



July 2012

Virginia Central Railway Trail Design Guidelines

Prepared for:



Prepared by:





Virginia Central Railway Trail Design Guidelines

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Prepared for:

Spotsylvania County

Planning Department
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Spotsylvania, Virginia

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Greenway

A continuous corridor of undeveloped land reserved for recreational use and environmental protection.

A stream, forested, or river corridor could be classified as a greenway. Greenways can accommodate trailways; however a trailway is not a required element of a greenway.

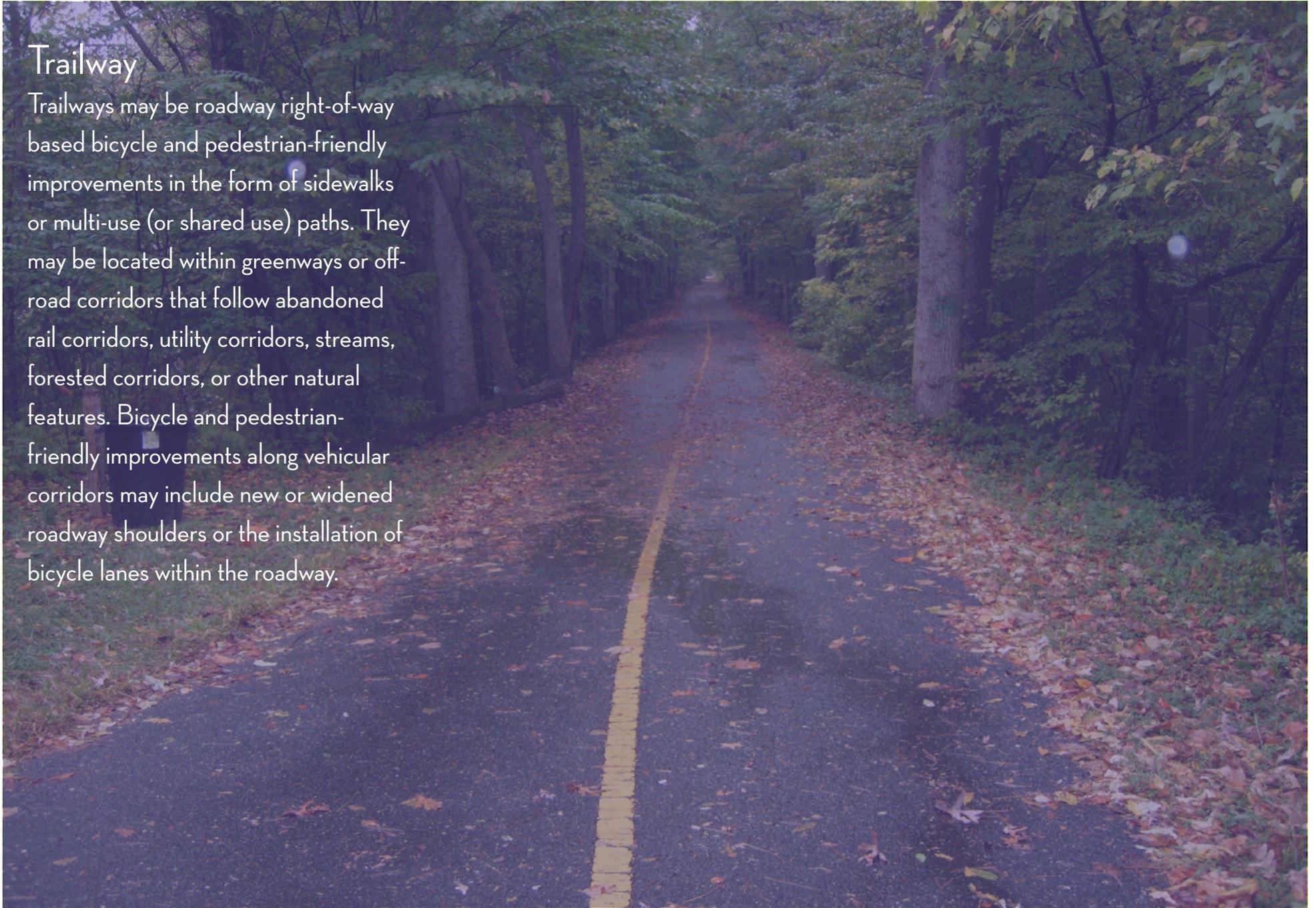


Table of Contents

1.0 Introduction	1		
1.1 Background	1		
1.2 Overview	1		
1.3 Design Guidelines and Feasibility Study	3		
2.0: Trail Design Guidelines and General Standards	9		
2.1 Introduction	9	2.4 Accessibility	18
2.2 Generalized Trail Cross Sections	9	2.5 Signage and Pavement Markings	19
2.2.1 Paved Multiuse Path (Off-Road)	10	2.5.1 General Trail Section (non-intersection)	19
2.2.2 Combination of Paved and Soft Path (Standard Section)	11	2.5.2 Major Intersections (Signalized or Unsignalized)	20
2.2.3 Combination of Paved and Soft Path (Minimum Section)	12	2.5.3 Intersecting Roadway (Unsignalized)	20
2.2.4 Paved Multiuse Path (Parallel to Roadway)	13	2.5.4 Minor Intersection (Unsignalized)	21
2.2.5 Bridge Section (Off-Road)	14	2.5.5 Intersection of Trails	21
2.2.6 Box Culvert Section (Off-Road)	15	2.5.6 Structures	21
2.3 Standard Surface Type	17	2.5.7 Trailheads	22
2.3.1 Paved Trail Sections: Asphalt Surface	17	2.5.8 Interpretive Locations	22
2.3.2 Unpaved Trail Sections: Crushed Aggregate Surface	17	2.5.9 Disclaimer	22
		2.6 Trail Junctions	23
		2.6.1 Three-Leg Junctions	23
		2.6.2 Four-Leg Junctions	23

Trailway

Trailways may be roadway right-of-way based bicycle and pedestrian-friendly improvements in the form of sidewalks or multi-use (or shared use) paths. They may be located within greenways or off-road corridors that follow abandoned rail corridors, utility corridors, streams, forested corridors, or other natural features. Bicycle and pedestrian-friendly improvements along vehicular corridors may include new or widened roadway shoulders or the installation of bicycle lanes within the roadway.



1.0 Introduction

1.1 Background

Spotsylvania County continues to experience growth. More people and new jobs come to the county each year and contribute to a need for improvements to public and private facilities—including facilities to support non motorized travel. An interconnected system of facilities to serve non motorized users is important to maintaining and improving quality of life for county residents, visitors, and workers. In 2011 Spotsylvania County adopted a countywide Trailways Master Plan as a part of an effort to maintain and improve people’s quality of life.

The Trailways Master Plan envisions an interconnected system of trailways countywide, connecting non motorized users with community, business, public, natural, cultural, and historic resources throughout Spotsylvania County and ultimately with neighboring jurisdictions. The plan identifies numerous new facilities within greenway corridors and parallel to existing and future roadways. With development continuing in many locations countywide, a primary goal of the plan is to protect and preserve future railway corridors before their continuity is threatened by development.

1.2 Overview

The Trailways Master Plan identifies a number of important corridors countywide. Among them is a trailway along the historic Virginia Central Railway (VCR) line (Figure 1.1) between Fredericksburg and Orange County. Running east/west, the VCR corridor has the potential to connect a number of

important north/south trails such as the Ni River Trail and the Lake Anna State Park Connector Trail. It also has the potential to become a part of a system of pedestrian and bicycle facilities supporting Civil War tourism in the county, while also providing an opportunity for commuters to traverse the county. In addition as outlined in the 2007 Virginia Outdoors Plan by the Virginia Department of Conservation and Recreation, it has the potential to reach the Town of Orange.

The VCR was chartered in 1836 and originally connected Richmond with the Orange and Alexandria Railroad in Gordonsville, Virginia, running through the City of Fredericksburg and Spotsylvania County. In 1868, the VCR merged to form the Chesapeake and Ohio Railway (C&O), portions of which are still in use by CSX Transportation (CSX-T) today.

While trains no longer run along the more than 15-mile section of the VCR corridor in Spotsylvania County, evidence remains of the corridor’s former use. Long sections of the VCR corridor run uninterrupted and still show the smoothly graded and straight alignment of the former railroad. Several sections of the original VCR alignment have been developed for residential uses, but many remain natural or have been reclaimed for agricultural and utility uses. In locations where the historic railway alignment has been lost to development, the trail will need to divert from the historic alignment to remain continuous.

One section of the VCR Trail has already been constructed in eastern Spotsylvania County and runs between Gordon Road (Route 627) and Salem Church Road (Route 639). Fredericksburg continues to pursue their section of the VCR Trail and expects to begin construction of their section



Existing VCR Trail Section in Spotsylvania County



Potential Future VCR Trail Section on an Existing Utility Easement



Civil War History along the Future VCR Trail

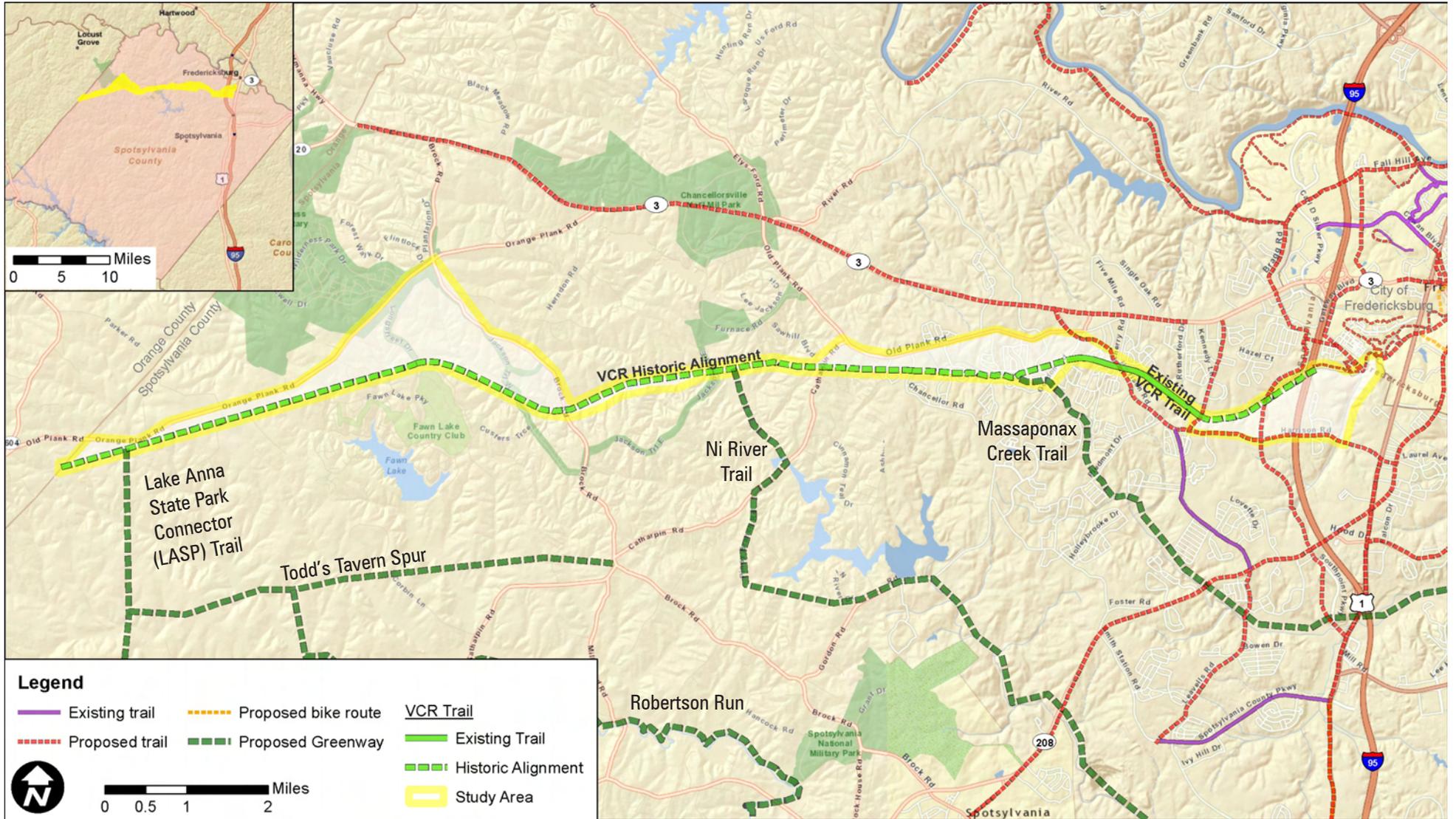


Figure 1.1: Study Area

of the trail from I-95 to downtown Fredericksburg in 2013.

Upon completion, the VCR Trail will run from the historic core of the City of Fredericksburg to Orange County over a distance of approximately 17 miles. The completed trail will cross I-95 and major and minor streets. Approximately 15.7 miles of the VCR trail will be in Spotsylvania County, with the remaining portion in Fredericksburg. Figure 1.2 shows the trail master plan for Spotsylvania County's section of the VCR Trail.

1.3 Design Guidelines and Feasibility Study

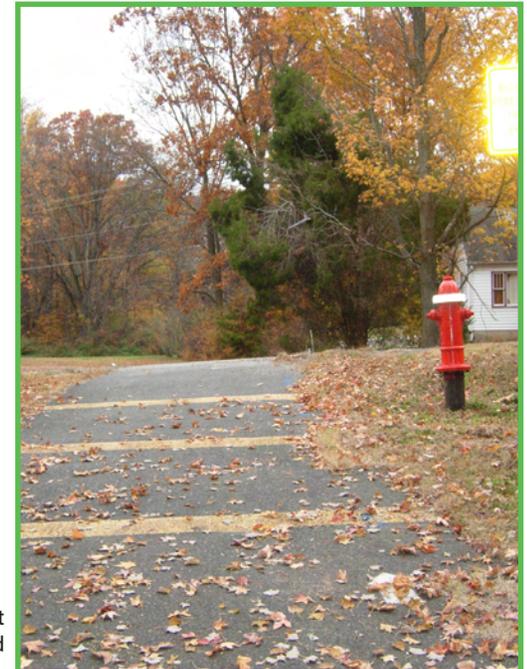
Recognizing the importance of corridor preservation and with the hope of creating support and partnership for future trail development, Spotsylvania County, in cooperation with local and regional agencies and organizations undertook a feasibility study and the development of trail design guidelines for the VCR Trail corridor. The study and guidelines development process reviewed existing conditions, engaged the public with a community meeting process, and developed a comprehensive trail concept plan and design guidelines. This document presents the trail design guidelines. Spotsylvania County's Trailways Master Plan (2011) also should be referenced with regard to planning and implementation activities related to the VCR Trail.

The design guidelines address the use of the trail by two primary sets of user groups: pedestrians and bicyclists and equestrians. Pedestrians and bicyclists are accommodated by both the hard trail surface that is a part of the trail plan, as well as the soft path that is planned in some sections of the trail. While equestrians are able to use paved sections of the trail, they typically prefer a soft path such as crushed limestone. The design guidelines and trail plan present a standard to accommodate equestrians in the western portion of the trail from the future Ni River Trail to Jackson Trail west.

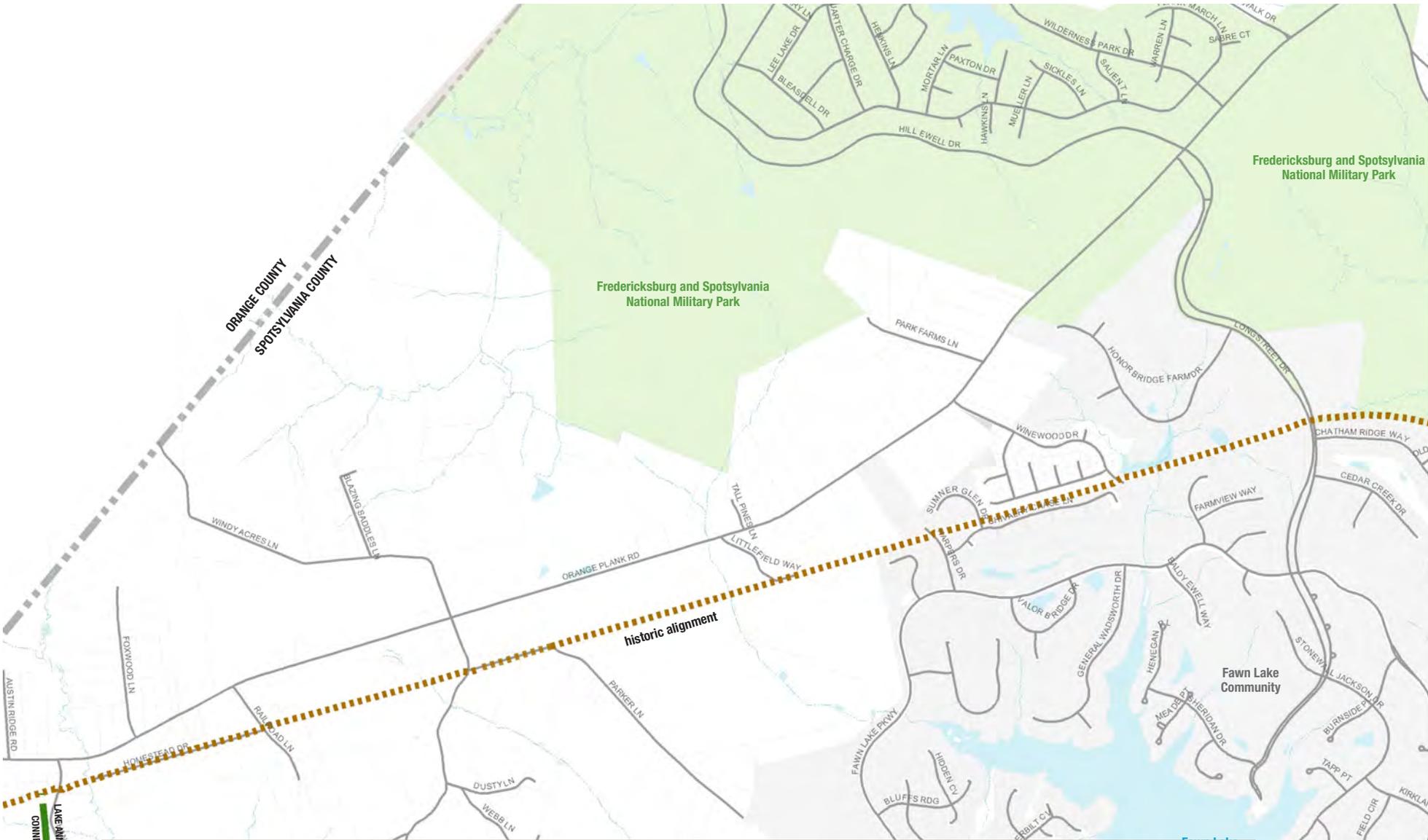
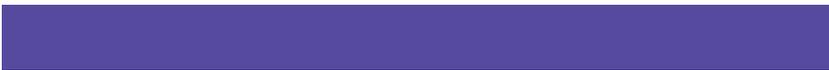


Historic VCR Alignment in Spotsylvania County

Existing VCR Trail near Salem Church Road



Existing VCR Trail Terminus at Gordon Road



LEGEND	ROAD CROSSING	SIGN	VCR TRAIL	OTHER TRAIL	GENERAL FEATURE
● FEATURE LOCATION	🚲 BICYCLE/PEDESTRIAN SIGNAL	⚠️ ENTRY/EXIT FEATURE	— EXISTING ASPHALT PATH	— EXISTING TRAIL	💧 WATER
📍 TRAILHEAD	🚦 UNSIGNALIZED	🌳 NATURAL FEATURE	— PROPOSED ASPHALT PATH	— PROPOSED GREENWAY	🌳 PARK
🅑 PARKING		🏛️ HISTORICAL FEATURE	— PROPOSED DUAL EQUESTRIAN PATH	— PROPOSED SHARED USE PATH OR BICYCLE LANES	🏠 PUBLIC LAND
📍 TRAIL JUNCTION		📍 WAYFINDING	⋯ PROPOSED ON-ROAD SECTION		
📍 TRAILSIDE AMENITY		📍 FEATURE	— PROPOSED ALTERNATIVE ALIGNMENT		

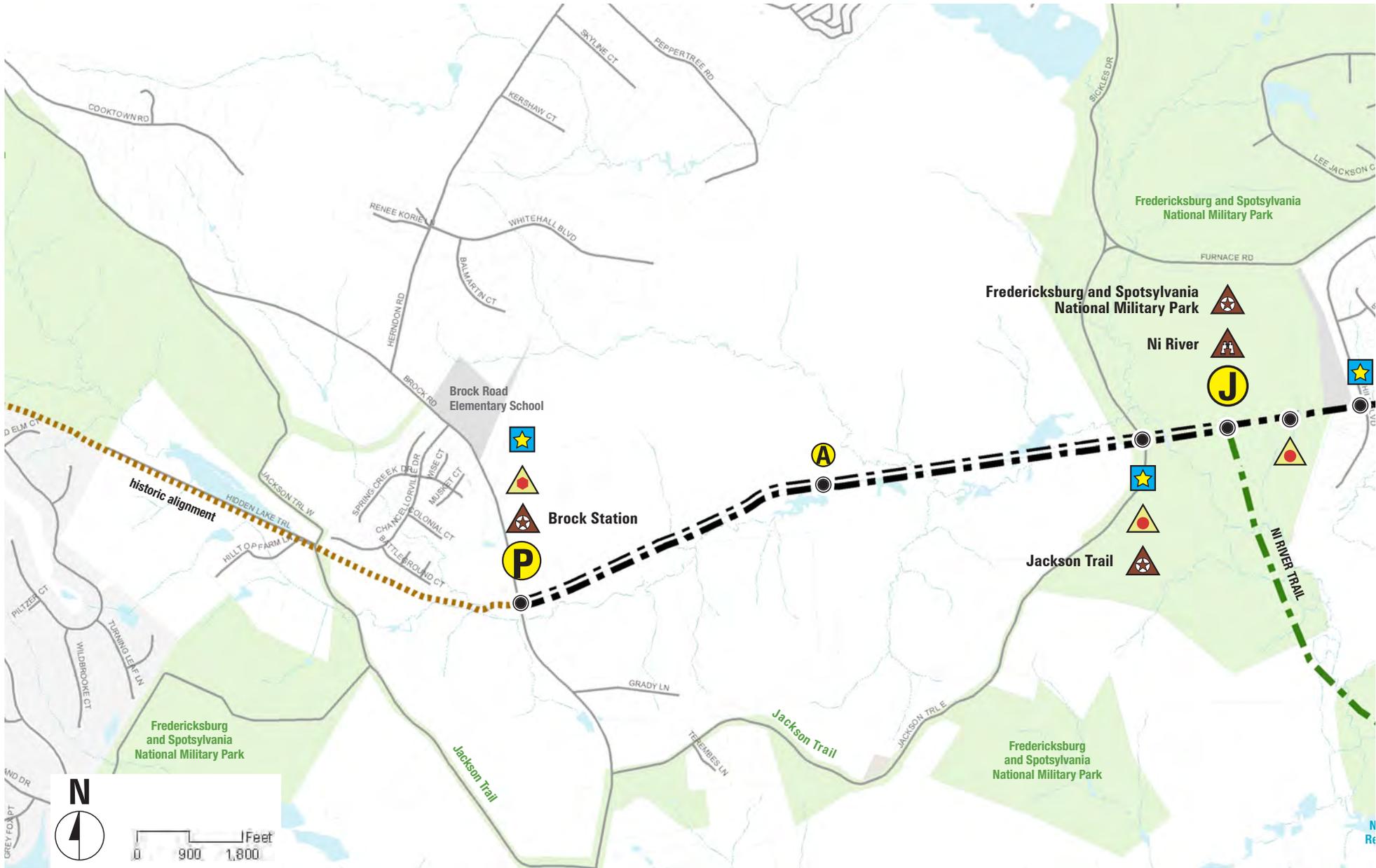
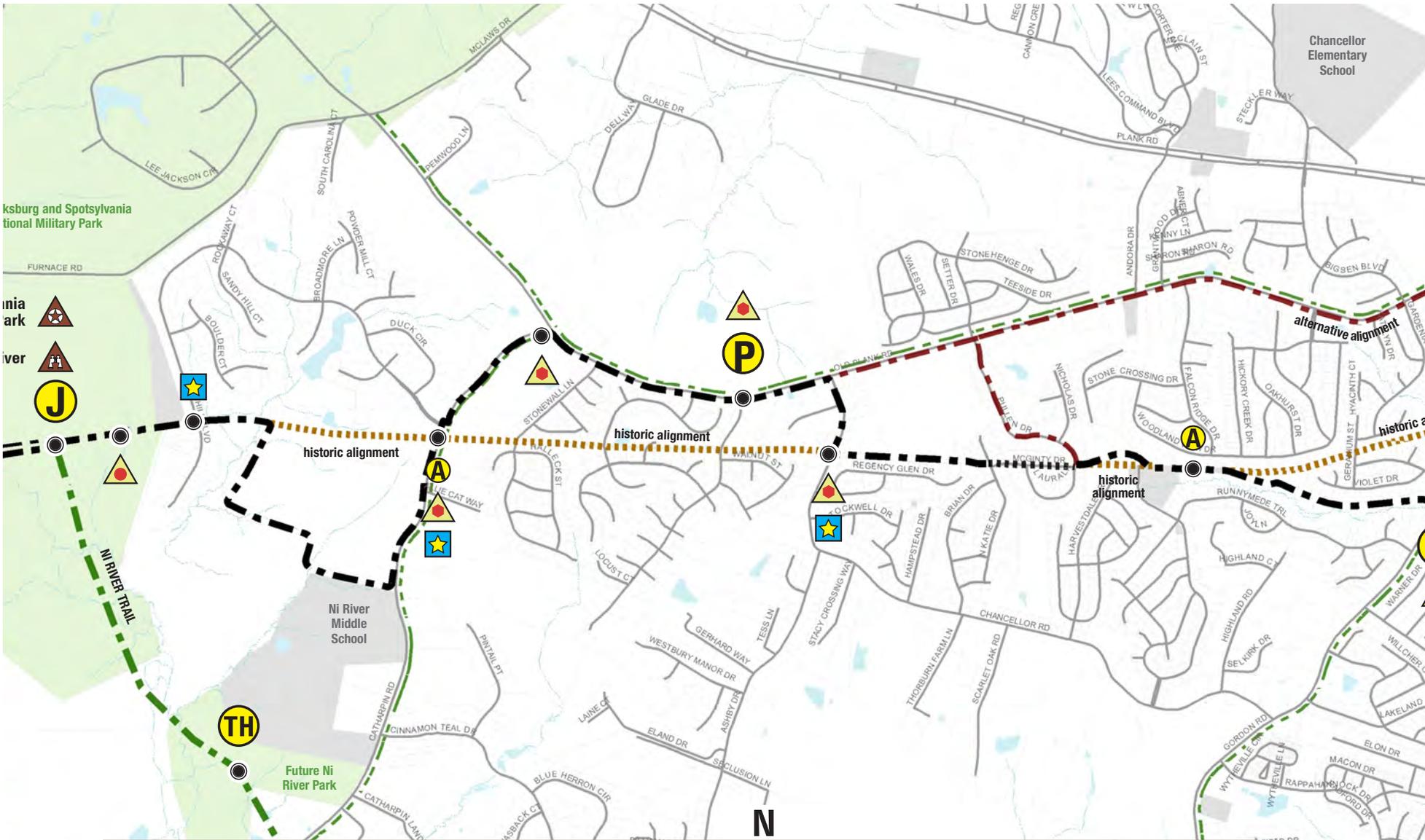
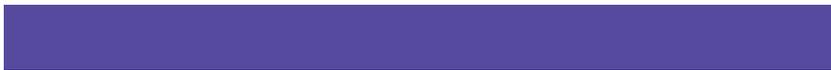


Figure 1.2: Trail Master Plan



LEGEND	ROAD CROSSING	SIGN	VCR TRAIL	OTHER TRAIL	GENERAL FEATURE
● FEATURE LOCATION	🚲 BICYCLE/PEDESTRIAN SIGNAL	⚠️ ENTRY/EXIT FEATURE	— EXISTING ASPHALT PATH	— EXISTING TRAIL	💧 WATER
📍 TRAILHEAD	🚦 UNSIGNALIZED	🌳 NATURAL FEATURE	- - - PROPOSED ASPHALT PATH	- - - PROPOSED GREENWAY	🌳 PARK
🅑️ PARKING		🏛️ HISTORICAL FEATURE	- - - PROPOSED DUAL EQUESTRIAN PATH	- - - PROPOSED SHARED USE PATH OR BICYCLE LANES	🏠 PUBLIC LAND
🅑️ TRAIL JUNCTION		📍 WAYFINDING	⋯ PROPOSED ON-ROAD SECTION		
🅑️ TRAILSIDE AMENITY		📍 FEATURE	- - - PROPOSED ALTERNATIVE ALIGNMENT		

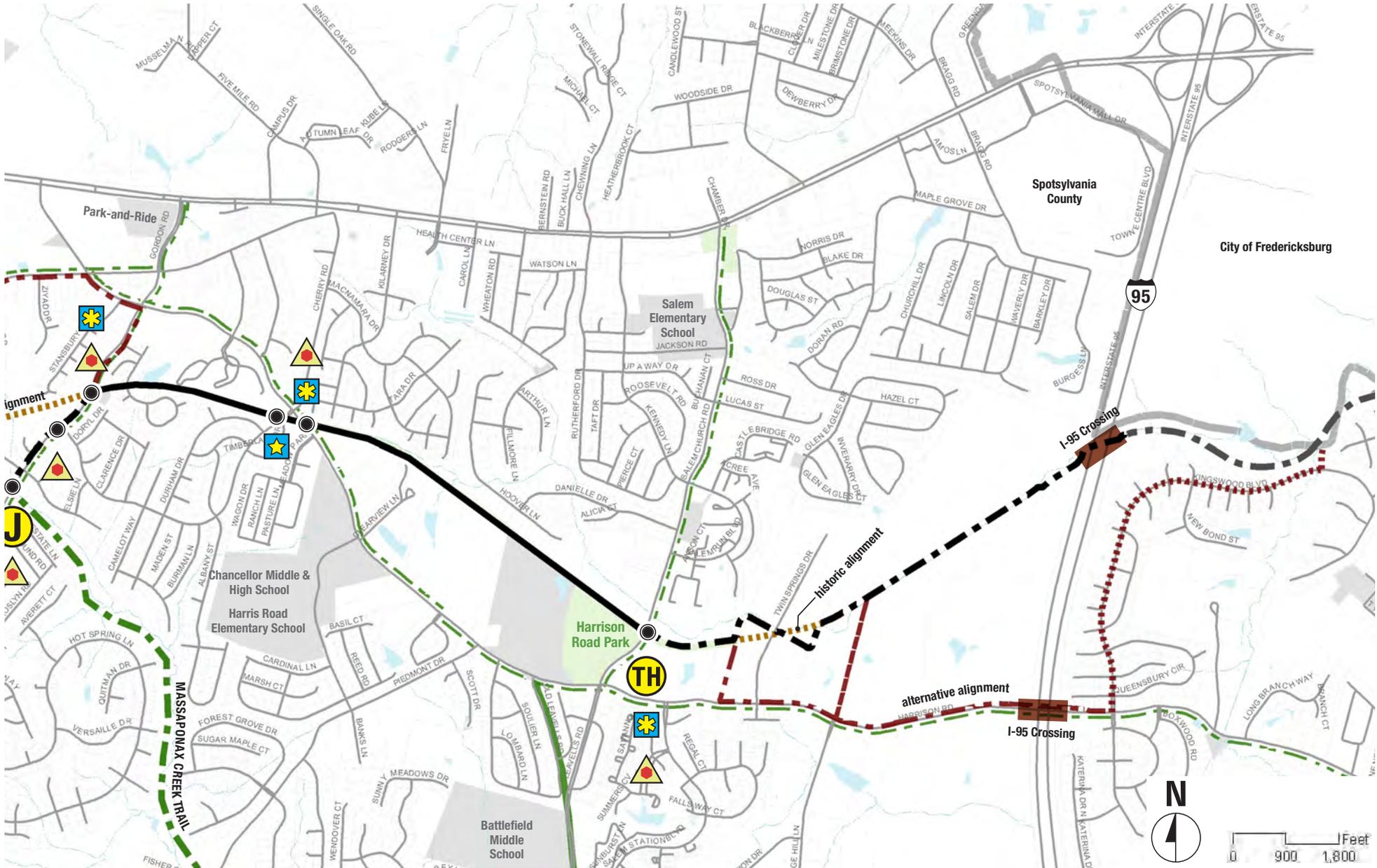


Figure 1.2: Trail Master Plan



2.0: Trail Design Guidelines and General Standards

2.1 Introduction

The Trail Design Guidelines and General Standards are a component of the VCR Trail concept plan together with the preferred trail alignment concept, which is under separate cover. The trail alignment concept shows a proposed alignment of the VCR Trail from east of I-95 to Brock Road. West of Brock Road, a number of different alignments were evaluated; however, numerous constraints including a lack of support from the public prevented a preferred route from being identified during the study. In the future, the section of the historic railway alignment between Brock Road and the Orange County line should be reconsidered if there is community interest and support in developing a trail facility along this section of the VCR corridor.

The design guidance contained in the following sections is intended to be a planning reference, not an engineering standard. The design guidelines were created using best practices from reference local, state, and federal standards for trail facilities similar to the proposed VCR Trail.

In the development of the trail concept plan, consideration was given to principles of crime prevention through environmental design (CEPTED), understanding that the trail will be isolated in some locations, and in others, adjacent to developed properties. The facility locations, alignment, and trail cross sections were developed to benefit user safety and

minimize negative effects to adjacent property. The locations of trail heads and facilities, clear width of the proposed trail, management of access to the trail, as well as other features were purposefully located and configured to enhance safety as well as provide an effective trail facility. As sections of the trail are implemented, careful consideration of best practices of CEPTED should be incorporated in the trail design.

The Design Guidelines and General Standards consist of the following:

- Generalized trail cross sections
- Surface type standards
- Accessibility guidance
- Signage and pavement marking guidance

2.2 Generalized Trail Cross Sections

The trail cross sections presented in this section describe the location and general configuration of key cross-sectional elements of the trail within the right-of-way. The cross sections show the trail surface, shoulders and recovery areas, medians and landscaped/natural areas, drainage and side slopes, and clear zones. In determining an easement or right-of-way need for any section of the VCR Trail, area-specific considerations will need to be evaluated. Limits of disturbance will vary widely based on the trail cross section and physical conditions in the trail corridor. The generalized trail cross sections and guidance in this section were developed referencing the following documents:



Future Section of VCR Trail on the Historic Alignment of the Railway

- Spotsylvania County's Trailways Master Plan (2011)
- Virginia Department of Transportation's Road Design Manual (2008)
- Department of Justice's 2010 ADA Standards for Accessible Design

The trail cross sections presented in this section are tailored to the VCR Trail and its envisioned set of users. Corridor conditions that dictated the development of individual sections included geographic location, adjacency to transportation facilities, limitations on right-of-way, locations of water (streams, wetlands, and similar), and water crossings. The following sections summarize generalized trail cross sections.

2.2.1 Paved Multiuse Path (Off-Road)

General Description. Paved multiuse path for use in locations not parallel to a transportation facility and where there is sufficient right-of-way to meet standard trail cross section conditions.

- Primary Users. Bicycles and pedestrians (including walkers, joggers, and skaters)
- Secondary Users. Equestrians
- Surface Type. Paved
- Preferred Surface Material. Asphalt (porous or non porous)
- Substitute Surface Material. Concrete (porous or non porous)
- Shoulders. Preferred to be maintained as grass or with other low-growing vegetation
- Stormwater Management. A 4- to 6-foot wide vegetated swale (2 percent slopes on the faces of the swale) along one or both sides of the trail (depending on location) along with appropriately scaled BMPs at swale outfall locations



Figure 2.1: Paved Multiuse Path (Standard Section)

2.2.2 Combination of Paved and Soft Path (Standard Section)

General Description. Combination paved (asphalt or concrete) and soft path (stone dust, crushed limestone, or similar) dual path system for use in locations not parallel to a transportation facility and where there is sufficient right-of-way to meet standard trail cross section conditions.

- Primary Users. Bicycles, pedestrians (including walkers, joggers, and skaters), and equestrians
- Surface Type. Combination paved and unpaved (improved)
- Preferred Surface Material. Paved: Asphalt (porous or non porous); Unpaved: Crushed limestone
- Substitute Surface Material. Concrete (porous or non porous); Unpaved: Stabilized compacted earth
- Shoulders. Preferred to be maintained as grass or with other low-growing vegetation
- Stormwater Management. A 4- to 6-foot wide vegetated swale (2 percent slopes on the faces of the swale) along one or both sides of the trail (depending on location) along with appropriately scaled BMPs at swale outfall locations

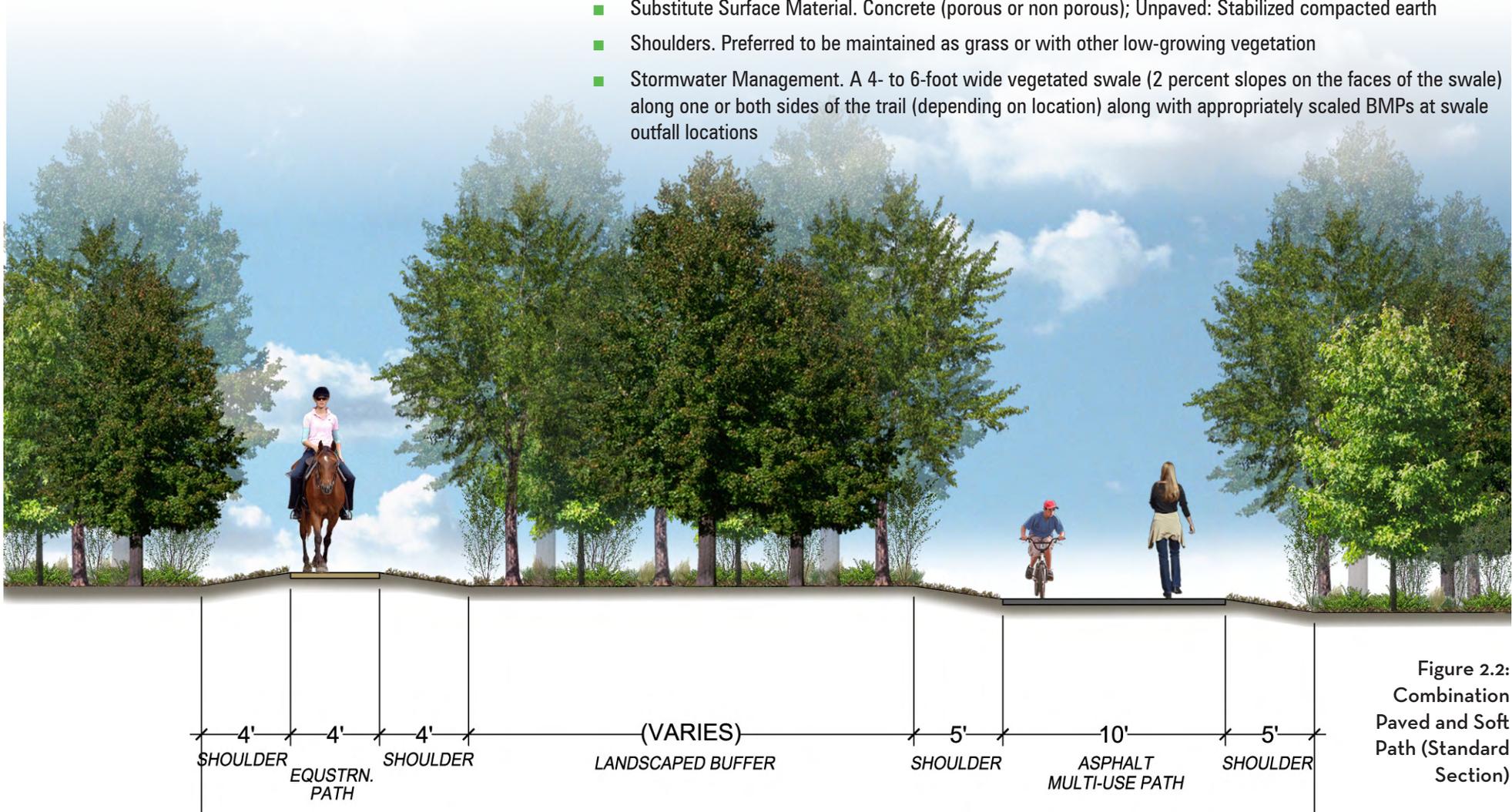


Figure 2.2:
Combination
Paved and Soft
Path (Standard
Section)

2.2.3 Combination of Paved and Soft Path (Minimum Section)

General Description. Combination paved (asphalt or concrete) and soft path (stone dust, crushed limestone, or similar) dual path system for use in locations not parallel to a transportation facility and where there is not sufficient right-of-way to meet preferred spacing between the soft path and paved paths.

- Primary Users. Bicycles, pedestrians (including walkers, joggers, and skaters), and equestrians
- Surface Type. Combination paved and unpaved (improved)
- Preferred Surface Material. Paved: Asphalt (porous or non porous); Unpaved: Crushed limestone
- Substitute Surface Material. Concrete (porous or non porous); Unpaved: Stabilized compacted earth
- Shoulders. Preferred to be maintained as grass or with other low-growing vegetation
- Stormwater Management. A 4- to 6-foot wide vegetated swale (2 percent slopes on the faces of the swale) along one or both sides of the trail (depending on location) along with appropriately scaled BMPs at swale outfall locations

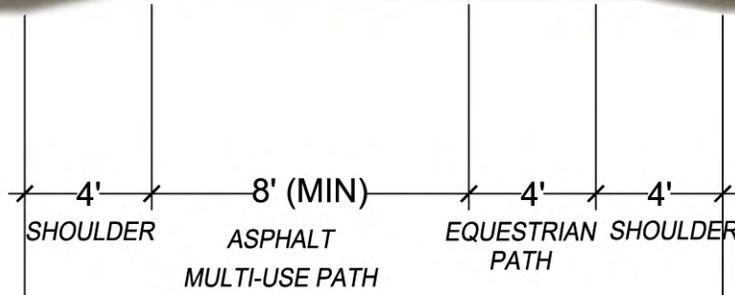


Figure 2.3: Combination Paved & Soft Path (Minimum Section)

2.2.4 Paved Multiuse Path (Parallel to Roadway)

General Description. Paved multiuse path for use in locations parallel to a transportation facility and where there is sufficient right-of-way to meet standard trail cross section conditions.

- **Primary Users.** Bicycles and pedestrians (including walkers, joggers, and skaters)
- **Secondary Users.** Equestrians
- **Surface Type.** Paved
- **Preferred Surface Material.** Asphalt (porous or non porous)
- **Substitute Surface Material.** Concrete (porous or non porous)
- **Shoulders.** Preferred to be maintained as grass or with other low growing vegetation
- **Stormwater Management.** A 4- to 6-foot wide vegetated swale (2 percent slopes on the faces of the swale) along one or both sides of the trail (depending on location) along with appropriately scaled BMPs at swale outfall locations

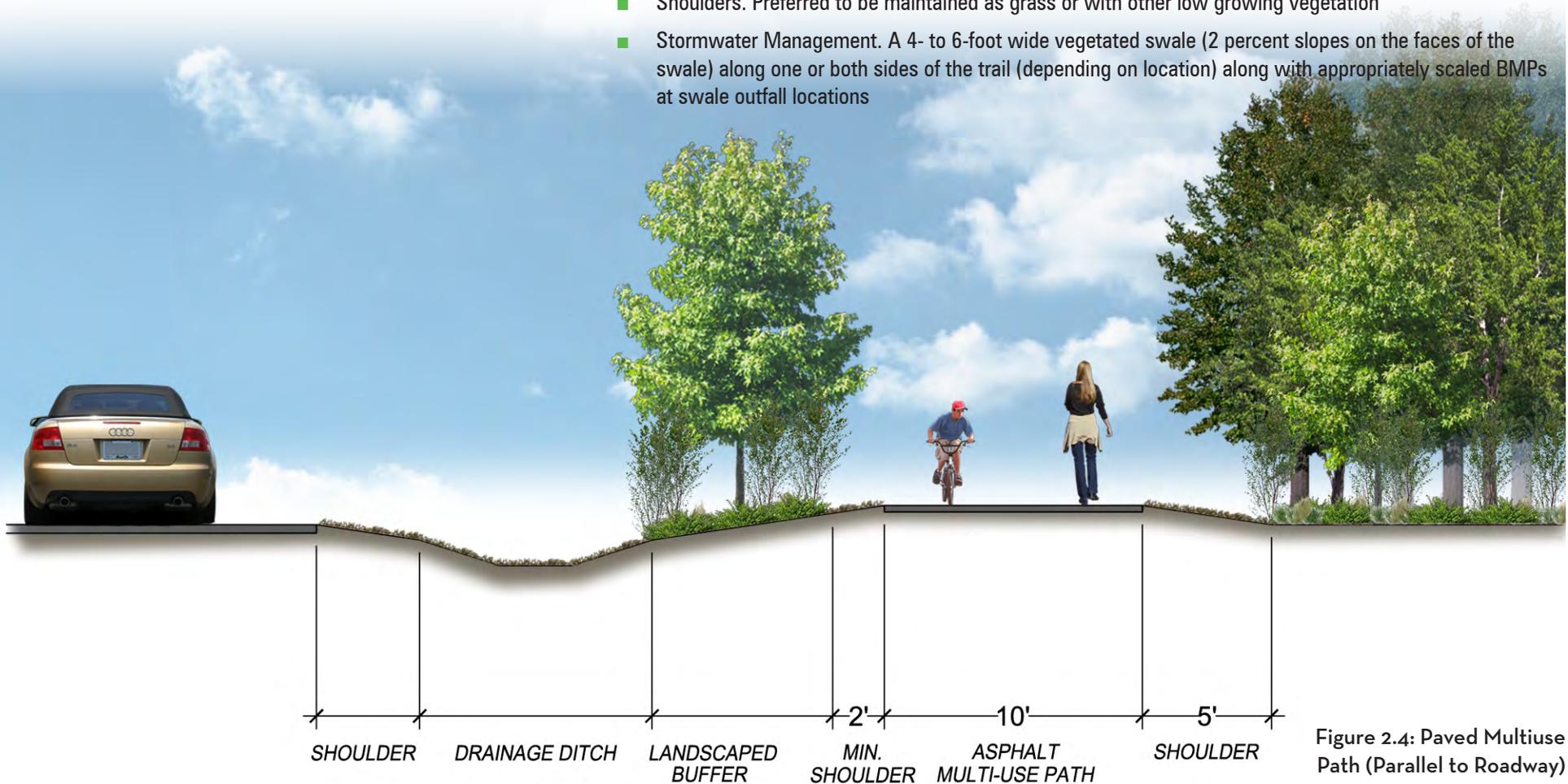


Figure 2.4: Paved Multiuse Path (Parallel to Roadway)

2.2.5 Bridge Section (Off-Road)

General Description. Trail bridge section where the facility must cross above a natural or man-made obstruction.

- Primary Users. Bicycles, pedestrians (including walkers, joggers, and skaters), and equestrians
- Secondary Users. None
- Surface Type: Paved or natural (depends on trail condition)
- Surface Material. Non skid and durable natural or composite surface
- Special Notes. Approaches should be designed to minimize vertical inconsistency between trail surface and structure surface

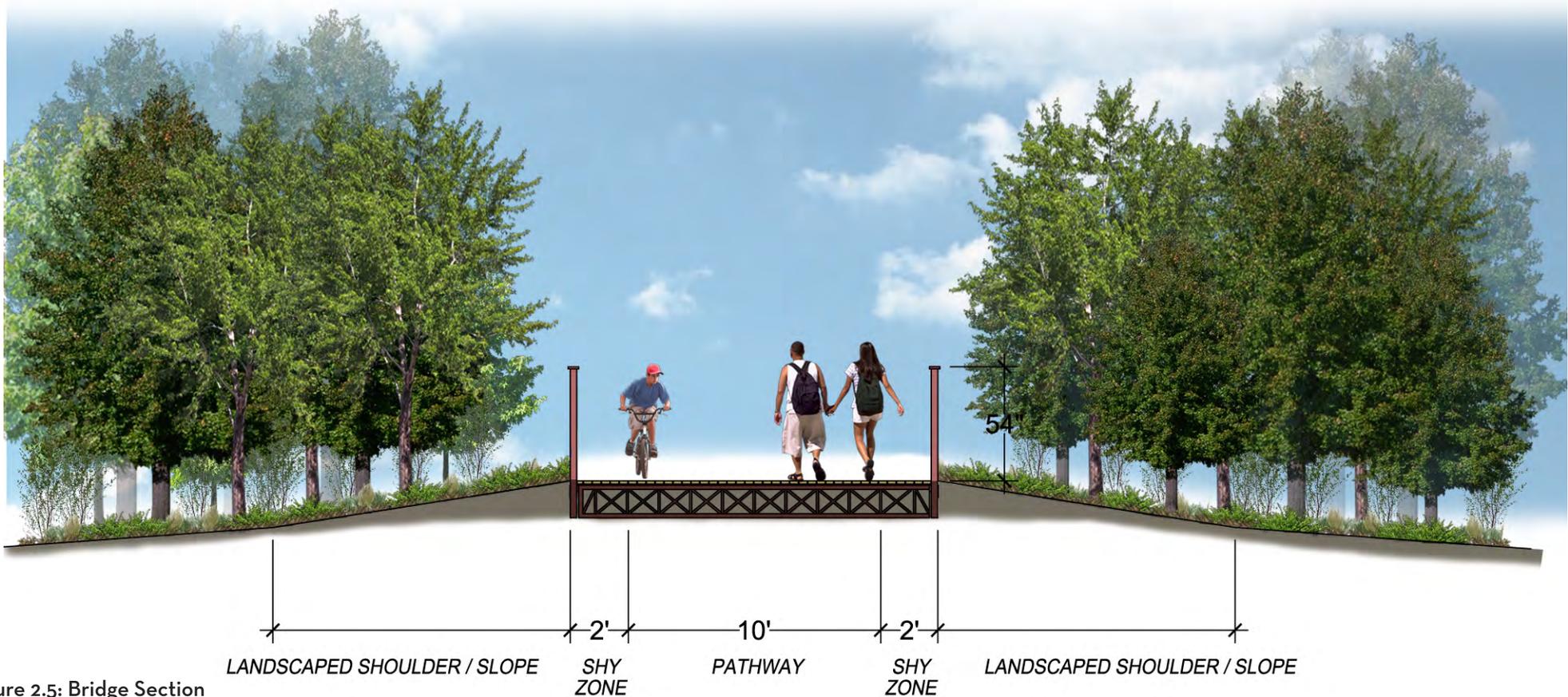
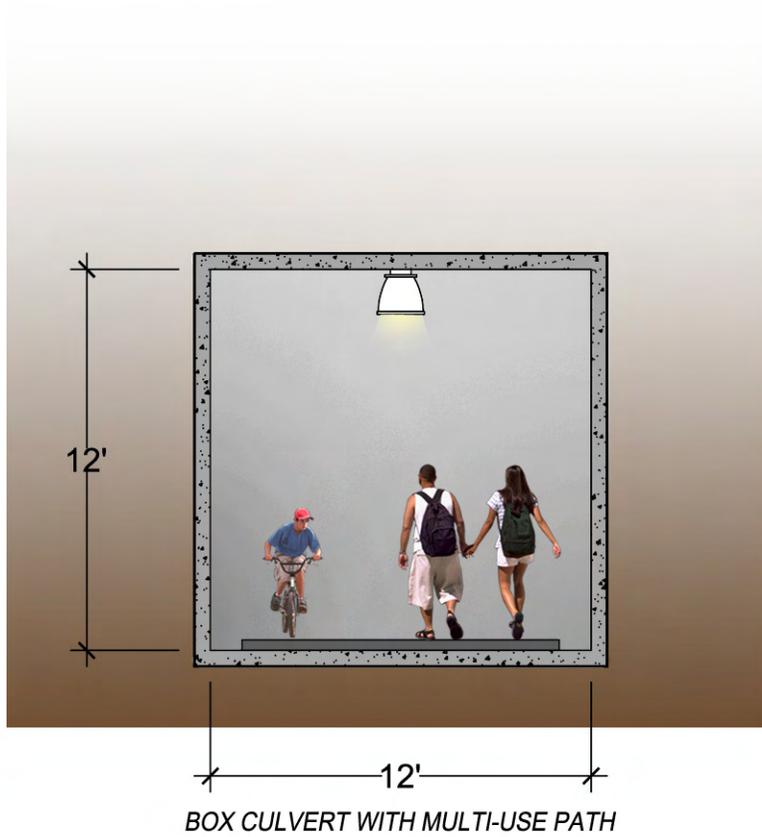


Figure 2.5: Bridge Section



2.2.6 Box Culvert Section (Off-Road)

General Description. Trail tunnel (culvert) section where the facility must cross above a natural or man-made obstruction.

- **Primary Users.** Bicycles, pedestrians (including walkers, joggers, and skaters), and equestrians
- **Secondary Users.** None
- **Surface Type:** Paved
- **Surface Material.** Concrete
- **Special Notes.** Lighting is recommended

Figure 2.6: Box Culvert Section (Off-Road)



Bridge Piers along the Historic Railway Alignment

Appropriate Height Railing Protecting a Trail User from a Slope Hazard, C&O Canal Towpath



In addition to the elements shown in the cross section figures, the following are recommended:

- Cross Slope. Trail cross slope should not exceed 3 percent.
- Vertical Grade. Trail grades should not exceed 5 percent at non-intersection locations. At-intersections grades should not exceed 1 percent.
- Shoulders. These should have a minimum graded and compacted width of 2 feet. The cross slope of shoulders should not exceed a 6:1 slope.
- Clear Zones. A recommended minimum of a 4-foot clear zone should be provided as measured from the edge of the improved path to a lateral obstruction except where the trail is on a structure. Where the trail is on a structure, a 2-foot minimum distance from the edge of the trail to the railing or barrier is recommended.
- Hazard Clearance. A minimum of 5 feet of separation should be provided from the edge of the improved path to hazard or any slope greater than 3:1. This minimum distance can be reduced by installing an appropriate barrier to protect the trail user from the hazard. Guidance on railings and barriers is below.
- Railings and Barriers. The minimum height (from the improved trail surface) of a railing or barrier (separating a trail from a hazard) should be the following:
 - 42 inches if the barrier is not on a structure
 - 54 inches if the barrier is on a structure
- Vertical Clearance. Vertical clearance between the trail surface and overhead obstructions such as transportation infrastructure and natural features should be a minimum of 10 feet. Vertical clearance between the lowest point of a trail structure and the finished surface of a roadway should be a minimum of 16 feet. Vertical clearance between the lowest point of a trail structure and a waterway must be determined through a hydraulic analysis and review by state agencies.

2.3 Standard Surface Type

The planned VCR Trail is proposed to have different surface types for the paved and unpaved sections. The preferred paved trail section surface type is asphalt and in tunnel and culvert sections it is concrete. The preferred unpaved section surface type is crushed aggregate finished with compacted crushed limestone (stone dust). The following provides general guidance for the design of trail surface (paved and unpaved section). Figure 2.7 shows a general trail surface section for reference. It should be noted that the design of the paved and unpaved trail surfaces will need to be determined based on an engineering study prior to construction.

2.3.1 Paved Trail Sections: Asphalt Surface

- Compacted subgrade of suitable material (as determined by a geotechnical investigation)
- 6 inches of compacted base (VDOT No. 21A)
- 2 inches of asphalt surface meeting standard VDOT specifications for road and trail surfaces

2.3.2 Unpaved Trail Sections: Crushed Aggregate Surface

- Compacted subgrade of suitable material (as determined by a geotechnical investigation)
- 6 inches of compacted base (VDOT No. 21A)
- 2 inches of crushed limestone aggregate (3/8" minus crushed fine or VDOT No. 10)

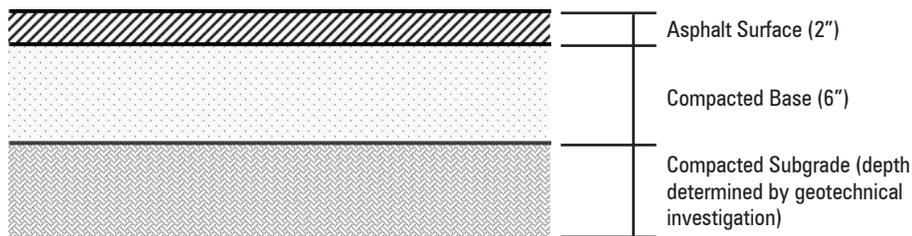
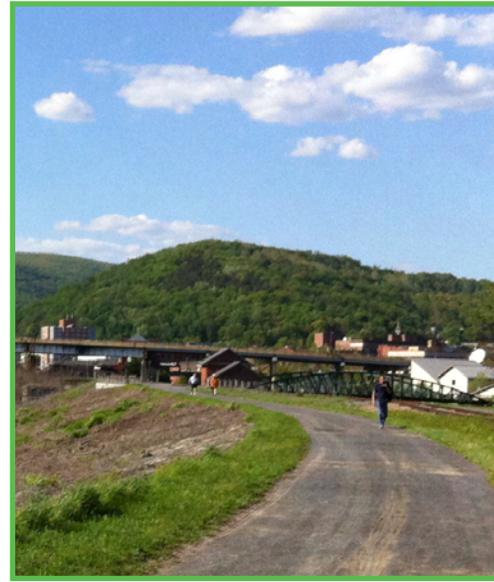


Figure 2.7: Asphalt Trail Section (general)

Existing Asphalt Section of the VCR Trail near Salem Church Road



Crushed Limestone Surface, C&O Canal Towpath



Porous Asphalt Surface



Bridge Crossing with
Switchback Approach
Slopes, Pittsburgh, PA

2.4 Accessibility

The topical area of accessibility bears special consideration. Recreational trails should seek to meet Americans with Disabilities Act (ADA) guidelines; however, physical constraints may limit the ability for a trail to be designed safely and reasonably to meet ADA requirements. To the extent that physical conditions permit, the trail should be safe and accessible to all users and meet local, state, and federal design standards and guidelines pertaining to accessibility. The following documents should be consulted in detail during any design of the trail and supporting facilities:

- Spotsylvania County Trailways Master Plan (2011)
- Virginia Department of Transportation's Road Design Manual (2008)
- Department of Justice's 2010 ADA Standards for Accessible Design
- U.S. Department of Transportation's Manual on Uniform Traffic Control Devices (2009)
- Virginia Department of Transportation's Virginia Supplement to the 2009 Manual on Uniform Traffic Control Devices (2011)

2.5 Signage and Pavement Markings

Appropriate signage and pavement markings are important in providing the trail user guidance as to the way in which to use the trail safely on an individual basis as well as in coordination with other trail and intersecting roadway users. Signage should provide general trail information (mile markers, interpretive features, etc.) as well as specific guidance related to operations (STOP, Yield, etc.). Signage and pavement markings inform the user as to the trail's context and how to use the trail. Signage and pavement marking guidance was developed based on the following references, which should be further consulted during detailed planning and design of the trail and supporting facilities:

- U.S. Department of Transportation's Manual on Uniform Traffic Control Devices (2009)
- Virginia Department of Transportation's Virginia Supplement to the 2009 Manual on Uniform Traffic Control Devices (2011)
- Spotsylvania County's Trailways Master Plan (2011)

A set of recommended generalized signage and pavement marking templates were developed based on the above documents and the requirements of specific locations along the trail. Location specific concepts for the VCR Trail are included in the concept design package. The placement of any new traffic control devices affecting vehicular or trail traffic/movements should be substantiated by an engineering study. Templates were developed for trail intersections with major and minor streets; approaches to bridges; intersections with other

trails; approaches to trailheads; and regular sections (non intersection) along the trail. Sign and pavement marking templates outlined below reference the U.S. Department of Transportation's Manual on Uniform Traffic Control Devices (2011) unless otherwise noted.

2.5.1 General Trail Section (Non intersection)

Pavement Markings

- Centerline Color and Width. Standard yellow, 4 inches
- Centerline Configuration. Broken (dashed) line on trail sections that are straight and flat with good sight distance and solid line on trail sections where sight distance is limited
- Edgeline Color and Width (optional). Standard white, 4 inches
- Edgeline Configuration (optional). Solid

Signage

- Milepost Signage. Placed at half-mile intervals
- Property/Easement Signage. Placed periodically along the trail to delineate the boundary of the easement or trail property and delineate public from private property
- Other Signage. Located and placed at regular intervals to indicate distance to major destinations, bike routes, other trails, and streets

Milepost Marker on the Tobacco Heritage Trail



Sample of Highway Crossing Pavement Marking on a Trail



Stop Sign (R1-1)



Crosswalk, Stop on Red (R10-23)



Intersection Ahead Sign (W2-1)



No Motor Vehicles Sign (R5-3)



Crosswalk Sign (R1-6)

Source: MUTCD, 2012



Trail Crossing Sign (W11-15)

2.5.2 Major Intersections (Signalized or Unsignalized)

Trail Approaches

Pavement Markings

- "HWY XING" pavement marking
- Solid yellow centerline (4 inches)
- Standard stop bar

Signage

- Rules of the trail
- Street sign to indicate intersecting street name
- Other directional/informational signage to indicate locations of trail-user related services and destinations
- Stop sign (R1-1)
- Intersection ahead sign (W2-1)
- No motor vehicles sign (R5-3)

Notes: The aforementioned is provided as planning and general design guidance. During detailed design, an engineering study should be performed to determine the signage and pavement marking needs of all trail intersections and locations along the trail. Where trails approach a sidewalk, trail markings and signage should be placed prior to the intersection of the sidewalk.

Intersecting Roadway (Signalized)

Pavement Markings

- High-visibility ladder-type crosswalk

Signage

- Trail crossing (W11-15a) or bicycle and pedestrian crossing (W11-15)
- Trail crossing plaque (W11-15P), in combination with W11-15 or W11-15a
- Distance plaque (W16-2aP), in combination with W11-15
- Crosswalk, stop on red (R10-23)

2.5.3 Intersecting Roadway (Unsignalized)

Pavement Markings

- "TRAIL XING" pavement marking
- High-visibility ladder-type crosswalk

Signage

- Trail crossing (W11-15a) or bicycle and pedestrian crossing (W11-15)
- Trail crossing plaque (W11-15P), in combination with W11-15 or W11-15a
- Distance plaque (W16-2aP), in combination with W11-15

2.5.4 Minor Intersection (Unsignalized)

Trail Approaches

Pavement Markings

- "HWY XING" pavement marking with crossing warning sign (W2-1)
- Solid yellow centerline (4 inches)
- Standard stop bar

Signage

- Rules of the trail
- Street sign to indicate intersecting street name
- Other directional/informational signage to indicate locations of trail-user related services and destinations
- Stop sign (R1-1)
- No motor vehicles sign (R5-3)

Notes: The aforementioned is provided as planning and general design guidance. During detailed design, an engineering study should be performed to determine the signage and pavement marking needs of all trail intersections and locations along the trail. Where trails approach a sidewalk, trail markings and signage should be placed prior to the intersection of the sidewalk.

Intersecting Roadway

Pavement Markings

- Standard crosswalk marking

Signage

- Trail crossing (W11-15a) or bicycle and pedestrian crossing (W11-15)

- Trail crossing plaque (W11-15P) in combination with W11-15 or W11-15a
- Distance plaque (W16-2aP) in combination with W11-15 (optional)
- In-street crossing sign (R1-6), optional

2.5.5 Intersection of Trails

Pavement Markings

- Standard stop bar on intersecting trail approach

Signage

- Where equestrians are present yield by user type sign
- Rules of the trail
- Stop sign (R1-1) on intersecting trail approach
- Guide sign for bicycle facilities (D-1 series) or B11-1c bicycle to destination sign

2.5.6 Structures

Pavement Markings

- Standard trail centerline and edgeline marking

Signage

- Narrow bridge and cyclists and riders (horses) must dismount sign as needed for substandard conditions
- Obstruction warning signs (OM3-L, C, or R) as appropriate
- Vertical clearance signs (W12-2) as appropriate
- Sign indicating the name of the feature being crossed (road, stream, wetland, etc.)

Mile Marker and Informational Sign on the Great Allegheny Passage Trail



Trail Head Signage, Great Allegheny Passage Trail



Trail Head Signage, Great Allegheny Passage Trail

2.5.7 Trailheads

Pavement Markings

- Standard trail centerline and edgeline marking

Signage

- Trailhead name and location signage
- Trail route map
- Local information directory indicating nearby services and points of interest
- Signage indicating available facilities and services at the trailhead
- Distance signage
- Rules of the trail

2.5.8 Interpretive Locations

Pavement Markings

- Standard trail centerline and edgeline marking

Signage

- Milepost sign
- Interpretive/informational signage describing the identified feature

2.5.9 Disclaimer

The aforementioned is provided as planning and general design guidance. During detailed design, an engineering study should be performed to determine the signage and pavement marking needs of all trail intersections and locations along the trail.

Mile Marker and Informational Sign on the Great Allegheny Passage Trail



Interpretive Signage along the C&O Canal Towpath

2.6 Trail Junctions

There will be many locations where the VCR Trail and other trails will intersect. It is important that trail junctions are designed to promote safe interaction between trail facilities. Trail junctions should be designed to minimize entry speed to the primary trail from the intersecting trail and to manage speeds from the primary trail to the intersecting trail. Adequate sight distance should be provided at trail junctions to enable users of the primary and secondary trails to view one another on approach (prior to intersection). The following provides general guidance for three- and four-leg trail junctions.

2.6.1 Three-Leg Junctions

- Locations and frequency. Junctions should be located to maximize sight distance and minimize disruption to the flow of the primary trail
- Junction Angle. 90 degrees (preferred)
- Traffic Control. Stop or Yield on intersecting trail
- Trail Junction Grades. Should be minimized in the vicinity of the intersection area (made as flat as practical) to improve sight distance and user comfort and accommodation
- Preferred Configuration. Standard T, U, or circular (roundabout)
- Non preferred Configuration. Y or acutely angled junction

2.6.2 Four-Leg Junctions

- Locations and frequency. Junctions should be located to maximize sight distance and minimize disruption to the flow of the primary trail
- Junction Angle. 90 degrees (preferred)
- Traffic Control. Stop or Yield on intersecting trail
- Trail Junction Grades. Should be minimized in the vicinity of the intersection area (made as flat as practical) to improve sight distance and user comfort and accommodation
- Preferred Configuration. Offset T or circular (roundabout)
- Non preferred Configuration. Aligned four-leg



Circular Trail Junction

