds
- Drainage should slope away from the bench and trail
- Wheelchair access should be provided alongside benches with firm surfaces to match the trail
- Locate benches a minimum of 4' from restrooms, phone booths, and drinking fountains and a minimum of 2' from trash receptacles, light poles, and signposts
- Benches should be securely anchored to the ground
- Install one trash / recycle receptacle per every two benches



The Carolina Thread Trail is a regional trail that connects 15 counties across North and South Carolina with miles of trail. Trails like this create opportunities for recreation, transportation, conservation, and, ultimately, economic development

Edge Protection

Edge protection helps protect trail users from an adjacent steep slope or hazardous situation. It serves as a low barrier between the user and the surrounding conditions. Edge protection for bicyclists needs to be 42 inches high. The rail height prevents the cyclist from flipping forward over an obstacle. Bridges and boardwalks require a 36-inch-high rail for pedestrians and 3-inch-high edge protection that is detectable by blind users. Landscaping can also be a form of protection.



06 | Implementation and Evaluation

6.1 Overview

Completing the Powhatan County Trail Master Plan is only one step in creating a bicycle and pedestrian-friendly community. Implementing this plan will require a coordinated effort among County officials, leaders, and citizen volunteers, as well as follow-up plans and studies on more specific improvements. This section discusses prioritizing projects, potential funding sources, partners for proposed projects, and a series of actions and steps for moving forward with the recommendations.

6.2 Priority Projects

Establishing priorities for capital improvements can be a tricky proposition. Decisions are often complicated by factors such as interfacing with agencies like VDOT, regional factors, neighborhood concerns, a changing political climate, conflicting County interests, budget constraints, private development proposals, and environmental permitting.

The recommendations in Section 5 can be divided into three categories: high, medium, or low-priority routes. The first are those routes that scored high in the priority calculations. Those proposed routes and trail types are considered to have the most likely impact on the quality of life of Powhatan residents and could have economic development significance. This includes some 10' wide, paved multi-use trails and natural surfaced trails. Due to several complex issues, the cost and timeline for these projects would be difficult to estimate. It is not practical to estimate costs beyond those provided in this plan until corridors have been fully secured, land surveying has occurred, route alignments have been finalized, construction plans have been drawn, and funding for implementation has been secured. As such, we suggest that these projects be further studied and implemented as circumstances allow. This due diligence should occur for medium and low-priority trail projects, too.

Important:

A multi-criteria evaluation method was developed to evaluate the recommended projects in the plan. This method aimed to order the projects so Powhatan County could determine where to place its resources and pursue project partnerships with VDOT.

The ranking of the major infrastructure-based projects in the Powhatan County trail master plan is meant to guide where the County could invest in independent projects. The challenge in creating a prioritized list for certain projects is the County's limited direct influence on state highways and other state-owned facilities like Powhatan State Park and the Wildlife Management Area. Many proposed projects are not in the road rights of way, such as those in utility easements, along creeks and rivers, or are on property already owned by the County. On-street bicycling facilities may require the addition of right-of-way acquisition and pavement installation.

The project profiles contained in Section 5 of the master plan are ranked through this process and are shown in Figure 6-1. Projects that provided separation from vehicle traffic and high vehicular speeds and a key linkage to parks, schools, and the Courthouse Village area ranked high in this process. The priority calculator and cost estimates in early 2024 dollars are provided in Appendix D.

Trail support features include restrooms, water stops, lighting, and other trail amenities. Public participants in the community outreach efforts desired these items, especially restrooms. Although less important than the trail connection projects, these items do not lend themselves well to direct objective comparison. These items are not included in the priority matrix but recommended locations for trailheads and crossings have been identified on the proposed routing map found in Appendix A. Other trail amenities are discussed in Sections 3 and 5.

Powhatan, Virginia
Trails Master Plan 2024
Preliminary Opinions of Probable Costs

High Priority 10' Wide Paved Trail Project												
Type of Facility	Primary Corridor	From	To	Side of Street	Length of 6' Bike Lane (\$105 per lf)	Length of 10' Asphalt Path (\$165 per lf)	Curb Ramps (\$2,250 ea.)	Crosswalks (\$425 ea.)	Traffic Signals (\$55,000 ea.)	Ped Heads (\$4,000 ea.)	Opinion of Probable Costs	
1	Greenway/Multi-purp Trail	Fighting Creek Park	Fighting Creek Park	NA	0	2,870	0	0	0	0	\$473,550	
2	Greenway/Multi-purp Trail	Fighting Creek Park	Fighting Creek Park	NA	0	3,503	0	0	0	0	\$577,995	
3	Greenway/Multi-purp Trail	Skaggs Rd	Village Park	LFT	0	650	0	0	0	0	\$107,250	
4	Greenway/Multi-purp Trail	Old Buckingham Rd	Mann Rd	RT	0	5,695	0	0	0	0	\$934,950	
4a	Greenway/Multi-purp Trail	Old Buckingham Rd	General Scott Blvd	LFT	0	10,887	6	2	0	0	\$1,810,705	
4b	Greenway/Multi-purp Trail	Lockin Rd	Emmanuel Church Rd	LFT	0	10,707	6	3	0	0	\$1,781,430	
4c	Greenway/Multi-purp Trail	Hwy 60/Lucken Rd	Bell Rd	LFT	0	4,987	0	0	0	0	\$822,555	
4d	Greenway/Multi-purp Trail	Wild Life Management Area (WMA)	WMA Trailhead	NA	0	9,598	0	0	0	0	\$1,581,690	
5	Greenway/Multi-purp Trail	Utility Easment	Hwy 60	LFT	0	2,761	0	0	0	0	\$455,555	
5a	Greenway/Multi-purp Trail	Utility Easment	Poahontas Elementary School	NA	0	4,191	1	0	0	0	\$693,765	
5b	Greenway/Multi-purp Trail	Maldens Rd	Maldens Road	RT	0	3,795	3	2	0	4	\$649,775	
5c	Greenway/Multi-purp Trail	Utity Easment/Maldens Rd	Utity Substation	LFT	0	14,176	0	0	0	0	\$2,339,040	
5d	Greenway/Multi-purp Trail	Cosby Rd	Maldens Rd / Cosby Rd	LFT	0	8,931	0	1	0	2	\$1,482,040	
5e	Greenway/Multi-purp Trail	Sotomors Creek	Maldens Rd / Cosby Rd	NA	0	6,612	0	0	0	0	\$1,090,980	
6	Greenway/Multi-purp Trail	Fighting Creek & Appomattox River	James River Easment	NA	0	27,147	0	0	0	0	\$4,479,255	
7	Greenway/Multi-purp Trail	Anderson Hwy	Mill Quarter /Pamunton Golf Club	RT	0	22,101	10	2	0	6	\$3,694,015	
8	Greenway/Multi-purp Trail	James River	Powhatan High School	NA	0	13,083	0	0	0	0	\$2,159,695	
9	Greenway/Multi-purp Trail	James River	State Park Canoe Launch C	NA	0	10,926	0	0	0	0	\$1,802,790	
Total Improvements for High Priority Projects:					0	162,579	26	10	0	12	\$26,938,285	
Medium Priority 10' Wide Paved Trail Projects												
Type of Facility	Primary Corridor	From	To	Length of Bike Lane Striping (\$22 per lf)	Length of 10' Asphalt Path (\$165 per lf)	Curb Ramps (\$2,250 ea.)	Crosswalks (\$425 ea.)	Traffic Signals (\$55,000 ea.)	Ped Heads (\$4,000 ea.)	Opinion of Probable Costs		
19	Greenway/Multi-purp Trail	Winterfield Rd	Hwy 711	RT	0	3,108	4	1	0	0	\$522,245	
Total Improvements for Medium Priority Projects:					0	3,108	4	1	0	0	\$522,245	
Low Priority 10' Wide Paved Trail Project												
Type of Facility	Primary Corridor	From	To	Length of 10' Asphalt Path (\$165 per lf)	Curb Ramps (\$2,250 ea.)	Crosswalks (\$425 ea.)	Traffic Signals (\$55,000 ea.)	Ped Heads (\$4,000 ea.)	Opinion of Probable Costs			
NA	Greenway/Multi-purp Trail	NA	NA	0	0	0	0	0	0	\$0		
Total Improvements for Low Priority Projects:					0	0	0	0	0	0	\$0	
Total Improvements for Paved Trail Project Projects:					0	162,579	26	10	0	12	\$27,458,530	

See the priority calculations in the appendix

What This Ranking Means

Having a prioritized list of projects helps the County determine which improvements should be considered as early as possible for funding. No ranking method is perfect, as there is no way to account for all the factors that lead to implementation in an orderly manner. For on-street bicycling projects, the ranking method is more complex as it may turn out that VDOT is resurfacing a street where there is a low-ranking project. In instances like this, it would be beneficial to take the opportunity to implement a project from the plan, even if it does not rank as high as a project that might take another ten years to complete.

The County should discuss these priorities during its budget cycle to determine the best course of action and funding sources to consider for implementation.

6.3 Evaluation

Transportation-based projects, programs, and policies are some of the most measurable aspects of the built environment in that an organization or municipality can track the progress of investments and policy changes. Given the economic uncertainty in many communities and within funding sources, non-profits, counties, metropolitan planning organizations, and departments of transportation are finding value in tracking the performance of various actions. For communities like Powhatan County, tracking the performance of projects, programs, and policies can lead to easy material for a Bicycle Friendly Community application. Still, communities that show measurable progress in implementing their plans can also find themselves in a more strategic position to receive funding from grants or other pursuits.

Performance should not be confused with prioritization, as performance is measured as a change over a period, not a ranking of strategies. Performance for bicycling and related endeavors can fall into many categories, each measured by some criterion.

The table below depicts several performance areas that the County could consider measuring and documenting, including its performance, VDOT's investments in the County, and outreach efforts.

Performance Measure	Frequency (every 1 or 2 years)
Percentage of facilities addressed from plan	2
Miles of sidewalks, bike lanes, and multi-modal pathways	2
Signage added along routes	2
Number of crashes (by level / total)	2
Participants using the trail system	1
Participants at local trail events	1
Funding allocated to bicycle and pedestrian-related projects and programs	1

Figure 6.2

6.4. Funding

Facilities for bicycling and pedestrians are constructed – and therefore funded – through several avenues, and there are even more funding sources to pursue programmatic implementation measures. Funding is generally divided into five categories of sources: local, state, federal, non-profit, and private funding. The following section describes some of the more prominent sources in each category that the County could tap for the implementation of this plan.

Local Funding

The County can establish an annual budget line item for trail system improvements. A specific budget item is the most direct way to ensure that funding for such facilities is available. Still, sometimes a County’s budget may be too limited to finance this work. Facilities can also be built through “incidentals” with any new projects or improvements, such as parks and recreation facilities, libraries, schools, and new roads. In addition, future private development should be reviewed for adequate bicycling and pedestrian access, connections, and parking.

Counties often plan to fund bicycling and pedestrian facilities or improvements through the development of Capital Improvement Programs (CIP). Typical capital funding mechanisms include the following: capital reserve fund, capital protection ordinances, municipal service district, tax increment financing, taxes, fees, and bonds.

State and Federal Funding

It is important to track changes or adjustments in these programs, as funding allocations and programs are in flux regularly and partially driven by the status of the federal government’s transportation funding acts, which are intended to be updated semi-regularly.

State Aid Transity Grants

The Virginia Department of Rail and Public Transportation administers approximately \$100 million in state grant money yearly for transit systems, including bicycle accommodation. A local match is required. For more information, visit: <http://www.drpt.virginia.gov/transit/grants/>.

402 Highway Safety Program

The Virginia Department of Motor Vehicles funds projects or programs to reduce highway crashes, injuries, and fatalities. This program is eligible to fund a wide range of transportation safety-related activities, including bicycle safety. Approximately \$4 million in grants is available. It is distributed through two grant programs: annual grants and mini-grants.

To receive annual grants, each proposal must identify a specified safety issue, such as bicycle safety, and present a plan to address that issue. Proposals may address efforts to start a new program or expand an existing one. Funds are available from mini-grants throughout the year for various safety programs, including bicycle safety and education. The maximum allowable amount is \$1,500. For more information, visit: https://www.dmv.virginia.gov/safety/grants/grant_program_manual.pdf.

Moving Ahead for Progress in the Twenty-First Century (MAP-21)

The largest source of federal funding for pedestrian and bicycle projects continues to be the US DOT’s Federal-Aid Highway Program, which Congress has reauthorized periodically since the passage of the Federal-Aid Road Act of 1916. The most recent act, known as the Fixing America’s Surface Transportation (FAST) Act, replaced the previous act, Moving Ahead for Progress in the Twenty-First Century (MAP-21), enacted in July 2012 as Public Law 112-141. The FAST Act is currently the guiding legislation for the Federal-Aid Highway Program.

MAP-21 authorizes funding for federal surface transportation programs, including highways and transit, for the 27 months between July 2012 and September 2014. It is impossible to guarantee the continued availability of any listed MAP-21 programs or predict their future funding levels or policy guidance. Nevertheless, many of these programs have been included in some form since the passage of the Intermodal Surface Transportation Efficiency Act (ISTEA) in 1991. They may continue to provide capital for active transportation projects and programs. For more information, visit: <https://www.fhwa.dot.gov/map21/>.

Fixing America’s Surface Transportation Act (FAST Act)

The FAST Act eliminates the MAP-21 Transportation Alternatives Program (TAP) and replaces it with a set-aside of Surface Transportation Block Grant (STBG) program funding for transportation alternatives (TA). These set-aside funds include all projects and activities that were previously eligible under TAP, encompassing a variety of smaller-scale transportation projects such as pedestrian and bicycle facilities, recreational trails, safe routes to school projects, community improvements such as historic preservation and vegetation management, and environmental mitigation related to stormwater and habitat connectivity.

The Bipartisan Infrastructure Law (BIL) directs the Secretary to set aside, for Transportation Alternatives (TA), an amount from each state’s Surface Transportation Block Grant (STBG) apportionment¹. The state receives a share of the national total TA funding that is determined by multiplying the amount of the national total TA funding by the ratio that the amount of FY 2009 transportation enhancements (TE) funding to the state bears to the total amount of TE funds apportioned to all states in FY 2009¹. The national total for TA funds is approximately \$1.439 billion in FY 2024¹. For more information, please visit the Federal

Highway Administration’s Bipartisan Infrastructure Law - Transportation Alternatives (TA) Fact Sheet.

Surface Transportation Block Grant Program (STBG)

The Surface Transportation Program provides states with flexible funds that may be used for various highway, road, bridge, and transit projects. A wide variety of bicycle and pedestrian improvements are eligible, including on-street bicycle facilities, off-street trails, sidewalks, crosswalks, bicycle and pedestrian signals, parking, and other ancillary facilities. Modification of sidewalks to comply with the requirements of the Americans with Disabilities Act (ADA) is also an eligible activity. Unlike most highway projects, STBG-funded bicycle and pedestrian facilities may be located on local and collector roads, which are not part of the Federal-aid highway system. For more information visit: <https://www.fhwa.dot.gov/specialfunding/stp/>.

Highway Safety Improvement Program (HSIP)

The Highway Safety Improvement Program (HSIP) is a core federal-aid program to significantly reduce traffic fatalities and serious injuries on all public roads, including non-state-owned roads and roads on tribal land. The HSIP requires a data-driven, strategic approach to improving highway safety on all public roads with a focus on performance. The HSIP consists of three main components: the Strategic Highway Safety Plan (SHSP), the State HSIP or program of highway safety improvement projects, and the Railway-Highway Crossing Program (RHCP). In addition, some states also have a High-Risk Rural Roads (HR) program if they have a high fatality rate on rural roads. For more information, visit: <https://highways.dot.gov/safety/hsip>.

Congestion Mitigation / Air Quality Program (CMAQ)

The Congestion Mitigation / Air Quality Improvement Program funds projects and programs in air quality non-attainment and maintenance areas for ozone, carbon monoxide, and particulate matter, which reduce transportation-related emissions. States with no non-attainment areas may use their CMAQ funds for any CMAQ or STP-eligible project. These federal dollars can be used to build bicycle and pedestrian facilities that reduce travel by automobile. Purely recreational facilities generally are not eligible. Communities located in attainment areas that do not receive CMAQ funding apportionments may apply for CMAQ funding to implement projects that reduce travel by automobile. For more information, visit: <https://www.transportation.gov/sustainability/climate/federal-programs-directory-congestion-mitigation-and-air-quality-cmaq>.

Federal Transit Administration (FTA) Metropolitan Planning

This program provides funding for statewide and metropolitan coordinated transportation planning. Federal planning funds are first apportioned to state DOTs. State DOTs then allocate planning funding to MPOs. Eligible activities include pedestrian or bicycle planning to increase safety for non-motorized users and enhance the transportation system's interaction and connectivity across and between modes. For more information visit: <https://www.transit.dot.gov/regulations-and-guidance/transportation-planning/metropolitan-statewide-non-metropolitan-planning>.

Federal Transit Administration Advanced Mobility of Seniors and Individuals with Disabilities

This program provides formula funding to states and designated recipients to meet the transportation needs of older adults and people with disabilities when the transportation service provided is

unavailable, insufficient, or inappropriate to meet these needs. Funds are apportioned based on each state's population share for these two groups. The program aims to improve mobility for older adults and people with disabilities by removing barriers to transportation services and expanding mobility options. This program supports transportation services planned, designed, and carried out to meet the transportation needs of older adults and people with disabilities in all areas – large urbanized (over 200,000), small urbanized (50,000-200,000), and rural (under 50,000). The funding can be used for "traditional" or "nontraditional" projects. "Traditional" projects are capital projects defined in 49 U.S.C. 5302(3). "Nontraditional" projects are capital and/or operating projects beyond the scope of the Americans with Disabilities Act (ADA) complementary paratransit services or public transportation alternatives designed to assist older adults and people with disabilities. For more information, visit: <https://www.transit.dot.gov/funding/grants/enhanced-mobility-seniors-individuals-disabilities-section-5310>.

Partnership for Sustainable Communities

The Partnership for Sustainable Communities is a joint project of the Environmental Protection Agency (EPA), the U.S. Department of Housing and Urban Development (HUD), and the U.S. Department of Transportation (US DOT). The partnership aims to "improve access to affordable housing, more transportation options, and lower transportation costs while protecting the environment in communities nationwide." It is based on five livability principles, one of which explicitly addresses the need for bicycle and pedestrian infrastructure ("Provide more transportation choices: Develop safe, reliable, and economical transportation choices to decrease household transportation costs, reduce our nation's dependence on foreign oil, improve air quality, reduce greenhouse gas emissions, and promote public health").

The partnership is not a formal agency with a regular annual grant program. Nevertheless, it is an important effort that has led to new grant opportunities (including TIGER I and TIGER II grants). Virginia jurisdictions should track partnership communications and be prepared to respond proactively to announcements of new grant programs. Initiatives that speak to multiple livability goals are more likely to score well than initiatives that are narrowly limited in scope to pedestrian improvement efforts. For more information, visit:

https://www.hud.gov/program_offices/economic_development/sustainable_communities_regional_planning_grants.

Land and Water Conservation Fund (LWCF)

The Land and Water Conservation Fund provides grants for planning and acquiring outdoor recreation areas and facilities, including trails. Funds can be used for right-of-way acquisition and construction. The Department of Environment and Natural Resources administers the program as a grant program for state and local governments. Maximum annual grant awards for County governments, incorporated municipalities, public authorities, and federally recognized Indian tribes are \$250,000. The local match may be provided with in-kind services or cash. For more information, visit: <https://www.npcparks.gov/about-us/grants/land-and-water-conservation-fund>.



River, Trails, and Conservation Assistance Program (RTCA)

The Rivers, Trails, and Conservation Assistance Program is a National Parks Service (NPS) program providing technical assistance via direct NPS staff involvement to establish and restore greenways, rivers, trails, watersheds, and open space. The RTCA program provides only planning assistance, and no implementation funds are available. Projects are prioritized for assistance based on criteria including conserving significant community resources, fostering cooperation between agencies, serving many users, encouraging public involvement in planning and implementation, and focusing on lasting accomplishments. This program may indirectly benefit trail development in Virginia locales through technical assistance, particularly for community organizations, but is not a capital funding source. For more information, visit <https://www.nps.gov/orgs/rtca/index.htm>.

Other Potential Federal Programs

- **Safe Streets and Roads for All:** This Department of Transportation program supports planning and demonstration activities, as well as projects and strategies, to prevent death and serious injury on roads and streets involving all roadway users, including pedestrians, bicyclists, public transportation, personal conveyance, and micromobility users, motorists, and commercial vehicle operators. The application deadline is usually in August.
- **Consolidated Rail Infrastructure Safety Improvements (CRISI):** This Department of Transportation program funds projects that improve rail infrastructure safety. In March 2024, the Department of Transportation announced \$2.4 billion in funding for the CRISI program, which combines appropriations from fiscal years 2023 and 2024 and the Bipartisan Infrastructure Law. This money can often improve pedestrian crossings at rail lines.

- Rebuilding American Infrastructure with Sustainability and Equity (RAISE): These grants support planning or constructing surface transportation infrastructure projects that will improve safety, environmental sustainability, quality of life, mobility and community connectivity, economic competitiveness, and opportunity, including tourism, state of good repair, partnership and collaboration, and innovation. The deadline for applications is usually in February.
- Bridge Investment Program: Bridge Project Grants under the Bridge Investment Program are available for bridges with total eligible project costs up to \$100 million. Planning Project grants support up to 80% of the bridge project planning costs. The application deadlines are usually due by February. It should be noted that the deadlines for Planning Project Grants are usually extended to March for Bridge Project Grants. Where bridge upgrade projects are being planned, this grant can offset the additional costs of adding pedestrian/bicycle paths to otherwise vehicle-centric designs.

Non-profit / Private Funding

Another method of funding sidewalks and multi-modal pathways is to partner with public agencies, private companies, local hospitals or hospital foundations, and/or not-for-profit organizations. Most private funding sources offer limited grants, and public-private partnerships engender a spirit of cooperation, civic pride, and community participation.

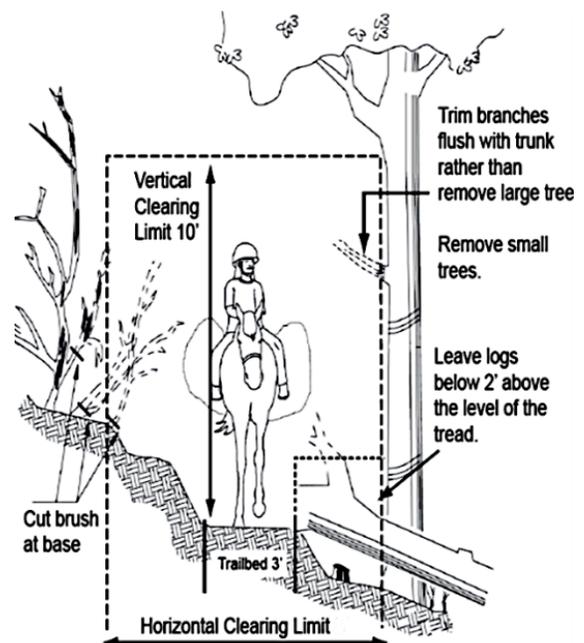
The key to the involvement of non-profit and private partners is to make a compelling argument for their participation. Major employers and developers could be identified and provided with a “Benefits of Walking, Bicycling and Greenways” handout for themselves and their employees. Very specific routes that make critical connections to the place of business would be targeted for private partners’

monetary support following a successful master planning effort.

Potential partners include major employers located along or accessible to trails, sidewalks, bicycle routes, or other multi-modal pathways. Name recognition for corporate partnerships could be accomplished through trailhead or interpretive signage. Utilities often make good partners, and many trails now share corridors. Money raised from providing an easement to utilities can help defray maintenance costs. It is important to have legal counsel review the agreement and verify ownership of the subsurface, surface, or air rights to agree.

Volunteer Work

Many citizens are expected to be excited about the development of the County’s trail system. On special community workdays, individual community volunteers can be brought together with groups of volunteers from church groups, civic groups, scout troops, and environmental groups to work on route and multi-modal pathway development. Volunteers can also be used for fundraising, maintenance, and programming needs.



Pruning guidelines per US Forest Service

6.5 Action Steps for Implementation

Completing the action steps listed below helps guide the development of the future trail network. It also creates a supportive program and policy environment for a more bicycle—and pedestrian-friendly County. These steps will be crucial in moving forward with the overall recommendations of the trail master plan.

1. **Adopt the Powhatan County Trail Master Plan -** This is the first implementation stage. The plan should be forwarded to regional and state decision-makers for inclusion in other regional planning and development processes. Neighboring communities should also receive a copy for consideration when their local plans are updated.
2. **Identify Street Rehabilitation/Resurfacing Projects for Potential Project Implementation -** VDOT and County street projects offer an opportunity to add bicycle and pedestrian infrastructure to corridors identified in the plan. The County should communicate regularly with VDOT division staff to determine when routes will be subject to resurfacing or other improvements. The County may be required to contribute funding as a partner to these projects based on state policy limitations.
3. **Develop Supportive Education and Enforcement Programs—** Pedestrian & Bicycle facilities alone will not lead to a pedestrian/cyclist-friendly community. This plan highlights a variety of program recommendations to promote a culture that supports walking and biking. Ideally, programs and policy priorities should be implemented alongside infrastructure improvements. Still, the community should recognize that programs like installing signage or wayfinding can occur several years before major infrastructure improvements are made.
4. **Establish an Annual Budget for Plan Implementation –** Once the trail master plan is adopted, the County can consider budgeting pedestrian / bicycle-related projects. While capital projects garner the most attention from resources and public input perspectives, other efforts such as signage, shared lane markings, and promotional items are also important. They can likely be accomplished by County staff. As such, funds are suggested to be budgeted in the annual operating budget to accomplish small projects and outreach efforts. Significant capital improvement projects should be proposed in the County’s capital improvement program (CIP) budget process based on the prioritization established in this report and anticipated available resources. The County can start small and work these improvements into the budget over time, as resources allow.
5. **Measure Performance—**This chapter identifies how Powhatan County and others can track the plan’s implementation performance. This can help justify funding pursuits and strengthen the community’s ability to gain funding from various sources. These efforts include regular surveys, counting users along popular bicycling routes and sidewalks, and participation in events utilizing the trail system.
6. **Complete the Bicycle Friendly Community Application—**In the year following plan adoption, the community should complete and submit a Bicycle Friendly Community application to the League of American Bicyclists. The application requires input from various data sources, many of which are included in this plan. Even if the community does not receive official status on its first attempt, the feedback from the League and the potential for Honorable Mention status can inspire local leaders to implement other plan recommendations.

Sidewalk Connectivity

Some proposed trail routes in this planning study rely on the connectivity provided by existing sidewalks. This plan recommends that the County access all existing public sidewalks for maintenance needs and ADA adherence. Developing safe, walkable routes from County trails to parks and schools offers numerous benefits, such as improved fitness, health, and overall well-being. Well-connected pedestrian paths ensure that parks and schools are accessible to everyone, including those without access to private transportation.

Project Costs

The proposed trails and bicycle projects in the Powhatan, Virginia Trails Master Plan were assessed for probable costs in 2024. The proposed projects in this planning study amount to approximately \$54,667,745. These projects are anticipated to be implemented over the next 10 or more years. Opinions of probable costs consider planner experiences and market rates for similar (2023-2024) projects, including land acquisition, design, construction, and potential contingencies. It is important to note that these estimates are opinions and do not account for future economic changes. They serve as a preliminary guide for budgeting and decision-making. For each project, contractor-informed cost estimates should be determined based on accurate land survey information and actual construction design documents. The final detailed cost estimates will provide a more accurate reflection of the project's cost, considering site-specific conditions and requirements.

6.6 Conclusion

Powhatan County has a variety of unique destinations. Existing trails, such as those at public recreation facilities, are frequently used and highly praised by local community members and visitors to the County. As Powhatan County seeks to become a place where more people want to bike and walk, it is necessary to maintain, improve, and expand its current bicycling and pedestrian network. Access to the Powhatan Trail system will become integral to recreation and alternative transportation for many residents. Providing better access and more options to utilize the County's trail system will continue to be a source of pride for Powhatan County and its citizens.

