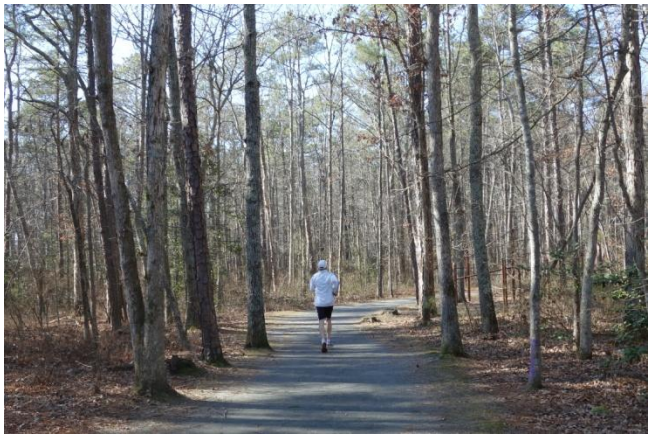
CHAPTER 14: BIKEWAYS & TRAILS

Overview



The Bikeways and Trails Chapter provides general guidance for the location and facility design for bicycle, pedestrian and equestrian facilities. Developing a safe and accessible non-motorized network is an important part of keeping Chesterfield County an attractive, desirable and healthy place to live, work, shop and recreate. These facilities have a broader impact than simply improving the safety of people who walk, bike and drive; they are economic development tools that attract new business, provide tourism destinations for visitors and aid in the physical and mental health of residents. This chapter addresses both transportation and recreational needs of the community while protecting and providing access to environmental and cultural features unique to Chesterfield County. Implementation of the Bikeways and Trails Plan will provide a safe and comfortable network to walk and bike as viable alternative transportation choices and connect residential areas to destinations such as shopping, services, parks, libraries, jobs and schools.

This chapter includes recommendations for bicycle and pedestrian facilities associated with road projects as well as facilities that are more park-like in nature. It is the intent of this chapter to combine transportation and recreation elements of biking and walking to create a safe network to best serve the public, as well as provide opportunities for the equestrian community. A bikeway is defined as an improvement designed and designated to accommodate bicycle travel whether within a road, shared use path, trail or other approved facility. A trail is defined as an off-road, linear corridor with public access for recreation or transportation. This chapter uses the term facility to refer to either on-road facilities such as bike lanes or off-road facilities such as trails.

HOW TO USE THIS CHAPTER

This chapter of the Comprehensive Plan provides guidelines and recommendations that should be implemented when considering development proposals or public infrastructure projects. The general location of the non-motorized network has been identified on the Bikeways and Trails Plan. Rezoning, development proposals and public facility and infrastructure projects should align with this plan by providing facilities to accommodate and enhance the network. Residential or commercial development, as well as public facility improvements, should build additional non-motorized facilities to link to the network. Additional and more specific facilities may be recommended through Special Area Plans, the Neighborhood Connector Study, revitalization efforts and Safe Routes to Schools projects, and should enhance the overall network.

The development community (private sector) will play an important role in the building of the network. As part of private sector development, facilities should either enhance existing or dedicate and construct new facilities, in accordance with guidelines from this chapter when a facility from the Bikeways and Trails Plan is within or adjacent to new development. In addition to constructing facilities that are part of the mapped network, it is important to provide safe connections to the network.

Developers could also consider end-of-trip facilities that would enhance their project's desirability for walking and biking for residents, customers or employees.

PLANNING EFFORTS

Chesterfield County has been exploring the concept of bikeways, trails, greenways and linear parks for many years. The first Bikeways Plan was adopted by the Chesterfield County Board of Supervisors in 1989 with a focus towards on-road facilities. The Parks and Recreation Department has also written several plans including the Greenway Master Plan in 1993, updated as the Greenways and Trails Strategic Plan in 2003. The most significant effort exploring these issues was the Committee on the Future's 2005 Green Infrastructure Report. This report envisioned a high quality of life for Chesterfield County's residents by incorporating natural areas into urban, suburban and rural development. The protection of natural areas, or green infrastructure, was recommended for multiple benefits including wildlife habitat, environmental protection as well as community health and recreation. Additionally, Chesterfield County's strategic plan, *Blueprint Chesterfield*, sets five goals to serve as priorities for county decision making. While all of the goals relate to this chapter, several goals, including Healthy Living and Well Being, Safety and Security, and Thriving Communities and Environmental Stewardship are directly linked.

There are numerous state and regional efforts in which Chesterfield County is an active participant regarding non-motorized transportation. The Virginia Department of Conservation and Recreation produces the Virginia Outdoors Plan, an important component of which is the Virginia Outdoors Demand Survey that analyzes recreational trends for the state and region. In 2011, trails for hiking and walking were identified as the most needed recreational facility (66 percent), and trails for bicycling the third most needed facility (57 percent) according to respondents in the Richmond Region. The Virginia Outdoors Plan supports local projects and seeks to coordinate regional and state projects. The Richmond Regional Planning District Commission adopted the Richmond Regional Bicycle and Pedestrian Plan in 2004. The next regional assessment of bicycle and pedestrian planning will be included in the 2040 Long Range Transportation Plan/Congestion Management Process which is due July 2016. This regional assessment will focus on locality-driven bike and pedestrian planning efforts currently underway and consider potential next steps from a local perspective. The Crater Planning District Commission is currently updating the Tri-Cities Metropolitan Planning Organization (MPO) Bicycle and Pedestrian Plan for the Tri-Cities area, including southern Chesterfield County. Chesterfield County coordinated with surrounding locality efforts, especially along jurisdictional boundaries, in developing this chapter and the network recommended by the Bikeways and Trails Plan considered, and aligns with, surrounding plans.

COMMUNITY INPUT

In the summer of 2014, a series of district workshops and an online survey were conducted to gauge the interest and support for walking and biking in Chesterfield County. Workshops and meetings were attended by over 300 people and the survey was taken by over 1,000 people. In addition, approximately 700 people were reached by staff attending community events.

The public outreach showed that there is an interest in walking and biking in Chesterfield County, with 88 percent of the online survey respondents wanting to walk more and 93 percent wanting to bike more than they do now. The community identified that the strongest barrier to walking and biking in Chesterfield County was not feeling safe on roads and not having enough dedicated facilities for walking and biking, including pedestrian actuated signals, crosswalks and connected sidewalks. The survey asked respondents to rank different types of walking and biking facilities. By far the most popular facility type was a shared use path. Most people identified themselves as "interested, but concerned" bicycle riders - people who are looking for safe, dedicated infrastructure for bicycling. Analysis of all public input led to this chapter's recommendation of a shared use path network and supporting on-road bike facilities.

POTENTIAL NETWORK USERS AND NEEDS ASSESSMENT

Analyzing the type of user and their needs aided in design guidance of this chapter and the recommended locations on the Bikeways and Trails Plan. Chesterfield County has a diverse population and geography and the network should accommodate as many different users as feasible given site and project specific constraints.

Walking for pleasure is the predominant form of outdoor activity that households participate in statewide (82 percent) as reported from the 2011 Virginia Outdoors Demand Survey. Public input for this chapter included interest in safely walking to particular destinations such as retail, restaurants and public facilities. Pedestrians vary in ages and abilities and universal design should be employed to accommodate the greatest number of users. Facility design should consider various types of pedestrians including people who walk or jog, parents walking with strollers, people walking with leashed dogs, hikers and handicapped users.

Bicycling has been increasing in popularity across the nation. Facility designs should accommodate people of all ages and skill levels. As with walking, public input included interest in safely biking to particular destinations such as retail, restaurants and public facilities. People who bike fall into various categories with varying needs depending upon ability and can be described in three general categories. People who are "strong and fearless", or the experienced riders who are willing to cycle in almost any traffic condition would benefit from on-road bicycle facilities. This group makes up a small percentage of those who ride bikes, typically less than 5 percent. People who are "enthused and confident" are willing to ride in traffic, but prefer dedicated bike infrastructure and will seek routes with less traffic, even if the route is longer. This group would benefit from both on-road and off-road bicycle facilities. People who are "interested, but concerned" describe a majority of those who took the Chesterfield County survey (approximately 60 percent) and often include family and youth. They are people who want to bike more than they do now, but prefer not to ride in traffic and are most comfortable on separate bike paths or physically protected bike lanes.

Photo by Jim Waggoner

Horseback riding is another way to enjoy the outdoors and be physically active. Chesterfield County has a growing equestrian community with numerous horse boarding and riding facilities, especially in the southern and western portion of the county. Pocahontas State Park features the Bright Hope Equestrian

Photo courtesy of Tobacco Heritage Trail

Center that can be rented for shows and special events as well as equestrian trails. Horses could be allowed on specific facilities in the rural portion of the county. Equestrian users prefer a separate, soft surfaced trail. Other features necessary for equestrian use include horse trailer parking and access, higher railings on bridges, tie-ups and water troughs at rest areas and specialized signage to alert all users of equestrians at crossings.

Bikeways and Trails Plan

Bikeways and Trails Plan Goal:

Create and maintain a comprehensive network that will provide alternatives to vehicular transportation, safely link people to destinations within and outside the county and encourage and support an active lifestyle for all ages and abilities

The network consists of routes that provide the community with viable transportation options as well as recreational opportunities and will allow people to walk or bike safely to places within the county and to neighboring localities. There are two general route types identified on the Bikeways and Trails Plan:

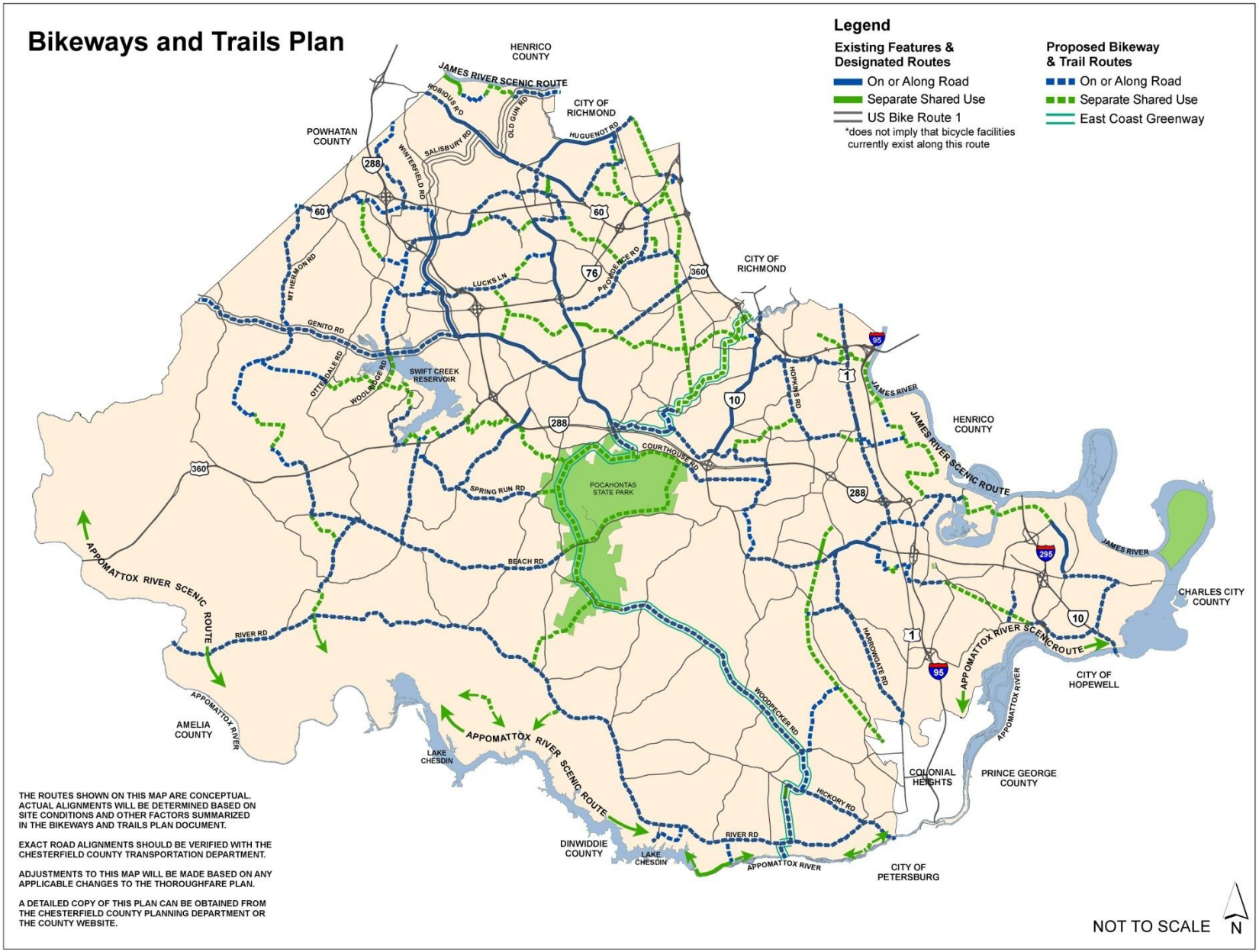
- **Off-road routes** that are park-like and depicted by green lines
- **On/along road routes** that are associated with a road and depicted by blue lines

The preferred facility of the Bikeways and Trails Plan should be a paved shared use path to accommodate both bicycle and pedestrian users. Generally, where shared use paths cannot be provided, sidewalks with on-road bicycle facilities (within rights of way) should be considered. When roadway improvements are being designed, reasonable accommodations to enhance the safety of pedestrians and bicyclists should be included in the plans, if feasible, as dictated by project purpose, project site constraints and project budget. It is the intent of the plan to accommodate both bicyclists and pedestrians along all identified routes. Equestrian users should be accommodated in the rural portion of the county in proximity to the equestrian population.

General route locations are shown on the Bikeways and Trails Plan; exact alignments of these routes will be determined at the project design level. Facility selections will be determined based on numerous factors including, but not limited to, vehicle volumes, speed and land use. Facility design will be in accordance to design guidelines in this plan as well as land availability and feasibility. Some roadways already have existing bike lanes and may serve as a connection between route segments. Due to the high speed and volumes on some routes with existing infrastructure, bike lanes should be redesigned with collaboration from VDOT to provide users with a greater level of protection from motor vehicle traffic.

The Bikeways and Trails Plan is not reflective of current conditions and does not imply that a road is conducive for pedestrians and bicyclists to use at this time, but is the ultimate planned network sought by this plan from a countywide perspective. The distinction between the off-road and on/along road sections on the plan is for general planning purposes and may change at the design level. Solid lines indicate existing facilities and dashed lines indicate proposed facilities, as the legend indicates. The map focuses on long-distance connections and intentionally omits circuit trails and short connector trails within federal, state and county parks.

Sidewalks are not identified on the map, but this plan does acknowledge the importance of sidewalks in the community. While not preferred, sidewalks can also provide important and safe connections for people who ride bikes in certain situations.


Bikeways and Trails Plan
Legend
Existing Features & Designated Routes
On or Along Road
Separate Shared Use
US Bike Route 1
*does not imply that bicycle facilities currently exist along this route
Proposed Bikeway & Trail Routes
On or Along Road
Separate Shared Use
East Coast Greenway
HENRICO COUNTY
CITY OF RICHMOND
POWHATAN COUNTY
JAMES RIVER SCENIC ROUTE
ROBIOUS RD
OLD GUN RD
HUGUENOT RD
SALISBURY RD
WINTERFIELD RD
MT HERMON RD
GENITO RD
OTTERDALE RD
WOOLRIDGE RD
SWIFT CREEK RESERVOIR
LUCKS LN
PROVIDENCE RD
HOPKINS RD
JAMES RIVER
COURTHOUSE RD
SPRING RUN RD
POCAHONTAS STATE PARK
BEACH RD
APPOMATTOX RIVER SCENIC ROUTE
RIVER RD
APPOMATTOX RIVER
AMELIA COUNTY
LAKE CHESDIN
WOODPECKER RD
HARROWGATE RD
HICKORY RD
CHARLES CITY COUNTY
CITY OF HOPEWELL
COLONIAL HEIGHTS
PRINCE GEORGE COUNTY
DINWIDDIE COUNTY
CITY OF PETERSBURG
THE ROUTES SHOWN ON THIS MAP ARE CONCEPTUAL. ACTUAL ALIGNMENTS WILL BE DETERMINED BASED ON SITE CONDITIONS AND OTHER FACTORS SUMMARIZED IN THE BIKEWAYS AND TRAILS PLAN DOCUMENT.
EXACT ROAD ALIGNMENTS SHOULD BE VERIFIED WITH THE CHESTERFIELD COUNTY TRANSPORTATION DEPARTMENT.
ADJUSTMENTS TO THIS MAP WILL BE MADE BASED ON ANY APPLICABLE CHANGES TO THE THOROUGHFARE PLAN.
A DETAILED COPY OF THIS PLAN CAN BE OBTAINED FROM THE CHESTERFIELD COUNTY PLANNING DEPARTMENT OR THE COUNTY WEBSITE.
NOT TO SCALE
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Bikeways and Trails Plan Phasing

This phasing section is intended to provide county staff, developers, the community and landowners a guide for implementation of the Bikeways and Trails Plan. Phasing was determined by several factors including the availability of right of way, population needs and density and connection of destinations. Phasing was also informed by public input garnered from public meetings and online comments throughout 2014 and 2015. The public response and support varied in different areas of the county. This plan should be evaluated on an annual basis and phasing of facilities should be updated on the same cycle as the Comprehensive Plan.

PROJECT PLANNING AND IMPLEMENTATION PROCESS

Following the adoption of this chapter, detailed planning and design for individual segments of the network will take place over time. This process will include additional input from the community regarding funding, impacts and design. This detailed planning process will begin with an inventory and analysis of existing conditions and land ownership of the proposed facility segment including discussions with property owners. Environmental and cultural resource concerns will also be identified at this stage, as well as other concerns.

The proposed network will be adjacent to various land uses throughout the county. The network should always consider and protect the private and public property that it parallels or crosses including single family homes, agricultural lands, commercial businesses and industrial lands. Facilities should be designed in consultation with each property owner to minimize impacts. Design features to mitigate impacts may include, but are not limited to, planted buffers or fencing between the facility and the adjacent property.

There are four general methods of obtaining public access for development of the network: donation, purchase, land dedication and easements. It is anticipated that the network will be located on both public and private property, and each segment will be designed and negotiated to best meet the needs and desires of the network, community and property owners. Perpetual easements dedicated for bikeway or trail facilities will be taxed in accordance with state law and county ordinance. Eminent domain, though an authorized tool of the county, should be extremely limited in usage to develop this network. The county will work with property owners and on a project-by-project basis for the most beneficial outcome for all.

PHASE I (EXISTING CONDITIONS)

There are approximately 40 miles of existing facilities found on the Bikeways and Trails Plan. These include roads with bicycling facilities and county parks with existing trails and land configuration that would be conducive for connecting those trails beyond the park boundary. Courthouse Rd, Robious Rd and Iron Bridge Rd are examples of roads that have existing bicycle facilities. Mid-Lothian Mines Park, Chester Linear Park and Matoaca Park are examples of parks that could serve as linear connections. Not all Phase I projects reflect optimal conditions and may need upgrading in future phases. The Phase I facilities can be viewed on the Bikeways and Trails Plan as solid lines.

PHASE II (ACTIVE PROJECTS)

There are approximately 8 miles of projects currently underway as of August 2015. These projects are currently funded for development and may be under construction, or will be under construction soon. The location of Phase II projects can be viewed on the Bikeways and Trails Plan generally as dashed lines. The projects are:

- Clover Hill Athletic Complex/Horner Park Trail, from Genito Road to south of Otterdale Branch
- Dundas Road, bridge improvements
- Ettrick/Virginia State University Riverside Trail, along Appomattox River at VSU Randolph Farm
- Falling Creek Historic Trail, along Falling Creek at Marina Drive
- Genito Road, bridge east of Woolridge Road
- Lake Chesdin Park Trail, from Ivey Mill Road to park boundary
- Lucks Lane, from Spirea Road to Route 288 (2 phase project)
- Old Bermuda Hundred Road, from East of Interstate 95 to Route 10 (2 phase project)
- Providence Middle School Revitalization Project, from South Providence Road to Starlight Lane
- Robious Road, from Robious Forest Way to the county line

PHASE III (0-10 YEARS)

The following list of projects is proposed to be pursued upon adoption of this chapter. If accomplished, approximately 28 miles would be added to the network over the next 10 years. Neither precise alignment nor design have been determined for any of the following projects and are conceptual at this time. The location of the Phase III projects can be viewed on the Bikeways and Trails Plan generally as dashed lines. These projects are not currently funded. The projects are:

- Courthouse Road, from Belmont Road/Route 288 to Southlake Boulevard
- Government Center Connector Trail, from Salem Church Road through Pocahontas State Park to Newbys Bridge Road/Route 288
- Jefferson Davis Highway (Route 1/301), from the county line to Osborne Road
- Johnston Willis Drive, from Trade Road to Midlothian Turnpike (Route 60)
- Manchester Middle School Revitalization Project, trail(s) connecting campus to community
- Southlake Boulevard, from Courthouse Road to Trade Road
- Stratton Park Trail, along Falling Creek from Chippenham Parkway to Jessup Road
- Swift Creek Trail, from Pocahontas State Park to Hull Street Road (Route 360)
- Trade Road, from Southlake Boulevard to Johnston Willis Drive

This phase should also include a detailed study of the equestrian community of Chesterfield County in partnership with the Cooperative Extension Office, the Agriculture and Forestry Committee, the Chesterfield Farm Bureau and the James River Soil and Water Conservation District. These organizations should partner to further determine the location, needs and desires of the equestrian community.

PHASE IV (BEYOND 10 YEARS)

Projects for Phase IV have not been programmed. General locations of facilities are shown on the Plan as dashed lines should future development occur. It is anticipated that projects generally located in the undeveloped portions of the county will be some of the last projects to be completed. Updated phasing will occur as the Comprehensive Plan is updated.

FUNDING AND MAINTENANCE

The proposed 362 mile network will consist of various facility types ranging from on-road bicycle lanes to paved shared use paths. At this time, approximately 48 miles of the plan have been constructed or are being constructed as noted in the phasing section. The cost for new construction of the plan facilities may cost $250,000 - $1,000,000 per mile. The cost is dependent upon many factors that include, but are not limited to, facility type, topography, environmental impacts, right of way and/or easement acquisition, utility relocation and construction. For example, a gravel trail located on county property with no property acquisition or utility relocation will cost less than a paved shared use path associated with a road project requiring property acquisition and utility relocation. In some cases, on-road bike accommodations may be achieved on existing roads through the use of pavement markings, installation of delineators, signage, or combination thereof by removing or narrowing travel lanes. Such modifications would need to maintain an acceptable vehicle level-of service and receive VDOT approval. The retrofitting of bike accommodations may cost $30,000 – $60,000 per mile.

Funding for this network will be a part of the annual budget process which is a public process and the community input will determine, in large part, the funding ability for this network in consideration of other community needs. Potential sources of funding to implement the Bikeways and Trails Plan could include:

- Capital Improvement Program
- Grants
- Bond Referendums
- Public-Private Partnerships
- Fundraising Events
- VDOT Revenue Sharing
- Congestion Mitigation Air Quality (CMAQ – Federal)
- Transportation Alternative Projects (Federal)

Other alternative funding options, such as user fees or donations may be considered to pay for construction and maintenance of the network.

Maintenance of the network will depend upon the location of the facility. Any facility in the Virginia Department of Transportation (VDOT) right of way will be maintained by VDOT. The Parks and Recreation Department will be responsible for the maintenance of facilities located outside of the VDOT maintained right of way or within county easements.

Local and Regional Context

The Bikeways and Trails Plan was prepared in context of other local, regional and statewide trends and projects as discussed in the following section.

U. S. BIKE ROUTE 1

U.S. Bike Route 1 (USBR 1) is a touring bicycle route designated by the American Association of State Highway and Transportation Officials (AASHTO) in 1982. Approximately 274 miles of this route are in Virginia, with 20 miles passing through Chesterfield County. The route is shown on the Bikeways and Trails Plan. Any changes to this route must be presented to AASHTO through VDOT. The route is signed and a map of the route is available online. This is a popular route for both local and visiting cyclists. The plan recommends improving portions of USBR 1 shown on Robious Road, Charter Colony Parkway and Genito Road; however, the plan does not recommend improvements along Old Gun Road, Salisbury Road or Winterfield Road.

OTHER PUBLIC TRAILS

In addition to the trails offered in Chesterfield County parks, other public trails can be found at state and federal parks. Pocahontas State Park has more than 80 miles of trails available for horseback riding, hiking and mountain biking. At the writing of this chapter, construction for an additional 20 miles of mountain biking trails has begun in the northern section of the park in preparation of becoming part of the Richmond Regional Ride Center, a mountain biking destination officially certified by the International Mountain Biking Association (IMBA). The Richmond Regional Ride Center will also include trails in the James River Park System located in the City of Richmond. Federal park sites include the Presquile Wildlife Refuge (visitation by appointment only) and two areas within the Richmond National Battlefield Park System, Parker's Battery and Drewry's Bluff. Several miles of trails at these sites offer interpretation of the natural environment as well as the history of the Civil War.

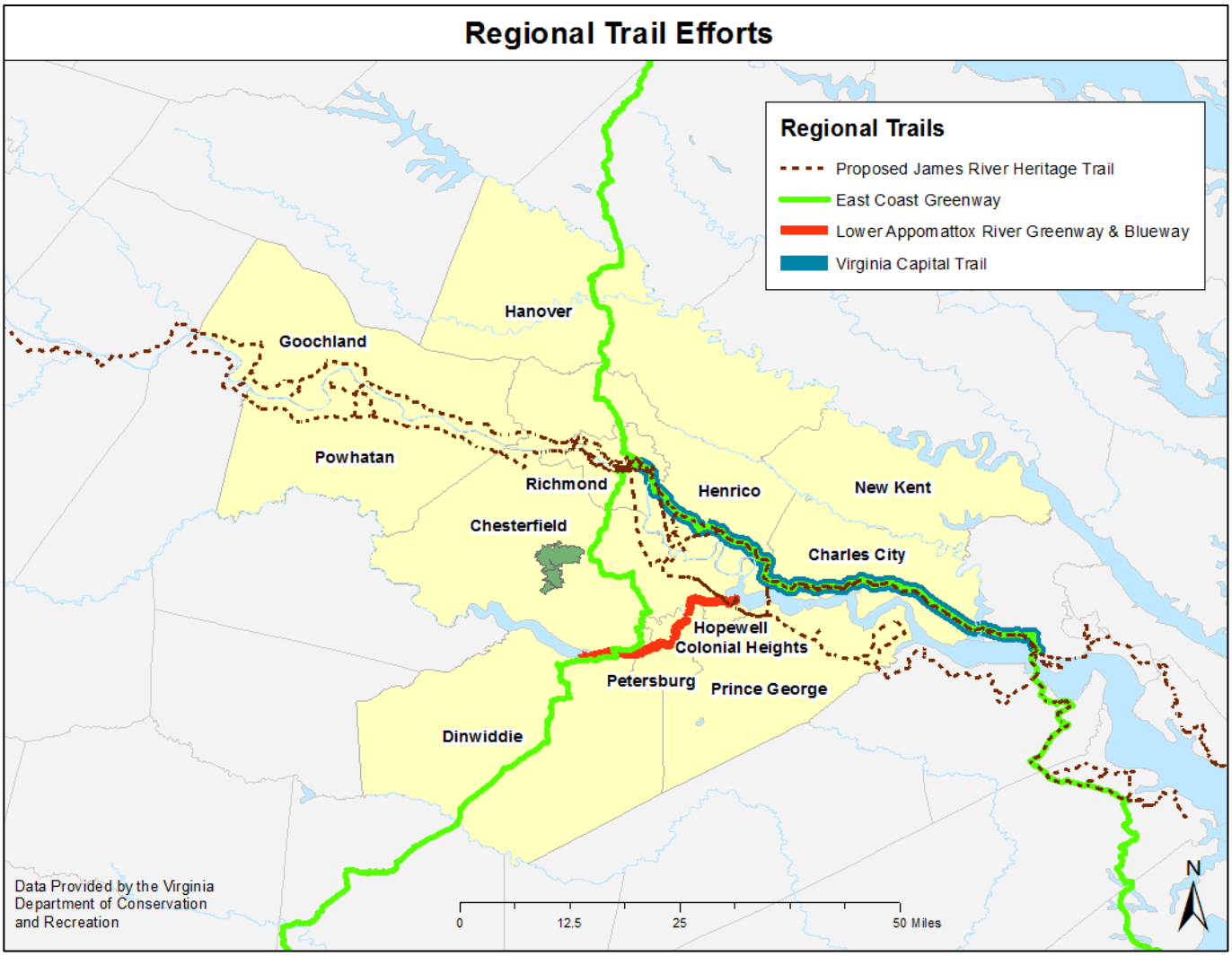
PRIVATE TRAILS

Many neighborhoods offer a trail system as an amenity to residents. While these trails are not open to the general public, they serve as an important biking and walking network for residents in their neighborhoods as well as potential future connections to the overall county network.

REGIONAL TRAIL EFFORTS

There are several regional trail efforts that are planned to pass through Chesterfield County, including the East Coast Greenway and the James River Heritage Trail. The vision of the East Coast Greenway is to develop a 2,900 mile trail system from Maine to Florida for people of all ages and abilities. This effort is spearheaded by the East Coast Greenway Alliance (ECGA). The East Coast Greenway route passes through Chesterfield County and plays an integral role in the proposed network. On the following map, the current East Coast Greenway on-road route is depicted. The proposed off-road route can be found on the Bikeways and Trails Plan.

The East Coast Greenway also is planned to connect the two sites of the Richmond Regional Ride Center - Pocahontas State Park and the James River Park System in the City of Richmond. The James River Heritage Trail is a proposed statewide trail following the James River from the Allegheny Mountains to the mouth of the Chesapeake Bay. This trail system is envisioned not only for bicyclists and hikers, but also for paddlers and fisherman to enjoy the water. Chesterfield County borders 35 miles of the James River and can play a role in this statewide trail. To the north and east of Chesterfield County, the Virginia Capital Trail is planned to be a 52-mile paved trail that follows the Scenic Route 5 corridor and will connect Richmond to Jamestown (anticipated completion fall 2015). Just across the county's southern border, the Friends of the Lower Appomattox (FOLAR) is planning a 22.8-mile trail system along the south side of the Appomattox River from the George F. Brasfield Dam to the confluence of the Appomattox River with the James River, with several portions of the trail completed to date. While this trail is not located in Chesterfield County, there is potential to connect to this trail system via a bicycle/pedestrian bridge.



General Bikeways and Trails Guidelines

The General Bikeways and Trails Guidelines assist in planning, coordinating and implementing the network for the county, and assist in creating recommendations for specific development proposals.

Major considerations in the development of these guidelines include:

- A safe, accessible, connected and convenient network for people of all ages and abilities that provides walking and biking access to neighborhoods, schools, parks, libraries, places of work and commercial areas
- A network that enhances the general health, mobility choice, desirability and high quality of life in all areas of the county, including equestrian access in appropriate locations.
- Coordination between various agencies responsible for constructing and maintaining the network.
- Ensuring extension and enhancement of the network through appropriate recommendations in development proposals.
- Protecting and enhancing environmental and cultural features through the sensitive design of facilities.

The following General Bikeways and Trails Guidelines should be used when addressing specific development proposals as well as when making facility decisions.

- **Road Project Evaluation.** Consider pedestrian and bicycle accommodations with all road projects.
- **VDOT Coordination.** Coordinate with VDOT to improve pedestrian and bicycle safety on existing roads through efforts including, but not limited to, installing pedestrian actuated signals, bicycle loop detection at signals, annual repaving projects, standardizing signage and pavement marking for bicycle lanes and regular maintenance and debris removal. Most of the roads in the county are managed and maintained by VDOT. Proposed pedestrian and bicycle facilities as well as road and intersection improvements must adhere to VDOT standards and specifications. A VDOT maintenance agreement will be required for any private improvements within rights of way.
- **Policy and Ordinance Revision.** Develop policies and ordinances that would address the provision of facilities in new development. Consider incentives such as setback and buffer relief.
- **Funding.** Consider various sources of funding to construct and maintain the network.
- **Connect Neighborhoods.** New subdivision development should provide pedestrian and bicycle connections to existing or planned adjacent subdivisions.
- **Public Project Coordination.** All new county infrastructure, public facility construction and improvements including, but not limited to, water and wastewater lines, stream restoration and other stormwater projects, schools, parks, libraries and buildings with public access, should address pedestrian and bicycle amenities, as well as network connections.

- **Special Area Plans, Revitalization Areas and Safe Routes to Schools.** The Special Area Plan, Revitalization Area and Safe Routes to Schools processes should include the identification of local facilities that provide connection to the countywide network.

- **Proactive Acquisition.** Work cooperatively with property owners to proactively acquire right of way for facilities identified on the Bikeways and Trails Plan.

- **Facility Impacts and Design.** Impacts of facilities on residential development should be mitigated through the location and design of the facility at the time of development to the greatest extent possible.

- **Regional Coordination and Partnerships.** Continue to communicate and partner with the Richmond Regional and Crater Planning District Commissions, participating localities, Pocahontas State Park, other state and federal agencies as well as national, regional and local nonprofit organizations to build, maintain and promote the network while ensuring regional continuity.

- **Bicycle Parking and Storage.** Bicycle racks should be installed at public and private destinations for safe, short-term bicycle storage. Large employers and multifamily developments should consider long-term storage, such as bike rooms.

- **End-of-Trip Facilities.** Consider the provision of end-of-trip facilities, such as showers and locker rooms, at key mixed use development projects in support of pedestrian and bicycle facilities.

- **Pedestrian and Bicycle Civic Group.** Support the establishment of a citizen group to serve as a link between the community and the government on various pedestrian and bicycling issues including volunteer efforts for trail building, advocacy, maintenance and educational programming.

- **Public Information.** Provide route information in various formats to promote safe and enjoyable use of the network.

- **Law Enforcement and Public Safety.** Incorporate crime reduction measures and strategies into facility design and support the expansion of Police Department efforts to patrol trails and other areas on bicycles for increased public safety as well as citizen led patrol efforts.

- **Tourism.** Partner with Richmond Regional Tourism and other organizations to construct, maintain and promote both long distance cycling opportunities such as the East Coast Greenway and U. S. Bike Route 1, and special bicycle destinations such as the Richmond Regional Ride Center at Pocahontas State Park. Market network facilities for cycling/running events. In appropriate areas, consider establishing partnerships to promote agri-tourism and equestrian trail riding to include special events.

Bikeways and Trails Plan Facility Guidance

The Bikeways and Trails Plan proposes a system designed to not only maximize the safety and comfort of people who bike and walk of all ages and abilities but to also protect and enhance environmental and cultural resources. While a shared use path is the preferred facility type, implementation of a shared use path may not be feasible in every context due to right of way constraints, excess cost or environmental concerns, among other factors. When a shared use path is not feasible, a sidewalk with an on-street bicycle facility is the preferred alternative. This network also aims at improving the safety of the motorist by providing safe alternative places for people to walk or bike.

CRIME PREVENTION AND LIABILITY MANAGEMENT

All facilities should be planned and designed with the health, safety and welfare of the public in mind. Each trail project will actively engage public safety officials and follow Crime Prevention Through Environmental Design (CPTED) guidelines established for reducing crime in designed spaces.

Currently, the Parks and Recreation Department works in close cooperation with public safety departments to provide critical information to dispatchers and personnel including park maps, access points and security measures added on-site. This cooperation and communication will continue and expand to include the facilities proposed in this plan. In addition, all facilities should be appropriately signed, provide access points for emergency response vehicles and consider the installation of call boxes in isolated areas or areas where cellular phone service is limited.

Virginia has both a State Tort Claims Act and a Recreational Use Statute that provide certain protections to public and private entities from liability claims related to recreational uses on lands that they own, or for which they have provided easements. Private landowners who have land adjacent to a trail are also protected by trespassing laws. For both public and private parties, insurance policies can provide added protection.

ENVIRONMENTAL AND CULTURAL RESOURCE CONSIDERATIONS

In addition to designing a network that is sensitive to private property, it is important to consider environmental and cultural resources in the design process. Chesterfield County is rich in environmental, cultural, historical and agricultural features. Environmental features include rivers, streams, wetlands, floodplains and associated riparian buffer areas including wildlife habitat and sensitive vegetation. Historic resources include historic settlements, cemeteries and battlefields. Agricultural features may include crop land, livestock and forestal lands. All federal, state and local regulations shall be followed in the design, construction and maintenance of the network. A properly designed network can provide a chance for enhancement of resources as well as an opportunity to incorporate educational moments into the recreational experience of the user. This often can be accomplished by adjusting the alignment of the facility to avoid sensitive areas while still providing a visual connection for the user. Additional information regarding the protection of resources can be found in Chapters 8 (Historical and Cultural Resources) and 9 (Environment) of the Comprehensive Plan.

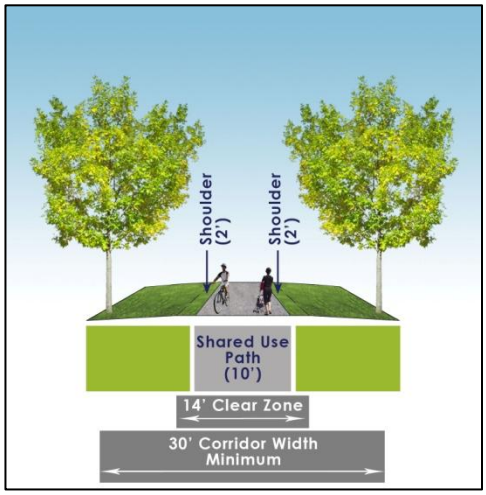
CROSS-SECTION ILLUSTRATIONS

The following section illustrates and defines each facility type, and describes considerations about when and where to place each facility type. The cross-sections illustrate the proposed dimensions along a segment of the facility or along the roadway. Accessible intersections with signaled and marked crossings will be equally important to the overall safety and comfort of users of the network.

Off-Road Facility Typical Section

Shared Use Path

Paths that are shared by pedestrians, joggers, wheelchair users, skaters, bicyclists and other non-motorized transportation mechanisms. The surface of the path should be firm, stable and slip resistant, which can be paved or firmly packed aggregate to appeal to a variety of user groups and ages.

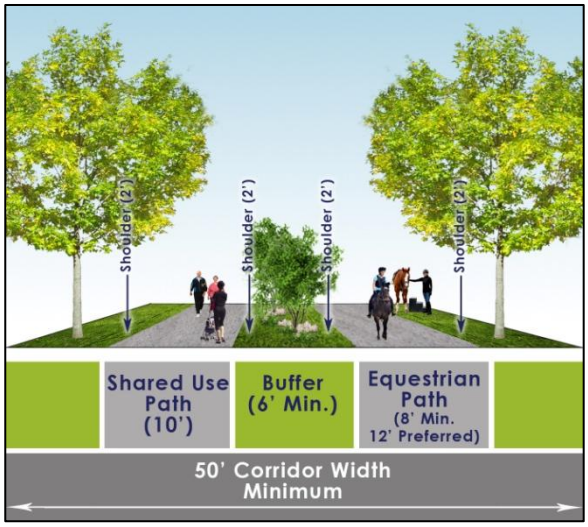


Considerations for facility placement: Shared use paths can be located in proximity to natural features such as stream and river corridors or manmade features such as rail or utility lines. In addition to providing an alternative mode of transportation and a place for recreation, these paths can also raise awareness of the natural and cultural environment with interpretation signs and exhibits. Paths and bridges should be designed and constructed for emergency vehicle access.

Shared Use Path and Equestrian Path

Two paths located within the same corridor to accommodate bicycle and pedestrian traffic as well as equestrian traffic. The paths should be separated with a visual buffer to limit conflicts.

Considerations for facility placement: A dual shared use path and equestrian path configuration should be used in appropriate rural settings where the equestrian community is located and provide connections to popular equestrian destinations such as Pocahontas State Park.



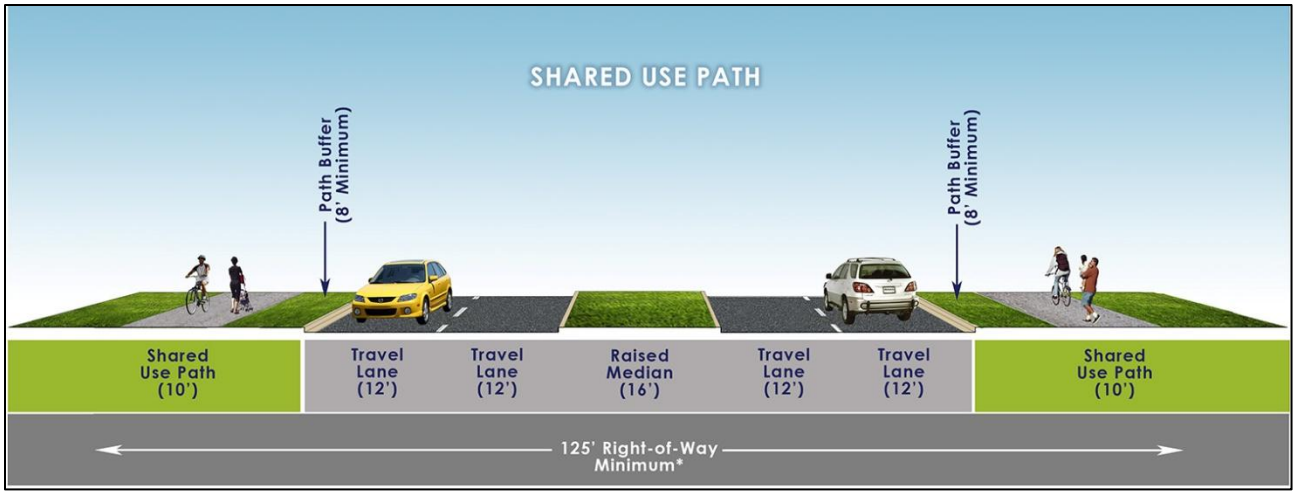
On/Along Road Facility Typical Sections

All typical sections depicted in the following illustrations are based on a four-lane divided roadway (excluding the paved shoulder typical section which is based upon a two-lane roadway). The Thoroughfare Plan will be amended to accommodate facilities within the ultimate rights of way from 10 feet up to 35 feet. The incorporation of these facilities within public roads will have a significant impact on right of way acquisition, utility relocation and construction cost.

The following sections provide general guidance based on VDOT standards, but are subject to change. The Bikeways and Trails Plan does not specify the type of facility to be provided. That decision will be made when design and construction of the facility is undertaken. Any facility within a VDOT maintained area will need to be reviewed and approved by VDOT.

Shared Use Path

Paths shared by pedestrians, joggers, wheelchair users, skaters, bicyclists and other non-motorized transportation mechanisms and separated by motor vehicle traffic by a barrier or open space. The surface of the path should be firm, stable and slip resistant, which can be paved or firmly packed aggregate to appeal to a variety of user groups and ages.



Considerations for facility placement: Shared use paths work well on rail trails, park and recreation areas and alongside major roadways (separated by a buffer). A network of shared use paths can connect residential communities with commercial areas, parks, schools and other destinations.

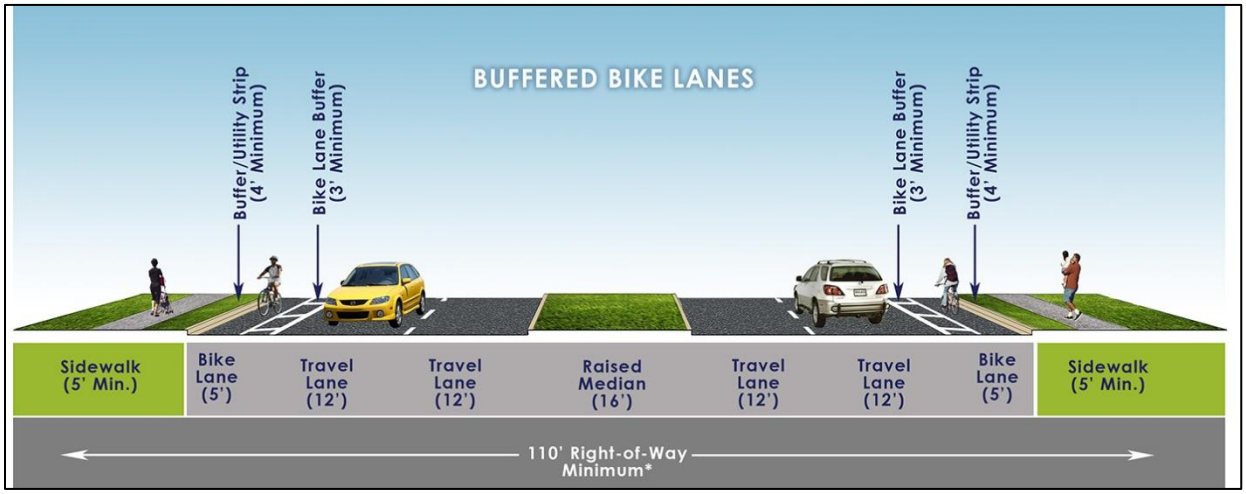
Sidewalk and Protected Bike Lane

A sidewalk for pedestrians, paired with an on-road bike lane that is physically separated from motor vehicle traffic lanes by a curb, on-street parking, raised concrete median, landscaped buffer or other various methods. Protected bike lanes can be one-directional on both sides of a street or two-directional on one or both sides of a street.

Considerations for facility placement: Protected bike lanes give bicyclists a higher level of comfort on high-speed, multi-lane, higher volume roadways as well as on low-speed streets with high pedestrian traffic in urban-like settings.

Sidewalk and Buffered Bike Lane

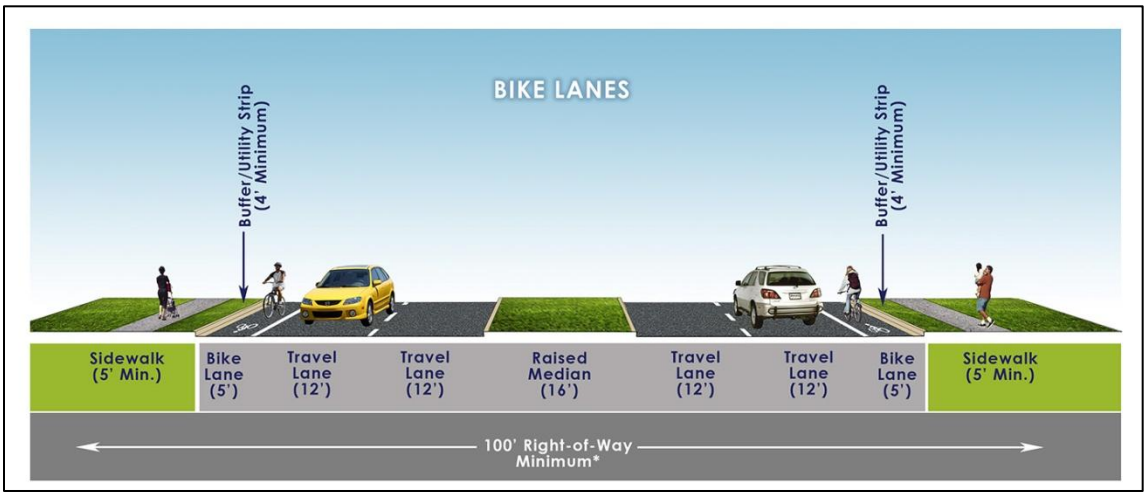
A sidewalk for pedestrians, paired with an on-road bike lane that provides bicyclists with a lane exclusively for bike travel and an additional striped buffer zone separating the lane from motor vehicle traffic.



Considerations for facility placement: Buffered bike lanes are suggested for low-speed roads and adequate width to implement the buffered lanes (usually eight to 11 feet).

Sidewalk and Bike Lane

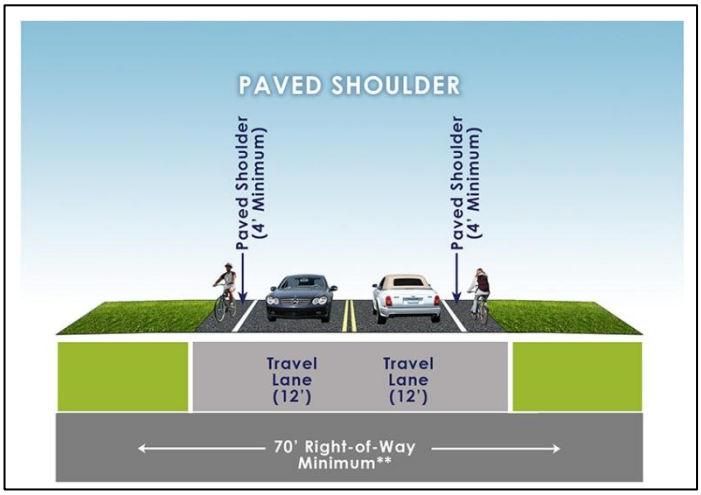
A sidewalk for pedestrians, paired with a portion of the roadway marked by pavement markings (such as lines, arrows and bicycle symbols) and signage (where appropriate), intended preferentially or exclusively for one-way bike travel. Bike lanes are usually adjacent to the traffic lane intended for the same direction of travel, unless the lane is a contra-flow lane, where the bike lane would be adjacent to the traffic lane intended for the opposite direction of travel.



Considerations for facility placement: Bike lanes are one of the most prevalent bike-travel facility types because they can be used on a variety of roadway types, but are not appropriate on high-speed, high-volume roads without a protective buffer separating bicyclists and motor vehicle traffic.

Paved Shoulder

A paved shoulder is located outside of the motor vehicle travel lane and can be used by people who bike to travel comfortably and conveniently in areas where more robust facilities are not appropriate.



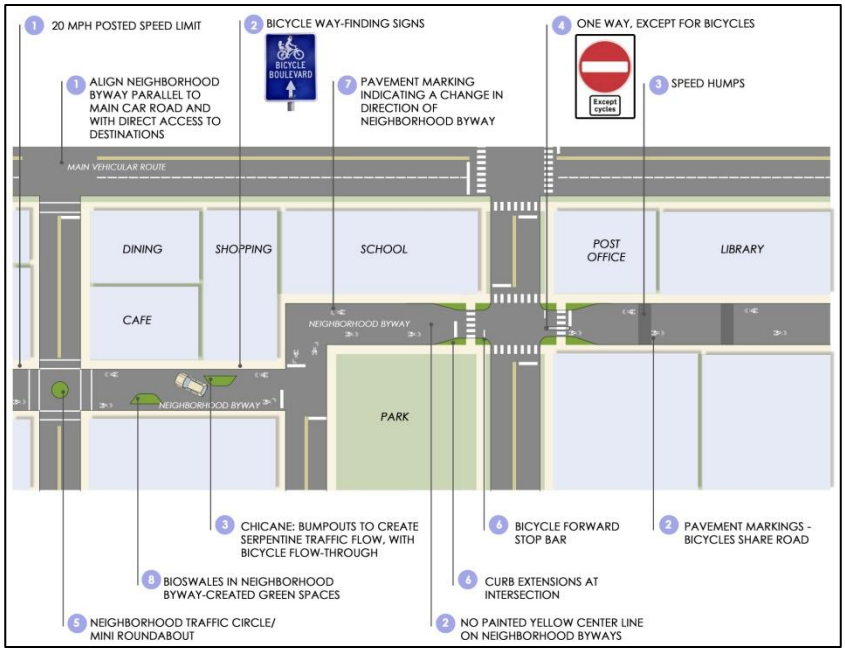
Considerations for facility placement: Paved shoulders should be at least four feet wide and work best on rural roadways.

Sidewalk and Wide Outside Lane

A sidewalk for pedestrians while increasing the width of the outside lane of traffic in order to give cars and bicyclists more space to comfortably travel in the same space, especially in areas where variance between vehicle and bicycle speeds increases.

Considerations for facility placement: Wide outside lanes work best on roads where bike lanes cannot be added due to space or other limitations, but lane width can be increased to 15 feet maximum on low-speed and low-volume roads.

Neighborhood Byway



A neighborhood byway is a low-speed, low-volume local roadway (such as an internal subdivision road) that has traffic calming measures in place to discourage through trips by motor vehicles to create safe, convenient walking and biking routes. Other measures such as signage and pavement marking are incorporated into the design. Any neighborhood byway improvements within VDOT maintained right of way or easements will need to be reviewed and approved by VDOT.

Considerations for facility placement: These routes may be used to aid in providing safe crossing of busy streets and provide improved access to commercial areas. They may also incorporate environmental features to manage stormwater and other concerns.

FACILITY SIGNAGE GUIDELINES

Any successful walking, biking or equestrian facility must have clear signage that is easy to see, read and understand. Ideally, signs are cohesive in their placement and design so people can easily identify their location and are able to follow the route. Signs are also important for the overall safety of the user and should be closely designed, located and maintained with input from the Chesterfield Fire and EMS and Police Departments. Three basic sign categories exist for non-motorized facilities: regulatory, warning and wayfinding (also known as guide signs). These categories are described and illustrated below.

Regulatory signage advises the user on required behaviors such as stopping and crossing locations, where bikes may use full lanes and when to yield to pedestrians.

Considerations for Regulatory Signage:

- Often legally required and enforceable
- Standardized sizes and designs
- Locations set by national, state or local codes
- Most signage found in the Manual on Uniform Traffic Control Devices (MUTCD) prepared by the American Association of State and Highway Transportation Officials (AAHSTO)

Warning signage highlights potential dangers such as sharp curves, steep slopes and railroad tracks ahead.

Considerations for Warning Signage:

- Can be legally required
- Standardized sizes and designs (although localities can add their own warning signage)
- Locations often set by national, state or local codes; should be placed in advance of the hazard
- Most signage found in the MUCTD

Wayfinding, or guide, signs direct users along the proper route, identify current locations and other potential destinations and mark mileage, parking and other amenities.

Considerations for Wayfinding Signage:

- Non-mandatory signage intended to aid users
- Some standard sizes and designs, but can vary by location and include creative design
- Designs should be uniform throughout the facility
- Off-road facility signs may include mile markers, trailblazers, entrance signs and rule signs

Typical Along/On Road Wayfinding Signage

Typical Off-Road Shared Use Path Wayfinding Signage

TRAILHEAD AND PARKING AREA GUIDANCE

Trailheads are places for users to convene, rest and gather information. Trailheads are recommended at locations that are considered primary access points to the network and can be co-located with other public facilities such as a park, school or library that can provide adequate parking and perhaps other amenities such as restrooms. All trailheads should provide necessary signage as well as site furnishings such as bike racks, benches, drinking fountains and trash receptacles. As with design of the entire network, trailheads should also follow CPTED standards. Trailheads should not negatively impact neighborhoods or private property to the greatest extent practicable. Exact locations of trailheads are not identified in this plan but will be developed in conjunction with the phasing of the system and community input.