

ACTIVE FAIRFAX

Active Transportation Toolkit

DRAFT 2024



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1

Introduction

Fairfax County's Vision for Active Transportation

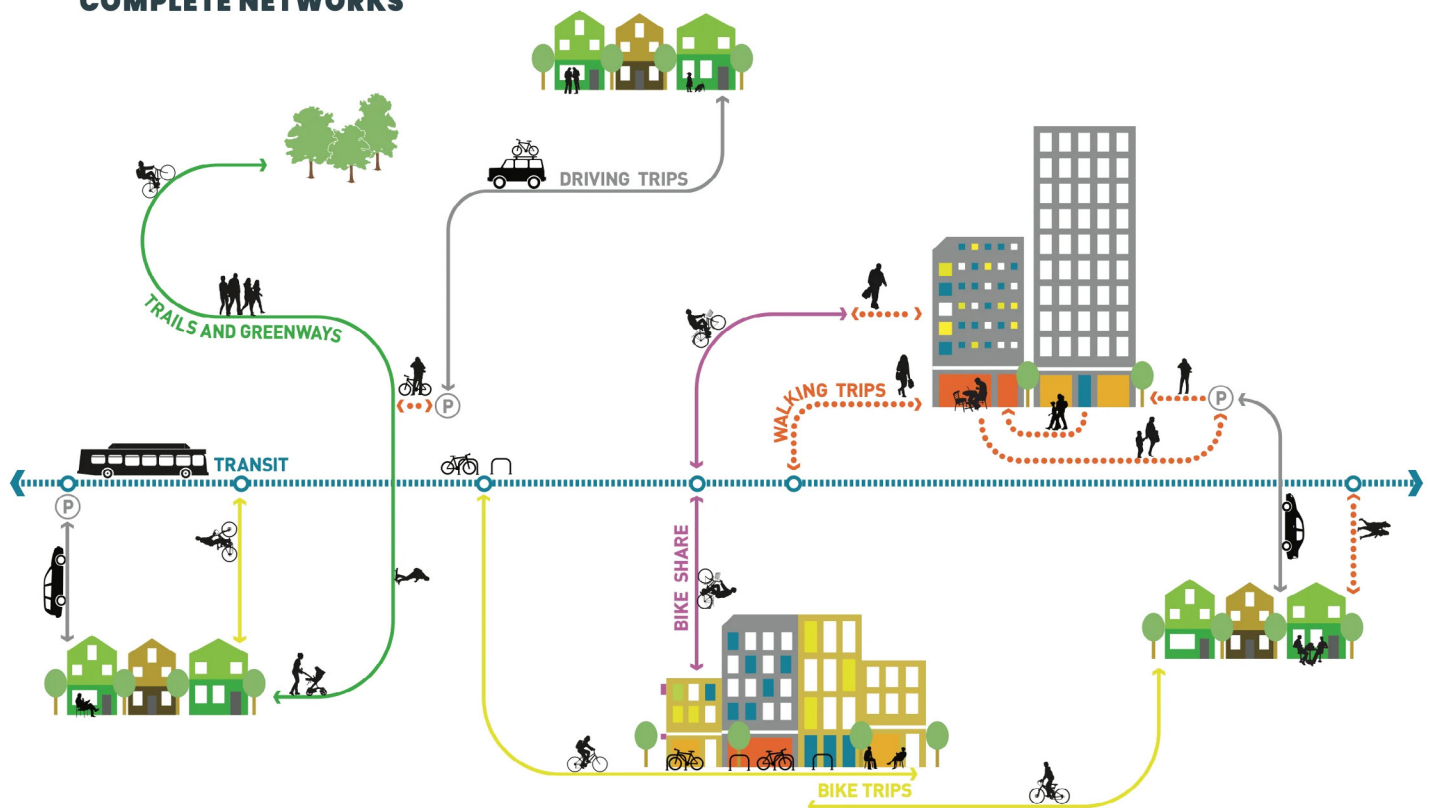
Fairfax County streets, sidewalks, bikeways and trails are welcoming places where people of all ages and abilities feel comfortable using active transportation to safely and conveniently access the widest range of destinations and to exercise, relax or spend time outdoors. Active transportation is defined as mostly non-motorized travel including walking, biking, hiking, and riding a scooter or horse for transportation or recreational purposes.

- Adopted by the Fairfax County Board of Supervisors in November 2021

Whether or not people will walk, bike, ride or roll for transportation or recreation is heavily influenced by the stresses, barriers, and amenities they encounter or expect to encounter on their trip. This Active Transportation Toolkit presents key guidance and resources for planners, engineers, developers, and advocates to develop a more comfortable active transportation network that serves people of all ages and abilities, and enhances community livability, health, safety and sustainability.

Fairfax County's long-term goal is that pedestrians and bicyclists can be accommodated on every street. Building active transportation infrastructure that serves all potential users is critical to improve traffic safety, reduce congestion, improve air quality and public health outcomes, provide better and more equitable access to jobs and opportunities, and bolster local economies.

COMPLETE NETWORKS



When and How to Use This Toolkit

This document provides centralized, context sensitive and comprehensive planning and implementation guidance on active transportation facility selection, design and best practices, and a collection of relevant design and policy resources. It is intended to support public and private transportation planning efforts, as well as implementation of planned facilities.

This document is intended as a resource to support transportation practitioners to make informed and context-sensitive trade-off decisions relating to the selection of active transportation facility types that maximize the comfort and safety of active transportation users of all ages and abilities. It is intended to support the vision, goals and objectives outlined in the Fairfax County Comprehensive Plan, Policy Plan, Special Area Plans and supplements applicable national, state, and local design standards.

Note that this document is not a policy document, some recommended facilities may not be implemented in all locations or on public streets, and there is no dedicated funding to implement the recommendations.

The recommendations in this toolkit reflect evolving national and local best practices, with a focus on safety, comfort, and convenience for people of all ages and abilities who are walking, biking, riding and rolling on trails, or along or across a variety of road types, while enhancing user comfort and neighborhood aesthetics.

In addition to facility recommendations along roadways, this toolkit describes different types of trails through open space. However, it does not provide guidance on facility selection in a natural context due to the varying environmental and cultural characteristics, features, operational considerations and constraints. A feasibility study with thorough topological, environmental, and cultural resource review is needed to determine feasibility, viability, and the type, width and alignment of trails through open space.



Photo credit: FCDOT

The development of all facilities that are to be owned and/or maintained by the Park Authority, or which are built on land owned and/or dedicated to the Park Authority, is guided by FCPA's Park Authority Board decision-making and established park planning processes. These planning processes and facility designs are located in Park Authority planning and trail standard documents which should be used in place of the guidance in this Toolkit for trails on parkland.

Similarly, the development of any facility to be owned, maintained, or dedicated to NOVA Parks or the National Park Service (NPS) is guided by established decision-making and planning processes. Transitions among differing facility types, especially between facilities owned or operated by different entities, require close coordination with and approval from the applicable landowner.

All projects on, along or across roadways that are maintained by the Virginia Department of Transportation (VDOT) are subject to VDOT and Fairfax County Department of Transportation (FCDOT) review and approval.

2

Guidance on Developing a Network of High-Comfort Active Transportation Routes

Introduction

To increase walking, bicycling and other active transportation modes, the connectivity and design of sidewalk, bikeway, and trail infrastructure must meet the needs of a broader set of users. Although all sidewalks must meet accessibility standards, not all facilities provide comfortable separation from traffic, enough room to pass or walk side by side, places to rest, lighting at night, or protection from sun or rain. Similarly, many existing bicycle facilities are disconnected and often do not provide enough separation from traffic, therefore excluding a large portion of the population who might otherwise ride. Critical to a high-comfort active transportation network are sidewalk, trail or bikeway designs that accommodate the broadest range of users along connected and convenient routes between origins and daily destinations.

Accommodating All Ages and Abilities: Choosing Design Users

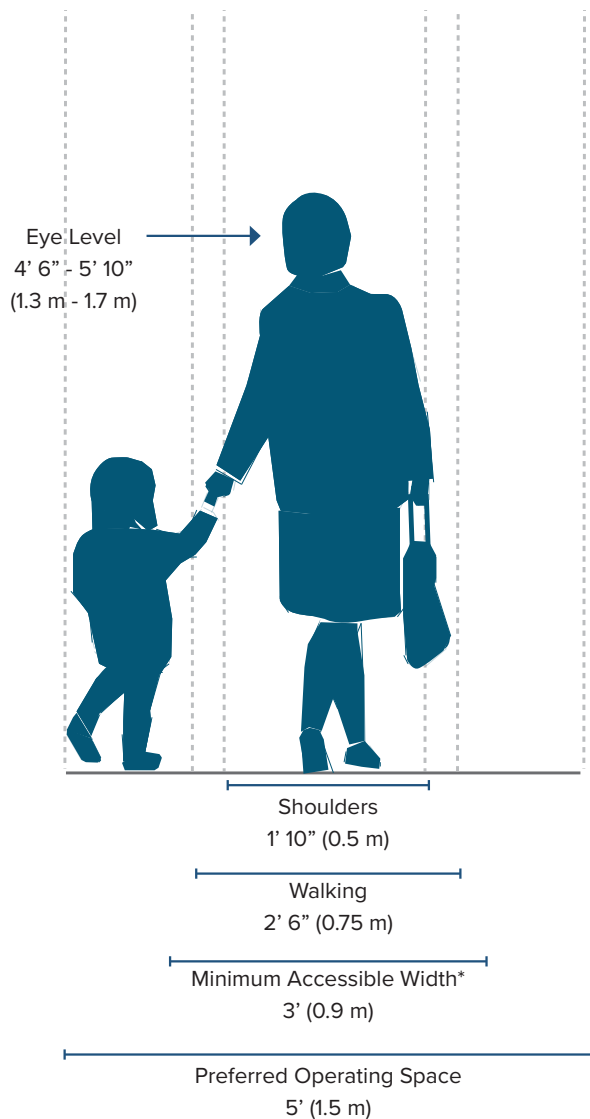
A broad range of active transportation users and user needs must be considered when planning an active transportation network that is comfortable and convenient for everyone, regardless of age, abilities, health, or type of micromobility vehicle. Some well-intended facility designs that were implemented to benefit one user type while unintentionally created a barrier for another.



Photo credit: FCDOT

Pedestrian Facility Design User

Pedestrian facilities should accommodate a variety of needs, abilities, and impairments. Age is a factor that affects pedestrians' physical characteristics, walking speed, and environmental perception. For example, children have lower eye height, may walk slower and less predictable than adults, and perceive their environment differently at various stages of development. Older pedestrians may walk more slowly and may require assistive devices for walking stability, sight, and hearing.



*At point of contact

Pedestrian Characteristics by Age

| AGE | CHARACTERISTICS |
|--------------|--|
| 0-4 | Learning to walk Requires constant adult supervision Developing peripheral vision and depth perception |
| 5-8 | Increasing independence, but still requires supervision Poor depth perception |
| 9-13 | Susceptible to "darting out" in roadways Insufficient judgment Sense of invulnerability |
| 14-18 | Improved awareness of traffic environment Insufficient judgment |
| 19-40 | Active, aware of traffic environment |
| 41-65 | Slowing of reflexes |
| 65+ | Difficulty crossing street Vision loss Difficulty hearing vehicles approaching from behind |

Source: AASHTO. *Guide for the Planning, Design, and Operation of Pedestrian Facilities*, Exhibit 2-1. 2021.

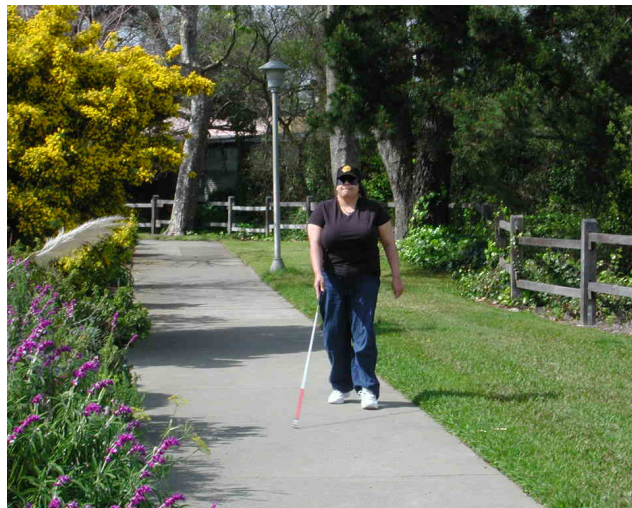
Disabled Pedestrian Design Considerations

The table below summarizes common physical and cognitive impairments, how they affect personal mobility, and recommendations for pedestrian-friendly designs.

| IMPAIRMENT | EFFECT ON MOBILITY | DESIGN SOLUTION |
|---|---|---|
| Physical Impairment Necessitating Wheelchair and Scooter Use | Difficulty propelling over uneven or soft surfaces. Cross-slopes cause wheelchairs to veer downhill or tip sideways. Require wider path of travel. | Firm, stable surfaces and structures, including ramps or beveled edges. Cross-slopes of less than two percent. Sufficient width and maneuvering space. |
| Physical Impairment Necessitating Walking Aid Use | Difficulty negotiating steep grades and cross slopes; decreased stability and tripping hazard. Slower walking speed and reduced endurance; reduced ability to react. | Cross-slopes of less than two percent. Smooth, non-slippery travel surface. Longer pedestrian signal cycles, shorter crossing distances, median refuges, and street furniture. |
| Hearing Impairment | Less able to detect oncoming hazards at locations with limited sight lines (e.g. driveways, angled intersections, channelized right turn lanes) and complex intersections. | Longer pedestrian signal cycles, clear sight distances, highly visible pedestrian signals and markings. |
| Vision Impairment | Limited perception of path ahead and obstacles; reliance on memory; reliance on non-visual indicators (e.g. sound and texture). | Accessible text (larger print and raised text), accessible pedestrian signals (APS), guide strips and detectable warning surfaces, safety barriers, and lighting. |
| Cognitive Impairment | Varies greatly. Can affect ability to perceive, recognize, understand, interpret, and respond to information. | Signs with pictures, universal symbols, and colors, rather than text. |
| Fatiguing Illnesses | Slower walking speed and reduced endurance; reduced ability to react. Increased chances of tripping or falling. | Longer pedestrian signal cycles, shorter crossing distances, median refuges, and street furniture. Smooth, non-slippery travel surface. |



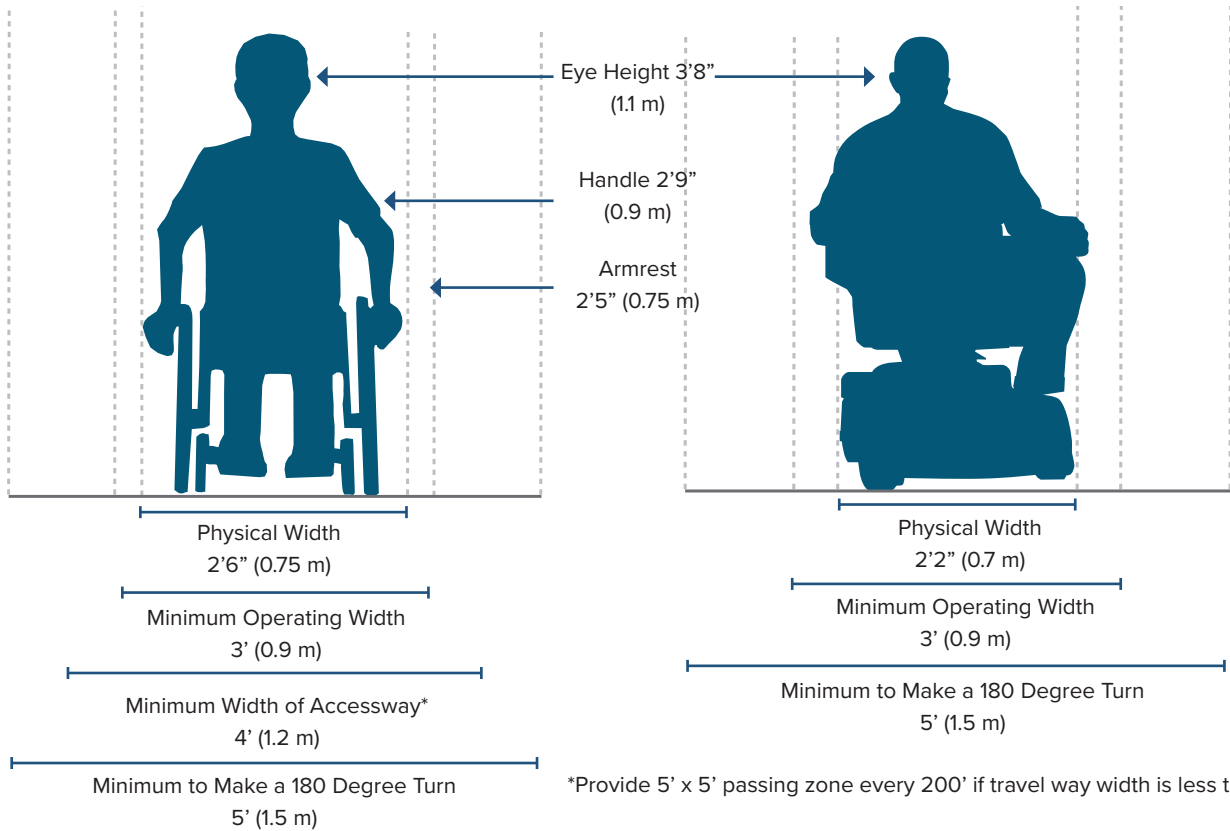
Photo Credit: FCDOT



Cerrito Creek Trail in Richmond, California



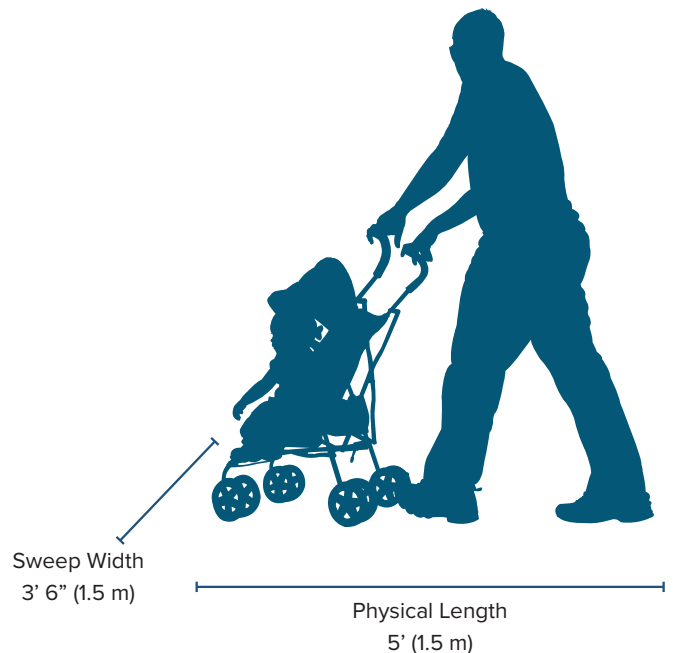
Wheelchair User Dimensions



Design Needs of Caregivers with Strollers

Strollers vary greatly in design and capacity. Some strollers accommodate a single child while others can carry 3 or more, side by side or single file. Many strollers have small pivoting front wheels for easy maneuverability, but these wheels may limit their use on unpaved surfaces or rough pavement. Jogging strollers usually have three larger wheels, which makes them vulnerable to lateral overturning. Tipping is one of the main safety concern for stroller users. Curb ramps are valuable to these users, though tight corners and vertical curbs at ramps can make navigating longer or wider strollers through an intersection challenging. Stroller users benefit from wide facility widths and smooth, saw cut concrete or asphalt surfaces.

Stroller Dimensions



Bicycle Facilities Design Users

Streets that are safe and comfortable for all ages and abilities bicycling are critical for community mobility. Refer to Chapter 3 for information on selecting All Ages and Abilities bicycle facilities for any road and land use context.

Many existing bicycle facility designs do not sufficiently address the needs of most people who might otherwise ride, traditionally favoring confident riders and long-distance bike commuters on standard bicycles. Bike facility design must meet the needs of a broader set of potential bicyclists, including children, seniors, women, inexperienced riders, people with disabilities, as well as people riding non-standard bicycles and micromobility devices.

In general, people riding standard-sized bicycles or most micromobility devices prefer five feet or more in operating width, although four feet may be acceptable, not including gutters in the dimension. Longer or wider types of bicycles such as cargo bikes, recumbents, or bikes with attachments need more space when traveling straight, when turning, or when waiting on medians.

Scooters, skateboards, and similar devices may be operated in on-street or off-street bike facilities, as well as on most sidewalks in Fairfax County. These devices can be entirely human-powered, powered by an electric motor, or a combination of the two. They typically have an operating speed of 20 mph or less, but this can vary widely depending on whether manually powered or motor driven, OR other factors like hills. These devices have similar design needs to those of standard bicycles and can be operated by a wide range of users, including those who may not be able to ride a bicycle.

BICYCLIST PROFILES

Interested but Concerned

51–56% of people

Often not comfortable using bike lanes, and may bike on sidewalks even if bike lanes are provided; prefer off-street or separated bicycle facilities or quiet or traffic-calmed residential roads. May not bike at all if bicycle facilities do not meet needs.



Somewhat Confident

5–9% of people

Generally prefer more separated facilities, but are comfortable riding in bicycle lanes or on paved shoulders.



Highly Confident

4–7% of people

Comfortable riding with traffic; will use roads without bike lanes.



LOW STRESS TOLERANCE



HIGH STRESS TOLERANCE

All Ages and Abilities: Most people fall in the “Interested but Concerned” category. They are uncomfortable in conventional bike lanes and are shy of adjacent traffic, preferring protected or separate facilities and quieter streets. They will ride on a sidewalk if no comfortable facility is provided. Between 28 and 40 percent of people are in the “No Way, No How” category and will not ride a bicycle. However, they also benefit from bicycle facilities which increase the predictability of bicyclists on the roadway as well as preserving sidewalks for pedestrians.




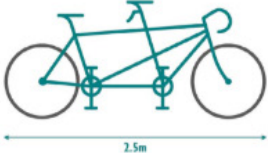
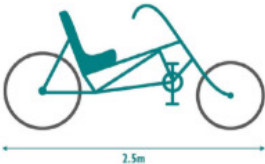
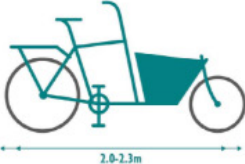
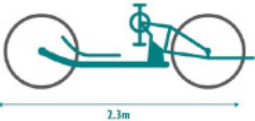



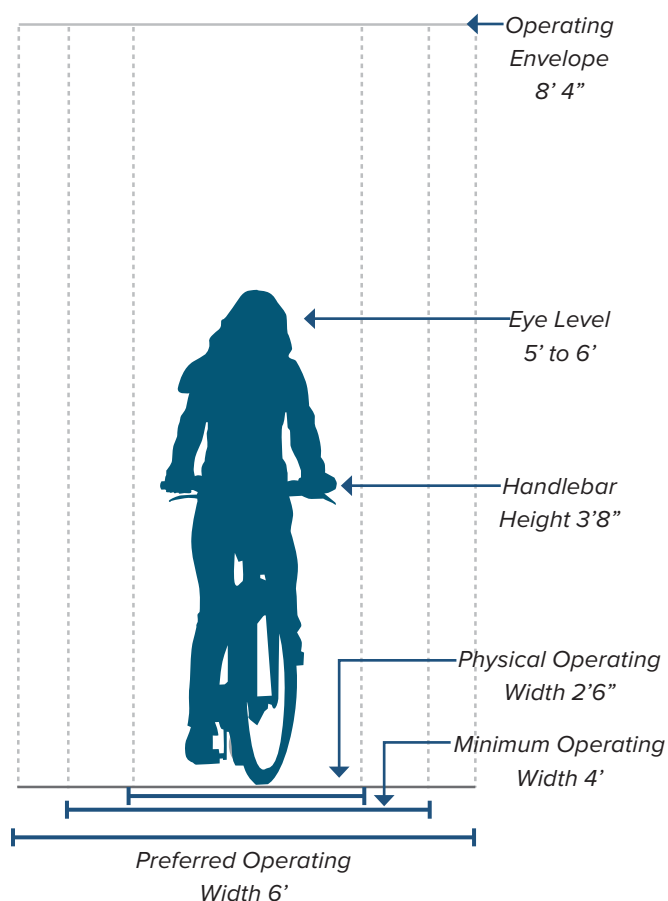
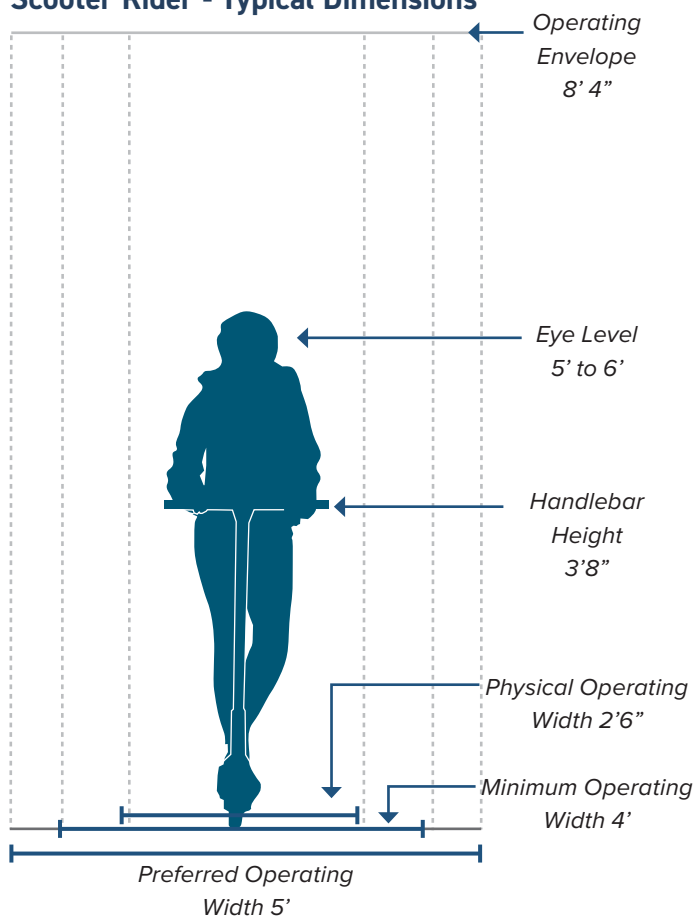
| Standard | Tandem | Recumbent | Cargo Bike |
|--|--|---|---|
|  <ul style="list-style-type: none"> • 1.8 m length • 0.65 m width • 1.65 m turning circle |  <ul style="list-style-type: none"> • Additional turning circle requirements up to 3.2 m |  <ul style="list-style-type: none"> • Additional turning circle requirements up to 3.2 m • Lower eye height for visibility envelope |  <ul style="list-style-type: none"> • Up to 0.85 m width • Additional turning circle requirements up to 2.65 m |
| Handcycle | Wheelchair User Tricycle | Additional Child Trailer | Additional Trailer Bike |
|  <ul style="list-style-type: none"> • Additional turning circle requirements up to 2.65 m • Lower eye height for visibility • Lower clearance to kerbs and other objects |  <ul style="list-style-type: none"> • Additional turning circle requirements up to 3.2 m |  <ul style="list-style-type: none"> • Additional turning circle requirements up to 2.65 m |  <ul style="list-style-type: none"> • Additional turning circle requirements up to 3.2 m |

Photo Source: Transport Scotland Cycling by Design (2021) p. 17

Bicycle Rider - Typical Dimensions



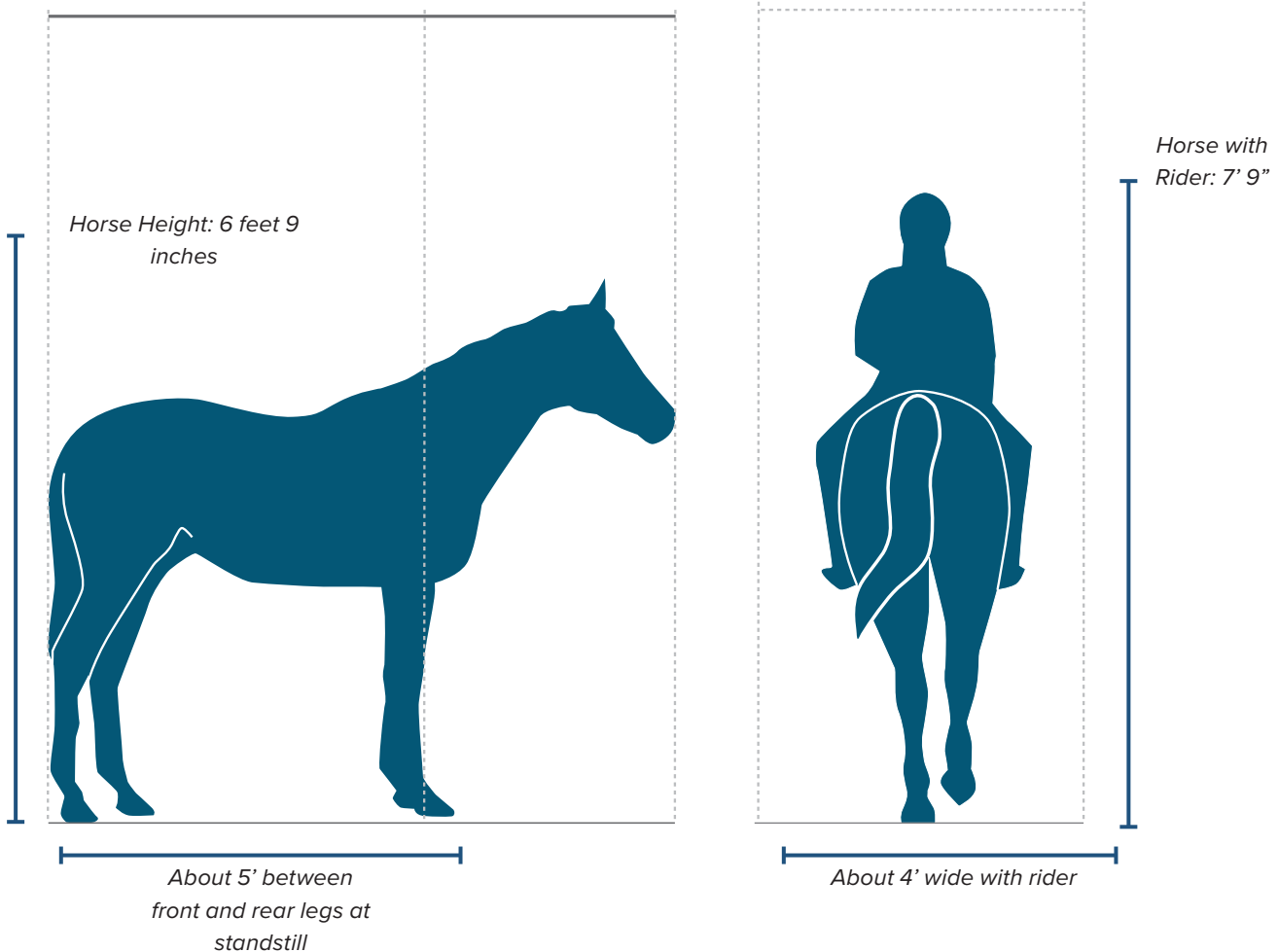
Scooter Rider - Typical Dimensions



Equestrian Facilities Design Users

On multi-use trails that permit equestrian uses, riders on their mounts are the heaviest, widest, and tallest potential user type. Mounts can include horses, mules, and donkeys, which all vary in size. Equestrians typically travel between 3 and 8 miles per hour on trails. These trail users prefer a soft surface tread that is grade separated from vehicles and fast cyclists.

Equestrian-Typical Dimensions



Where should High-Comfort Active Transportation Routes be Located?

Every road Fairfax County should accommodate all road users, no matter what mode of transportation is chosen for the trip, or the age and abilities of the users. However, the majority of the existing street network was built in the twentieth century, when walking, biking and other active transportation modes were not prioritized. Retrofitting existing streets with comfortable active transportation facilities will require a significant amount of funding and time. Therefore, it is essential to focus active transportation planning and improvements on key transportation corridors that connect neighborhoods with daily destinations such as centers of employment, transit, schools and recreational facilities.

The Fairfax County *Active Transportation and Trail Network Plan Map* will become a component of the Fairfax County Comprehensive Plan as referenced in the Transportation section of the Countywide Policy Element. The Map depicts existing and planned conceptual high-comfort active transportation routes in the County and provides guidance on Fairfax County's trail network routes, network function of designated active transportation routes (regional and local), location of low-stress neighborhood routes, and the approximate location of stream valley trail corridors. The Comprehensive Plan also includes policies on sidewalk and crosswalk facilities.



Photo Credit: FCDOT

The Fairfax County *Active Transportation and Trail Network Plan Map* is not a stand-alone active transportation plan. Transportation practitioners, trail planners, planning task force members, and interested members of the public should reference other parts of the Comprehensive Plan, in particular policies and facility selection guidance provided in the Transportation Element of the Policy Plan, the Parks and Recreation Element of the Policy Plan, the applicable Special Area Plan¹ and Urban Street Standards² and/or Urban Design Guidelines³, and additional facility selection and design guidance provided in this guide.



Photo Credit: FCDOT

1 <https://www.fairfaxcounty.gov/planning-development/comprehensive-plan/special-planning-areas>

2 <https://www.fairfaxcounty.gov/transportation/urban-street-standards>

3 <https://www.fcrevite.org/specialprojects/urban-design-guidelines>

DRAFT (LATER TO BE CHANGED TO: AS ADOPTED BY THE
FAIRFAX COUNTY BOARD OF SUPERVISORS, DATE, YEAR)

This map is a component of the Fairfax County Comprehensive Plan as referenced in the Transportation section of the Countywide Policy Element and identifies the County's approximate location of designated active transportation and trail routes regardless of funding status or completion. For more information on how to determine the land use context, description of facility types, and facility selection guidance reference the Contextual Guidance for Selecting All Ages & Abilities Active Transportation Facilities and Supporting Amenities table (Table) and the Active Transportation Toolkit (Toolkit).



TABLE 1:
CONTEXTUAL GUIDANCE FOR SELECTING ALL AGES & ABILITIES ACTIVE
TRANSPORTATION FACILITIES AND SUPPORTING AMENITIES

[illegible]

Overview of Route Types

The Active Transportation and Trails Network Plan Map breaks the active transportation network routes into five categories - Urban Network Routes, Trail Network Routes Along Roads, Trail Network Routes Through Open Space, Stream Valley Trail Routes, and Enhanced Local Routes. Each category permits several active transportation facility options which should be carefully considered and selected from based on the specific roadway and land use context. See Appendix A for guidance on active transportation facility selection for routes along roads, Chapter 2 on guidance for choosing an active transportation design user for the corridor, Chapter 3 for national, state and local facility design standards and guidance, Chapter 4 for more information on each facility type, and Appendix B and C on mitigating measures that can be taken in constrained conditions to enhance the comfort of active transportation users. Information on facilities through open space is provided in Chapter 6 of this document.

The Active Transportation and Trails Network Plan Map designates longer trails and bikeways that connect destination hubs with each other and to surrounding jurisdictions as **Regional Routes**. Walking, hiking and biking routes that connect neighborhoods to local destinations and to the Regional Routes are shown as **Local Routes**.



Photo Credit: FCDOT

Routes Along Roads

TRAIL NETWORK ROUTE ALONG ROAD (REGIONAL OR LOCAL)

Typical Facility:

- Multi-Use Hard Surface Trail(s) Designed for Fast Travel Speeds (Suburban Neighborhood Land Uses)
- Multi-Use Hard Surface Trail Designed for Slow Travel Speeds (Low Density Residential Area Land Use Context or Constrained Conditions)

Other Facility Options:

- One-Way Cycletrack(s) with Sidewalks
- Two-Way Cycletrack(s) with Sidewalks

Note: Location shown on the Map is approximate. Reference Active Transportation Facility Selection Along Roads Guidance (Appendix A) to determine preferred facility type, surface, and width options, desirable pedestrian facilities and landscape amenity panel type and width.

ENHANCED LOCAL ROUTE

Typical Facility:

- Neighborhood Greenway with Sidewalks
- On-Street Bike Lanes (Standard, Buffered, Green, Advisory) with Sidewalks
- Multi-Use Hard Surface Trail Designed for Slow Travel Speeds
- Shared Street with Sidewalks and Wayfinding and/or Enhanced Signage
- Pedestrian First Street

Other Facility Options:

- Multi-Use Hard Surface Trail Designed for Fast Travel Speeds
- One-Way Cycletracks with Sidewalks
- Two-Way Cycletrack with Sidewalks

Note: Location shown on the Map is approximate. Reference Active Transportation Facility Selection Along Roads Guidance (Appendix A) to determine preferred facility type, surface, and width options, desirable pedestrian facilities and landscape amenity panel type and width.

URBAN NETWORK ROUTE (REFER TO THE APPLICABLE SPECIAL AREA PLAN AND URBAN STREET STANDARDS AND/OR URBAN DESIGN GUIDELINES,) (REGIONAL OR LOCAL)

Typical Facilities (for reference only, may differ in Special Area Plans):

- Multimodal Through Corridor/Boulevard/Major Avenue/Avenue:
 - » One-Way Cycletracks with Enhanced Sidewalks
 - » Two-Way Cycletrack(s) with Enhanced Sidewalks
 - » Urban Trail(s) (constrained conditions)
- Local Street (reference Contextual Guidance for Selecting All Ages & Abilities Active Transportation Facilities and Supporting Amenities to determine need for dedicated and separated bicycle facilities):
 - » One-Way Cycletracks with Enhanced Sidewalks
 - » Two-Way Cycletrack with Enhanced Sidewalks
 - » Urban Trail(s) (constrained conditions)
 - » On-Street Bike Lanes (Standard, Buffered, Green, Advisory) with Enhanced Sidewalks
 - » Neighborhood Greenway with Enhanced Sidewalks
 - » Pedestrian First Street
 - » Shared Street (Wayfinding Signage and/or Warning Signage) with Sidewalks

Other Facility Options:

- Multi-Use Hard Surface Trail Designed for Fast Travel Speeds

Note: Location shown on network map is approximate. Consult applicable Special Planning Area recommendations, which may contain specific facility recommendations. Where included, facility recommendations in the Area Plans or Design Guidelines are the preferred facility type. However, facilities may be enhanced as needed per the Active Transportation Facility Selection Along Roads Guidance (Appendix A).

ALL OTHER ROUTES (ALONG ROADS)

Typical Facilities:

- On-Street Bike Lanes (Standard, Buffered, Green, Advisory) with Sidewalks
- Neighborhood Greenway with Sidewalks
- Pedestrian First Street
- Shared Street with Sidewalks and optional Wayfinding and/or Warning Signage
- Multi-Use Hard Surface Trail Designed for Slow Travel Speeds

Other Facility Options:

- One-Way Cycletracks with Sidewalks
- Two-Way Cycletrack with Sidewalks
- Multi-Use Hard Surface Trail Designed for Fast Travel Speeds

Note: Option to enhance facilities as needed per the Active Transportation Facility Selection Along Roads Guidance (Appendix A).



Photo Credit: FCDOT



Routes Through Open Space

Disclaimer: Due to the varying environmental and cultural characteristics and features, and operational considerations, of any public parkland, development of any facility to be owned, maintained, or dedicated to the Fairfax County Park Authority (FCPA), NOVA Parks or the National Park Service (NPS) is guided by established decision-making and planning processes. Transitions among differing facility types, especially between park facilities and facilities owned or operated by others, requires approval with the applicable land agency. The selection and design of active transportation facilities on parkland is determined by the individual public land agency based on their specific policies and standards for trail facilities.

TRAIL NETWORK ROUTE THROUGH OPEN SPACE (REGIONAL OR LOCAL)

Typical Facilities (Non-FCPA):

- Multi-Use Hard Surface Trail Designed for Fast Travel Speeds
- Multi-Use Hard Surface Trail Designed for Slow Travel Speeds
- Natural Surface Trail

Other Facility Options (Non-FCPA):

- Boardwalk (limited application, see page 86 for more information)

Note: For FCPA facilities, contact Fairfax County Park Authority Trail Coordinator at (703) 324-8741 for guidance. Location shown on network map through open space is conceptual, analysis is needed to determine viability, facility type, alignment, surface type, and width for implementation.

STREAM VALLEY TRAIL ROUTE (REGIONAL OR LOCAL)

Typical Facility (Non-FCPA):

- Natural Surface Trail
- Limited access, corridor for wildlife only

Other options as appropriate/feasible (Non-FCPA):

- Multi-Use Hard Surface Trail Designed for Slow Travel Speeds
- Boardwalk (limited application, see page 86 for more information)

Note: For FCPA facilities, contact Fairfax County Park Authority Trail Coordinator at (703) 324-8741 for guidance. Location shown on network map through open space is conceptual, analysis is needed to determine viability, facility type, alignment, surface type, and width for implementation.



Photo Credit: FCDOT

Routes with Additional Designations

Several routes of the planned Active Transportation and Trail Network are part of named regional routes, loop trails or networks. Coordination with regional partners and stakeholder organizations early in the planning or design process is key to ensure improvements are made in compliance with the vision of the designation and potential design or branding guidelines.

Routes with Additional Designations:

- [Capital Trails Network](#)
- NOVA Loop Trail
- Bull Run Loop Trail
- Sully Loop Trail
- Grand Loop Trail
- [Mount Vernon Trail](#)
- 66 Parallel Trail
- I-495 Trail
- South County East-West Trail
- Fairfax County Parkway Trail
- [East Coast Greenway Trail](#)
- [Potomac Heritage National Scenic Trail](#)
- [Gerry Connolly Cross County Trail](#)
- West County Trail
- Bull Run/Occoquan Trail
- Tysons Community Circuit
- U.S. Bicycle Route 1

Note: The development of all facilities that are to be owned and/or maintained by the Park Authority, or which are built on land owned and/or dedicated to the Park Authority, is guided by FCPA's Park Authority Board decision-making and established park planning processes. These processes and facility design are located in Park Authority planning and trail documents. Park Authority will coordinate with the appropriate agency to provide trail connections which encourage use and enhance existing trail networks while minimizing impacts.



Potomac Heritage Trail



Mount Vernon Trail



W&OD Trail



This map is a component of the Fairfax County Comprehensive Plan as referenced in the Transportation section of the Countywide Policy Element and identifies the County's approximate location of designated active transportation and trail routes. Many items of funding studies or completion. For more information, or to help determine the land use context, description of facility types, and facility selection guidance, reference the Continuum Guidance for Selecting All Ages & Abilities Active Transportation Facilities and Supporting Amenities Table (Table) and the Active Transportation Toolkit (Toolkit).



3

Selecting High- Comfort Active Transportation Facilities along Roads

Introduction

The Contextual Guidance for Selecting All Ages & Abilities Active Transportation Facilities and Supporting Amenities (Appendix A) contains guidance primarily for on-road active transportation facilities or facilities that parallel a roadway. The guidance includes categories of design factors for this type of facility: roadway characteristics, land use, and facility placement.

All streets in Fairfax County should safely and comfortably accommodate people walking and biking. There is no one-size-fits all active transportation facility that would achieve this vision. Corridors and sidewalks that are part of the regional or local trail network as designated on the Active Transportation and Trails Network Plan Map must include at least one multi-use hard surface trail or cycletrack, regardless of the roadway context. In many cases, trail network shown on the regional or local trail network map supersedes the guidance of the facility selection matrix, especially in the lower volume roadway contexts. Only in exceptional cases is an on-street bike facility or low-stress shared street considered an acceptable accommodation as part of the designated trail network, and is subject to FCDOT active transportation staff approval.

Disclaimer: The following guidance is not a substitute for a more thorough evaluation by a professional planner and engineer prior to implementation of any facility improvements, and the ultimate facility type and design is generally subject to final engineering.

Roadway Characteristics

- Projected or most recent Annual Average Daily Traffic (AADT)
- Posted Speed Limit
- Number of Travel Lanes

Land Use Context

Land use and its development intensity impact how Fairfax County residents and visitors travel, the frequency and total number of trips made, and the number and type of users that will benefit from safe and convenient multi-modal transportation options. The design and function of the transportation system for all types of users, in turn, affects the character and identity of a neighborhood, corridor, or activity center. Ultimately, this land use/transportation relationship influences economic development decisions and quality of life of residents, as well as personal decisions regarding dwelling choice, travel choice, and property investment.



Components that go into Active Transportation facility selection

Determining Roadway Characteristics

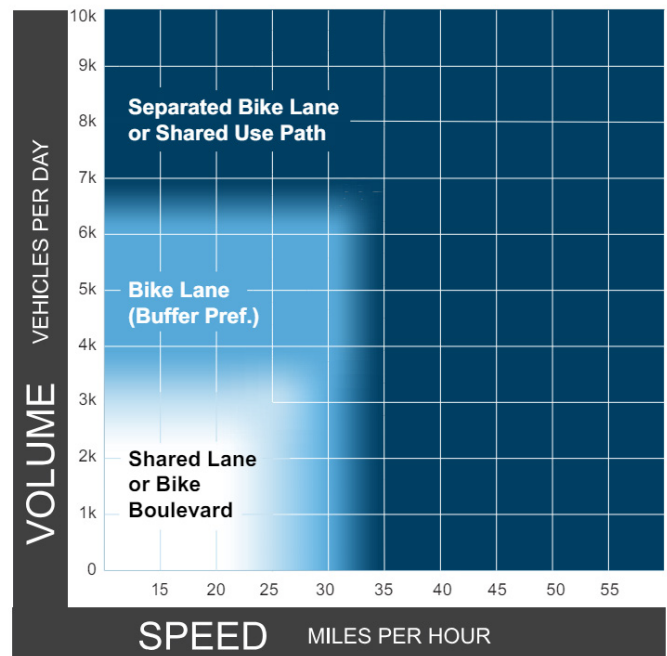
A roadway context are the specific transportation characteristics of a road. Characteristics typically include posted speed, number of travel lanes, average traffic volumes, pedestrian and bicycle facilities, landscaping, lighting, frequency of pedestrian crossings, intersections and driveways, adjacent land uses, and adjacent urban form. Different roadway contexts require different design approaches to achieve safer and more convenient mobility options for all road users, and to ensure the road can function as the community envisions – provide regional connections, provide access to local destinations, or serve as a public space.

The Contextual Guidance for Selecting All Ages & Abilities Active Transportation Facilities and Supporting Amenities (Appendix A) provides guidance on how to select comfortable active transportation facilities based on a specific roadway context primarily taking three key factors that impact active transportation user safety and comfort into consideration: (1) current traffic volume (use future if available), (2) posted speed limits, and (3) current or planned number of travel lanes (whichever is greater).

The Virginia Department of Transportation (VDOT), which owns and operates most of the roads in Fairfax County, provides data and information on each key roadway component on their Open Data Portal, “Virginia Roads” available at www.virginiaroads.org.























































































VDOT Traffic Volume

This map consists of Average Daily Traffic (ADT) volumes with Vehicle Classification Data for most recent years, on Interstate, Arterial and Primary Routes. It also includes a list of each Interstate and Primary highway segment with the estimated Annual Average Week Day Traffic (AAWDT) for that segment. Projected AADT data can be requested from FCDOT.



Preferred Bikeway Type for Roadways Contexts.
Source: FHWA Bikeway Selection Guide

Active Transportation Facility Selection Matrix (see Appendix A for full matrix)

| ROADWAY TYPE | | | COMMUNITY CHARACTER | | | |
|---------------------------------------|------------------|------------------------|---|--|---|---|
| Vehicles Per Day | Speed Limit | Number of Travel Lanes | Low-Density or Rural Residential Area | Suburban Neighborhood | Commercial Area in Residential or Suburban Neighborhood | Urban Center, Transit Station |
| Recommended Facility Types | | | | | | |
| 15k+ | All | 2-6+ |  |  |  or  |  or  |
| 6k - 15k | All | 2-6+ |  |  |  or  |  or  |
| 3k - 6k | All | 2-4 |  and  (Optional) |  and  (Optional) |  or  |  or  |
| 1k - 3k | 25 mph > | 4 |  or  and  |  or  and  |  or  |  or  |
| | | 2 |  or  and  |  or  and  |  and  |  and  |
| | 25 mph and below | 2 |  and  |  and  |  and  |  and  |
| <1k | 25mph > | 2 |  or  and  |  or  and  |  and  |  and  |
| | 25 mph | 2 |  and  |  and  |  and  |  and  |
| | 15 mph or less | 2 |  or  and  |  or  and  |  or  and  |  or  and  |
| Pedestrian Zone (Vehicles Prohibited) | | |  |  |  |  |
| Interstate | | |  |  |  |  |
| Landscaping and Amenities | | | Street Trees, Grass or Natural Landscaping, Occasional Benches, Pedestrian Scale Lighting along Regional Trails, at Intersections and at Trail Crossings. | Street Trees, Grass or Formal Landscaping, Pedestrian Scale Lighting, Occasional Benches. | Refer to <i>Special Planning Area Street Design Standards</i> and/or Guidelines. | Refer to <i>Special Planning Area Street Design Standards</i> and/or Guidelines. |



One- or Two-way
Cycletrack



Multi-use
Trail



Standard or
Buffered Bike
Lane



Neighborhood
Greenway



Pedestrian-
first Street



Sidewalk or
Pedestrian
Trail



Pedestrian
Zone

VDOT Speed Limits Map

This [map](#) provides information on speed limits that are posted on state-maintained roadways in Virginia. Speed limits exist for all roads; however, where this information is not available for mapping, they are not displayed. Most roads where speed limits are not shown are either rural, secondary roads (routes numbered 600 or greater) where a statutory 55 mph speed limit typically applies, or subdivision and residential local streets where a statutory 25 mph speed limit usually applies⁴. These statutory speed limits are often not posted on these roads.

Number of Travel Lanes

Reference the [Fairfax County Comprehensive Plan Transportation⁵ Plan Map](#) to determine planned number of travel lanes.

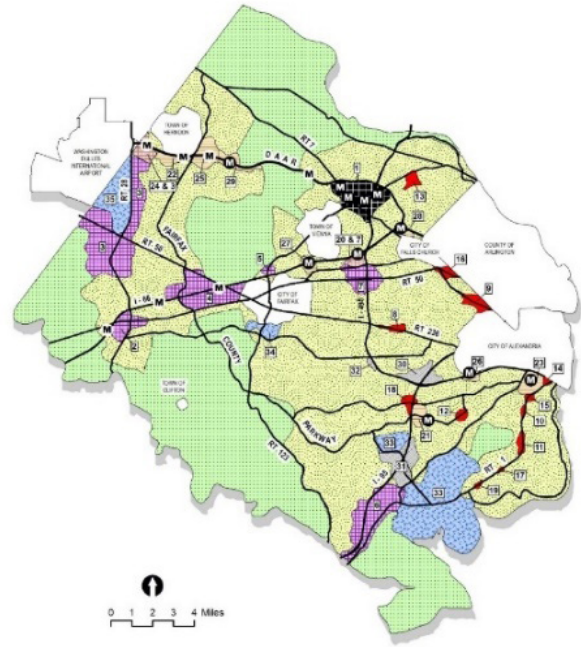
Where no change in travel lane is recommended in the Comprehensive Plan, existing number of travel lanes data should be used. This data is not publicly available but can be requested from VDOT. This information can also be found by visiting the location, on satellite imagery or on publicly available interactive panoramas of the road.



Photo credit: FCDOT

⁴ In the future, municipalities may be able to regulate speed limits to as low as 15 mph. House Bill No. 1071 <https://lis.virginia.gov/cgi-bin/legp604.exe?241+ful+HB1071H1>

⁵ https://www.fairfaxcounty.gov/transportation/sites/transportation/files/assets/documents/transportation_plan_map.pdf



Land Use in Fairfax County

Determining Land Use Context

The Concept for Future Development Map, as adopted by the Board of Supervisors on August 6, 1990 and amended in 2012, generally describes the types of land uses that are planned throughout the county and describes the desired future character for each area of the county in terms of eight broad categories:

- Urban Center
- Suburban Center
- Community Business Center
- Transit Station Area
- Industrial Area
- Large Institutional Land Area
- Suburban Neighborhood
- Low Density Residential Area



The Contextual Guidance for Selecting All Ages & Abilities Active Transportation Facilities and Supporting Amenities (Appendix A) groups the above land use categories into four land use tiers based on use and density:

- Tier 1: Urban Center, Transit Station Area
- Tier 2: Suburban Center, Community Business Center, Large Institutional Area
- Tier 3: Suburban Neighborhood, Industrial Area
- Tier 4: Low Density Residential Area

The basemap of the *Active Transportation and Trail Network Plan Map* reflects the above land use tiers for easy reference. Communities that wish to achieve a neighborhood aesthetic that differs from the approved land use category, may choose facilities from the desirable tier. For example, a neighborhood classified as Suburban Neighborhood land use (Tier 3) may prefer a rural aesthetic (Tier 4). More information on land use policies and regulations can be found at the [Fairfax County Department of Planning and Development](#).

Additional Considerations for Facility Selection

The guidance provided in the Contextual Guidance for Selecting All Ages & Abilities Active Transportation Facilities and Supporting Amenities (Appendix A) should be used as a starting point for the planning and design process. Additional context-sensitive factors that may need to be considered during the decision-making process include:

Community and User Needs

When selecting the preferred facility, identify pedestrian generators adjacent or near the facility that potentially attract the most vulnerable road users, such as schools, playgrounds, senior centers, multi-family residential buildings, bus stops, convenience stores or community resource centers. Also identify the regional function of the route and potential users, such as commuters. Engage identified vulnerable road users as stakeholders and in the selection process early on to ensure basic safety and comfort needs of facility users are met to the greatest extent possible.

Community and User Preferences

Where more than one active transportation facility of equal comfort is feasible and within budget, the wider community and user stakeholders should be included in the final decision-making process.



Photo credit: FCDOT

Side of Street Selection

Where a specific active transportation facility (e.g., a multi-use trail) is recommended on just one side of the street, the following criteria could be taken into consideration to determine which side of the street the facility should go on:

- Current level of accommodation of both bicycle and pedestrian users
- Location of existing facilities
- Regional and local connectivity and desire lines
- Available Right-of-Way
- Topography
- Location of utilities (overhead and underground)
- Sight distance limitations at intersections
- Location of on-street parking, demand for on-street parking (if applicable)
- Number of curb cuts/conflicts with turning vehicles
- Location of origins and destinations
- Location of uncontrolled left turns
- Location and type of signals
- Width of asphalt from centerline
- Feasibility to convert travel lanes or turn lanes
- Location of sensitive environments or cultural heritage
- Location of mature trees and landscaping
- Location of streams and flood zones
- Connectivity with trails through open space
- Location and type of signals
- Planned development and other changes in land use
- Community Preference
- User Preference

Determining Demand for Two-Way Bicycle Facilities

Where regional connectivity, trail connectivity, or nearby destinations result in demand for two-way bicycle traffic on one or both sides of the road, two-way bicycle or shared bicycle and pedestrian facilities should be provided, if possible, to improve the safety of counter-flow riding, improve user comfort and manage user and driver expectations.

Constrained Conditions

Limited right-of-way, environmental or cultural resource assets, or physical obstacles can result in constrained conditions that make it difficult to accommodate the facility type(s) specified in the Contextual Guidance for Selecting All Ages & Abilities Active Transportation Facilities and Supporting Amenities (Appendix A) and retain the existing roadway configuration. For example, it would likely not be feasible or desirable to incorporate active transportation facilities by widening a corridor that is narrower than current County standards and is lined with pre-existing development, private parcels, complex utilities, sensitive natural areas, or mature street trees.

In these and similar cases, the ultimate facilities may be accommodated through measures such as road diets, median removal or narrowing, using an alternative gutter design, modifying or removing a landscape buffer, or by acquiring an easement. If no feasible options to accommodate the active transportation facility specified in the Contextual Guidance for Selecting All Ages & Abilities Active Transportation Facilities and Supporting Amenities (Appendix A) are available, there may be options to modify the design of the active transportation facility itself, while keeping the goal to comfortably accommodate bicyclists and pedestrians of all ages and abilities, and network function of the facility, in mind. Reference the Guidance on Pedestrian Level of Comfort (Appendix B) and Guidance on Bicycle and Multi-Use Level of Comfort (Appendix C) of this document for determining the adequacy of existing or planned facilities and guidance on mitigation options in constrained conditions. Modifications should be considered using sound engineering judgment and should be reviewed and approved by the Fairfax County Department of Transportation Active Transportation Section staff.



Considerations for Facility Selection

Active transportation facility selection is primarily guided by the Comprehensive Plan recommendations. The decision tree shown on this page can be used in locations where no Comprehensive Plan recommendation is provided or to enhance the Comprehensive Plan recommendation as needed. The decision tree

on this page displays general considerations that should be taken into account when using the Contextual Guidance for Selecting All Ages & Abilities Active Transportation Facilities and Supporting Amenities (Appendix A). This decision tree also displays options to consider when conditions are too constrained to implement the optimal active transportation facility.

STREET

Consult Active Transportation and Trails Network Map Recommended Facility

For all other roads, consider:

- Vehicles Per Day (AADT)
 - Posted speeds
 - Land use
- Character
- Function

Can posted speeds be reduced?
Can vehicle volumes be reduced?

Facility Selection Toolkit Recommendations

Constraints

Facilities recommended in toolkit **not feasible**

Consider:

- Road diet
- Lane reduction
- Turn lane removal
- Speed limit reduction
- Median reduction or removal

Facilities recommended in toolkit **feasible**

Recommended facility still **not feasible**

No Constraints

Reference Facility Selection Toolkit

If more than one facility type fits the context, opt to implement the facility that provides the greatest separation and protection between vehicles and pedestrian or bicycle traffic

Consider:

- Narrowing facility to minimums
- Narrowing buffers*

**The consideration to narrow buffers may require justification in a design waiver on VDOT-maintained roads.*



Photo credit: FCDOT

Interim Improvements

There may be cases where budgets, scopes, timelines, or constrained conditions require interim or “quick build” active transportation facilities. This type of interim solution is best suited to reconfiguring road space within the existing curb and allows an active transportation facility to be built quickly and at a lower cost. It also has the added benefit of allowing for evaluation of the facility prior to reconstruction or permanent roadway reconfiguration.

VDOT notes the use of some traditional quick build materials such as flexible delineators in publications such as *VDOT Complete Streets: Bicycle and Pedestrian Facility Guidelines*, *Bus Stop Design and Parking Guidelines*. However, on VDOT roadways it is important to coordinate with VDOT, including for a permit, on quick-build designs and materials prior to implementation. In some instances, a maintenance agreement with VDOT may be required to clarify roles in the maintenance of quick build facilities.

Transitions

Providing safe and intuitive transitions between active transportation facilities is very important. This is especially the case for bicycle facilities since there are a wide range of potential facility types and users unfamiliar with the location may need to make quick decisions on preferable routing. For example, if a cycletrack ends, markings, visual cues such as a change in surface and/or signage should be added that advise the bicyclist how to proceed. For example, in constrained conditions an off-street cycletrack and adjacent sidewalk can merge into a shared facility

(trail) or a mixing zone (plaza) with signage alerting bicyclists to yield to pedestrians and/or a surface treatment that differs from the cycletrack and the sidewalk surface type and provides an intuitive visual cue to users to slow down and yield to other users. When the bicycle facility is located within VDOT right-of-way, a VDOT-approved detectable treatment should be installed to direct visually-impaired users to accessible routes.

If an active transportation facility segment is upgraded, added or relocated along a corridor with existing facilities, the new facility should provide safe, accessible and intuitive connectivity between the adjacent facilities, until those existing facilities can be upgraded to the ultimate design. Design elements can include tapering or meandering, warning signage.

If a new active transportation facility segment is added, every effort should be made to terminate the facility at a logical endpoint such as a driveway, intersection, perpendicular off-street trail or pedestrian destination such as a bus stop or rest area.

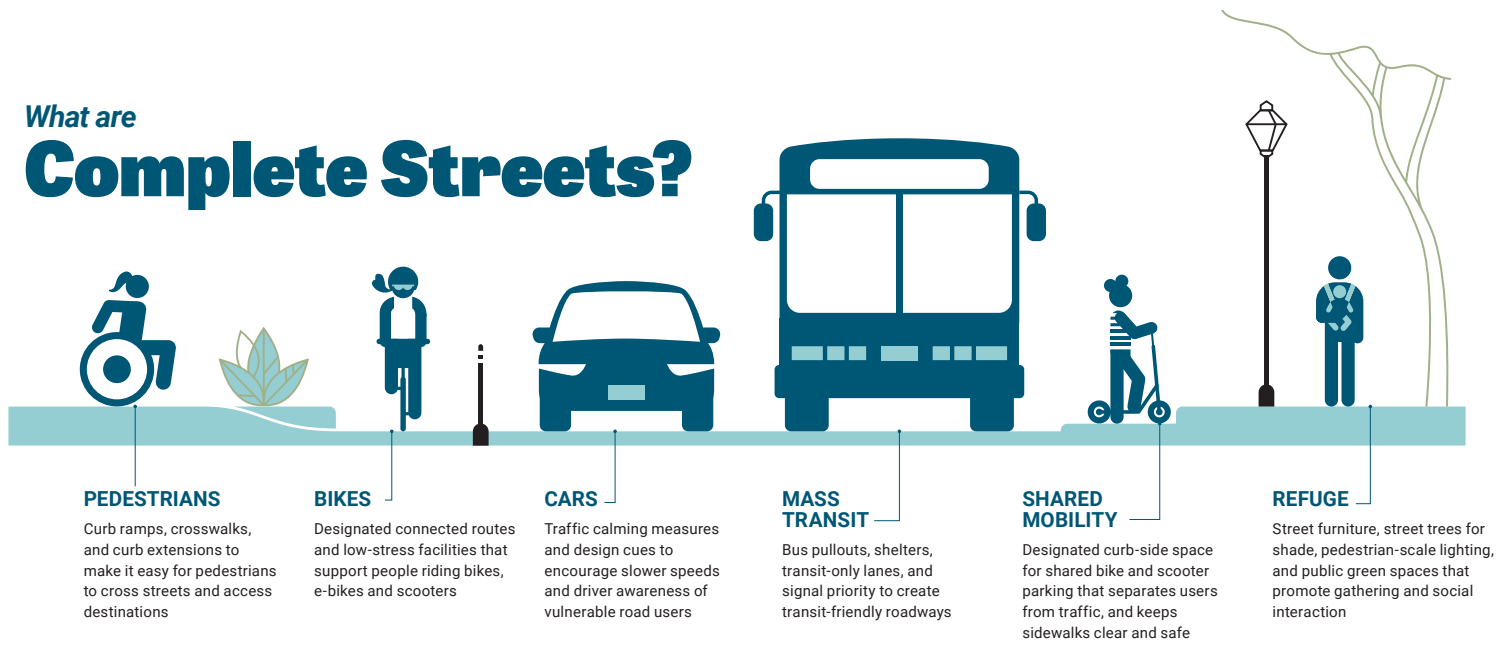
Effective transitions between active transportation facilities, and between an active transportation facility and a road increase the predictability of bicycle and other micromobility movements for other users, ensure accessibility and improve connectivity.



Photo credit: FCDOT



What are Complete Streets?



Complete Streets Considerations

Complete Streets balance the needs of all users and create places that are inviting, safe, and pleasant.

A true Complete Street contains infrastructure that meets the mobility needs of all users with amenities such as benches, bike parking, shade trees, lighting, public art, and wayfinding. See Chapter 5 for examples of streetscape amenities that can be incorporated into Complete Street projects. Non-standard Complete

Streets and placemaking design elements will likely require private or County maintenance and are subject to VDOT approval.

The graphic above describes the needs of the different modes. The design of each street will vary and respond to constraints, function and context.



Photo credit: FCDOT

Safety Considerations

The Safe System's Approach

FCDOT is prioritizing active transportation projects that improve pedestrian and bicyclists' safety by implementing proven safety countermeasures targeting three objectives of a Safe System Approach.

- **Safer People** - Encourage safe, responsible driving and behavior by people who use our roads and create conditions that prioritize their ability to reach their destination unharmed.
- **Safer Roads** - Design roadway environments to mitigate human mistakes and account for injury tolerances, to encourage safer behaviors, and to facilitate safe travel by the most vulnerable users.
- **Safer Speeds** - Promote safer speeds in all roadway environments through a combination of thoughtful, equitable, context-appropriate roadway design, appropriate speed-limit setting, targeted education, outreach campaigns, and enforcement.

The Safe System Approach has been embraced by the transportation community as an effective way to address and mitigate the risks inherent in our enormous and complex transportation system. It works by building and reinforcing multiple layers of protection to both prevent crashes from happening in the first place and minimize the harm caused to those involved when crashes do occur. It is a holistic and comprehensive approach that provides a guiding framework to make places safer for people.

Safety Countermeasures

There are a variety of road safety countermeasures that can enhance safety for all modes. FHWA's list of Proven Safety Countermeasures and the VDOT Pedestrian Safety Action Plan are two important sources for roadway improvements that are known to improve safety for all users, especially vulnerable road users such as bicyclists and pedestrians. Safety-enhancing active transportation countermeasures that both FHWA and VDOT recommend include:

- Lower speed limits
- On-street bicycle facilities
- Improved intersection/crosswalk lighting
- Leading pedestrian intervals
- Refuge islands
- Pedestrian Hybrid Beacons (PHBs)

- Rectangular Rapid Flashing Beacons (RRFBs)
- Road diets/lane reductions
- Sidewalks/Multi-use trail

For pedestrian crossings at unsignalized intersections, reference VDOT IIM-TE-384.1 to determine if a crossing meets VDOT criteria for a marked crosswalk, and which countermeasures can be used to increase safety.

In addition to these countermeasures that appear in both FHWA and VDOT recommendations, the VDOT Pedestrian Safety Action Plan Countermeasure Glossary (Appendix C) lists many other common safety countermeasures that could be strategically applied to improve safety on roads throughout Fairfax County.



Source: FHWA



Maintenance Considerations

All active transportation facilities should be kept free of debris, obstacles, and overgrowth. Maintaining and operating active transportation facilities to a high standard is critical to ensuring that they remain safe, comfortable, and accessible. A good maintenance and operational program protects funds invested in active transportation facilities so the infrastructure remains useful long after installation. Surface cracks, small rocks, branches, and other debris are tripping hazards for pedestrians, can deflect the wheel of a bicycle, or puncture bicycle tires. These conditions can result in falls and injuries. Active transportation facilities that are not kept free of obstructions or are overgrown can narrow the usable width of the facility causing conflicts and discourage use.

Considering maintenance and operational needs early in the planning and design processes helps prevent maintenance issues from becoming a barrier to implementing the most appropriate active transportation facility. However, **maintenance and operational responsibility should not drive facility selection decision making**. The table below provides an overview of active transportation facility maintenance considerations and responsibilities.

When considering maintenance needs, refer to national and state best practice guides, such as the FHWA's Guide for Maintaining Pedestrian Facilities for Enhanced Safety and VDOT's Maintenance Best Practices Guide.

Maintenance and Operations Resources

- [A Guide for Maintaining Pedestrian Facilities for Enhanced Safety - Safety I Federal Highway Administration \(dot.gov\)](#)
- [Ohio Department of Transportation \(ODOT\) Maintaining Pedestrian and Bicycling Facilities](#)
- [How Communities are Paying to Maintain Trails, Bike Lanes and Sidewalks](#)
- [Roadway and Bikeway Maintenance Practices - American Trails](#)
- [VDOT Maintenance Best Practices](#)

Maintenance responsibilities involving VDOT facilities are outlined in additional detail in Section 12 of the VDOT publication *Maintenance Best Practices*.

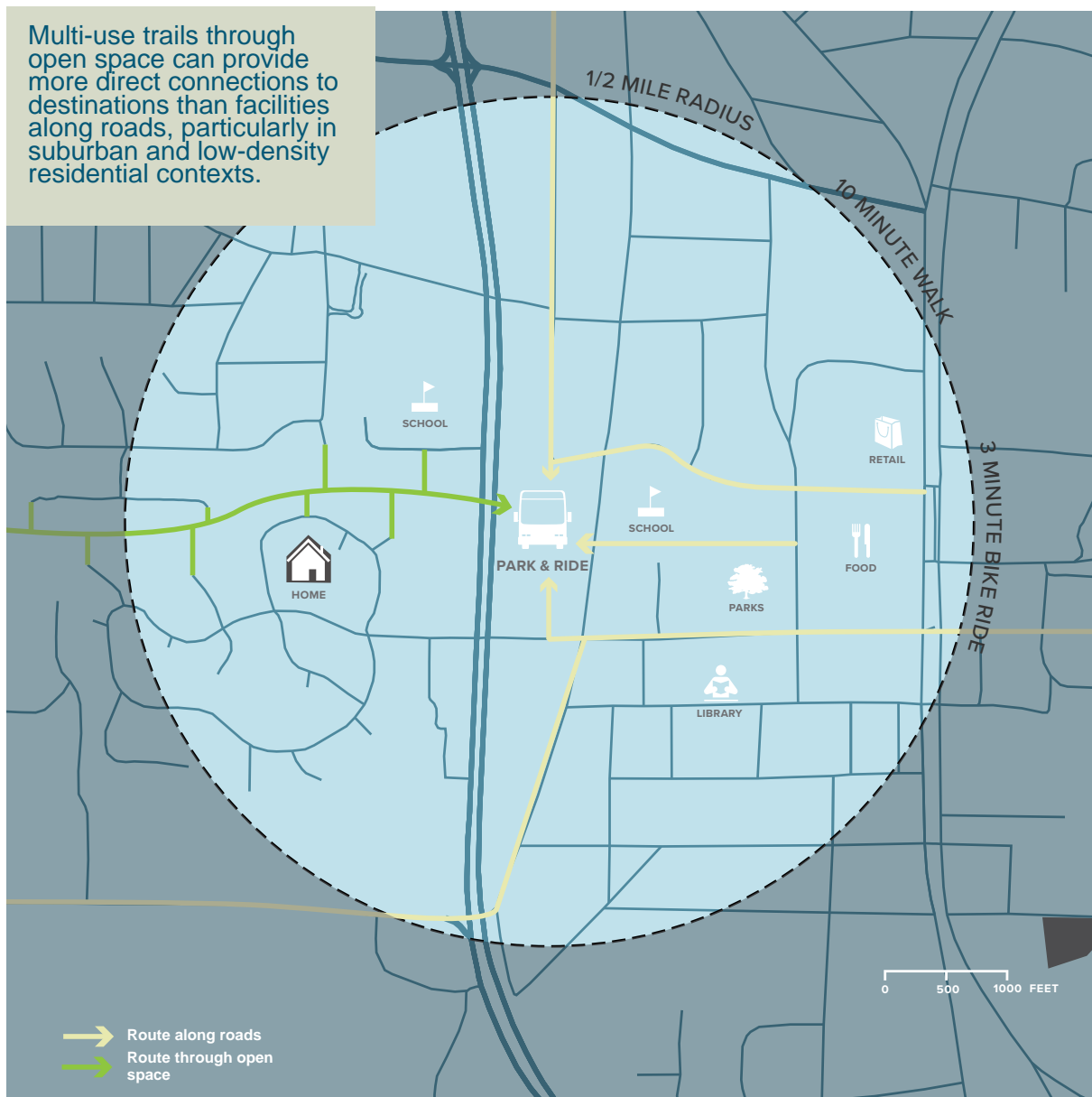
| GROUP | MAINTENANCE ROLES & RESPONSIBILITIES |
|---|---|
| VDOT | <p>Maintains and operates most roadways, and some active transportation facilities in Fairfax County. VDOT can maintain and operate active transportation facilities that are: within right-of-way, built to VDOT standard, and accepted into maintenance.</p> <p>Review development applications and transportation projects for maintenance considerations.</p> <p>Can issue land use permits/agreements for locality or private maintenance.</p> |
| Fairfax County | <p>Maintains some active transportation facilities in Fairfax County, primarily paved trails and enhanced sidewalks built to county standards or design guidance.</p> <p>Review development applications and transportation projects for maintenance considerations.</p> |
| Private Developers and Homeowner Associations | <p>Depending on maintenance agreements, may be responsible for maintaining publicly accessible roads and active transportation facilities within easements on their property. VDOT may also allow private maintenance agreements with property owners for sidewalks and shared use paths within the public right-of-way, generally supported if there is a significant length of frontage.</p> |
| Large Public Landowners (e.g., Fairfax County Park Authority, NOVA Parks, National Park Service, Department of Defense) | <p>Responsible for maintaining active transportation facilities and trails that are located on their property.</p> <p>May be responsible for maintaining active transportation facilities within easements.</p> |
| Homeowners | No maintenance responsibilities. |

Facilities through Open Space

Active transportation facilities through open space can provide more direct network connections between neighborhoods, and between neighborhoods and destinations, and trails of all types are popular community resources that encourage active recreation, connect people with nature, and promote appreciation for natural resources. Understanding potential use, user demand, site constraints, topography and location of sensitive resources helps guide decisions about facility feasibility, viability, type, width, design speed, alignment, and desirable amenities.

Due to the varying environmental and cultural characteristics and features, and operational considerations, of Park Authority owned parkland, development of any facility to be owned, maintained, or dedicated to the Park Authority is guided by Park Authority Board decision-making and established planning processes.

Multi-use trails through open space can provide more direct connections to destinations than facilities along roads, particularly in suburban and low-density residential contexts.



4

Designing Active Transportation Facilities for All Ages and Abilities

Introduction

In addition to the facility selection criteria outlined in the preceding chapter, there are numerous national, state and local design standards and guidelines that should be consulted when scoping, designing and implementing active transportation facilities along public and private roads in Fairfax County. The following sections provide an overview of available design manuals, policies and guides, but should not be considered a comprehensive list of resources.

FEDERAL STANDARDS AND POLICY DOCUMENTS

The American Association of State Highway Transportation Officials' (AASHTO) [Guide for the Planning, Design, and Operation of Pedestrian Facilities \(2021\)](#) identifies effective measures for accommodating pedestrians, vary among roadway and facility types.

The [Public Right-of-Way Accessibility Guidelines \(PROWAG\)](#) (2023) are accessibility guidelines for the design, construction, and alteration of pedestrian facilities in the public right-of-way.

The Federal Highway Administration's (FHWA's) [Separated Bike Lane Planning and Design Guide \(2015\)](#) is the latest national guidance on the planning and design of separated bike lane facilities. This resource documents U.S. best practices and offers ideas on future areas of research, evaluation, and design flexibility.

The FHWA [Manual on Uniform Traffic Control Devices for Streets and Highways \(MUTCD\) \(2023\)](#) specifies the legal standard for traffic signs and road surface markings. The MUTCD is a primary source for guidance on lane striping requirements, signal warrants, recommended signage, and pavement markings.

The FHWA [Safe Transportation for Every Pedestrian \(STEP\)](#) program provides resources and countermeasures to reduce pedestrian injuries and fatalities, such as the guide for improving pedestrian safety at uncontrolled crossing locations (2018).

The AASHTO [Guide for the Development of Bicycle Facilities \(2012\)](#) provides information on how to accommodate bicycle travel and operations in most riding environments.



ON-CORRIDOR FACILITY GUIDANCE

The National Association of City Transportation Officials' (NACTO) [Urban Bikeway Design Guide \(2012\)](#) provides cities with state-of-the-practice solutions that can help create complete streets that are safe and enjoyable for bicyclists.

The NACTO [Urban Street Stormwater Guide](#) provides cities with national best practices for sustainable stormwater management in the public right-of-way.

The NACTO [Urban Street Design Guide \(2013\)](#) is a collection of nationally recognized street design standards and provides best practice guidance for human-centered street design.

The NACTO [Don't Give Up at the Intersection Guide](#) (2019) provides detailed guidance on intersection design treatments that reduce vehicle-bike and vehicle-pedestrian conflicts.

The NACTO Designing for All Ages and Abilities guide (2017) is a facility selection guide for urban streets, with the goal of creating connection that are safe and comfortable to bike on, for all ages and abilities.





CONTEXT-SENSITIVE DESIGN GUIDANCE

The FHWA [Small Town and Rural Multimodal Networks](#) report is a resource and idea book intended to help small towns and rural communities support safe, accessible, comfortable, and active travel for people of all ages and abilities.

This [Advancing Trails to Support Multimodal Networks](#) brief by the Pedestrian and Bicycle Information Center provides a fresh look at the current state of practice for trail development, reflecting new research and showing the growing applications of trails in every type of environment and community.

The NACTO [City Limits Guide](#) gives practitioners a detailed, context-sensitive method to set safe speed limits on urban streets, using the safe systems approach.

[Trail Solutions](#), IMBA's Guide to Building Sweet Singletrack is one of the primary sustainable natural surface trail standards.

TRAILS THROUGH OPEN SPACE DESIGN GUIDANCE

This [Advancing Trails to Support Multimodal Networks](#) brief by the Pedestrian and Bicycle Information Center provides a fresh look at the current state of practice for trail development, reflecting new research and showing the growing applications of trails in every type of environment and community.

[Trail Solutions](#), IMBA's Guide to Building Sweet Singletrack is one of the primary sustainable natural surface trail standards.

STATE STANDARDS AND GUIDANCE

The Virginia Department of Rail and Public Transportation (DRPT) developed the [Multimodal System Design Guidelines](#) document in 2013 and updated it in 2020. This guide recommends facility types and designs for multi-modal facilities, including bicycle and pedestrian facilities

The [Virginia Supplement to the 2009 MUTCD](#) is a companion document to the FHWA MUTCD. This document clearly marks where Virginia standards deviate from FHWA standards.

[VDOT Road Diet Guidance Brochure](#) provides an overview of the benefits of road reconfigurations, as well as guidance on identifying potential road segments for restriping and preferred implementation process.

The [Virginia Department of Transportation Work Zone Pedestrian and Bicycle Guidance](#) presents recommendations and examples for work zone traffic control strategies for pedestrians and bicyclists.

The [VDOT Road Design Manual, Appendix A\(1\)](#) (updated at least annually) provides design concepts and criteria for state roadway reconstruction projects.

The VDOT [Traffic Operations Division Instructional and Informational Memoranda](#) provide guidance on a wide range of road and active transportation design issues, including crosswalk warrants and recommended treatments (IIM-TE-384).

[VDOT Bicycle and Pedestrian Treatments](#) portal provides an overview of active transportation enhancements with design guidance, resources and links to applicable VDOT standards.

LOCAL POLICY DOCUMENTS AND DESIGN STANDARDS

The Fairfax County [Public Facilities Manual](#) sets guidelines for the design of all public facilities constructed to serve new development.

The [Fairfax County Comprehensive Plan](#) is required by state law to be used as a guide to decision-making about the natural and built environment by decision-making bodies such as the county's Board of Supervisors, the Planning Commission, and the Board of Zoning Appeals. It is also a guide for county staff and the public to inform planning processes..

The [Fairfax County Zoning Ordinance](#) regulates land use in Fairfax County

The Fairfax County Urban Street Standards establishes multi-modal design standards for selected mixed-use activity centers

LOCAL TRAIL MANAGEMENT DOCUMENTS

The Fairfax County Urban Design Guidelines provide design and implementation guidance for streetscapes, parks and plazas, and architecture for some urbanizing areas of the County. They include standards for active transportation facilities.

Fairfax County Park Authority has developed a [Guide to Trail Management](#) that provides guidance on the planning, development, and management of trail facilities in Fairfax County.

FCPA Trail Standards (coming soon) provides additional guidelines for sustainable trail design, maintenance and construction standards.



Fairfax County Specific Scoping and Design Best Practices for Active Transportation Facilities Along Roads

Fairfax County design standards, guidelines, and recommendations are drawn from national, state, and local standards, and industry best practices. In some instances, standards will need to be adapted to better fit the local context, site constraints and community needs. Though design flexibility can be applied as needed and appropriate, all facilities within the public right-of-way must meet or exceed the minimums set by the Americans with Disabilities Act Accessible Design Guidelines (ADAAG) and the Public Right-of-Way Accessibility Guidelines (PROWAG). Also, all traffic control devices, signs, pavement markings in public right-of-way must conform to the federal Manual on Uniform Traffic Control Devices (MUTCD) and the Virginia Supplement to the MUTCD.

Facilities that do not meet state standards are usually maintained by Fairfax County or the applicable private property owner. The following cases are examples of conditions that diverge from state and federal guidelines:

- Special sidewalk or bike lane pavement materials not maintained by VDOT.
- Street trees and landscaping within the ROW.
- A boardwalk is used to minimize impact on environmentally sensitive areas.
- A narrower paved trail designed to County standards comfortably accommodates many types of users while maintaining the rural aesthetic of the area and limiting tree impacts.
- A paved multi-use trail narrows in spots to minimize impacts to cultural resources.
- A multi-use trail is enhanced with pavers and bicycle signage in an urban environment.

The development of all facilities that are to be owned and/or maintained by the Park Authority, or which are to be built on land owned and/or to be dedicated to the Park Authority, is guided by FCPA's Park Authority Board decision-making and established park planning processes.

Follow established decision-making, planning, and permitting processes for the development of any facility to be owned, maintained, or dedicated to the Fairfax County Government, NOVA Parks or the National Park Service (NPS).



Photo credit: FCDOT

Considerations for Concept Design

The Active Transportation and Trail Network Map should be used to determine desirable facility types as a starting point and can be adapted to fit the specific circumstances and community preferences. Additional design flexibility may be applied at time of implementation, subject to final engineering and FCDOT and VDOT approval.

Use the full width of available ROW when implementing planned active transportation facilities. If number of travel, turn and/or parking lanes cannot be further reduced, medians, travel lanes, and buffers should be reduced in width or eliminated before width of active transportation facility is reduced.

In Low Density Residential Areas or if a rural aesthetic is preferred, accommodations may differ on each side of the road to serve the greatest variety of users, needs and preferences. Which side a recommended facility should be located on depends on adjacent land uses, network function, existing infrastructure, and other site-specific factors.

In Urban Center and Transit Station Area land uses, a two-way bicycle facility should be considered where high demand for two-way bicycle traffic on one or both sides of the road is to be expected (i.e. where a multi-use trail passes through a commercial or mixed-use center, for linear park designs or where crossing the street is inconvenient or unsafe). If there are ROW or physical constraints, a Two-Way Cycletrack can be narrowed down to a 10+ft Urban Trail only if travel lanes/turn lanes/median cannot be reduced in width or eliminated. The buffer should be reduced only if minimum width Urban Trails on both sides of the road are not feasible.



Photo credit: FCDOT



Considerations for Plan Design

- Consider only offering parking on one side of the road, or alternating landscaping panels and on-street parking in constrained locations. Where two or more active transportation facilities intersect at grade or grade separated, ensure ADA and PROWAG compliant connections between the facilities are provided on both sides of the road. If a bicycle facility is present, the connections should be designed for bicycle use.
- For landscaping/amenity panel design details, reference the Comprehensive Plan and any applicable [Fairfax County Urban Design Guidelines](#) and state street tree policies and guidelines, and the VDOT Road Design Manual for applicable clear zone requirements. Avoid landscaping that will horizontally or vertically encroach on the active transportation facility or interfere with adequate lighting.
- Black is the preferred color for benches, lighting, hand railing and fencing unless otherwise specified in the Comprehensive Plan or [Fairfax County Urban Design Guidelines](#).
- Provide pedestrian scale lighting at marked and unmarked crosswalks, at bus stops, along regional multi-use trails, and on both sides of the street and along hard surface trails through open space within a quarter mile of a commercial area, school, community center, transit center, and public park with athletic facilities, and within a quarter mile of and within a designated Activity Center; and should be designed in line with federal and state guidelines and dark-sky best practices.
- Active Transportation overpasses, underpasses and tunnels should be lit. Consider adding public art to improve the comfort of facility users.
- Provided bicycle parking should be in line with the Fairfax County Bicycle Parking Guidelines.
- Choose ADA and PROWAG accommodations that do not create an impediment or hazard to other facility users, including pedestrians, pedestrians with strollers, or people traveling by bike (including cargo bicycles and bicycles with trailers), scooters or other micromobility device. For example, avoid sharp corners with vertical curb surfaces.
- Use an aesthetic treatment for retaining walls and soundwalls bordering active transportation facilities, or enhance a smooth concrete surface with public art.
- Management of Traffic (MOT): Adequate and convenient pedestrian and bicycle routes through work zones need to be provided. Detours that exceed federal recommendations (NCHRP Report 948) should be avoided. If no adequate detour can be provided, pedestrians and bicyclists need to be accommodated on site.
- Identify maintenance responsibilities prior to plan implementation.
- At submittal, reference standard VDOT facility types on design plans where feasible, for example refer to a 10ft paved multi-use trail as a Shared Use Path.

Reference additional scoping and design best practices for sidewalks on page 48, for bike facilities on page 52, for shared active transportation facilities on page 65, for intersections and crossings on page 74, and for supporting infrastructure on page 87.

LOS Equation

Shared-Use Path Level of Service Score = 5.45 - 0.00809(E) - 15.9(RW) - 0.287(CL) - (DPF)
where:

E = Events = Meetings per minute + 10(Active passes per minute)

RW = Reciprocal of path width (i.e., 1/path width, in feet)

CL = 1 if trail has a centerline, 0 if trail has no centerline

DPF = Delayed pass factor

LOS Scale

| Score | Grade | Score | Grade |
|--------------------|-------|--------------------|-------|
| $X \geq 4.0$ | A | $2.5 \leq X < 3.0$ | D |
| $3.5 \leq X < 4.0$ | B | $2.0 \leq X < 2.5$ | E |
| $3.0 \leq X < 3.5$ | C | $X < 2.0$ | F |

For a complete explanation of the derivation of the equation and scale, see the *Evaluation of Safety, Design and Operation of Shared-Use Paths: Final Report (Final Report)*.⁽²⁾

SUPLOS Equation

Helpful Tool to Determining Appropriate Facility Width

The Level of Service (LOS) of a planned multi-use trail can be determined by using the [Federal Highway Administration's Shared-Use Path Level of Service \(SUPLOS\) Calculator](#), which analyzes the relationship between path width and user demand. The tool enables planners and designers to understand the current level of service of a trail and its ability to accommodate future users if demand were to increase. Desirable trail widths are determined by several quantitative and qualitative factors listed below, which should always be considered alongside professional judgment.

- **Available space:** Physical or right-of-way constraints can make optimal widths difficult to achieve.
- **Known user conflicts:** Conflicts between different pathway users traveling at varying speeds is an indication that the pathway is too narrow or does not provide enough separation between user types.
- **Context:** Multi-use trails in urban contexts attract more people and a wider variety of user types, requiring wider facilities.
- **User types:** Pedestrians, joggers, bicyclists, equestrians, people on skateboards, and people on other devices such as e-scooters all differ in travel behavior and speed. A wider variety of user types requires wider facilities.

- **“Destination” trails:** Some multi-use trails that are local or regional destinations (such as the W&OD Railroad Trail or Mount Vernon Trail) may need to be wider than the FHWA SUPLOS Calculator recommends providing a more comfortable user experience.

Resources

- [AASHTO Guide for the Development of Bicycle Facilities](#)
- [ADA Guidelines for Outdoor Development Facilities](#)
- [VDOT Road Design Manual](#)
- [Federal Highway Administration \(FHWA\) Guidelines](#)
- NOVA Park Trail Design Guidelines
- FCPA Trail Standards (Coming Soon)
- [Fairfax County Urban Design Guidelines](#)
- [Fairfax County Special Planning Areas](#)
- [Fairfax County Urban Street Standards](#)



Protecting Fairfax County's Environmental and Historic Resources

Due to varying environmental, cultural, and operational considerations, all active transportation facilities and trails must be designed, implemented, and maintained in a way that avoids or mitigates negative impacts on ecological systems and cultural resources. The following best management practices are recommended to address environmental, cultural, and historic considerations:

- Sustainability of natural systems should be prioritized in design and construction of trails through open space.
- Ecologically sensitive areas should be preserved or protected whenever possible including:
 - » Wetlands, lakes, rivers, and streams
 - » Rare and endangered species habitat
 - » Public water supplies
 - » Sensitive forest areas
 - » Steep slopes and soils that are identified as restricted for trail or road development
 - » Unique or important geologic features or formations
- Focus trail development in or near areas already influenced by human activity, including existing infrastructure rights-of-way and developed areas.
- Design should avoid or minimize erosion associated both with trail treads and stormwater runoff.
- Provide buffers to protect natural systems and adjacent sensitive areas. Buffer widths will vary in response to several conditions, including:
 - » Sensitivity of the ecological systems being impacted.
 - » Extent of the natural open space or greenway corridor being traversed.
 - » Type of trail being proposed and its potential for creating ecological impacts.
 - » Grade and soil types.
 - » Desired trail experience.
 - » Recommended buffer widths may range from 50-200 feet depending on conditions and associated regulatory requirements. When planning and designing trails in natural and cultural resource areas, consult with the state's Natural Heritage Program, the State Historic Preservation.
- Use natural infiltration and best management practices for stormwater to prevent standing



Photo credit: FCDOT

water on the trail. The use of natural, dispersed infiltration systems such as vegetated swales and bioswales will bring ecological and hydrologic advantages over engineered stormwater control structures such as storm drains and catch basins.

- Responsible planning and management of trails is an ongoing responsibility/activity.
- Any project on or adjacent to parkland requires review by the Park Authority and projects located anywhere in the County require review by FCPA's Resource Management Division Archeology and Collections Branch.

For guidance on the review process and the requirements for facilities to be owned, maintained, or dedicated to the Park Authority, reference the FCPA Trail Standards (coming soon).

Resources

- FCPA Trail Standards (Coming Soon)
- [VDOT Community Trail Development Guide](#)
- [FHWA Evaluation of Safety, Design, and Operation of Shared-Use Paths](#)
- [FHWA Rails with Trails Best Practices and Lessons Learned](#)
- [FHWA Case Studies in Realizing Co-Benefits of Multimodal Roadway Design and Gray and Green Infrastructure](#)
- [NACTO Urban Street Stormwater Guide](#)
- [Guidelines for Conducting a Historic Resources Survey in Virginia](#)

5

Active Transportation Facility Types Along Roads

Introduction

All streets in Fairfax County should safely and comfortably accommodate people walking and biking. There is no one-size-fits all active transportation facility that would achieve this vision. This chapter is introducing the full range of active transportation facilities and accommodations available in Fairfax County, from pleasant neighborhood greenways to state-of-the-art cycletracks.

Low-Stress Shared Streets

Low stress shared streets are very low-speed, low-volume roadways that may be comfortable to use by most active transportation users. These types of roads are usually residential streets with no pavement markings and a 25 mph or lower speed limit. Some of these local streets may be connected to similar streets in another neighborhood or regional trails through open space via a hard-surface multi-use trail – providing additional connectivity and alternative routes for active transportation users. Wayfinding or safety signage is often the only needed enhancement, which is a plus in constrained conditions.

Enhanced Low-Stress Shared Streets

Enhanced Low-Stress Shared Streets, also known as Slow Streets, are low-speed, low-volume streets that are strategically and visibly enhanced for active transportation use.

Enhanced Low-Stress Shared Streets. Depicts added design features including safety signage, textured pavements, street furniture, and on-street parking for a chicane effect.
Image Source from [NACTO Urban Street Design Guide](#).



Image source: Bikemore

Neighborhood Greenway

Neighborhood Greenways, also known as Bicycle Boulevards, are the only type of Enhanced Low-Stress Shared Street that provides sidewalks for pedestrian use. Key elements include branded signage, bicycle warning and/or wayfinding signage, traffic calming and diversion features to maintain low vehicle volumes and speeds, enhanced streetscaping, and enhanced major street crossings for bicyclists. Neighborhood Greenway AADT should be monitored to ensure it remains under 3k and various traffic-calming and traffic-diversion measures should be implemented to maintain volumes under the 3k threshold.



Neighborhood Greenway, seen in Seattle, WA. Note the signage and pedestrian sidewalks bordering the road.
Image Source: [NACTO Bicycle Boulevard Signs and Pavements Markings](#).

Pedestrian First Streets

Pedestrian First Streets, also known as Play Streets or Woonerfs, are streets that double function as public space by design. These streets have negligible traffic volumes and very low travel speeds, traffic calming elements, no pedestrian facilities, no street markings, often no continuous curbs, and typically limited vehicular connectivity (cul-de-sacs). This facility design includes branded signage and gateway design, as well as placemaking elements within the roadway such as landscaped areas or planters often arranged to create a chicane layout, street furniture and public art. The street design encourages and accommodates recreational public uses such as play, leisure, and public gathering in addition to travel. Note that this facility type is currently primarily applicable outside of VDOT right-of-way, though a temporary pilot project in right-of-way is currently in the works.



Wall Street in Asheville NC, displays a Woonerf in action. Flushed curbs, with no raised sidewalks, increases walkability. The added bollards ensure safety is not lost in this curb transition. Photo: Alyson West, PBIC Image Library.

Green Alley

Green alleyways use materials to create a more inviting and comfortable space either for all modes of travel or active transportation use only, rather than prioritizing vehicle travel. They may include green infrastructure elements and utilize sustainable materials. Note that this facility type is currently only applicable outside of VDOT right-of-way.



Model depiction of a Green Alley. Image Source: [NACTO Urban Street Design Guide](#)

Resources

- [National Association of City Transportation Officials \(NACTO\)](#)
- [Fairfax County Public Facilities Manual \(PFM\)](#)
- [Virginia Department of Transportation \(VDOT\) Complete Streets Guide](#)
- [Federal Highway Administration \(FHWA\) Guidelines](#)
- [Virginia Department of Rail and Public Transportation \(DRPT\) Multimodal Design Guidelines](#)
- [Fairfax County Urban Design Guidelines](#)
- [Fairfax County Special Planning Areas](#)



Pedestrian Facilities

Sidewalks

Sidewalks are the most fundamental element of the walking network, as they provide an area for safe pedestrian travel separated from vehicle traffic. Providing adequate and accessible facilities – and enhancing these facilities with pedestrian amenities such as street trees and landscaping, pedestrian-scale lighting and benches - can lead to increased numbers of people walking, improved accessibility, and the creation of social space.

Sidewalks are typically constructed out of concrete and are separated from the roadway by a curb and gutter and grass buffer, or a drainage ditch. In activity centers or where desired by the community, sidewalks can be enhanced with aesthetic pavers or colored or patterned concrete, and a hardscaped or formal landscaped buffer. All sidewalk surfaces must be firm, stable and slip resistant. Refer to the applicable Urban Design Guidelines or Streetscape Standards for specific sidewalk and amenity panel design requirements or recommendations. In low density areas with a rural aesthetic, 6' asphalt walkways may be aesthetically more appropriate instead of a standard suburban concrete sidewalk. All sidewalks

must be accessible and should be properly maintained to ensure usability and safety. Note that VDOT maintains most concrete sidewalks that meet state standards, are in VDOT right of way, and are accepted by VDOT maintenance.

Key Design Principles

- See Fairfax County Specific Scoping and Design Best Practices for Active Transportation Facilities Along Roads in Chapter 4.
- Sidewalks should be at least 6ft wide.
- The surface of sidewalks should be smooth. Acceptable surface materials include concrete, ADA and PROWAG compliant pavers, or asphalt. Saw-cutting concrete is preferred to improve user experience for children in strollers, wheelchair users and people traveling on micromobility vehicles.



Photo credit: FCDOT

Standard Sidewalk

A standard sidewalk serves pedestrian mobility and physical activity needs in suburban areas.

LAND USE CONTEXT

Suburban residential

TRAVEL LANE EXAMPLES

All Ages and Abilities bike facilities; pedestrian, landscaping or amenity bump outs; bikeshare station; on-street parking

LANDSCAPED BUFFER EXAMPLES

Landscaping; street trees; pedestrian scale lighting; street lighting; benches; enhanced bus stops; trash cans; bike racks; wayfinding signage

SIDEWALK

Minimum width of 6 feet; saw cut concrete preferred; aesthetic treatments optional

BUILDING FRONTAGE ZONE EXAMPLES

Landscaping; trees; benches; trash cans; water fountains; play spaces



Standard sidewalk in a residential area.

TYPICAL SECTION

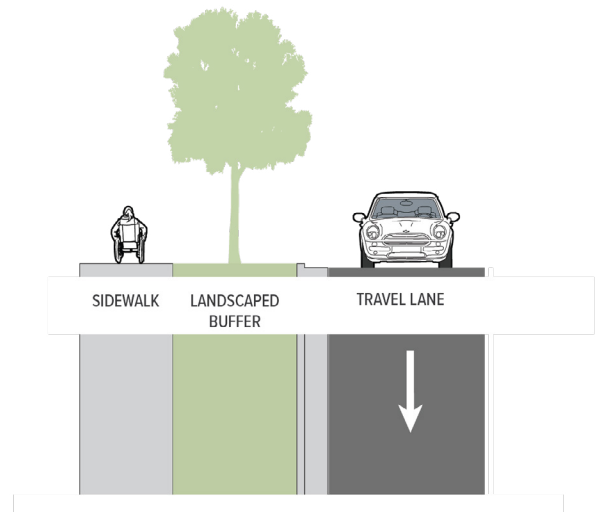


Photo credit: FCDOT

Enhanced Sidewalks

Enhanced sidewalks are comfortable and enticing walking environments that accommodate large numbers of pedestrians.

APPLICATION AREA

Mixed use or commercial

ENHANCEMENT ZONE

All Ages and Abilities bike facilities or accommodations; pedestrian, landscaping or amenity bump outs; on-street parking; bikeshare station; parklets and/or streetaries (where permitted)

AMENITY ZONE

Landscaping; street trees; pedestrian scale lighting; street lighting; benches; enhanced bus stops; trash cans; bike racks; wayfinding signage

PRIMARY PEDESTRIAN ZONE

Exceed minimum width of 6 feet; saw cut concrete preferred; aesthetic treatments optional

BUILDING FRONTAGE ZONE

Landscaping; trees; retail seating; benches; trash cans; water fountains; public art; plazas; play spaces



Enhanced Sidewalk model. Note the vegetation, added public spaces and benches, bike facilities, and private outdoor space. Image Source: [NACTO Urban Street Design Guide](#)

TYPICAL SECTION

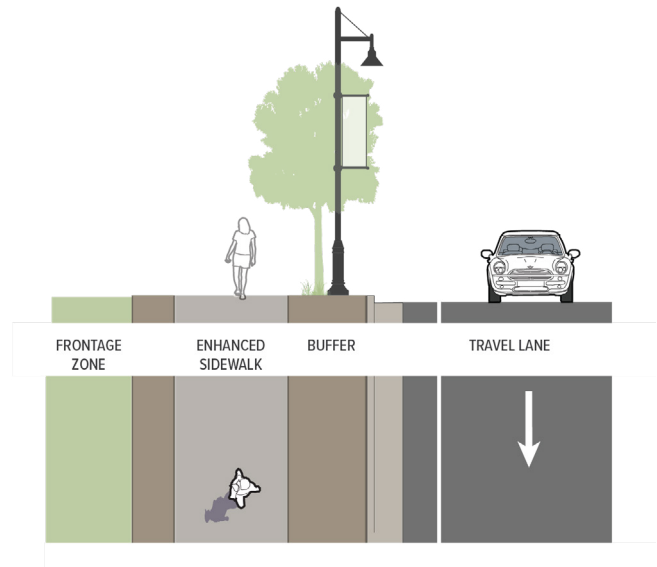


Photo credit: FCDOT

Pedestrian Trail

An asphalt pedestrian trail along a road primarily serves pedestrian mobility and physical activity needs with a rural or park-like aesthetic.

APPLICATION AREA

Low-density residential or open space

ENHANCEMENT ZONE EXAMPLES

All Ages and Abilities bike facilities; pedestrian, landscaping or amenity bump outs; on-street parking

AMENITY ZONE EXAMPLES

Landscaping; street trees; pedestrian scale lighting; street lighting; benches; bus stops; trash cans; wayfinding signage

PRIMARY PEDESTRIAN ZONE EXAMPLES

Minimum width of 6 feet; asphalt preferred

BUILDING FRONTAGE ZONE EXAMPLES

Landscaping; trees; benches; trash cans; water fountains; play spaces

Pedestrian Zones

Pedestrian Zones are streets that are permanently closed to vehicular traffic. Some pedestrian zones allow delivery trucks to enter the space at certain times of the day. These pedestrian-only streets are typically lined with restaurants, retail, and other commercial activity, and often feature interactive public art, water features, outdoor dining and programming to activate the space. When placed, designed, and maintained well, Pedestrian Zones can become a destination for shopping, dining and strolling.



Church Street in Burlington VT

TYPICAL SECTION

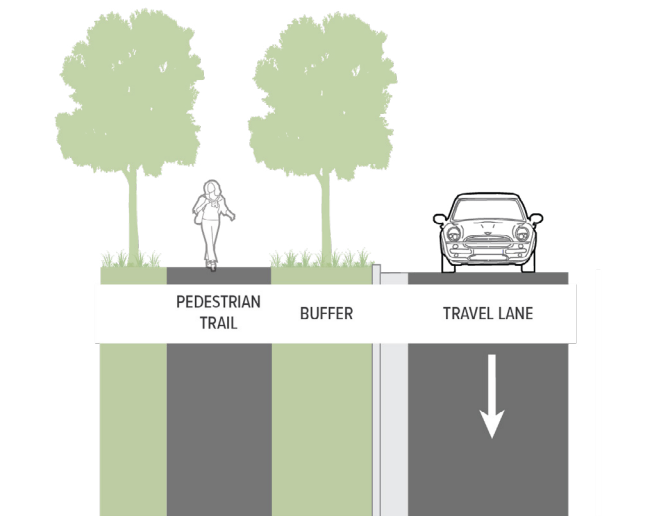


Photo credit: FCDOT

Resources

- [National Association of City Transportation Officials \(NACTO\)](#)
- [AASHTO Guide for planning, design, and operation of pedestrian facilities](#)
- [Fairfax County Public Facilities Manual \(PFM\)](#)
- [Virginia Department of Transportation \(VDOT\) Complete Streets Guide](#)
- [Federal Highway Administration \(FHWA\) Guidelines](#)
- [Fairfax County Urban Design Guidelines](#)
- [Fairfax County Special Planning Areas](#)



Bicycle Facilities

Bicycle facilities are designated spaces typically along a roadway that are specifically designed for the movement of bicycles, scooters and other micromobility devices. Providing context sensitive and well-designed facilities is fundamental to accommodating users of all ages, abilities, and confidence levels. Bike lanes enable bicyclists to ride at their preferred speed without interference from prevailing traffic conditions. Bike lanes also facilitate predictable behavior and movements between bicyclists and motorists. Bicyclists may leave the bike lane to pass other bicyclists, make left turns, avoid obstacles or debris, and avoid other conflicts with other users of the street. Keeping bike lanes free of debris is key to maintaining usability.

Note: Though striped on-road bicycle facilities are only comfortable for most users on low speed and low volume roads, these types of facilities can be added on all other roads where sufficient width is available (through a lane diet or a road diet) during pavement maintenance activities. Though only comfortable for experienced bicyclists, these interim facilities improve road safety for all road users by narrowing wide travel lanes (which can reduce speeding), minimizing the size of conflict areas for pedestrian crossings, providing additional buffer space for pedestrian facilities, and improving sight distance for turning traffic at intersections and driveways. Public and private construction projects, however, should provide bicycle facilities that serve users of all ages and abilities, in coordination with FCDOT's Active Transportation Section staff.



Richmond CA

Key Design Principles

- See Fairfax County Specific Scoping and Design Best Practices for Active Transportation Facilities Along Roads in Chapter 4.
- On-street bike lanes next to on-street parking should be 5ft wide with a 3ft buffer. In constrained conditions a 6ft bike lane next to on-street parking is acceptable. Consider an off-street bicycle facility where high vehicle turnover (i.e., commercial or time restricted parking) is expected. Bike facility dimensions do not include curb and gutter.
- Green markings should be considered at locations with significant conflict between bike lane users and vehicles.
- Buffers should be added between the bike lane and the travel lane where space allows.
- The surface of cycletracks should generally be asphalt or similarly smooth surface. Asphalt pavers or saw-cut concrete may be used in certain contexts with FCDOT approval. Line cycletracks with flush 6' concrete curbs if the facility is not embedded in hardscaping.
- One-way cycletracks should be 6.5ft wide to allow for safe passing.
- Utility covers should not be located on a cycletrack facility.
- At transit stops, consider aligning the cycletrack behind the transit waiting area if space allows.
- Amenity panels should ideally be placed between the sidewalk and cycletracks.
- Ensure that the amenities placed between a cycletrack and the curb are ADA accessible from the sidewalk.
- Existing bike lanes should not be converted to an on-street parking lane, but the space can be used to provide a safer and more comfortable separated bicycle facility such as a multi-use trail or cycletrack.
- Where VDOT warrants are met, BIKES ALLOWED TO USE FULL LANE signs should be considered as an interim treatment on low-speed roads with marked centerlines that are too narrow for cyclists and vehicles to safely share the lane side-by-side.
- Wayfinding guidance should be included along key routes of the dedicated bikeway network.

Bike Lanes without Vertical Barrier

The most basic dedicated bicycle facilities are bike lanes that delineate exclusive space for use by bicyclists through pavement markings within the roadway and signage. The bike lane is located directly adjacent to motor vehicle travel lanes and is applied in the same direction as motor vehicle traffic. On-street bike lanes are supplemented with a bike symbol and directional arrow (optional, usually applied when frequent wrong-way riding is observed), as well as bike lane signage. No vertical separation between the bike lane and travel lane is provided.

Standard Bike Lanes

USER EXPERIENCE

Provides a dedicated space for bicyclists, however the lack of physical protection means that this facility may not be comfortable for many “interested but concerned” bicyclists on busier roads.

ROADWAY CHARACTERISTICS

Low speed and low volume preferred; no more than 2-4 travel lanes

APPLICATION AREA

Appropriate for all land use categories with matching roadway characteristics.

OTHER CONSIDERATIONS

Minimum bike lane width is 5 feet, with desired widths varying depending on factors such as on-street parking. Wherever possible, should be paired with a buffer (see Buffered Bike Lane) and an Urban Trail to provide mobility options for all user types.

TYPICAL SECTION

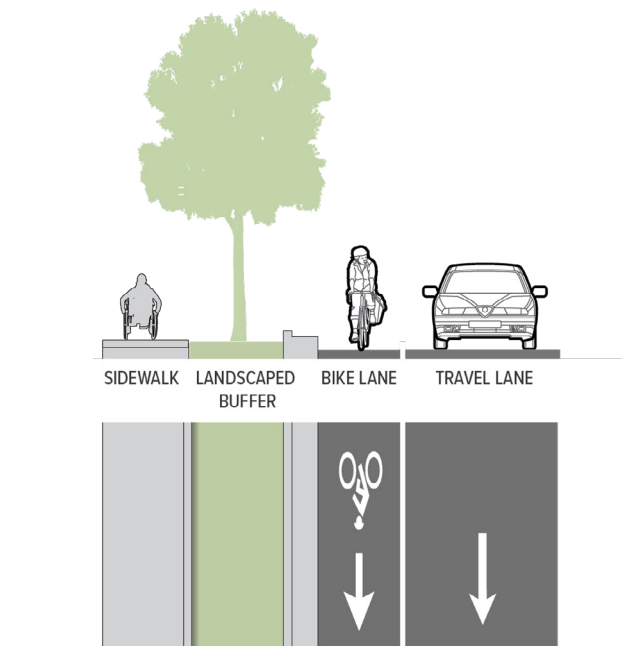


Photo credit: FCDOT

Buffered Bike Lanes

Buffered bike lanes provide a buffer zone between the bike lane and travel lane and/or an adjacent parking lane.

USER EXPERIENCE

Adds an additional buffer from vehicle traffic or parked vehicles. This may increase comfort for some bicyclists but still does not provide any vertical protection that generally appeals to less confident bicyclists.

ROADWAY CHARACTERISTICS

Low to medium speed and volumes; 2-4 travel lanes

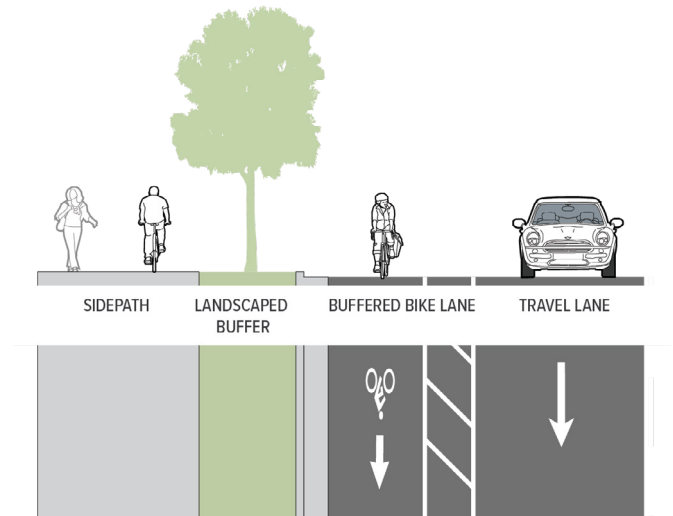
APPLICATION AREA

Appropriate for all land use categories with matching roadway characteristics.

OTHER CONSIDERATIONS

Buffer should be a minimum of 3 feet. In some cases, the buffer (or an additional buffer) can be placed alongside on-street parking for door zone protection.

TYPICAL SECTION



Aerial View of a Buffered Bike Lane. Image Source: [NACTO Bikeway Design Guide](#)



Photo credit: FCDOT

Painted Bike Lanes

Green paint can be applied to bike lanes to visually narrow the road, make bike lanes more visible to drivers and more inviting to users, discourage illegal parking in bike lanes, or to key sections of bike lanes to mark conflict areas with vehicles to increase bicyclist visibility and emphasize bicyclist priority.

USER EXPERIENCE

May improve comfort for some bicyclists due to improved facility visibility, especially at conflict points.

WHEN TO APPLY

May be considered in any circumstances that apply to a Standard Bike Lane or Buffered Bike Lane. Can be particularly helpful in areas with high vehicle turning movements and to delineate bicycle paths across busy intersections.

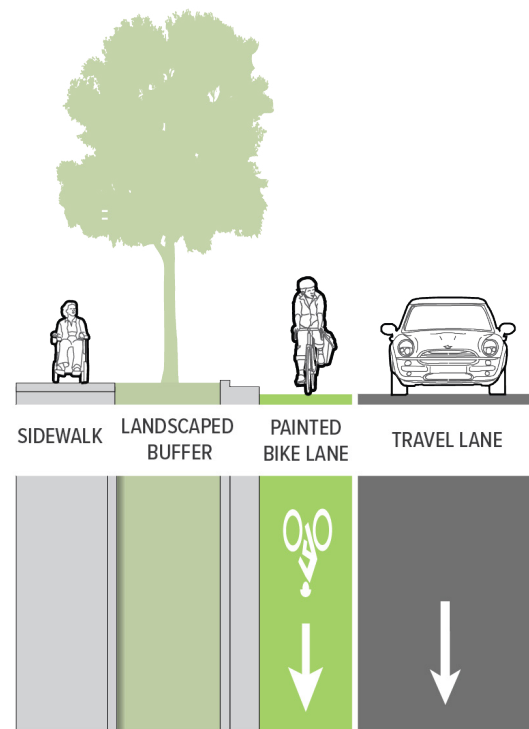
APPLICATION AREA

Appropriate for all land use categories with matching roadway characteristics.

OTHER CONSIDERATIONS

This treatment can be applied to an entire bicycle facility or strategically at specific points along a bicycle facility, subject to VDOT approval.

TYPICAL SECTION



Green Painted Bike Lanes increase cyclist visibility. Image Source: [NACTO Bikeway Design Guide](#)



Painted cycletrack at intersection

Advisory Bike Lanes

Advisory bike lanes can provide bike lanes on a road that is either too narrow to accommodate bike lanes in both directions and/or experiences low traffic volumes. This facility maximizes limited roadway space by allowing vehicles to encroach on the advisory bike lane when passing oncoming traffic, while yielding to bike lane users. The functionality of this design mimics unmarked roads.

USER EXPERIENCE

When implemented on low-volume streets, the user experience is similar to standard bike lanes. However, this facility does not provide vertical protection and the ability of vehicle traffic to encroach on the advisory bike lane may be uncomfortable for some users.

ROADWAY CHARACTERISTICS

Low speed and very low volume; no more than 2 travel lanes

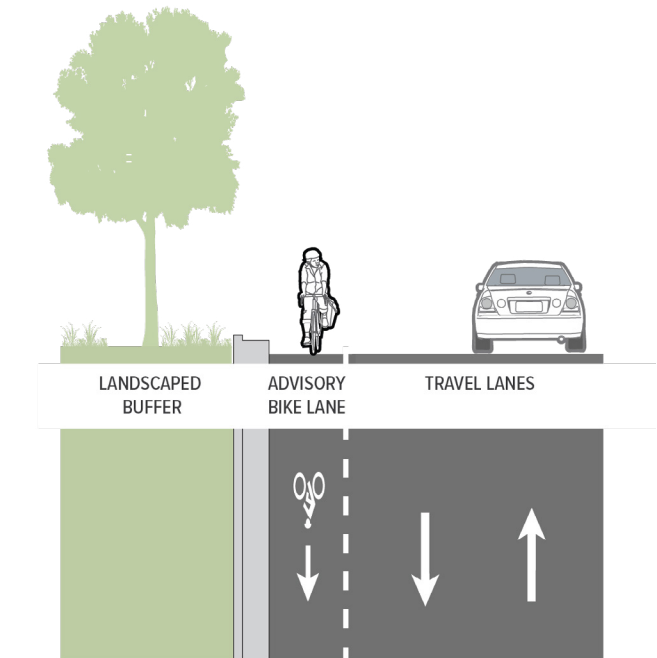
APPLICATION AREA

Appropriate for all land use categories with matching roadway characteristics.

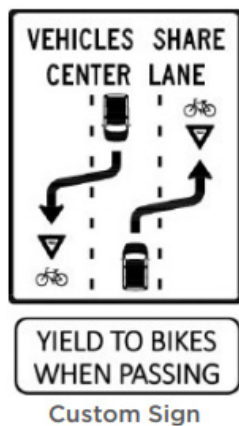
OTHER CONSIDERATIONS

May be considered as an interim facility before implementing dedicated bicycle facilities and/or paved multi-use trails. This design is non-standard and will need to be approved by VDOT when implemented in right-of-way.

TYPICAL SECTION



SIGNS

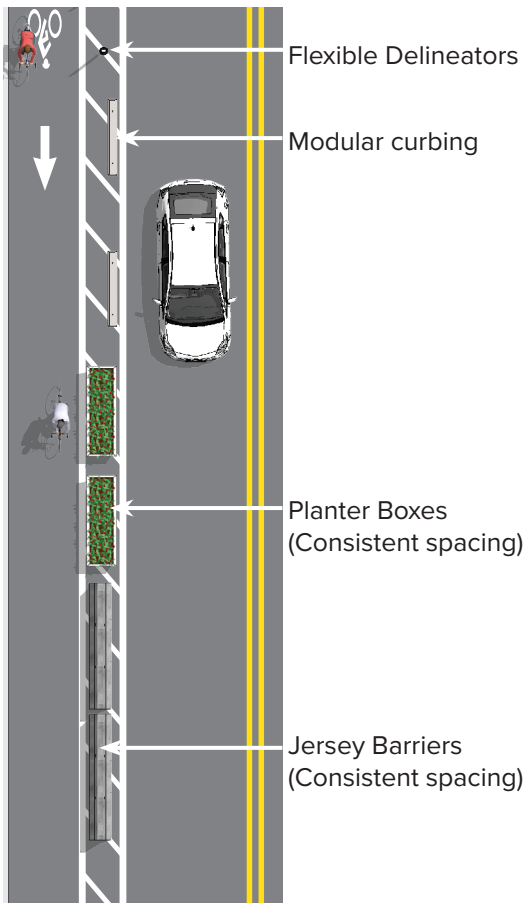


Advisory bike lanes in Alexandria, VA
Photo Credit: WashCycle

Bikes Lanes with Vertical Barrier

Bicycle facilities that are separated from vehicular traffic by a vertical barrier are called cycletracks. Cycletracks are highly attractive to a wide range of bicyclists, as these facilities provide separation from both motorized traffic and from pedestrians. Separation of pedestrians and bicyclists is especially desirable in mixed-use and denser areas, where increased user volumes are expected. Cycletracks can be designed to accommodate one-way bicycle movements on each side of the road (similar to on-street bike lanes) or can be configured to support two-way bicycle traffic (similar to multi-use trails). Cycletracks can be located at the street level, intermediate level, or sidewalk level. Cycletracks usually have two buffers – one between the sidewalk and the cycletrack, and one between the cycletrack and motorized traffic.

Barrier Separation

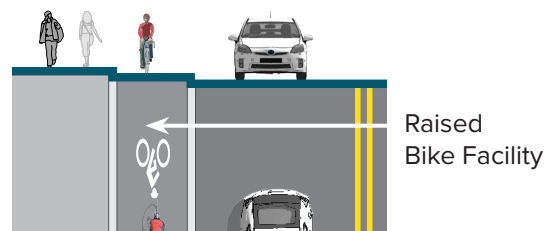


Barrier treatments are subject to VDOT approval

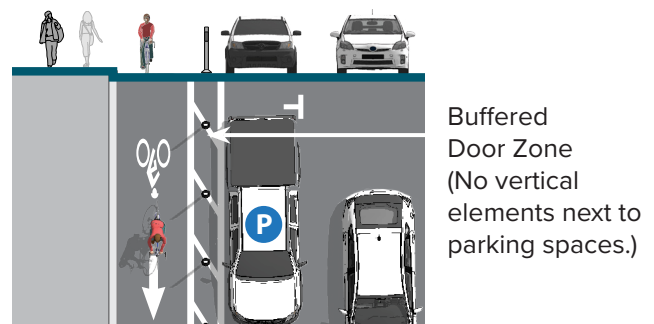
Median Separation



Elevation Separation



Parking Separation



On-Street One-Way Cycletracks

On-street one-way cycletracks are bikeway facilities that are located in the roadway but separated from vehicle traffic using concrete curbing, flexible posts, jersey barriers, or on-street parking.

USER EXPERIENCE

This facility offers protection from vehicle traffic through vertical elements and is generally a comfortable facility for most bicyclists.

ROADWAY CHARACTERISTICS

May be implemented on roadways with any volume and speed, and in conjunction with 2-6 travel lanes. Deflective vertical barriers are strongly encouraged on roads with speed limits of 40 miles and higher.

APPLICATION AREA

Mixed-use or medium to high density

OTHER CONSIDERATIONS

One-way cycletracks should be at least 6 feet wide—including a 3-foot buffer—to allow bicyclists to pass each other safely. Bus stops should be made accessible by providing a sidewalk grade platform with bike ramps on both sides, and an accessible connection between the sidewalk and the bus platform.



Photo credit: FCDOT

TYPICAL SECTION

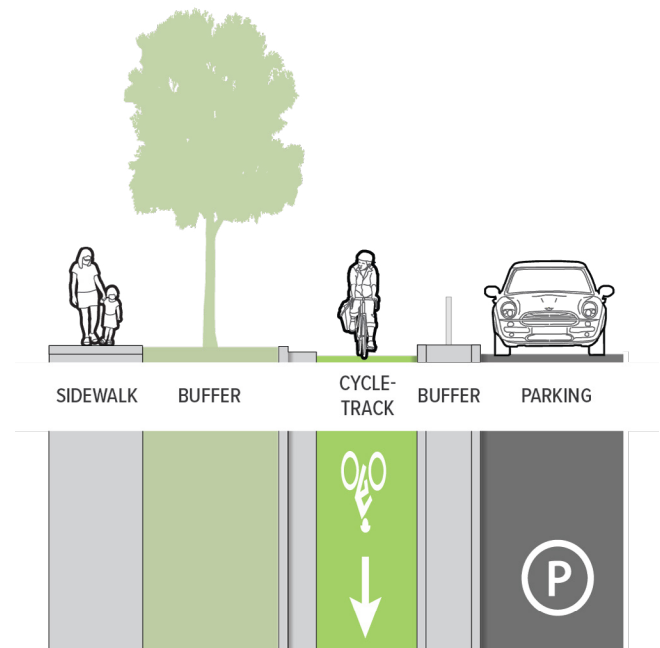
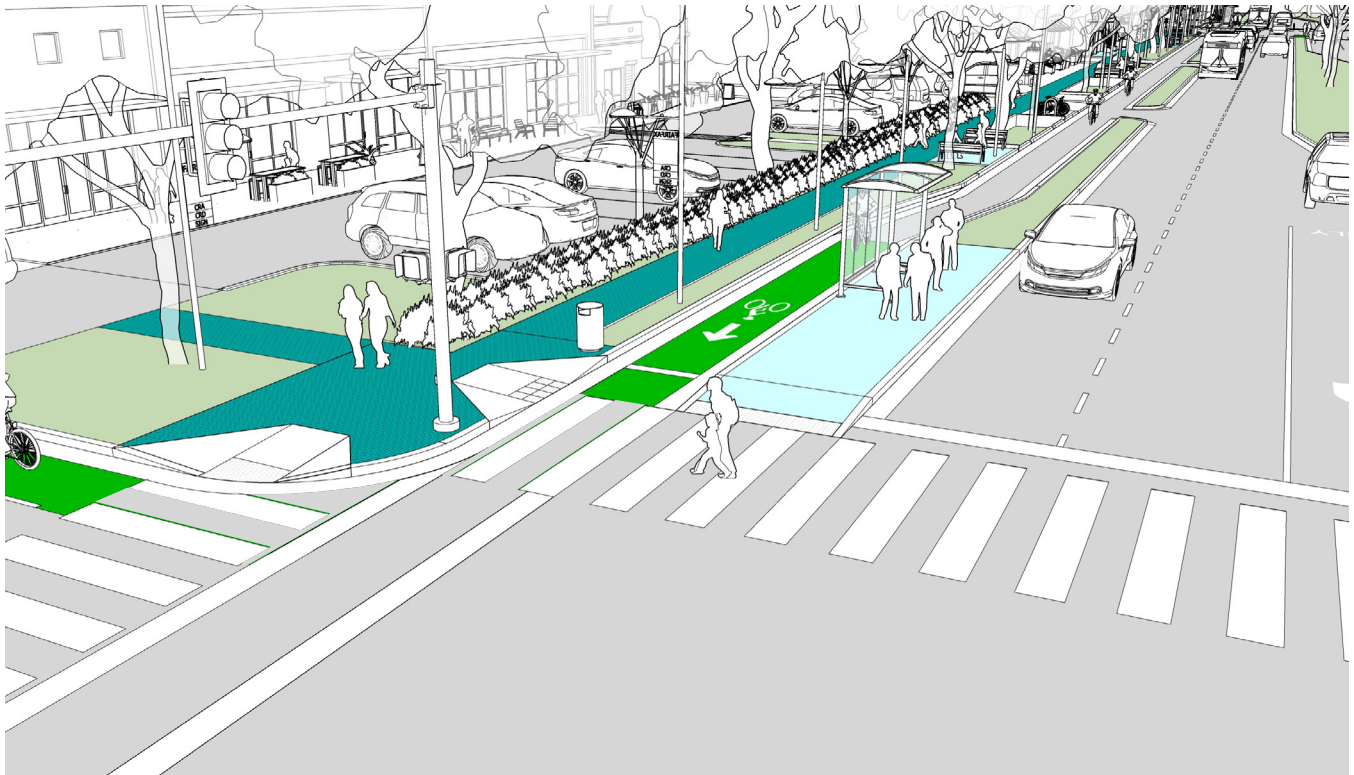
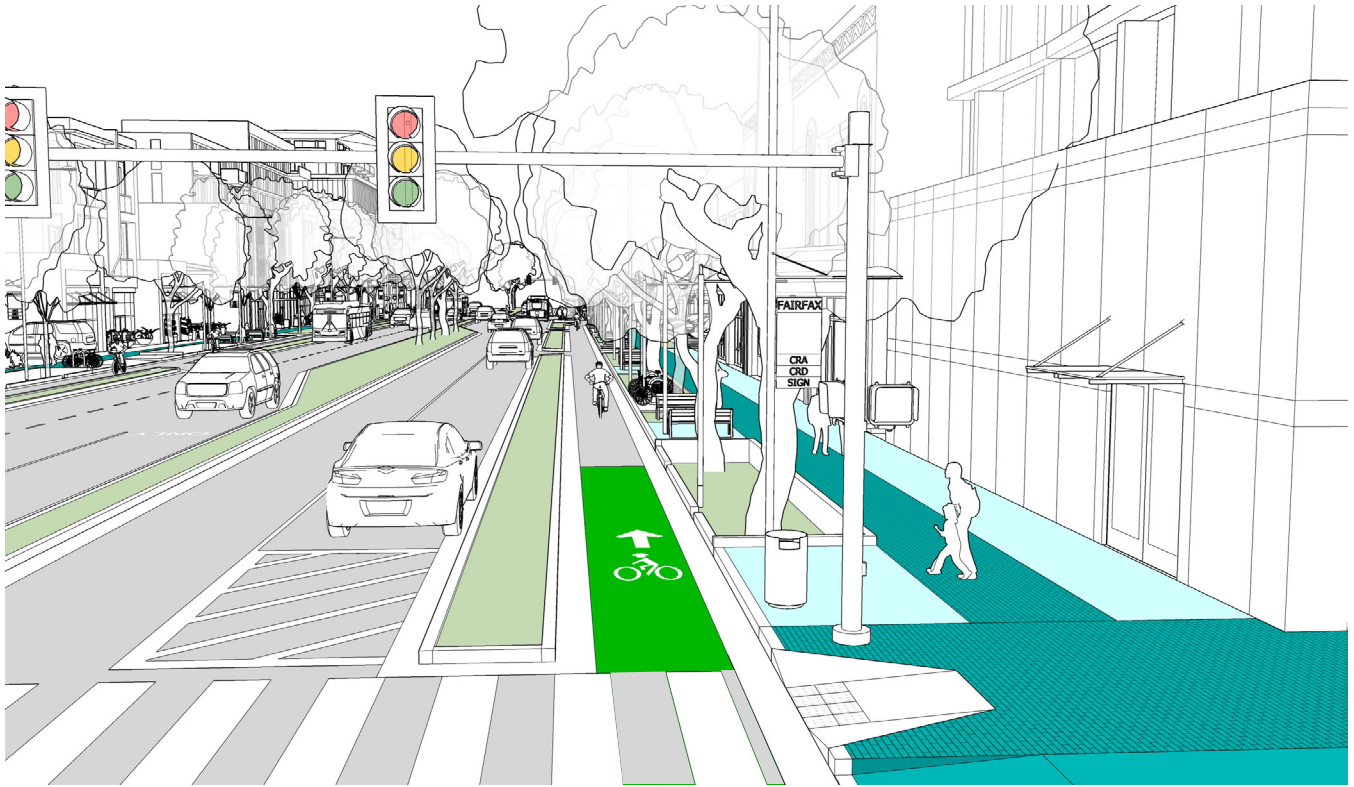


Photo credit: FCDOT



Off-Street One-Way Cycletracks

Off-street one-way cycletracks are bikeway facilities located outside of the roadway with parallel sidewalks, either at sidewalk grade or slightly below sidewalk grade.

USER EXPERIENCE

This facility offers very good protection from vehicle traffic by being located off-street and are usually very comfortable for All Ages and Abilities bicyclists.

ROADWAY CHARACTERISTICS

May be implemented on roadways with any volume and speed, and in conjunction with 2–6 travel lanes.

APPLICATION AREA

Mixed-use or medium to high density

OTHER CONSIDERATIONS

One-way cycletracks should be at least 6 feet wide to allow bicyclists to pass each other safely. Since the facility is located at or near sidewalk grade, separation from pedestrian traffic can be accomplished through amenity placement, texture differences between the sidewalk and the bike facility, or landscaping. The facility should be set behind bus stops to reduce user conflict. Curb ramp design and signals should be enhanced for bicycle comfort and convenience, including aligning ramps with the facility and by setting pedestrian signals to Rest in Walk and Pedestrian Recall, with a Lead Pedestrian Interval. Rapid Flashing Beacons should be automatically activated.

TYPICAL SECTION

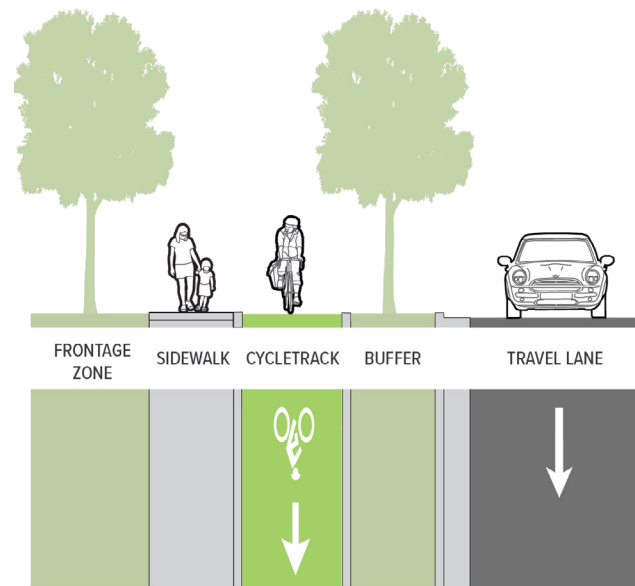


Photo credit: FCDOT

On-Street Two-Way Cycletracks

On-street two-way cycletracks allow bi-directional bicycle movement in both directions on one or both sides of the road. This facility is separated from vehicle traffic using rubber or concrete curbs, flexible posts, or on-street parking.

USER EXPERIENCE

This facility provides separation from vehicle traffic through vertical elements and is generally a comfortable facility for most bicyclists.

ROADWAY CHARACTERISTICS

May be implemented on roadways with any volume and speed, and in conjunction with 2–6 travel lanes. On roadways with more than 4 travel lanes, provision of two two-way cycletracks – one on each side of the road – is recommended. Deflective vertical barriers are strongly encouraged on roads with speed limits of 45 miles and higher.

APPLICATION AREA

Mixed-use or medium to high density

OTHER CONSIDERATIONS

Minimum desired width is 11 feet in constrained conditions, including a 3-foot buffer. Conflict points such as driveways and intersections must be designed with additional visibility to accommodate bi-directional bicycle travel. Bus stops should be made accessible by providing a sidewalk grade platform with bike ramps on both sides, and an accessible connection between the sidewalk and the bus platform.

TYPICAL SECTION

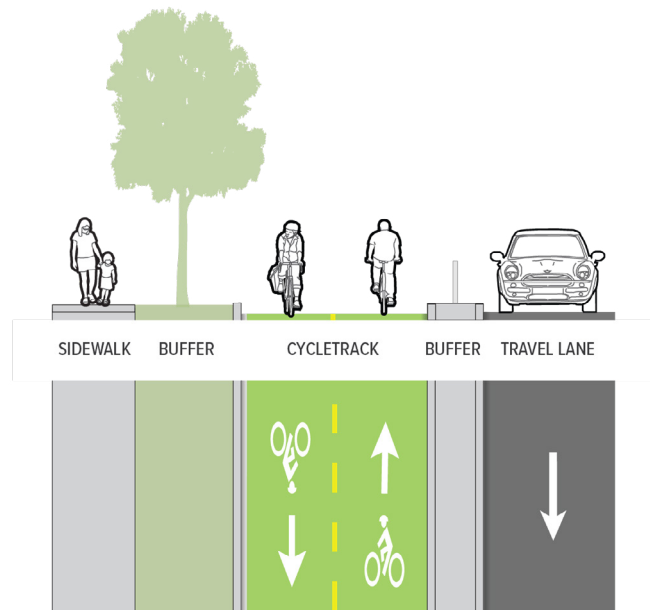
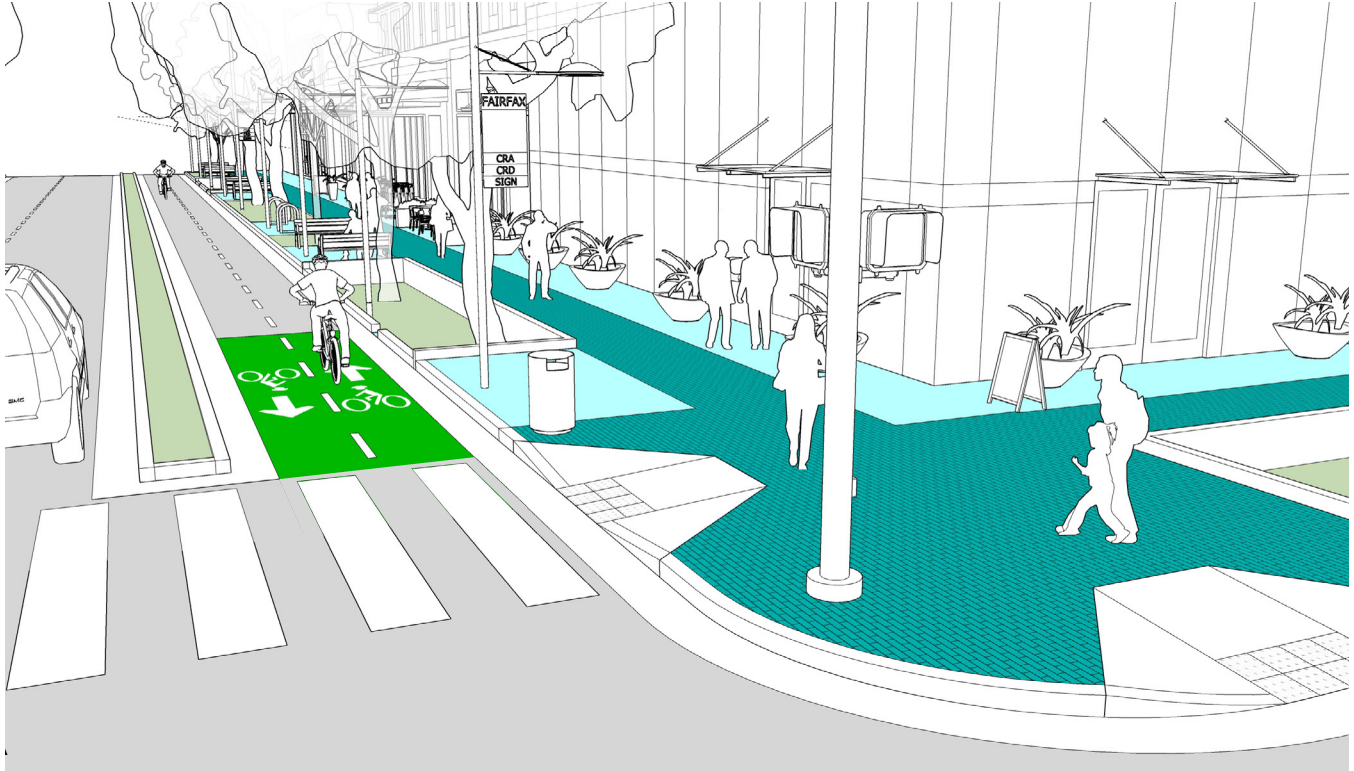


Photo credit: FCDOT



On-street Two-way Cycletracks



Off-Street Two-Way Cycletracks

Off-street two-way cycletracks allow bi-directional bicycle movement in both directions on one or both sides of the road, at sidewalk grade or slightly below sidewalk grade. They are vertically separated from the roadway and may also have landscaping features or other buffer zone amenities between the facility and the roadway.

USER EXPERIENCE

This facility offers very good separation from vehicle traffic by being located off-street and are usually very comfortable for bicyclists of all ages and abilities.

ROADWAY CHARACTERISTICS

May be implemented on roadways with any volume and speed, and in conjunction with 2 – 4 travel lanes. On roadways with more than 4 travel lanes, provision of two two-way cycletracks – one on each side of the road – is recommended.

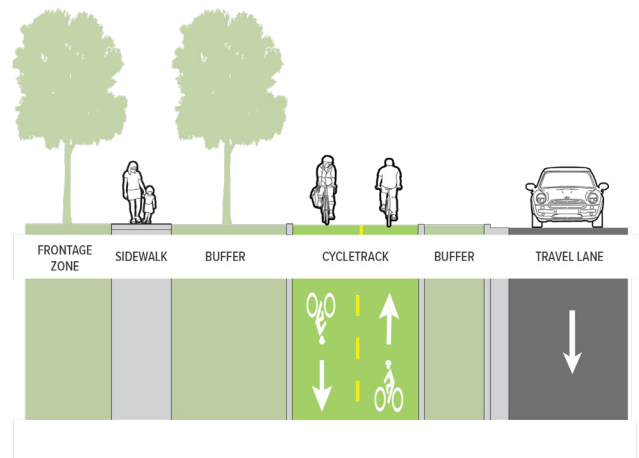
APPLICATION AREA

Mixed-use or medium to high density

OTHER CONSIDERATIONS

Minimum desired width is 10 feet, 8ft in constrained conditions. Conflict points such as driveways and intersections must be designed with additional visibility, signage and/or markings to alert drivers of bi-directional bicycle travel. Since the facility is located at or near sidewalk grade, separation from pedestrian traffic can be accomplished through amenity placement, markings, signage, texture or color differences between the sidewalk and the bike facility, and/or landscaping. The facility should be located behind bus stops to reduce user conflict. Curb ramp design and signals should be enhanced for bicycle comfort and convenience, including aligning ramps with the facility and by placing pedestrian (or bicycle signals) to “Rest in Walk” and “Pedestrian Recall”, with a Lead Pedestrian Interval. Rapid Flashing Beacons should be automatically activated.

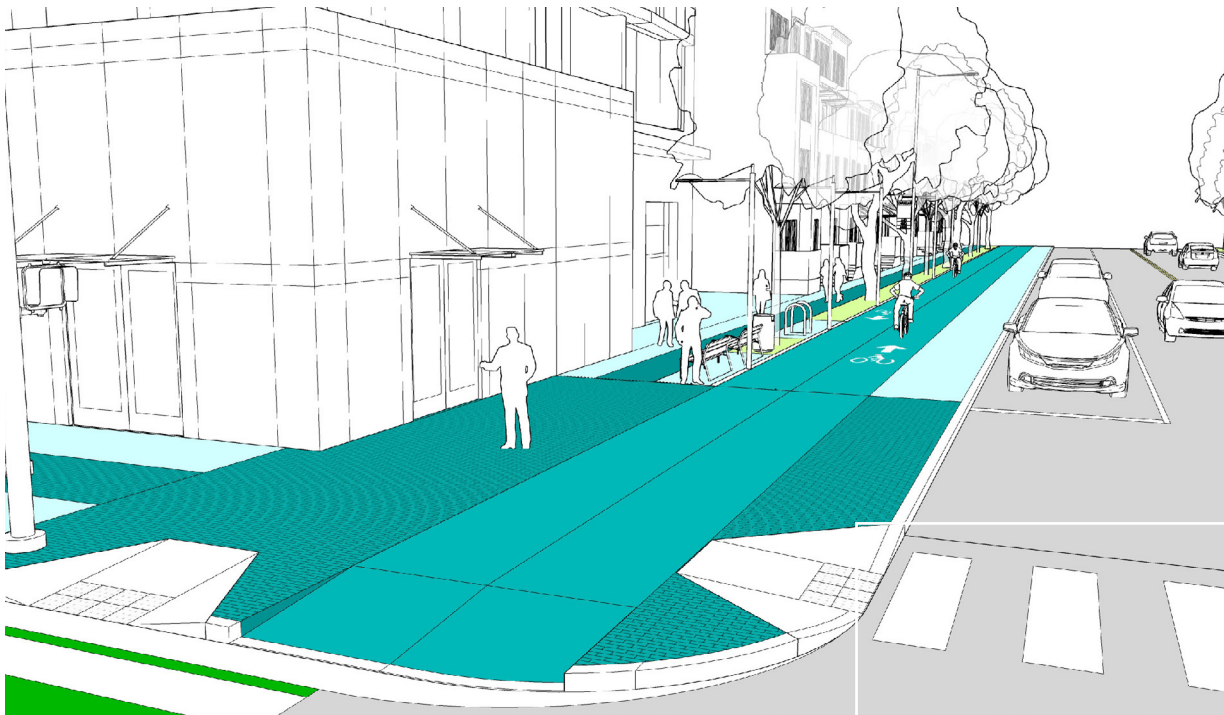
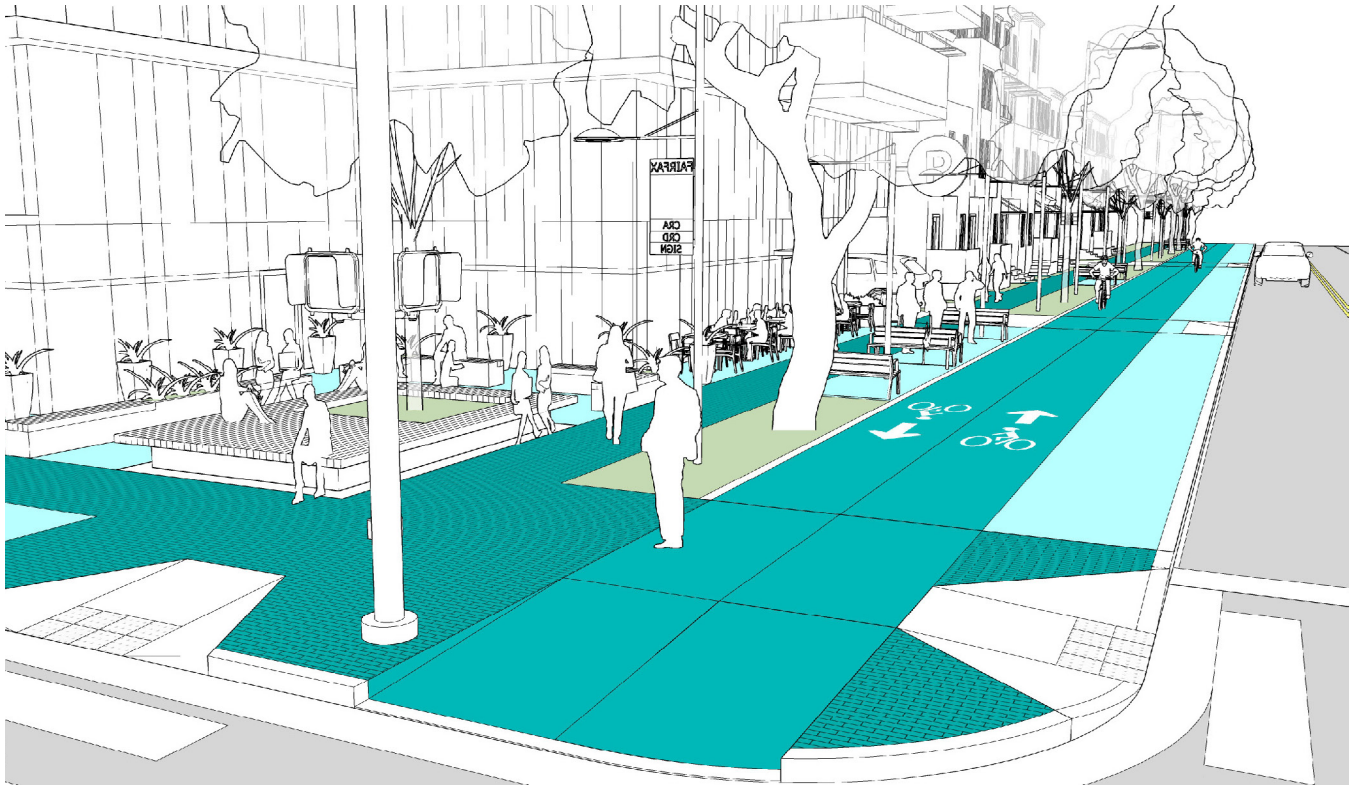
TYPICAL SECTION



Paved Off-Street Cycletrack in Vancouver, British Columbia

Resources

- [AASHTO Guide for the Development of Bicycle Facilities](#)
- [Fairfax County Public Facilities Manual](#)
- [VDOT Road Design Manual](#)
- [Federal Highway Administration \(FHWA\) Guidelines](#)
- [FHWA's SUPLOS Calculator](#)
- [Fairfax County Urban Design Guidelines](#)
- [Fairfax County Special Planning Areas](#)



Shared Active Transportation Facilities

Shared active transportation facilities provide spaces for people to walk, roll, bike, ride or use a micromobility device in a shared space, separate from vehicular traffic. Generally, these facility types require additional width where a higher number of users are expected to comfortably accommodate the varying use types and speeds, or even a separation of slower and faster users (dual trail). Hard Surface multi-use trails are typically constructed out of saw-cut concrete in mixed-use or urban-aesthetic areas, and asphalt in all other areas, and are separated from the roadway by a curb and gutter, and an amenity panel, grass buffer or a drainage ditch.

Shared active transportation facilities can be enhanced with aesthetic pavers or colored, patterned, or stamped concrete, or can be expanded to a linear park, including generous landscaping, public art, plazas, water features, play areas and/or interactive elements. Refer to the applicable Urban Design Guidelines or Streetscape Standards for specific trail facility and amenity panel design requirements or recommendations. All hard surface multi-use trails along roads must be accessible and should be properly maintained to ensure usability and safety.



Photo credit: FCDOT

Key Design Principles

- See Fairfax County Specific Scoping and Design Best Practices for Active Transportation Facilities Along Roads in Chapter 4.
- See [VDOT Road Design Manual Appendix A\(1\)](#) for shared use path design along VDOT-maintained roadways.
- Adjacent land use, neighborhood aesthetics, proximity to High Priority Active Transportation Areas (see page 100), regional and local network function and the FHWA's SUPLOS Calculator should be considered to determine desirable shared active transportation facility widths and surface type.
- A sidewalk should not be constructed in lieu of a planned multi-use trail to ensure all road users have access to safe and comfortable facilities.
- Wayfinding guidance should be included along the regional and local trail network.
- Whenever feasible, minimize tree impact by meandering a facility, and replace affected trees in ROW as space allows.
- Consider boardwalks to bridge sensitive areas if no alternative route is feasible.
- Provide safe crossings of roads with adequate warning signage and sight distance for trail users and road users. Use W11-15a or W11-15P in combination with W11-15 to warn drivers. Use W2-1 in combination with W16-9P to warn trail users. Stop signs are generally not preferred for trail users.
- Bollards on trails of all types are not desirable. Monitor trail usage first. If unauthorized vehicles do enter the trail, consider adding signage, markings, and/or a landscaped island or a plastic flexpost in the center of the trail entrance – provided there is 5' clearance on either side of the vertical obstacle.
- Multi-use trails that connect to sidewalks should include a ramp to the street to allow on-street bicyclists to access the trail.

Paved Multi-Use Trails Designed for Fast Travel Speeds

Paved multi-use trails along roadways provide a comfortable travel area for a variety of active transportation users separate from motorized traffic. Hard surface multi-use trails designed for fast travel speeds are typically designed to state and federal Shared Use Path or Sidepath standards.

USER EXPERIENCE

Well-maintained multi-use paths that are properly designed for bicycle use and expected pedestrian volumes are desirable for bicyclists of all skill levels preferring separation from traffic.

ROADWAY CHARACTERISTICS

May be implemented on roadways with any volume and speed. On roadways with more than 4 travel lanes or along high-volume roads with few signalized pedestrian crossings, provision of two hard surface multi-use trails for fast travel speeds – one on each side of the road – is recommended. On roadways with just one multi-use trail, a continuous facility on the same side of the road is desirable.

APPLICATION AREA

Medium to Low density

ENHANCEMENT ZONE EXAMPLES

Pedestrian, landscaping or amenity bump outs; on-street parking; bikeshare station; bike racks

AMENITY ZONE EXAMPLES

Landscaping; street trees; pedestrian scale lighting; street lighting; benches; bus stops; trash cans; wayfinding signage

PRIMARY ACTIVE TRANSPORTATION ZONE

10 feet width and asphalt surface preferred.

BUILDING FRONTAGE ZONE EXAMPLES

Landscaping; trees; benches; trash cans; water fountains; play spaces

OTHER CONSIDERATIONS

To facilitate commuting and fast-moving travel, these multi-use trails should generally be straight and direct routes to key destinations, with intersection treatments that support efficient and safe through movement by trail users such as Rest in Walk with Pedestrian Recall and Lead Pedestrian Interval pedestrian signal timing. When multi-use trails run alongside a roadway corridor, design characteristics should be maintained where possible in order to reinforce the continuity of the pathway and create a distinction between sidewalks and other nearby facilities.

TYPICAL SECTION

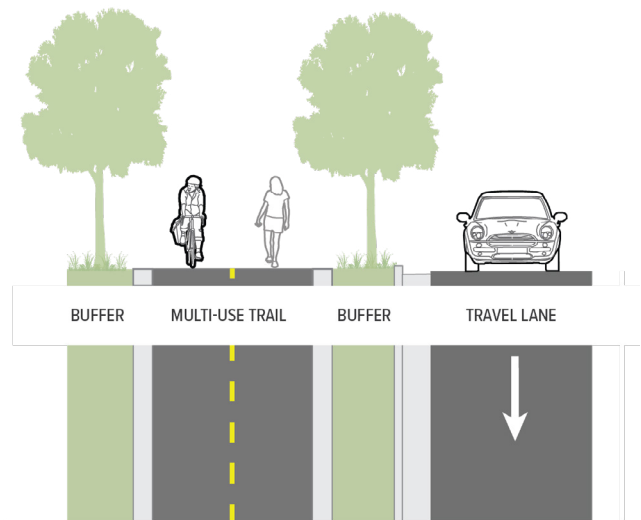
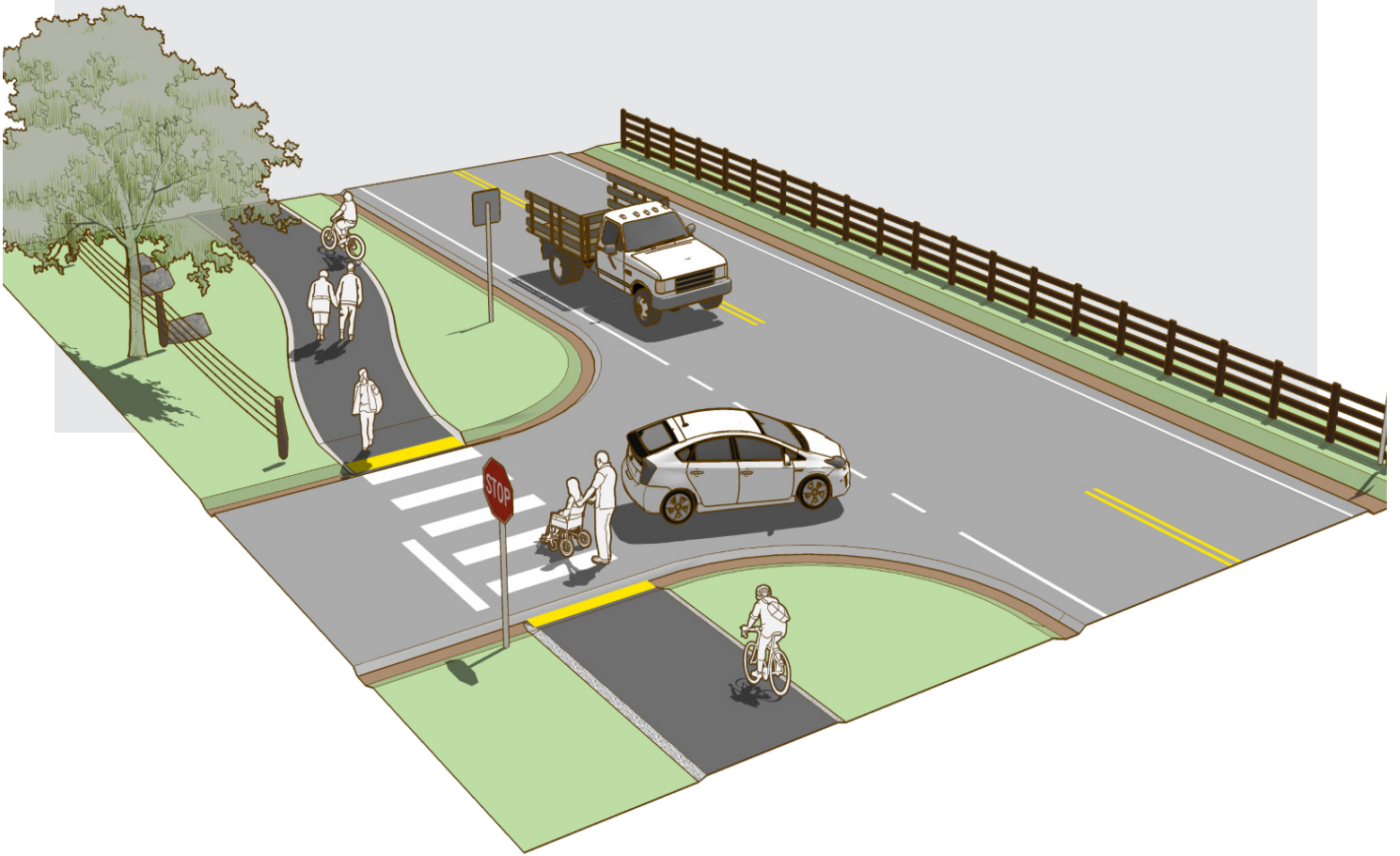


Photo credit: FCDOT

Multi-use hard surface trails along roads at intersections



*Image Source: Small Town
and Rural Design Guide*

Hard Surface Multi-Use Trails Designed for Slow Travel Speeds

Paved multi-use trails designed for slow travel speeds provide a comfortable bi-directional path for pedestrians, skaters, wheel-chair users, joggers, bicyclists, and other users, separate from motorized traffic. The facility intentionally has a lower design speed than recommended by state and national standards to provide a more comfortable environment for pedestrians and other slower users and may include speed calming features such as tighter curves or a rougher surface. However, curb ramps and signage should be designed with bicycle use in mind. A land use assessment and user demand analysis, combined with the use of FHWA's SUPLOS Calculator, should be conducted to determine appropriate widths. Consider supplementing this facility with a standard bicycle facility to serve all users.



Photo credit: FCDOT



Photo credit: FCDOT

Urban Trail

Urban trails are shared active transportation facilities that support bi-directional bicycle and pedestrian travel similar to paved multi-use trails but with a distinct urban aesthetic, usually with a saw-cut concrete or smooth paver surface. This is a non-standard trail type used in some mixed-use and higher density areas in Fairfax County. Urban Trails are a space-saving alternative to cycletracks along constrained corridors or at pinch points along cycletrack routes. However, great care should be taken to route visually impaired pedestrians from Urban Trails to pedestrian facilities along cycletracks where the two facility types meet.

USER EXPERIENCE:

Well-maintained Urban Trails that are properly designed for bicycle use and wide enough to avoid conflicts between users are very comfortable for pedestrians and bicyclists of all skill levels preferring separation from traffic. However, confident commuters and cyclists preferring faster travel speeds will not be served well by this type of facility.

ROADWAY CHARACTERISTICS

May be implemented on roadways with any volume and speed. On roadways with more than 4 travel lanes or along high-volume roads with few signalized pedestrian crossings, the provision of two Urban Trails – one on each side of the road – is recommended. On roadways with just one Urban Trail, a continuous facility on the same side of the road is desirable.

APPLICATION AREA

Mixed-use or medium to high density

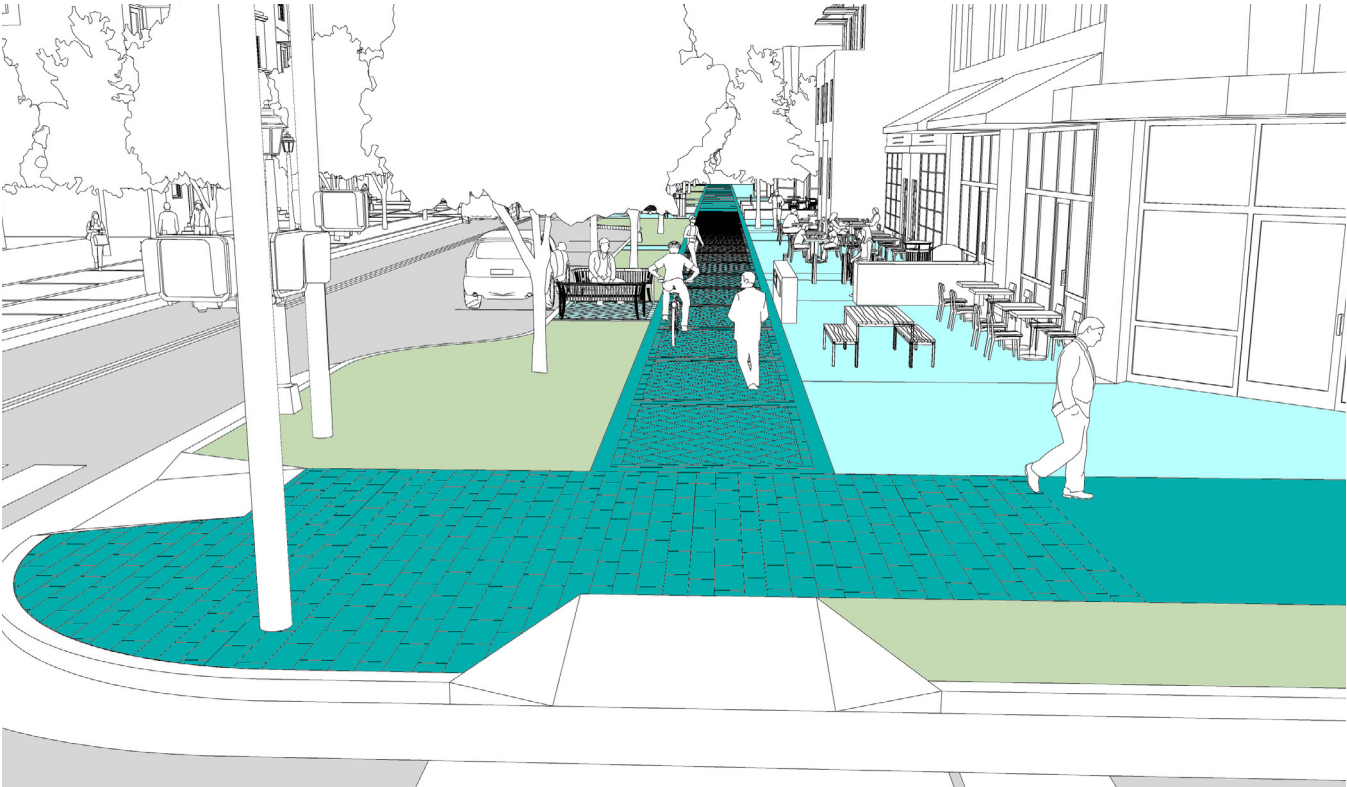
ENHANCEMENT ZONE EXAMPLES

Standard or buffered bike lanes; pedestrian, landscaping or amenity bump outs; on-street parking; bikeshare station; parklets and/or streetaries (where permitted)

AMENITY ZONE EXAMPLES

Landscaping; street trees; pedestrian scale lighting; street lighting; benches; enhanced bus stops; trash cans; bike racks; wayfinding signage

Urban Trail



PRIMARY ACTIVE TRANSPORTATION ZONE

Minimum of 8 feet in width, 10-12 feet preferred. Saw-cut concrete or smooth pavers preferred. Aesthetic treatments optional.

BUILDING FRONTAGE ZONE EXAMPLES

Landscaping; trees; retail seating; benches; trash cans; water fountains; public art; plazas; play spaces

OTHER CONSIDERATIONS

These trails should generally include enhanced treatments at intersections and driveways that allow for efficient and safe through movement by trail users, including Shared Use Path curb ramps, elevated driveway crossings and timed or automated signals. Add Bikes Yield to Peds, Bike Route and/or bicycle wayfinding signage along the route to communicate the shared use to facility users, design characteristics should be maintained to reinforce the continuity of the pathway and create a distinction between sidewalks and other nearby facilities.

Enhanced Urban Trails and Livability Spines

Livability Spines and enhanced Urban Trails are designed to provide a continuous park-like setting along urban streets. Longer enhanced Urban Trails connect urban destinations and provide a high-quality recreational experience in addition to a transportation function. Livability Spines act as alternative “main streets” to major through corridors and create destinations for shopping, recreation and outdoor gatherings. Enhanced Urban Trails and Livability Spines typically feature a wide Urban Trail with enhanced aesthetic treatments, generous landscaping, lighting, interactive or passive public art, benches, plazas, play spaces, and wayfinding. These trails are typically regional attractions, so potential demand should be considered during the design phase. Generally, a 12-foot minimum trail width is recommended, to avoid crowding.

placeholder for local-context images (Embark Livability Spine, Tysons Loop, and Indy Cultural Trail)

TYPICAL SECTION

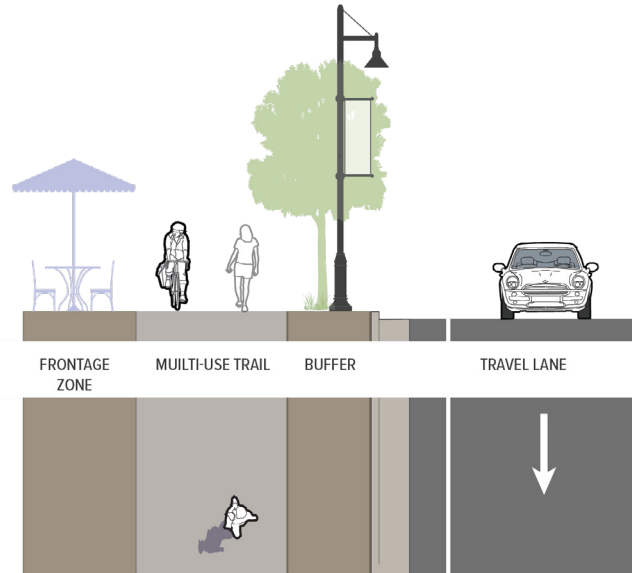


Photo credit: FCDOT

Paved Multi-Use Trails Designed to County Standards

Paved multi-use trails are facilities designed to County standards instead of state or national standards to encourage slower travel speeds or provide a more recreational user experience and are appropriate in areas with low bicycle and pedestrian activity. These trails can provide short neighborhood connections or could complement a higher speed active transportation facility on the other side of the road.

USER EXPERIENCE

Well-maintained paved multi-use trails that support slow bicycle use are very comfortable for pedestrians and bicyclists of all skill levels preferring separation from traffic. However, confident commuters and bicyclists preferring faster travel speeds will not be served well by this type of facility.

ROADWAY CHARACTERISTICS

May be implemented on roadways with any volume and speed, and in conjunction with 2 - 4 vehicle lanes. Additional bicycle facilities that are designed to state standards may need to be provided to accommodate all users.

APPLICATION AREA

Low to medium density

ENHANCEMENT ZONE EXAMPLES

Standard or buffered bike lanes; pedestrian, landscaping or amenity bump outs; on-street park

AMENITY ZONE EXAMPLES

Landscaping; street trees; pedestrian scale lighting; street lighting; benches; enhanced bus stops; trash cans; bike racks; wayfinding signage

PRIMARY ACTIVE TRANSPORTATION ZONE

Minimum of 8 feet in width. Asphalt surface preferred.

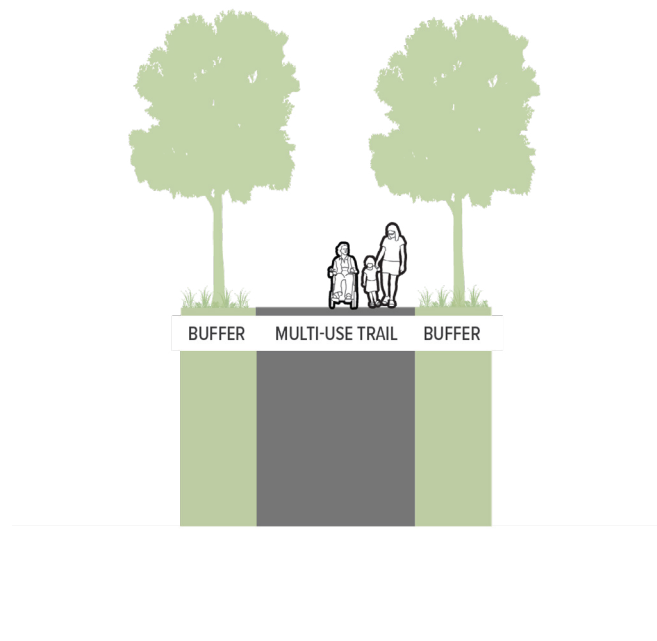
BUILDING FRONTAGE ZONE EXAMPLES

Landscaping; trees; benches; trash cans; water fountains; play spaces

OTHER CONSIDERATIONS

These multi-use trail facilities are usually 8 feet wide and designed to Fairfax County standards. They should be designed with user enjoyment in mind, not efficiency or travel speed. However, the facility should safely and comfortably accommodate slower bicycle traffic. Include a buffer space at least 4 feet wide to accommodate signage and driveway ramps. An 8-foot buffer to allow for shade trees, benches, and other amenities is preferred. This trail type could include pathways to connect two neighborhoods, such as at the end of a cul-de-sac. They may feature additional elements to magnify the recreational experience, such as shade trees and enhanced landscaping, trail theming, pedestrian scale lighting, benches, water fountains, interactive or passive public art, play spaces, bike racks, picnic areas, and educational or wayfinding signage.

TYPICAL SECTION



Other Considerations for Shared Active Transportation Facilities

Selecting the most appropriate pathway crossing treatment depends on the characteristics of the barrier that the pathway crosses. Treatments range from simple marked crosswalks to full traffic signals or grade-separated crossings. An engineering study should be conducted for each crossing to determine the most appropriate treatment, and should also consider:



Bollard Alternatives

Bollards are physical barriers designed to restrict motor vehicle access to the trail. Unfortunately, physical barriers are often ineffective at preventing access, and create obstacles to legitimate path users. Alternative design strategies include signage, pavement markings, landscaping and curb cut design to reduce the likelihood of motor vehicle access. A flex post may be used if frequent non-compliance is observed.

Wayfinding Signage

The ability to navigate through an area is informed by landmarks, natural features, and other visual cues. Signs along key routes should indicate the direction of travel, the locations and distances to those destinations. A wayfinding system is similar to a transit or vehicular wayfinding system, in that it consists of comprehensive signing and/or pavement markings to guide active transportation users to their destination along routes that are safe, comfortable and/or attractive.



Flush Concrete Curbs

Paved trail or cycletrack facilities may be lined with flushed curbing to increase durability of the facility, visibility of the edges at night and provide a consistent line for vegetation edging.



Potomac Yard Park in Alexandria with flushed curbing consistent vegetation lining the trail. Photo Credit: City of Alexandria

Considerations for Multi-Use Trails along Interstates

Multi-use trails along interstates can provide very important direct connections but need to be carefully designed to improve user comfort and safety.

Trail crossings of interstate ramps should be signalized, or grade separated to improve user safety, comfort and convenience.

Shade trees, landscaping, pedestrian scale lighting and provision of other amenities such as benches, water fountains, wayfinding and public art are encouraged to increase user comfort in all seasons and all hours of the day.

Sound barriers between the interstate and trail provide the greatest degree of protection from vehicles, sound, and air pollution, and should be considered wherever possible. In constrained conditions, privacy fencing and vegetation screening may be needed to separate trail users from private properties. Sound barriers should not be used as privacy fencing. If the trail must be routed



*U.S. 36 Highway in Colorado complemented the bikeway instillation with rapid transit improvements, to create a multimodal connection between Denver and Boulder.
Source: Commuting Solutions*

next to the interstate as a last resort, a minimum 50-inch-high concrete barrier should be used to separate the trail from vehicles.

Resources

- [AASHTO Guide for the Development of Bicycle Facilities](#)
- [Fairfax County Public Facilities Manual \(PFM\)](#)
- [VDOT Road Design Manual](#)
- [Federal Highway Administration \(FHWA\) Guidelines](#)
- [FHWA's SUPLOS Calculator](#)
- [Fairfax County Urban Design Guidelines](#)
- [Fairfax County Special Planning Areas](#)



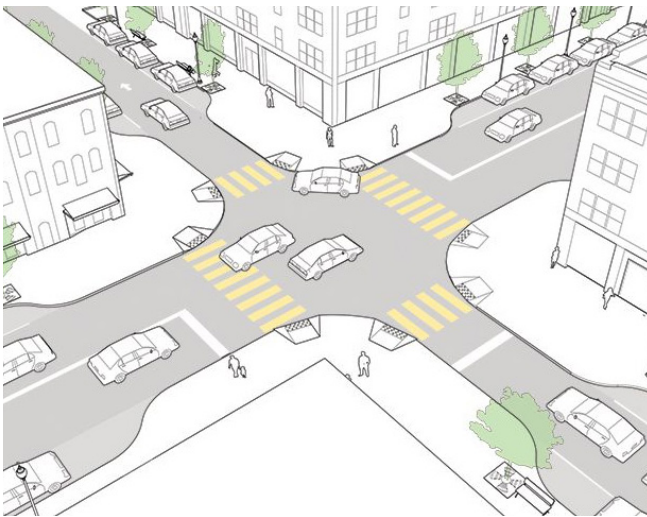
I-66 Parallel Trail



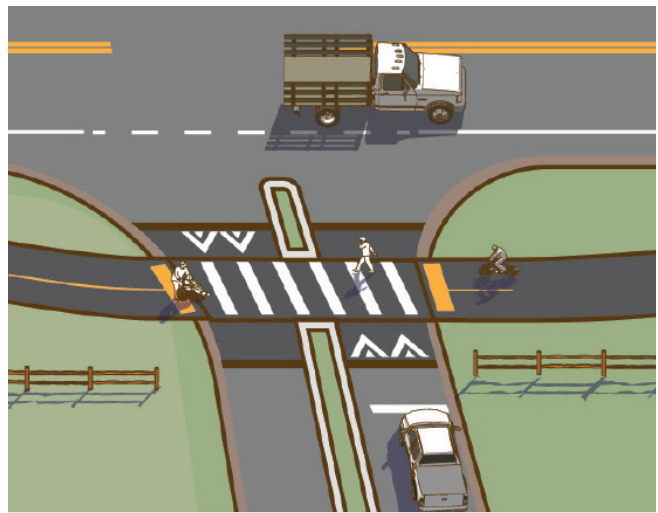
Intersection and Crossing Treatments

Selecting the most appropriate pathway crossing treatment depends on the characteristics of the roadway that the pathway crosses, and all new treatments are subject to the Virginia Department of Transportation's approval. Treatments range from simple marked crosswalks to full traffic signals or grade-separated crossings. All traffic devices, including crosswalk markings and signs, must conform to the federal and state regulations for dimensions, color, wording and graphics. A review should be conducted for each crossing to determine the most appropriate treatment per state guidelines, and should consider:

- Number of lanes
- Presence of or opportunity for a pedestrian refuge
- Distance from adjacent signalized intersections
- Pedestrian desire lines and location of pedestrian generators
- Vehicle speeds and volumes
- Geometry of the location and sight distance
- Availability and quality of street lighting
- Driveways and access management
- Location and type of connecting active transportation facilities
- Type of users, e.g., older adults, school-aged children, etc.



Conventional crosswalks in an urban setting.
Image Source: [NACTO](#)



Multi-use trail separation at a road crossing.
Image Source: [Small Town and Rural Design Guide](#)

Key Design Principles

- See Fairfax County Specific Scoping and Design Best Practices for Active Transportation Facilities Along Roads in Chapter 4.
- Signalized intersections in Fairfax County should have marked crosswalks on all legs.
- Bicycle detection (or bicyclist accessible actuation) should be provided at all signalized intersections, unless green time for each leg is provided on a routine cycle.
- All parallel (VDOT CG-12 Type B) ramps need to direct users in the direction of the crosswalk. All perpendicular (VDOT CG-12 Type A) ramps should be positioned to direct users in the direction of crosswalk as much as possible, however, must be angled to have grade breaks perpendicular to the curb. One curb ramp per crosswalk is required for new construction and for alteration projects unless demonstrated to be technically infeasible. A blended transition could be considered in this case (see VDOT Road Design Manual).
- Ramps shall match the width of the facility or the facility on the adjacent roadway, whichever is wider, without use of vertical face/header curbs, which provide challenges for bicyclists, strollers and other micromobility vehicles on sidewalks and trails (mountable curbs are acceptable, if needed).
- Roll-throughs of islands should match the width of the facility, the facility on the adjacent roadway, or 8 ft wide, whichever is wider.
- Perpendicular (VDOT CG-12 Type A) ramps are preferred where space allows. Parallel (VDOT CG-12 Type B) ramps are acceptable if buffer is included in ramp and vertical-face curbing is only included on back side of ramp or fully parallel to the travel path of the user if the ramp is 8 ft or wider.
- At a T intersection, provide a crossing for active transportation users approaching from a cross street to the sidewalk, trail and/or cycletrack on the opposite side of the street.
- At locations with proper ADA ramps, where there is no pedestrian facility on one or both sides of the street, but there is demonstrated demand for pedestrian facilities or pedestrian-oriented land uses, crosswalks should also be marked per VDOT's latest unsignalized pedestrian crosswalk guidelines..
- A 6+ft pedestrian refuge island should be provided when a median is present at an intersection. An 8-10' wide island is preferred to accommodate bicyclists.
- Provide grade-separated pedestrian crossings across interstates and at uncontrolled interchange ramps.
- At grade pedestrian crossings of roadways are generally preferred over grade-separated crossings but may be desirable if the pedestrian generators on both sides of the streets are at a different elevation than the street and can be connected by a grade-separated crossing at that elevation.



Photo credit: FCDOT



Photo credit: FCDOT



Intersection Treatments for Sidewalks and Multi-Use Trails



Crosswalk

Legal crosswalks exist at all public street intersections whether marked or unmarked. However, the only way a crosswalk can exist at a mid-block location is if it is marked. Unmarked crosswalks are the natural extension of the shoulder, curb line or sidewalk. A marked crosswalk is any crosswalk, which is delineated by white markings placed on the pavement, and usually includes pedestrian, trail or bike crossing signs. Note that it is at Virginia Department of Transportation's discretion whether a marked or unmark crosswalk can be added.



Active Warning Beacon

This treatment consists of high visibility crosswalks and pedestrian warning signage with Rectangular Rapid Flashing Beacons (RRFBs) mounted to the signpost. RRFBs are typically push activated but can also include passive detectors that recognize pathway users and immediately activate the RRFB. When possible, pedestrian refuge islands should be included. RRFBs shall be installed in accordance with VDOT IIM-TE-384.1 on unsignalized crossings.



Hybrid Beacons

Hybrid beacons should be installed if warranted at crossings of streets that are more arterial in nature, either due to high vehicle speeds or the number of lanes. Hybrid beacons are centered over each travel lane, typically push activated, and are accompanied by signage to indicate to drivers where to stop and how to interpret the light patterns. Hybrid beacons should not be used in conjunction with railroad crossing signals due to the similarity of flashing signals (use full traffic signal instead). It is important that the beacon is immediately activated after the button is pushed unless there are nearby signals to coordinate timing.



Full Traffic Signal

The use of a full traffic signal at a mid-block location would require a signal warrant as outlined in the Manual on Uniform Traffic Control Devices (MUTCD) and should be considered where pathways cross arterial roads in conjunction with a railroad crossing or where high volumes of pathway traffic is anticipated.



Grade Separation

Grade separated crossings include bridges and underpasses and should be used when physical barriers such as canals or creeks need to be crossed, or when an at-grade street or railroad crossing is deemed unsuitable through an engineering analysis. Bridges and underpasses need to be at least 14' wide (16' preferred). Greater widths are preferred for underpasses that are longer than 60'. Underpasses should have a minimum vertical clearance of 10', and lighting should be considered, especially in culverts or tunnels. Public art can be used in tunnels and on bridges for placemaking and to improve user comfort.



Pedestrian Signalization Improvements

Pedestrian signal heads indicate to pedestrians when to cross at a signalized crosswalk. Pedestrian signal indications are recommended at all legs of a signalized intersection. Countdown signals should be used at all new and rehabbed signalized intersections. Adequate pedestrian crossing time is a critical consideration at signalized intersections. At crossings where older pedestrians or pedestrians with disabilities are expected, crossing speeds as low as 3 ft per second should be assumed. Consider the use of Rest in Walk, Pedestrian Recall and Leading Pedestrian Interval (LPI) settings to improve safety and comfort and reduce delay for active transportation users. Accessible Pedestrian Signals (APS) provide crossing assistance to pedestrians with various types of disabilities.

Intersection Treatments for Bike Lanes and Cycletracks

Most vehicle-bike conflicts occur at intersections. On many streets, large turn radii and wide lanes encourage drivers to make sweeping, fast turns. These design decisions increase exposure and risk for people walking and biking, reduce the safety and comfort of the bike network, and discourage cycling. NACTO recommends three key design strategies to improve safety at intersections and crossings:

- Reduce turning speed
- Increase the visibility of people bicycling
- Give priority at intersections to people bicycling



Separated Bicycle Signal Phase

Separated bicycle lane crossings of signalized intersections can be accomplished through the use of a bicycle signal phase which reduces conflicts with motor vehicles by separating bicycle movements from any conflicting motor vehicle movements. Bicycle signals are traditional three lens signal heads with green, yellow and red bicycle stenciled lenses. At the time of this document's publication, bicycle signal phases have not yet been approved for use in Virginia.



Two-Stage Turn Boxes

Two-stage turn boxes offer bicyclists a safe way to make turns at multi-lane signalized intersections from a physically separated or conventional bike lane. On cycletracks, bicyclists are often unable to merge into traffic to turn due to physical separation, making the two-stage turning critical. This treatment received Interim Approval from FHWA in 2017 (IA-20).



Bike Boxes

A bicycle box is designed to provide bicyclists with a safe and visible space to get in front of queuing traffic during the red signal phase. Motor vehicles must queue behind the white stop line at the rear of the bike box. On a green signal, all bicyclists can quickly clear the intersection. This treatment received Interim Approval from the FHWA in 2016 (IA-18).



Intersection Plazas

In constrained conditions, a cycletrack and sidewalk can enter a shared plaza at key intersections. Aesthetic treatments such as pavers reinforce slow speeds and encourage bicyclists to yield to pedestrians and transit users. Some intersection plazas may also include larger active transportation amenities such as a bikeshare station, bike racks, bus stops, interactive or static public art, seating or landscaping. Accessible wayfinding will need to be provided.



Protected Intersection

Also known as setback or offset intersections, this design keeps bicycles physically separate from motor vehicles up until the intersection, providing a high degree of comfort and safety for people of all ages and abilities. This design can reduce the likelihood of highspeed vehicle turns, improve sightlines, and dramatically reduce the distance and time during which people on bikes are exposed to conflicts.



Driveway & Minor Street Crossings

The added separation provided by multi-use trails and cycletracks creates additional considerations at intersections and driveways when compared to conventional bicycle lanes. It is necessary to preserve sightlines, denote potential conflict areas between modes, and provide warning signage as needed, especially when motorists turning into or out of driveways may not be expecting bicycle travel opposite to the main flow of traffic. At driveways and crossings of minor streets, bicyclists should not be expected to stop if the adjacent vehicular traffic does not stop. Where possible, raised crossings at multi-use trail or cycletrack level improve the comfort and safety of facility users.



Bike Detection and Actuation

Bicycle detection and actuation is used to alert the signal controller of bicycle crossing demand on a particular approach. Proper bicycle detection should meet two primary criteria: accurately detects bicyclists and provides clear guidance to bicyclists on how to actuate detection (e.g., what button to push, pavement markings alerting cyclists where to wait).

Considerations for Mid-Block Crossings

Mid-block crossings can provide more direct connections and can respond to known traffic safety concerns. Locations where mid-block crossings should be considered include:

- Long blocks (longer than 600 ft.) with destinations on both sides of the street.
- Locations with heavy pedestrian traffic, such as schools, shopping centers, and multi-use trail crossings.
- At transit stops, where transit riders must cross the street on one leg of their journey.
- Uncontrolled crossings of multi-lane roadways with over 15,000 ADT may be possible with features such as sufficient crossing gaps in vehicular traffic (more than 60 per hour), median refuges, or beacons, and good sight distance.



Resources

- [National Association of City Transportation Officials \(NACTO\)](#)
- [Fairfax County Public Facilities Manual \(PFM\)](#)
- [IIM-TOD-384.2: Pedestrian Crossing Accommodations at Unsignalized Locations](#)
- [Virginia Department of Transportation \(VDOT\) Complete Streets Guide](#)
- [Federal Highway Administration \(FHWA\) Guidelines](#)
- [Virginia Department of Rail and Public Transportation \(DRPT\) Multimodal Design Guidelines](#)
- [Fairfax County Urban Design Guidelines](#)
- [Fairfax County Special Planning Areas](#)

6

Active Transportation Facilities Through Non-FCPA Open Space

Hard Surface Multi-Use Trails

A multi-use trail running through an open space provides opportunities for active recreation, for communities to connect with nature, and provides additional connectivity between neighborhoods and destinations. Multi-use trails can have a hard surface or natural surface and vary in width between a foot and 10+ feet. Some trails can support high speed travel while others are designed for slower speeds. What trail designs is appropriate is highly context specific, depending on factors such as the grade of the land, size and amount of vegetation present, proximity to waterways, structures, cultural resources and other elements, expected user types and volumes and primary purpose of the facility. Trails through open space are studied, designed and constructed by or in coordination with the applicable landowner. If a planned trail passes through or near environmentally sensitive areas, the facility should be carefully aligned and designed to prevent or significantly minimize environmental impacts during construction and once in use.



Photo credit: FCDOT

Paved Multi-Use Trails Designed for Fast Travel Speeds

Hard surface multi-use trails through open spaces that are designed for fast travel speeds are generally accessed by a wide variety of users. These facilities are typically designed to state and federal standards. Adjacent land uses, network function and expected user types and demand should be taken into consideration to determine appropriate widths. In particularly high-volume areas, separation of faster and slower users (dual trails) provides higher capacity connections for high-speed users, and a more comfortable facility for slower users.

FURTHER CONSIDERATIONS

To facilitate commuting and fast-moving travel, these trails should generally be straight and direct routes to key destinations, with enhanced treatments at road crossings that allow for efficient and safe through movement by trail users. Amenities such as wayfinding signage, benches, trash and recycling receptacles, bike racks, rest areas and appropriate lighting should be considered along trails. Multi-use trail design should comply with all AASHTO and VDOT requirements for Shared Use Paths related to design speed, sight distances, stopping distances, and grades.

Resources

- [AASHTO Guide for the Development of Bicycle Facilities](#)
- [ADA Guidelines for Outdoor Development Facilities](#)
- [Virginia Department of Transportation \(VDOT\) Complete Streets Guide](#)
- [Federal Highway Administration \(FHWA\) Guidelines](#)
- NOVA Park Trail Design Guidelines
- FCPA Trail Standards (Coming Soon)
- [Fairfax County Urban Design Guidelines](#)
- [Fairfax County Special Planning Areas](#)



Credit: Elizabeth MacGregor



Photo credit: FCDOT

Paved Multi-Use Trails Designed for Slow Travel Speeds

Paved multi-use trails designed for slow travel speeds provide a comfortable bi-directional path for users. These trails are designed primarily for recreation and specialized short-distance uses such as neighborhood links and pedestrianized commercial areas (such as an ecological spine or pedestrianized promenade), or can complement a parallel trail designed for higher travel speeds. The facility intentionally has a lower design speed than recommended by state and national standards to improve the comfort of pedestrians, equestrians, beginner or child bicyclists and other slower users by lowering the speed differential between them and faster users. The trail design may include speed calming features such as tighter curves or a rougher surface, such as accessible pavers or concrete. However, curb ramps and signage should be designed with bicycle use in mind. Adjacent land uses, network function and expected user types and demand should be taken into consideration to determine appropriate widths.



Photo credit: FCDOT

Ecological Spines (Linear Parks)

Ecological spines are linear green spaces in urban areas. The size and design of linear parks varies and depends on its context, function and area. These parks frequently link other urban elements and may function as a green spine through an urban area. Though there is a great variety of linear park designs, typical facilities will generally consist of a continuous multi-use trail, rest areas and seating, enhanced landscaping, green infrastructure such as riparian corridors, and active and/or passive recreation components.

Resources

- [Public Facilities Manual](#)
- NOVA Park Trail Design Guidelines
- FCPA Trail Standards (Coming Soon)
- [Fairfax County Urban Design Guidelines](#)
- [Fairfax County Special Planning Areas](#)



Natural Surface Trails

Natural surface trails provide low impacts, found in open spaces (primarily parks) as these areas are limited in development and their primary land use is recreational. These are not intended to be ADA compliant. Natural surface trails are compacted dirt surfaces and typically range 2-4' wide, and can accommodate hiking, biking, and/or equestrian use. Though natural surface trails' primary role is recreational, these trails can provide transportation uses.

Natural Surface Trail Typologies



Hiking Trail

Hiking trails should be designed with the intended user experience in mind and can range from easy trails for families and beginners to technically more challenging facilities.



Mountain Biking Trail

Mountain biking trails can include a variety of obstacles on or off the track, with signage stating the difficulty level and features to navigate over or around.



Equestrian Trail

Equestrian riders generally prefer natural surface materials. Along popular trail routes, a separated parallel dedicated equestrian trail may be considered. Consider equestrian trailhead amenities such as trailer parking and horse corrals.

Resources

- [Public Facilities Manual](#)
- NOVA Park Trail Design Guidelines
- FCPA Trail Standards (Coming Soon)
- [Equestrian Design Guidebook for Trails, Trailheads and Campgrounds](#)

Stream Valley Trails

Stream Valley Trails are a part of the Fairfax County trail system and are co-located within Environmental Quality Corridors (EQC's) establishing an integrated network of stream valleys and associated lands. The purpose of this network is to conserve open space; protect wildlife habitat, biodiversity of species, riparian corridors, water quality and aesthetic values; control flooding and erosion; and provide continuity of non-motorized access between parklands, residential communities, employment and commercial centers and transit areas where appropriate. EQCs may vary in size and character from steeply sloped corridors with cascading streams to broad floodplains; all are treated as sensitive environmental areas.

DESIGN FEATURES

- Facilities within stream valleys should be carefully located and designed to be sensitive to environmental conditions.
- The specific types of facilities and support amenities, such as parking, lighting and restrooms, are determined by the managing agency with public participation through its Park Planning and Development process.
- As stated in the Fairfax Public Facilities Manual, all Stream Valley Trails should be constructed within a 20-foot-wide easement, unless it can be demonstrated that an easement of another width is appropriate or required due to the specific site constraints and conditions.
- Stream Valley Trails feature a mixture of hard surface, boardwalk, and natural surface material types.

FURTHER CONSIDERATIONS

- Erosion and flooding are frequent challenges for Stream Valley Trails.
- Consideration should be given for stream crossings and links to on-road connections.
- In addition to trails, seating areas, small picnic and open play areas, landscaping and interpretive structures may also be developed, if they do not adversely impact the EQC or ecological functions.

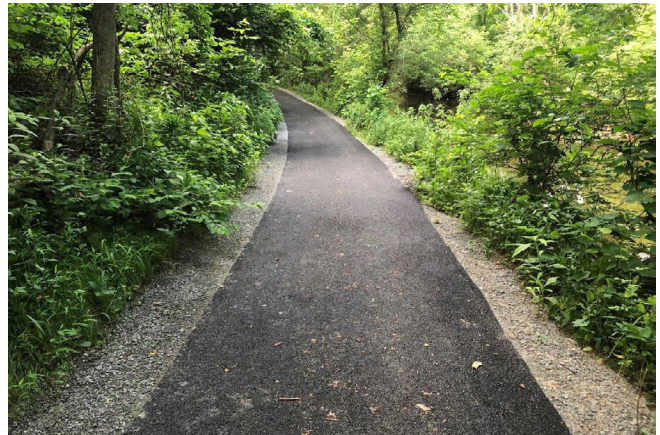


Photo credit: FCDOT



Photo credit: Elizabeth MacGregor

Resources

- [FCPA Stream Valley Policy](#)
- [Fairfax County Comprehensive Plan Parks and Recreation Policy Plan](#)
- FCPA Trail Standards (Coming Soon)
- [Public Facilities Manual](#)
- [US Forest Service Trail Construction and Maintenance Notebook](#)



Trail Crossings

Stream and Wetland Crossings

Stream and wetland crossings should be designed to be low maintenance and be able to withstand and not significantly affect the normal flow of water. A wooden or concrete boardwalk can be used in rare circumstances to minimize impact on environmentally sensitive areas if no alternative route is possible. However, boardwalks still have significant natural resources impacts, are very expensive to implement, and require substantial maintenance work to maintain safety needs. Bridges are typically used for situations with steep banks and high-water flow. Culverts are another type of stream crossing. Open-box culverts have begun to be implemented in Fairfax County.



Photo credit: FCDOT

Street Crossings

Generally, street crossings should be limited where possible. When trails must cross a street, they should intersect at a right angle and provide a safe and comfortable crossing experience. Refer to the Section on Intersection and Crosswalk Treatments starting on page 74 for guidance on crossing types and potential treatments.

Both road users and trail users should be alerted that a trail is crossing a roadway. Warning signage should be placed on both the intersecting road, and the trail itself. Where trail users outnumber road users, give trail users priority by adding a stop condition for road users. Crossings can also serve as rest points with trail amenities such as restrooms, benches or water fountains.



Photo credit: FCDOT

7

Supporting Infrastructure

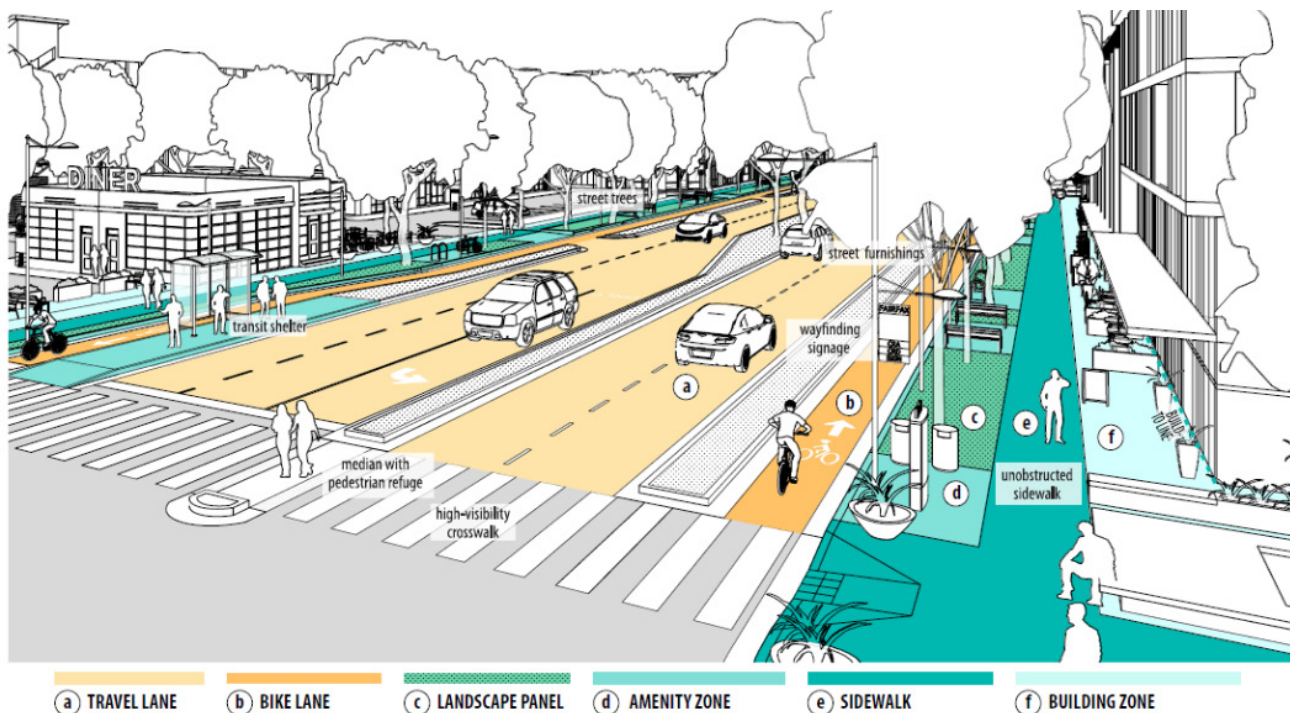
Streetscape Design Considerations

Including support infrastructure for active transportation users – especially key elements such as shade trees, pedestrian-scale lighting, enhanced transit facilities and benches - and context sensitive streetscaping is an essential part of the planning and design of any active transportation facility. Providing a pleasant, comfortable, convenient, and interesting experience will entice more people to use the active transportation facilities. These attractive and functional streetscapes are sometimes referred to as pedestrian amenities and are necessary support infrastructure for active transportation users. While the Contextual Guidance for Selecting All Ages & Abilities Active Transportation Facilities and Supporting Amenities (Appendix A) can provide critical guidance on the type of active transportation facility to provide on a corridor, the streetscape design considerations listed below can help complete the facility and integrate it into the surrounding context.

General Layout Guidance

Layout of streetscape elements should create a cohesive look for an entire block or corridor rather than individual placement of elements in a piecemeal fashion. The layout should consider the overall neighborhood character, provide a consistent aesthetic treatment, and be consistent with long term goals for the design and function of the street.

Given limited street space, streetscape elements may conflict with one another, limit visibility, block pedestrian travel, or create a sense of clutter. All streetscape elements should be located with consideration for the requirements and constraints of other streetscape elements that may be placed on the street. For example, tree locations should consider the scheme for street lighting and vice versa.



Source: Fairfax County McLean District Design Guidelines

The placement of streetscape elements should allow the comfortable, accessible and efficient flow of pedestrians and bicyclists along the street and from parked cars and adjacent buildings to the sidewalk. At the same time, streetscapes should provide a diversity of amenities and spaces for public enjoyment and include elements of surprise and variety that reflect the specifics of unique places.

The below considerations provide design guidance, standards, and additional resources that can successfully integrate amenities into the planned streetscape. For more information, see the [Urban Design Guidelines For Fairfax County Commercial Revitalization Districts And Areas, Chapter 2](#) and any applicable [District Design Guidelines](#).



Urban Center



Suburban Center



Suburban Neighborhood



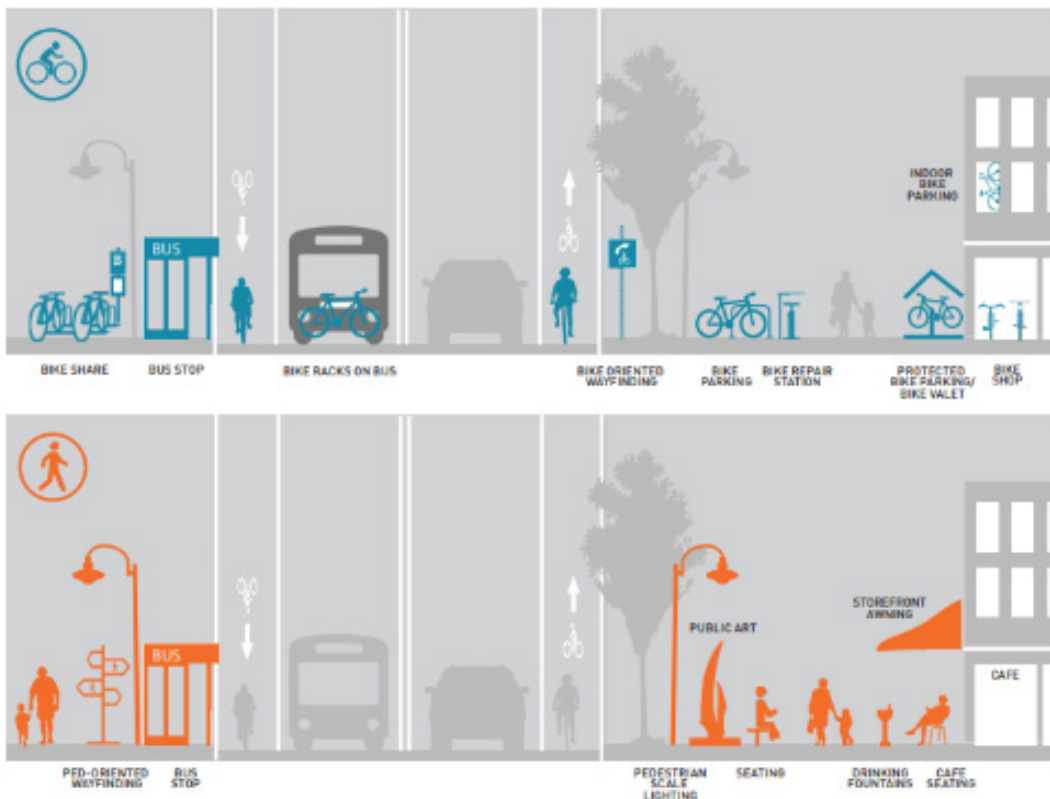
Low Density Neighborhood

General Guidance on Functional Streetscaping Elements

As discussed in the NACTO Urban Street Design Guide and NACTO Urban Street Stormwater Guide, sidewalk amenities such as pedestrian scale lighting and shade trees play a critical role in active transportation street design. Enhanced transit facilities can increase multi-modal trips, and street furniture can make streets more attractive and friendly for older adults, people with disabilities, and caregivers of infants and young children by providing places to rest. In addition, street trees provide shade that improves pedestrian comfort while also conferring important stormwater management and filtration benefits, especially when used in conjunction with green infrastructure such as bioswales. Street furniture, pedestrian scale lighting and shade trees can also bring economic benefits by increasing foot traffic for adjacent businesses and increasing property values.



Photo credit: NACTO



Location of Utilities

Capital projects and new development should consider overall pattern of plantings, lighting, and furnishings when placing new utilities in the right-of-way, and locate existing utility lines to minimize disruption to the desirable streetscape and pedestrian and bicycle through travel while maintaining necessary access for maintenance and emergencies. Utility laterals should run adjacent to, not directly under, potential site furnishing and

tree planting locations wherever possible. Utility covers in the active transportation zone should meet accessibility requirements. For more information on utility placement, see the [Urban Design Guidelines For Fairfax County Commercial Revitalization Districts And Areas, Chapter 2](#).

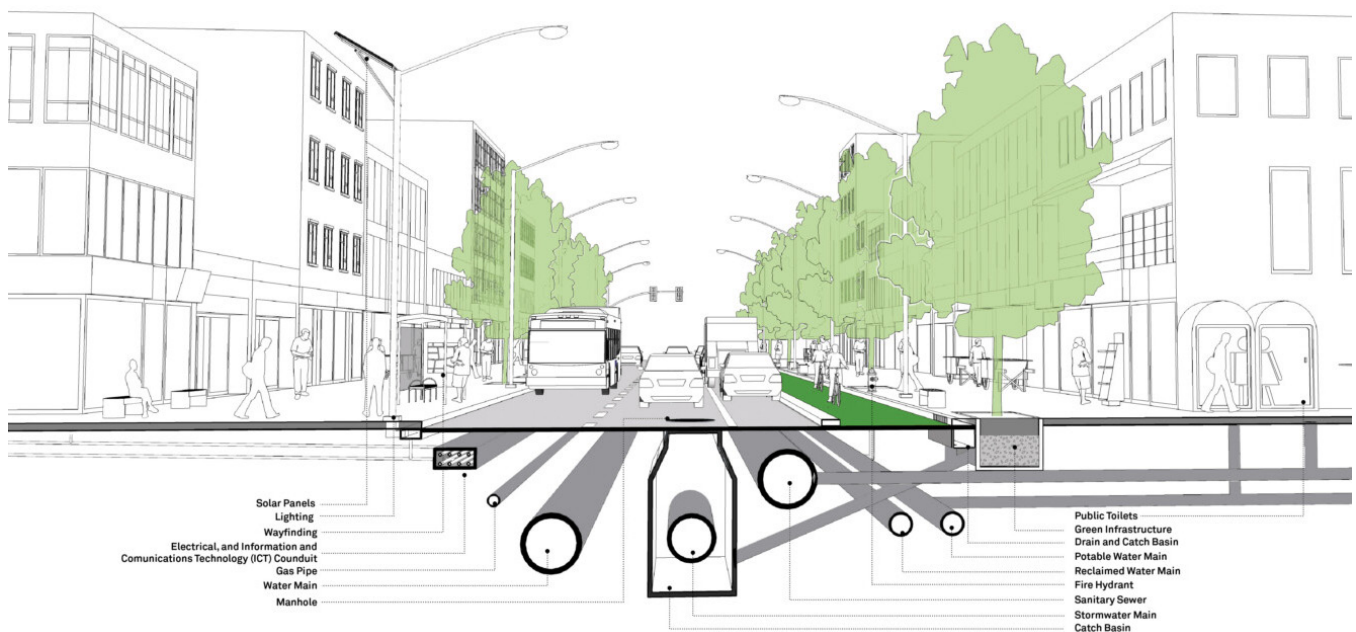


Photo credit: NACTO, <https://nacto.org/publication/global-street-design-guide/>

Trail Enhancements Considerations

Enhancing trails with supporting infrastructure such as trail heads, strategically placed rest areas, intuitive wayfinding signage, shade trees, landscaping, public art, and context-appropriate pedestrian-scale lighting can promote more frequent use for transportation and recreation – even become a destination in itself - while also improving safety and comfort.

Trail enhancements should have a consistent look and feel, and be welcoming, low maintenance and low impact in design. Consider the use of permeable pavers, native landscaping and trees, branding, and durable materials. Improving trail access to surrounding active transportation facilities is also essential to make them more easily reachable and better integrated into the existing transportation network.



Rest Stop/ Repair Station near midpoint between Napa & Yountville., Napa Valley Vine Trail

| ELEMENT | PURPOSE | GENERAL RECOMMENDATIONS | RESOURCES |
|------------------------------|---|---|---|
| Street Trees and Landscaping | <ul style="list-style-type: none"> Provides physical barrier or buffer for improved safety. Provides vertical element and sense of enclosure in the streetscape. Enhances comfort. Helps meet air quality and CO² sequestration goals. Provides shade and alleviates heat island effects. Lowers noise volume levels. Helps to manage stormwater runoff. Psychological benefits from greenery, color of leaves, smell, place making, change of season effects etc. | <ul style="list-style-type: none"> All planting must adhere to guidelines established in the ANSIA 300 Standards for Tree Care Operation. At time of planting, trees should be a minimum of 2-inch caliper or a maximum of 3-inch caliper on major arterials. Trees that are 4 inches or more in diameter at maturity must be at least 6' from the face of curb or outside of the roadway clear zone if there is no curb or the roadway speed is 45MPH or greater. Tree planting spacing: 25-35' Trees should be planted at a minimum of 5 feet from any underground utilities. Species selection and placement should be coordinated with utility companies potentially affected to ensure long-term compatibility. When planting street trees, follow guidelines set by the Tree Care Industry Association. Plans should be prepared by licensed landscape architects or certified arborists. Species availability should be verified prior to plan submission and approval. | <ul style="list-style-type: none"> https://www.fcrevite.org/specialprojects/urban-design-guidelines https://cdn.ymaws.com/americanhort.site-ym.com/resource/collection/38ED7535-9C88-45E5-AF44-01C26838AD0C/ANSI_Nursery_Stock_Standards_AmericanHort_2014.pdf https://online.encodeplus.com/regs/fairfaxcounty-va-pfm/doc-viewer.aspx?se-cid=262&keywords=tree%27s%2Ctreed%2C-treeing%2Ctrees%2Ctrees%27%2Ctree#se-cid=596 https://www.fcrevite.org/sites/default/files/Assets/documents/Urban-Design-Guidelines/Appendix-Alternative-Tree-Planting-Standards.pdf https://www.virginiadot.org/business/resources/NOVA_FairfaxPermits/Landscape_Guidelines.pdf https://www.tcia.org/TCIA/TCIA/Build_Your_Business/A300_Standards/A300_Standards.aspx https://www.viennava.gov/residents/sustainability/trees/street-tree-guidelines |

| ELEMENT | PURPOSE | GENERAL RECOMMENDATIONS | RESOURCES |
|---------------------------|--|---|---|
| Pedestrian Scale Lighting | <ul style="list-style-type: none"> Increases visibility. Improves safety. Enhances comfort. Provides vertical element in the streetscape. | <ul style="list-style-type: none"> Dominion Energy is the approved vendor/supplier for VDOT maintained roads. All intersections where pedestrians may be present should be lit at all four corners with pedestrian scale lighting (same pole as street lighting or separate pole). On roads with 6 or more through lanes and a median, pedestrian scale lighting should also be provided in the median. All bus stops should have pedestrian scale lighting. Pedestrian scale lighting should be provided on all streets and trails in activity centers, commercial areas, transit center areas, and within a ¼ mile of such areas. Pedestrian scale lighting should be provided within ¼ miles of schools, community centers, and public parks with athletics fields. Pedestrian scale lighting should be provided along regional trails. Design: Stylistic compatibility within each area. | <ul style="list-style-type: none"> https://www.fcrevite.org/specialprojects/urban-design-guidelines https://www.virginiadot.org/business/resources/IIM/TE-390_LED_Lighting.pdf https://www.pps.org/article/streetlights https://www.virginiadot.org/vtrc/main/online-reports/pdf/20-r31.pdf https://safety.fhwa.dot.gov/roadway_dept/night_visib/docs/Pedestrian_Lighting_Primer_Final.pdf https://highways.dot.gov/safety/other/visibility/roadway-lighting-resources |
| Transit Accommodations | <ul style="list-style-type: none"> Effective signage and wayfinding allows people to intuitively navigate transit systems. Shelters give transit users a respite from inclement weather conditions. Bicycle parking or docking stations for micromobility devices make transit more accessible and allow more people to use forms of active transportation. | <ul style="list-style-type: none"> Pedestrian-scale lighting, increases comfort and safety around stops. Signs identifying routes serving the transit stops must comply with R410. Other recommended signs include real-time bus arrival estimations, bus route maps and schedules, local maps, and wayfinding/directional signs. Transit Shelters Environmental controls for shelters must be proximity actuated. Shelters must connect to pedestrian access routes (R302) to boarding and alighting platforms (R308). <p>Last Mile Connections</p> <ul style="list-style-type: none"> Docking stations for shared micro-mobility devices and bicycle parking should be located within 50' of transit stops or station entrances and/or entrances to major destinations. | <ul style="list-style-type: none"> https://www.virginiadot.org/business/resources/locdes/rdm/appenda1.pdf https://www.access-board.gov/prowag/ <p>Transit shelters:</p> <ul style="list-style-type: none"> https://www.access-board.gov/prowag/chapter-r3-technical-requirements/#r308-transit-stops-and-transit-shelters https://www.virginiadot.org/business/resources/locdes/rdm/appenda1.pdf https://nacto.org/publication/transit-street-design-guide/station-stop-elements/ https://nacto.org/publication/transit-street-design-guide/stations-stops/ https://nacto.org/publication/transit-street-design-guide/station-stop-elements/stop-elements/ bike-parking/ https://www.vdot.virginia.gov/media/vdot-virginiagov/doing-business/technical-guidance-and-support/technical-guidance-documents/location-and-design/migrated/rdm/chap2b_acc10192023_PM.pdf |

| ELEMENT | PURPOSE | GENERAL RECOMMENDATIONS | RESOURCES |
|---------|---|--|--|
| Benches | <ul style="list-style-type: none"> • Provide places socialization, rest, or passive recreation. • Provides vertical element in the streetscape. | <ul style="list-style-type: none"> • Design: Stylistic compatibility within each area | <ul style="list-style-type: none"> • https://www.fcrevite.org/specialprojects/urban-design-guidelines • https://online.encodeplus.com/regs/fairfax-county-va-pfm/doc-viewer.aspx#secid--1 • https://www.fairfaxcounty.gov/parks/sites/parks/files/assets/documents/plandev/trail-management/traildevelopment.pdf • https://www.ada-compliance.com/ada-compliance/903-benches |
| Signage | <ul style="list-style-type: none"> • Allows for wayfinding and providing a location, for example in the event of an emergency. • Alerts users of safety hazards. • Directs traffic and helps to designate right-of-way. • Provides vertical element in the streetscape. | <p><u>Kiosks (parks, trailheads):</u></p> <ul style="list-style-type: none"> • Location: central w/in trail systems or at trailheads. • Contains: trail system map, trail use guidelines, user group info, emergency info, other useful info. <p><u>Street signs:</u></p> <ul style="list-style-type: none"> • Street signs must be vandal-proof (as per 13-7 to 17-7 under VDOT criteria) unless privately owned (for private streets or driveways). • Sign backgrounds must be blue sheet reflective materials, letters must be silver reflective sheeting, 3M® brand, reflective sheeting must be applied to both sides of blank nameplates, and the sign background can only have one piece of reflective sheeting. • Name plate length: 9" to 48". • Height clearance: Bottom of signs must be 10' above ground, or 16' above ground at signalized intersections. <p><u>Trail signs:</u></p> <ul style="list-style-type: none"> • Standard signing and markings from the MUTCD must be included in the design and construction of the trail to alert trail users of potential hazards and to convey regulatory messages. | <ul style="list-style-type: none"> • https://www.fcrevite.org/specialprojects/urban-design-guidelines • https://www.fairfaxcounty.gov/parks/sites/parks/files/assets/documents/plandev/trail-management/traildevelopment.pdf • https://mutcd.fhwa.dot.gov/ • https://online.encodeplus.com/regs/fairfax-county-va-pfm/doc-viewer.aspx?secid=345#secid-345 • https://online.encodeplus.com/regs/fairfax-county-va-pfm/doc-viewer.aspx?secid=381 • https://online.encodeplus.com/regs/fairfax-county-va-pfm/doc-viewer.aspx?secid=431#secid-431 |

| ELEMENT | PURPOSE | GENERAL RECOMMENDATIONS | RESOURCES |
|---------------------------------------|--|--|--|
| Bicycle Parking, Charging, and Repair | <ul style="list-style-type: none"> Bicycle parking allows bicyclists to secure their bikes at their destinations. Bicycle repair stations allow bicyclists to fix or adjust their bikes so they can continue riding. They fill a gap between a point of emergency and a bike shop with mechanics. Electric bicycle charging stations extend the range of electric bicycle users for longer trips. | <p><u>Bike Parking</u></p> <ul style="list-style-type: none"> Meet Fairfax County Bicycle Parking Guidelines <p><u>Bike Repair Stations</u></p> <ul style="list-style-type: none"> Location: well-lit and visible location with no obstacles, near popular cycling routes or bicycle parking, with enough space for a person to work on their bike while others navigate the space around them (see manufacturer installation recommendations as dimensions vary). <p><u>E-Bike Charging Stations</u></p> <ul style="list-style-type: none"> Design: integrated with bicycle parking racks as some e-bikes do not have removable batteries. Location: places of business or activity where e-bike riders have something to do (work, shop, eat, etc.) while their bikes charge. Placement should follow similar guidelines as in bike parking above. | <ul style="list-style-type: none"> https://www.fcrevite.org/specialprojects/urban-design-guidelines https://www.fairfaxcounty.gov/transportation/sites/transportation/files/assets/documents/pdf/bikeprogram/fcdot_bicycle_parking_guidelines_final2.pdf https://www.virginiadot.org/business/resources/locdes/rdm/appenda1.pdf https://gogreenspoke.com/news/bike-repair-station-guide/ |
| Shared Micromobility | <ul style="list-style-type: none"> Provides additional mobility options for short trips. Increases accessibility and reach of transit. Improves the image of cycling. Reduces congestion. | <ul style="list-style-type: none"> Micromobility operators must have a permit. | <ul style="list-style-type: none"> https://www.fairfaxcounty.gov/cableconsumer/csd/shared-mobility Fairfax County Code Chapter 86 Institute for Transportation and Development Policy: The Bike Sharing Guide |
| Public Art | <ul style="list-style-type: none"> Helps to create a sense of identity (placemaking). Increases sense of comfort. Can generate additional pedestrian trips. Can improve perceived personal safety. | <ul style="list-style-type: none"> Artwork should be responsive to the atmosphere of its location, accessible to all, not impede accessibility to other resources, and not be a risk to public safety. Interactive art can provide duplicate function as play structure for all ages. Light installations can make secluded pedestrian spaces such as under or overpasses more attractive and comfortable to use outside of daylight hours, and can deter loitering and other inappropriate uses of the space. In selecting art, community support, diversity and equity, insurance and liability, and installation and maintenance costs should be considered. | <ul style="list-style-type: none"> Arts Fairfax ArtsFairfax Northern Virginia Arts & Culture Events, Grants & Services County's Murals Program – Paint It Fairfax Paint it, Fairfax! Fairfax County - OCR (fcrevite.org) Fairfax County Park Authority Policy Manual: Policy 110 - Public Art WMATA Art in Transit Program Public Art Reston Art in public places, outreach programs |

8

Project Funding and Prioritization

Active transportation infrastructure is generally implemented through development or public capital projects. This chapter will provide guidance on funding sources for public active transportation infrastructure projects, and the project selection process.

Project Funding

Transportation projects in Fairfax County are funded through a combination of local, state, federal, regional, and private sources as directed by the Fairfax County Transportation Priorities Plan (TPP) for FY 2020–2025. The plan, approved by the Fairfax County Board of Supervisors, outlines the county’s transportation project priorities through FY 2025, with an estimated \$3.036 billion allocated for transportation capital projects. Additionally, the county has made a significant investment in active transportation projects to improve pedestrian and bicycle infrastructure. The Board of Supervisors allocated \$100 million for one-time investments in these areas through FY 2027, with \$30.2 million already distributed for active transportation improvements and maintenance. This initiative is part of a broader effort to prioritize safer pedestrian and bicycle facilities, reflecting the community’s input and needs.

Below is a list of various local, state, regional and federal sources of revenues available for transportation projects:

Local Revenue Sources

- General Obligation Bonds
- Revenue Bonds
- General Funds
- Special Tax Districts
- Service Districts
- Commercial and Industrial Property Tax
- Northern Virginia Transportation Authority (NVTa) 30% Local Funding

Regional Revenue Sources

- NVTa Six Year Program (SYP): Projects funded by NVTa 70% revenues (approx. \$200 million/yr for projects in Northern Virginia).
- Tolls / Concessionaire Agreements: Commuter Choice (I-66 Inside the Beltway, I-95/395); I-66 Outside the Beltway Concession Payment, etc. Future: I-495 Northern Extension
- Regional Gas Tax – Statutorily Directed to WMATA

Statewide Programming

- Six-Year Improvement Program (SYIP): Annually updated state document that earmarks funds (from various sources) for transportation projects in the next six fiscal years.
- Approved by Commonwealth Transportation Board (CTB).
- Programs governed by various state processes:
- Smart Scale
- State of Good Repair
- Interstate Operations and Enhancement Program
- Virginia Highway Safety Improvement Program
- Special Structures
- Revenue Sharing
- State Aid for Transit

Federal Programs

- Discretionary Grants (RAISE; INFRA; MEGA; Safe Streets and Roads for All (SS4A))
- Earmarks
- Defense Access Roads
- Transportation Alternatives (TA) Set-Asides
- Recreational Trails
- Formula Grants
- Congestion Mitigation and Air Quality (CMAQ)
- Regional Surface Transportation Program (RSTP)

It should be noted that most of the sources above are used to fund transportation projects of all scopes, and each of these sources have guidelines and restrictions on use which dictates eligible project types. Given this, FCDOT has historically used mostly local funding to pay for active transportation improvements.



Project Prioritization

Since it will take a substantial amount of funding to build out the entire active transportation network, the County needs to prioritize active transportation projects for implementation. FCDOT is using a four-step approach to prioritizing lists of potential active transportation projects.

Step One: Staff

begins with a high-level spatial analysis of all potential projects using available data and tools to identify projects that based on their location would likely yield the greatest public benefit, such as projects located in High Priority Active Transportation Areas (for more information see next section below), which include areas with higher active transportation user volumes such as denser residential neighborhoods, commercial areas and locations near transit stops, schools and parks; with concentrations of people that are more likely to rely on active travel and transit due to economic necessity, young or high age, or disability; along high-risk corridors for active transportation users; and/or along regional trail routes.

Step Two: Staff, Board Members, Community Stakeholders

Staff, Board members and community stakeholders identify any key projects not captured in Step One that should be considered for further analysis in Step Three, in addition to the top-ranking projects identified in Step One.

Step Three: Staff

The list of projects identified in Steps One and Two will be further refined by staff by identifying opportunities to combine projects, and assign scores based on proximity to active transportation trip generators and ease of implementation. The highest-ranking projects will move on to Step Four.

Step Four: Staff, Board Members, Community Stakeholders, General Public

In the final step, staff will provide project feasibility and an order of magnitude costs for all short-listed projects.

The final product of this process will be a prioritized short list of projects for Board consideration for funding with data and evaluation factors from steps One through Four summarized to facilitate funding decisions.

Based on discussions with the Board, staff will develop final staff recommendations for Board approval.

Outreach plans can be developed specific to the circumstances such as amount of funding available, degree to which input is needed to develop additional projects, and if the proposed projects have already been through a public input process.



Photo credit: FCDOT

What are High Priority Active Transportation Areas?

High Priority Active Transportation Areas are defined as areas with high active transportation need and demand.

Prioritizing active transportation infrastructure in these areas is a strategic way for Fairfax County to serve the greatest amount of current and potential active transportation and transit users, while meeting goals related to active transportation safety, connectivity, economic development and livability. These High Priority Active Transportation Areas are shown on the map on the following page – the darker the color the higher the need and demand for active transportation options. Contact the FCDOT Active Transportation Section at activefairfax@fairfaxcounty.gov to request this data in GIS format.



Photo credit: FCDOT

Transportation Need

Transportation planning has historically not met the needs of marginalized communities. Understanding where the most people with the greatest need for affordable, safe, and convenient mobility options are located will help prioritize improvements. The Transportation Needs Analysis is taking the following socio-demographic factors into consideration:

- Income
- Race
- Disability Status
- Air Quality
- Age
- Housing Cost Burden
- Linguistic Isolation
- Educational Attainment
- Single parent households

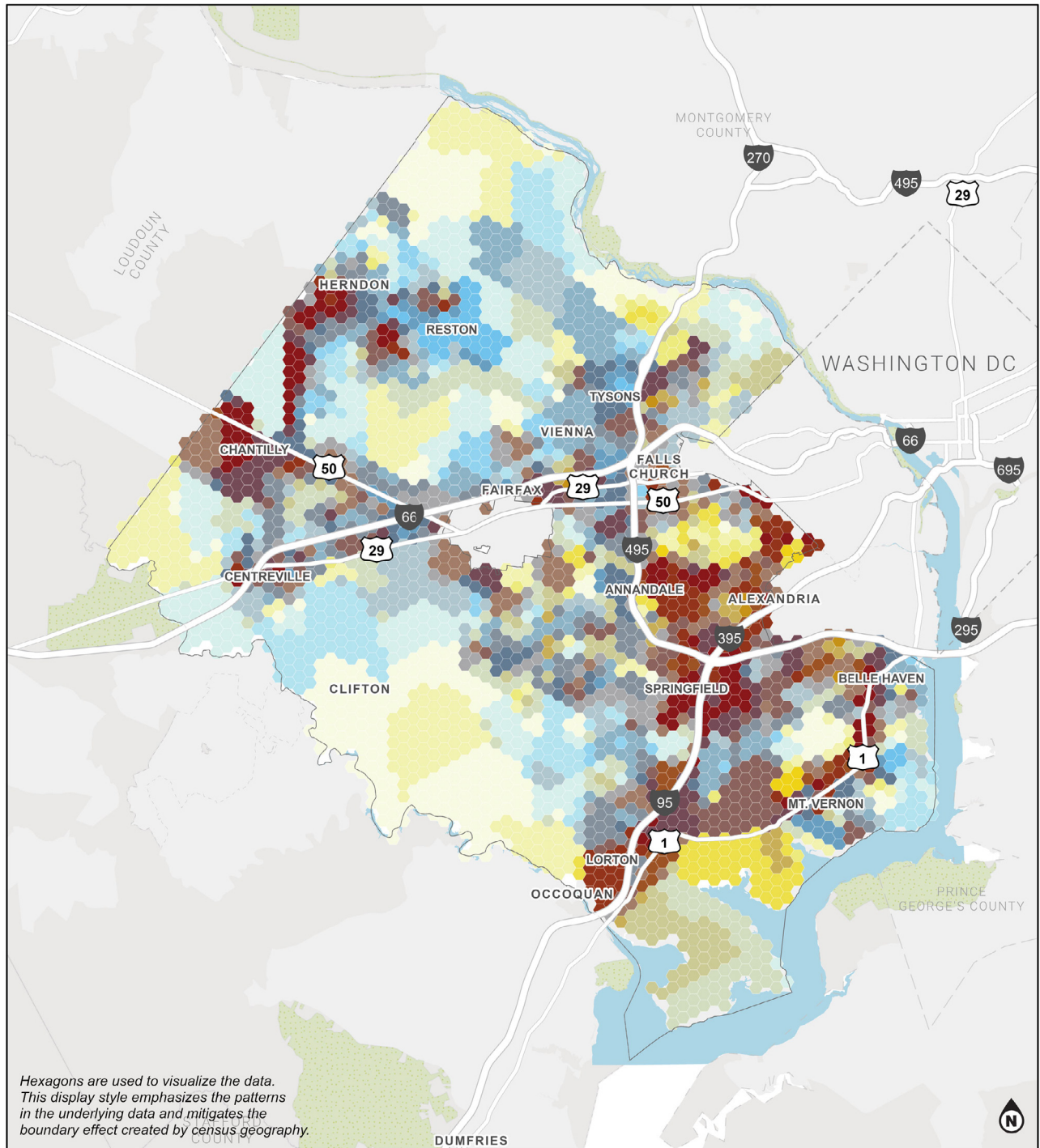
Transportation Demand

A Transportation Demand Analysis is an objective, data driven process that estimates the cumulative demand for active transportation based on known pedestrian generators:

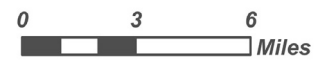
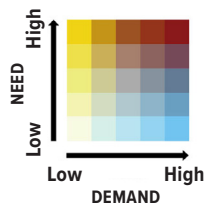
- Population Density
- Employment Density
- Recreation Locations
- Shopping Locations
- Schools
- Transit
- Community Services

Future Activity (special planning areas, planned trails and transit)

Due to short distances between origins and destinations within areas with high demand, there is an opportunity to convert short vehicle trips to active transportation trips.



NEED AND DEMAND ANALYSIS



Data Sources: Fairfax County, TIGER
Map Produced: 2/25/2022
By: Alta Planning + Design

9

Going Beyond the Basics: Iconic Active Transportation Facilities as Economic Development and Placemaking Tools

Active transportation facilities primarily serve a public utilitarian purpose. However, they can be designed with unique, distinct, and creative design details or amenities that animate public and private spaces, enhance streetscapes and neighborhood aesthetics, improve local business viability and public safety by attracting visitors and additional users, and deepen community identity. The following overview highlights example projects that went beyond the utilitarian purpose of public facilities.

Cultural Trail, Indianapolis, IN

When the Indianapolis Cultural Trail officially opened in 2013, it was a bold move, big in scope and impact. The city transformed its sidewalks and streets to pave an eight-mile urban trail network. The biking and walking path threads through downtown's signature landmarks, attractions, and locally loved spots that give the city's neighborhoods their character. The eight-mile trail passes through the vibrant streets of Indianapolis' six distinct cultural districts: Indiana Avenue, White River State Park & The Canal, Mass Ave, Market East, the Wholesale District, and Fountain Square.

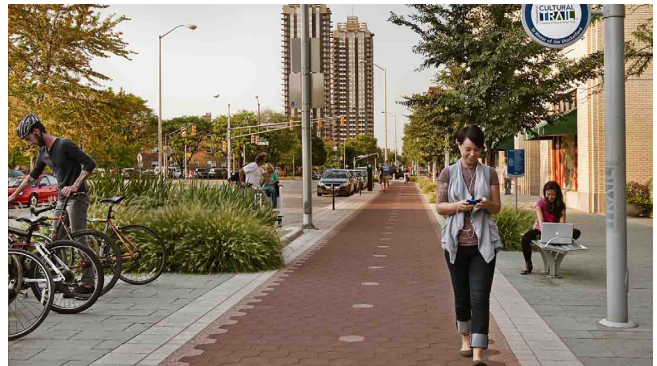


Photo Credit: Visit Indy

11th Street Bridge Park Project, Washington, D.C.

11th Street Bridge Park will connect Wards 7 and 8 across the Anacostia River and demonstrates how a bridge facilitating active transport can also support economic growth, equitable development, and serve as a civic space for all. The project repurposes pillars and piers left over from an old bridge to create a civic space offering public amenities such as: an amphitheater, an environmental education center, a play space with urban agriculture, public art, and more.



Photo Credit: OMA & Luxigon

Atlanta Beltline Trail, Atlanta, GA

Atlanta BeltLine, Atlanta's spectacular outdoor space, comprises 22 miles of unused railroad tracks circling the core of the city's in-town neighborhoods. From trails and walkways to open green space and parks, the Atlanta BeltLine connects people to neighborhoods, dining and places throughout the city. Thousands of visitors flock to the Atlanta BeltLine to exercise, explore Atlanta's neighborhoods and spend time with friends and family. A world-class amenity similar to New York City's High Line, the Atlanta BeltLine is also home to Art on the BeltLine, the Southeast's largest temporary public art project.



Photo Credit: New City LLC

Meadow Park Sculpture Trail, Great Sutton, Ellesmere Port, UK

The Meadow Park Sculpture Trail demonstrates how art can be incorporated into facilities planning and create a sense of community that inspires further improvements to areas nearby the park. It is also an example of what a small, modular project can look like. A local artist, Simon O'Rourke, created a sculpture trail for what was a neglected local park serving Ellesmere Port, a town of just over 60,000 residents. In conjunction with the trail, O'Rourke wrote a short children's story in the form of a poem and created a sculpture for each of its nine verses.



Photo Credit: Simon O'Rourke

Vera Katz Eastbank Esplanade, Portland, OR

The Vera Katz Eastbank Esplanade is a riverfront trail that extends 1.5 miles along the Willamette River, connecting the east and west sides of downtown Portland. The esplanade provides places for active recreation, public gathering, and quiet contemplation. Interpretive signs along the path weave a story of Portland's development, explaining the natural, cultural, and economic history that created its identity. The Esplanade includes 1200 feet of floating walkway, which is the longest one of its kind in the United States and offers the sensation of walking on water.



Photo Credit: John Wachunas

Liberty Bridge, Greenville, SC

The \$4.5 million Liberty Bridge was funded by the City of Greenville's Hospitality Tax, which must be spent on tourism-related facilities. At 345 feet long, 12 feet wide and 8 inches thick, the concrete reinforced deck is supported by a single suspension cable. The deck's distinctive curve has a radius of 214 feet and it is cantilevered toward the waterfall from supporting cables on the outside. The bridge deck also inclines 12 feet or 3% from east to west over the river. While bridges with similar structural concepts have been built in Europe, this bridge is unique in its geometry and there is nothing like it in the United States.

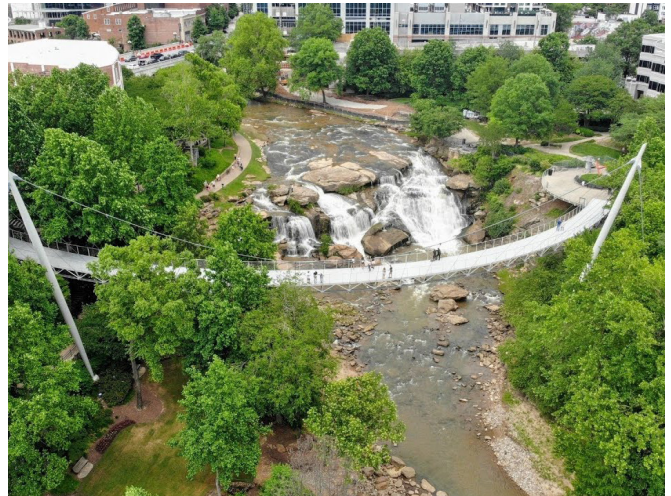


Photo Credit: Jordan Kothe

Delaware River Trail, Philadelphia, PA

The Delaware River Trail is a scenic multimodal trail that stretches along Philadelphia's Central Delaware River Waterfront. The trail improves accessibility to a variety of businesses, residences, and public attractions such as Spruce Street Harbor Park, Blue Cross RiverRink Summerfest and Winterfest, and Cherry Street Pier. The trail improves safety for all modes of travel along Columbus Boulevard, accommodating walkers, joggers, and cyclists, and providing clear separation from motorists. The trail is part of the East Coast Greenway and the Circuit, a vast regional network of hundreds of miles of multiuse trails across Pennsylvania and New Jersey that is growing each year. It also creates an important connection to Spring Garden Street, the site of a planned Greenway connecting the Delaware River to the Schuylkill River.



Photo Credit: WHYY

Cycling Through Water, Limburg, Belgium

This unique bike trail in northern Belgium offers an experience so unique that it has brought the facility worldwide fame. The 700 feet long path slices through a pond in the De Wijers nature reserve. In the middle, the bike trail dips low enough to put riders at eye level with the water. The project was developed by the Department of Tourism as part of the Limburg Province's efforts to promote its 1,240 miles of biking trails and beautiful scenery.

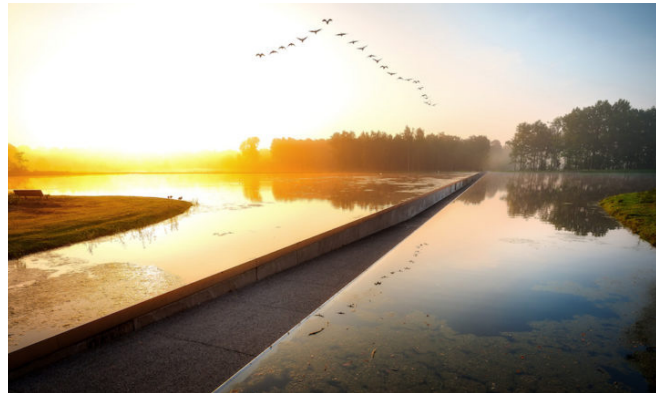


Photo Credit: Luc Dalemans

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Appendices

Appendix A: Contextual Guidance for Selecting All Ages & Abilities Active Transportation



DRAFT Contextual Guidance for Selecting All Ages & Abilities Active Transportation Facilities and Supporting Amenities

To be used for planning purposes only. See notes below table for design details and additional guidance.

| Context Type | Roadway | | | Land Use: Low Density Residential Area (except Commercial Area) or Aesthetic: Rural | | | | Land Use: Suburban Neighborhood (except Commercial Area), Suburban Center (except Mixed-Use Area)/Industrial Area or Aesthetic: Suburban | | | | Land Use: Commercial Area in Low Density Residential or Suburban Neighborhood, Mixed-Use Area in Suburban Center, Community Business Center, Large Institutional Area or Aesthetic: Village Center or Small Town | | | | Land Use: Urban Center, Transit Station Area or Aesthetic: City or Urban | | | |
|--|-------------------------|--|------------------------|--|--|--|--|--|--|---|---|--|---|---|---|--|---|---|---|
| Context Factors | Projected AADT (2045) | Posted Speed Limit | Number of Travel Lanes | | | | | | | | | | | | | | | | |
| Active Transportation Cross Section Components | | | | Recommended Facility on Side A (Note 1) | Recommended Facility on Side B (Note 1) | Recommended Buffer/Landscape/Amenity Panel | Recommended Crosswalk Treatment | Recommended Facility on Side A | Recommended Facility on Side B | Recommended Buffer/Landscape/Amenity Panel | Recommended Crosswalk Treatment | Recommended Facility on Side A | Recommended Facility on Side B | Recommended Buffer/Landscape/Amenity Panel | Recommended Crosswalk Treatment | Recommended Facility on Side A (Note 1) | Recommended Facility on Side B (Note 1) | Recommended Buffer/Landscape/Amenity Panel | Recommended Crosswalk Treatment |
| Planned Roadway Characteristics | Interstate | | | | | Behind Soundwall with 8-ft Landscaping and Amenity Panel, and Privacy Fencing between Public ROW and Private Properties as needed | Grade Separated or Signal | | | Behind Soundwall with 8-ft Landscaping and Amenity Panel, and Privacy Fencing between Public ROW and Private Properties as needed | Grade Separated or Signal | 10-ft Urban Trail | 10-ft Urban Trail | Behind Soundwall with 8-ft Landscaping and Amenity Panel, and Privacy Fencing between Public ROW and Private Properties as needed | Grade Separated or Signal | 12-ft Urban Trail | 12-ft Urban Trail | Behind Soundwall with 8-ft Landscaping and Amenity Panel, and Privacy Fencing between Public ROW and Private Properties as needed | Grade Separated or Signal |
| | 15k and Higher | All Speed Limits | 6+ | | 10-ft Paved Multi-Use Trail Designed for Fast Travel Speeds | | Marked Every 2,000 ft or Less, Grade Separated, PHB or Signal | | | | Marked Every 1,500 ft or Less, Grade Separated, PHB or Signal | a) 8-ft Two-Way Cyclistack with 6-ft Sidewalk or b) 10-ft Urban Trail | a) 8-ft Two-Way Cyclistack with 6-ft Sidewalk or b) 10-ft Urban Trail | a) Off-Street: 8-ft Landscaping and Amenity Panel between Curb and Cyclistack, vertical or detectable separation between Cyclistack and Sidewalk, On-Street: 3-ft Buffer with Defective Vertical Barrier between Travel Lane and Cyclistack + 8-ft Landscaping and Amenity Panel between Curb and Sidewalk OR 3-ft Buffer between Parking Lane and Cyclistack + 8-ft Landscaping and Amenity Panel between Curb and Sidewalk; b) 8-ft Landscaping Panel | Marked Every 1,000 ft or Less, PHB or Signal | a) 10-ft Off-Street Two-Way Cyclistack with 8-ft Sidewalk or b) 12-ft Urban Trail | a) 10-ft Off-Street Two-Way Cyclistack with 8-ft Sidewalk or b) 12-ft Urban Trail | a) Off-Street: 8-ft Landscaping and Amenity Panel between Curb and Cyclistack, vertical or detectable separation between Cyclistack and Sidewalk, On-Street: 3-ft Buffer with Defective Vertical Barrier between Travel Lane and Cyclistack + 8-ft Landscaping and Amenity Panel between Curb and Sidewalk OR 3-ft Buffer between Parking Lane and Cyclistack + 8-ft Landscaping and Amenity Panel between Curb and Sidewalk; b) 8-ft Landscaping Panel | Marked Every 750 ft or Less, PHB or Signal |
| | | | 4 | | 8-ft Paved Multi-Use Trail Designed to County Standards | | Marked Every 1,000 ft or Less, Pedestrian Refuge, PHB, or Signal | | | | Marked Every 1,000 ft or Less, Pedestrian Refuge, PHB, or Signal | | | | Marked Every 600 ft or Less, Pedestrian Refuge and/or RRB at Key Locations, with PHB or Signal where speed limit is 40 mph or higher | a) 6.5-ft Off-Street One-Way Cyclistack with 6-ft Sidewalk or c) 12-ft Urban Trail | a) 6.5-ft Off-Street One-Way Cyclistack with 6-ft Sidewalk or c) 12-ft Urban Trail | a) Off-Street: 8-ft Buffer between Curb and Cyclistack + 8-ft Amenity and Landscaping Panel between Cyclistack and Sidewalk OR 8-ft Landscaping and Amenity Panel between Curb and Cyclistack, vertical or detectable separation between Cyclistack and Sidewalk, On-Street: 3-ft Buffer with Defective Vertical Barrier between Travel Lane and Cyclistack + 8-ft Landscaping and Amenity Panel between Curb and Sidewalk OR 3-ft Buffer between Parking Lane and Cyclistack + 8-ft Landscaping and Amenity Panel between Curb and Sidewalk; b) 8-ft Landscaping and Amenity Panel between Curb and Sidewalk; c) 8-ft Buffer | Marked Every 600 ft or Less, Pedestrian Refuge and/or RRB at Key Locations |
| | | | 2 | | 6-ft Pedestrian Trail | | Marked Every 1,000 ft or Less, Pedestrian Refuge and/or RRB at Key Locations, with PHB or Signal where speed limit is 40 mph or higher | | | | Marked Every 1,000 ft or Less, Pedestrian Refuge and/or RRB at Key Locations, with PHB or Signal where speed limit is 40 mph or higher | | | | Marked Every 600 ft or Less, Pedestrian Refuge and/or RRB at Key Locations | | | | Marked Every 600 ft or Less, Pedestrian Refuge and/or RRB at Key Locations |
| | | | 6+ (Note 1) | | 8-ft Paved Multi-Use Trail Designed to County Standards | | Marked Every 2,000 ft or Less, Grade Separated, PHB or Signal | | | | Marked Every 1,500 ft or Less, Grade Separated, PHB or Signal | a) 8-ft One-Way Cyclistack with 6-ft Sidewalk, b) 8-ft Two-Way Cyclistack with 6-ft Sidewalk or c) 10-ft Urban Trail | a) 8-ft One-Way Cyclistack with 6-ft Sidewalk, b) 8-ft Two-Way Cyclistack with 6-ft Sidewalk or c) 10-ft Urban Trail | | Marked Every 750 ft or Less, PHB or Signal | a) 6.5-ft Off-Street One-Way Cyclistack with 6-ft Sidewalk or c) 12-ft Urban Trail | a) 6.5-ft Off-Street One-Way Cyclistack with 6-ft Sidewalk or c) 12-ft Urban Trail | a) Off-Street: 8-ft Buffer between Curb and Cyclistack + 8-ft Amenity and Landscaping Panel between Cyclistack and Sidewalk OR 8-ft Landscaping and Amenity Panel between Curb and Cyclistack, vertical or detectable separation between Cyclistack and Sidewalk, On-Street: 3-ft Buffer with Defective Vertical Barrier between Travel Lane and Cyclistack + 8-ft Landscaping and Amenity Panel between Curb and Sidewalk OR 3-ft Buffer between Parking Lane and Cyclistack + 8-ft Landscaping and Amenity Panel between Curb and Sidewalk; b) 8-ft Landscaping and Amenity Panel between Curb and Sidewalk; c) 8-ft Buffer | Marked Every 750 ft or Less, PHB or Signal |
| | 6k-15k | All Speed Limits | 4+ (Note 1) | | | With 35 mph Speed Limit or Lower, Marked at Every Intersection Where Pedestrian Facilities are Present or at Key Locations (Note 5) with Pedestrian Refuge and/or Optional RRB, With 40 mph Speed Limit or Higher, Marked Every 1,000 ft or Less with PHB or Signal. | | | | With 35 mph Speed Limit or Lower, Marked at Every Intersection Where Pedestrian Facilities are Present and at Key Locations (Note 5) with Pedestrian Refuge and/or Optional RRB, With 40 mph Speed Limit or Higher, Marked Every 1,000 ft or Less with PHB or Signal. | | | a) Off-Street: 8-ft Buffer between Curb and Cyclistack + 8-ft Amenity and Landscaping Panel between Cyclistack and Sidewalk or 8-ft Landscaping and Amenity Panel between Curb and Cyclistack, vertical or detectable separation between Cyclistack and Sidewalk, On-Street: 3-ft Buffer with Defective Vertical Barrier between Travel Lane and Cyclistack + 8-ft Landscaping and Amenity Panel between Curb and Sidewalk OR 3-ft Buffer between Parking Lane and Cyclistack + 8-ft Landscaping and Amenity Panel between Curb and Sidewalk; b) 8-ft Landscaping and Amenity Panel between Curb and Sidewalk; c) 8-ft Buffer | With 35 mph Speed Limit or Lower, Marked Every 750 ft or Less with Pedestrian Refuge and/or Optional RRB, With 40 mph Speed Limit or Higher, Marked Every 750 ft or Less with PHB or Signal. | | | | With 35 mph Speed Limit or Lower, Marked Every 750 ft or Less with Pedestrian Refuge and/or Optional RRB, With 40 mph Speed Limit or Higher, Marked Every 750 ft or Less with PHB or Signal. | |
| | | | 2 | | 6-ft Pedestrian Trail | 8-ft | Marked at Every Intersection Where Pedestrian Facilities are Present or at Key Locations (Note 5), Pedestrian Refuge and/or RRB at Key Locations. | | | 8-ft | Marked at Every Intersection Where Pedestrian Facilities are Present and at Key Locations (Note 5), Pedestrian Refuge and/or RRB at Key Locations. | a) 8-ft One-Way Cyclistack with 6-ft Sidewalk, b) 8-ft Two-Way Cyclistack with 6-ft Sidewalk or c) 10-ft Urban Trail | a) 8-ft One-Way Cyclistack with 6-ft Sidewalk, b) 8-ft Two-Way Cyclistack with 6-ft Sidewalk or c) 10-ft Urban Trail | | Marked Every 600 ft or Less, Pedestrian Refuge and/or RRB at Key Locations | | | | Marked Every 600 ft or Less, Pedestrian Refuge and/or RRB at Key Locations |
| | 3k-6k | All Speed Limits | 4+ (Note 1) | | a) No On-Street Parking: 5-ft Standard Bike Lane + 8-ft Paved Multi-Use Trail Designed to County Standards, With On-Street Parking: 8-ft Buffered Bike Lane + 6-ft Pedestrian Trail, or b) 8-ft Paved Multi-Use Trail Designed to County Standards | | With 35 mph Speed Limit or Lower, Marked at Every Intersection Where Pedestrian Facilities are Present or at Key Locations (Note 5) with Pedestrian Refuge and/or Optional RRB, With 40 mph Speed Limit or Higher, Marked Every 1,000 ft or Less with PHB or Signal. | | | a) No On-Street Parking: 5-ft Standard Bike Lane + 8-ft Paved Multi-Use Trail Designed to County Standards, With On-Street Parking: 8-ft Buffered Bike Lane + 6-ft Pedestrian Trail, or b) 8-ft Paved Multi-Use Trail Designed to County Standards | With 35 mph Speed Limit or Lower, Marked at Every Intersection Where Pedestrian Facilities are Present and at Key Locations (Note 5) with Pedestrian Refuge and/or Optional RRB, With 40 mph Speed Limit or Higher, Marked Every 1,000 ft or Less with PHB or Signal. | a) 8-ft One-Way Cyclistack with 6-ft Sidewalk, b) 8-ft Two-Way Cyclistack with 6-ft Sidewalk or c) 10-ft Urban Trail | a) 8-ft One-Way Cyclistack with 6-ft Sidewalk, b) 8-ft Two-Way Cyclistack with 6-ft Sidewalk or c) 10-ft Urban Trail | | With 35 mph Speed Limit or Lower, Marked at Every Intersection Where Pedestrian Facilities are Present and at Key Locations (Note 5) with Pedestrian Refuge and/or Optional RRB, With 40 mph Speed Limit or Higher, Marked Every 1,000 ft or Less with PHB or Signal. | | | | With 35 mph Speed Limit or Lower, Marked at Every Intersection Where Pedestrian Facilities are Present and at Key Locations (Note 5) with Pedestrian Refuge and/or Optional RRB, With 40 mph Speed Limit or Higher, Marked Every 1,000 ft or Less with PHB or Signal. |
| | | | 2 | | | | Marked at Every Intersection Where Pedestrian Facilities are Present and at Key Locations (Note 5), Pedestrian Refuge and/or RRB at Key Locations With Speed Limit of 40 mph or Higher. | | | a) No On-Street Parking: 5-ft Standard Bike Lane + 8-ft Paved Multi-Use Trail Designed to County Standards, With On-Street Parking: 8-ft Buffered Bike Lane + 6-ft Pedestrian Trail, or b) 8-ft Paved Multi-Use Trail Designed to County Standards | Marked at Every Intersection Where Pedestrian Facilities are Present and at Key Locations (Note 5), Pedestrian Refuge and/or RRB at Key Locations With Speed Limit of 40 mph or Higher. | a) 8-ft One-Way Cyclistack with 6-ft Sidewalk, b) 8-ft Two-Way Cyclistack with 6-ft Sidewalk or c) 10-ft Urban Trail | a) 8-ft One-Way Cyclistack with 6-ft Sidewalk, b) 8-ft Two-Way Cyclistack with 6-ft Sidewalk or c) 10-ft Urban Trail | | Marked Every 600 ft or Less, Pedestrian Refuge and/or RRB at Key Locations | | | | Marked Every 600 ft or Less, Pedestrian Refuge and/or RRB at Key Locations |
| | 1-3k | Above 25 mph | 4+ (Note 1) | | a) No On-Street Parking: 5-ft Standard Bike Lane + 8-ft Paved Multi-Use Trail Designed to County Standards, With On-Street Parking: 8-ft Buffered Bike Lane + 6-ft Pedestrian Trail, or b) 8-ft Paved Multi-Use Trail Designed to County Standards (preferred if Posted Speed >35 mph) | | Marked at Every Intersection Where Pedestrian Facilities are Present and at Key Locations (Note 5) | | | a) No On-Street Parking: 5-ft Standard Bike Lane + 8-ft Paved Multi-Use Trail Designed to County Standards, With On-Street Parking: 8-ft Buffered Bike Lane + 6-ft Standard Sidewalk, or b) 8-ft Standard Sidewalk | Marked at Every Intersection Where Pedestrian Facilities are Present and at Key Locations (Note 5) | a) 8-ft One-Way Cyclistack with 6-ft Sidewalk, b) 8-ft Two-Way Cyclistack with 6-ft Sidewalk or c) 10-ft Urban Trail | a) 8-ft One-Way Cyclistack with 6-ft Sidewalk, b) 8-ft Two-Way Cyclistack with 6-ft Sidewalk or c) 10-ft Urban Trail | | Marked Every 600 ft or Less | | | a) Off-Street: 8-ft Buffer between Curb and Cyclistack + 8-ft Amenity and Landscaping Panel between Cyclistack and Sidewalk OR 8-ft Landscaping and Amenity Panel between Curb and Cyclistack, vertical or detectable separation between Cyclistack and Sidewalk, On-Street: 3-ft Buffer with Defective Vertical Barrier between Travel Lane and Cyclistack + 8-ft Landscaping and Amenity Panel between Curb and Sidewalk OR 3-ft Buffer between Parking Lane and Cyclistack + 8-ft Landscaping and Amenity Panel between Curb and Sidewalk; b) 8-ft Landscaping and Amenity Panel between Curb and Sidewalk; c) 8-ft Buffer | Marked at Every Intersection |
| 2+ (Note 1) | | | | a) No On-Street Parking: 5-ft Standard Bike Lane + 8-ft Paved Multi-Use Trail Designed to County Standards, With On-Street Parking: 8-ft Buffered Bike Lane + 6-ft Pedestrian Trail, or b) 8-ft Paved Multi-Use Trail Designed to County Standards (preferred if Posted Speed >35 mph) | | Marked at Every Intersection Where Pedestrian Facilities are Present and at Key Locations (Note 5) | | | a) No On-Street Parking: 5-ft Standard Bike Lane + 8-ft Standard Sidewalk (Note 2), With On-Street Parking: 8-ft Buffered Bike Lane + 6-ft Standard Sidewalk (Note 2), or b) 10-ft Paved Multi-Use Trail Designed for Fast Travel Speeds | Marked at Every Intersection Where Pedestrian Facilities are Present and at Key Locations (Note 5) | | | | Marked Every 600 ft or Less | | | | Marked at Every Intersection or Every 600 ft or Less | |
| 25 mph or Less (15 mph preferred) (Note 1) | | 2 | | Neighborhood Greenway + 6-ft Paved Pedestrian Trail | Neighborhood Greenway | | | | | Neighborhood Greenway and 6-ft Sidewalk (Residential) or 8-ft Sidewalk (Commercial) | Neighborhood Greenway and 6-ft Sidewalk (Residential) or 8-ft Sidewalk (Commercial) | | Marked at Key Locations | | | | | | Marked at Key Locations |
| Under 1k | Above 25 mph | 2+ (Note 1) | | a) No On-Street Parking: 5-ft Standard Bike Lane + 8-ft Paved Multi-Use Trail Designed to County Standards (preferred if Posted Speed >35 mph) | | Marked at Key Locations | | | | a) No On-Street Parking: 5-ft Standard Bike Lane + 8-ft Standard Sidewalk (Note 2), With On-Street Parking: 8-ft Buffered Bike Lane + 6-ft Standard Sidewalk (Note 2), With On-Street Parking: 8-ft Buffered Bike Lane + 6-ft Standard Sidewalk, or b) 10-ft Paved Multi-Use Trail Designed to County Standards | Marked at Key Locations | | | | Marked at Key Locations | | | | Marked at Key Locations |
| | | 25 mph or Less (15 mph preferred) (Note 1) | 2 (With Centerline) | | Neighborhood Greenway + 6-ft Paved Pedestrian Trail | Neighborhood Greenway | | | | | Neighborhood Greenway and 6-ft Standard Sidewalk | Neighborhood Greenway and 6-ft Standard Sidewalk | | | | Marked at Key Locations | | | |
| | 15 mph or Less (Note 1) | 2 (Without Centerline, No Curb and Gutter preferred) | | a) Pedestrian First Street or b) Neighborhood Greenway + 6-ft Paved Pedestrian Trail | a) Pedestrian First Street or b) Neighborhood Greenway | Landscaping and Amenities should be Provided within the Road Space, in an Alternating (Chevron) Pattern | Unmarked | | a) Pedestrian First Street or b) Neighborhood Greenway + 6-ft Sidewalk | Landscaping and Amenities should be Provided within the Road Space, in an Alternating (Chevron) Pattern | Unmarked | | | Unmarked | a) Pedestrian First Street or b) Neighborhood Greenway + 6-ft Sidewalk (Residential) or 8-ft Sidewalk (Commercial) | a) Pedestrian First Street or b) Neighborhood Greenway + 6-ft Sidewalk (Residential) or 8-ft Sidewalk (Commercial) | Landscaping and Amenities should be Provided within the Road Space, in an Alternating (Chevron) Pattern | Unmarked | |
| Pedestrian Zone - Vehicles Prohibited | NA | NA | NA | NA | Landscaping and amenities should be provided throughout the space. | NA | NA | NA | NA | Landscaping and amenities should be provided throughout the space. | NA | NA | NA | Landscaping and amenities should be provided throughout the space. | NA | NA | NA | Landscaping and Amenities should be provided throughout the Space. | Marked at every intersection |
| Landscaping/Amenity Panel Design Details (Note 8) (Maintenance actions will need to be determined) | | | | Street Trees, Grass or Natural Landscaping, Occasional benches, Pedestrian Scale Lighting along Regional Trails, at Intersections and at Trail Crossings. | | | | Street Trees, Grass or Formal Landscaping, pedestrian Scale Lighting, Occasional Benches. | | | | See Special Planning Area Design Standards and/or Guidelines. | | | | See Special Planning Area Design Standards and/or Guidelines. | | | |

Acronyms:

AADT = Annual average daily traffic

PHB = Pedestrian Hybrid Beacon

RRFB = Rectangular Rapid-Flashing Beacon

Notes:

Note 1: Consider implementing a interim (striped) or permanent (reconstructed curbline) road diet

Note 2: 8+ft Paved Multi-Use Trail Designed to County Standards (Low Density Residential Area or Rural Aesthetic), 10ft Paved Multi-Use Trail Designed for Fast Travel Speeds (Suburban Neighborhood/Industrial Area), 10+ft Urban Trail (Suburban Center/Community Business Center/ Large Institutional Area) or 10ft Off-Street Two-Way Cycletrack (Urban Center/Transit Station Area)/10+ft Urban Trail if part of the designated Fairfax County Trail Network.

Note 3: A two-way bicycle facility should be considered where high demand for two-way bicycle traffic on one or both sides of the road is to be expected. In constrained conditions, a two-way off-street cycletrack with sidewalk can be replaced by a 10+ft Urban Trail at pinch points or for longer distances. The buffer should be reduced only if minimum width Urban Trails on both sides of the road are not feasible.

Note 4: Subject to VDOT approval; Enabling Legislation needed

Note 5: Where there is no pedestrian facility or perpendicular trail on one or both sides of the street but there is demonstrated demand for pedestrian facilities or pedestrian-oriented land uses, crosswalks should also be marked.

Note 6: Consider use of advisory bike lanes or shoulders in the interim

Note 7: Active transportation accommodations may differ on each side of the road to serve the greatest variety of users, needs and preferences. Which side a recommended facility should be located on depends on adjacent land uses, network function, existing infrastructure and other site specific factors.

Note 8: Reference the Comprehensive Plan and any applicable streetscaping guidelines, Fairfax County and state street tree policies and guidelines, federal and state guidance on pedestrian-scale lighting spacing and the VDOT Road Design Manual for applicable clear zone requirements. Avoid landscaping that will horizontally or vertically encroach on the active transportation facility.

Appendix B: Guidance on Pedestrian Level of Comfort

Pedestrian Level of Comfort in Low Density Residential Areas

| Road Context | Pathway width | Buffer Width | Pedestrian Environment and Supporting Amenities | | | | | | | |
|---|---------------|--------------|---|------------------|------------------|---------------|--------------------------------|------------------|------------------|---------------|
| | | | No Building Visible from Sidewalk | | | | Building Visible from Sidewalk | | | |
| | | | PSL & ST: No | PSL: Yes, ST: No | PSL: No, ST: Yes | PSL & ST: Yes | PSL & ST: No | PSL: Yes, ST: No | PSL: No, ST: Yes | PSL & ST: Yes |
| Posted Speed Limit 25 or less and AADT <9000 | 6+ | 8ft to >8ft | 6 | 7 | 8 | 9 | 7 | 8 | 9 | 10 |
| | | 4ft to 7ft | 5 | 6 | 7 | 8 | 6 | 7 | 8 | 9 |
| | | 0 ft to <4ft | 4 | 5 | 6 | 7 | 5 | 6 | 7 | 8 |
| | <6ft | 8ft to >8ft | 3 | 4 | 5 | 6 | 4 | 5 | 6 | 7 |
| | | 4ft to 7ft | 2 | 3 | 4 | 5 | 3 | 4 | 5 | 6 |
| | | 0 ft to <4ft | 1 | 2 | 3 | 4 | 2 | 3 | 4 | 5 |
| Posted Speed Limit 25 or less and AADT 9000 or more | 6-7ft | 8ft to >8ft | 5 | 6 | 7 | 8 | 6 | 7 | 8 | 9 |
| | | 4ft to 7ft | 4 | 5 | 6 | 7 | 5 | 6 | 7 | 8 |
| | | 0 ft to <4ft | 3 | 4 | 5 | 6 | 4 | 5 | 6 | 7 |
| | <6ft | 8ft to >8ft | 2 | 3 | 4 | 5 | 3 | 4 | 5 | 6 |
| | | 4ft to 7ft | 1 | 2 | 3 | 4 | 2 | 3 | 4 | 5 |
| | | 0 ft to <4ft | 1 | 1 | 2 | 3 | 1 | 2 | 3 | 4 |
| Posted Speed Limit 30 or more | 6-7ft | 8ft to >8ft | 4 | 5 | 6 | 7 | 5 | 6 | 7 | 8 |
| | | 4ft to 7ft | 3 | 4 | 5 | 6 | 4 | 5 | 6 | 7 |
| | | 0 ft to <4ft | 2 | 3 | 4 | 5 | 3 | 4 | 5 | 6 |
| | <6ft | 8ft to >8ft | 1 | 2 | 3 | 4 | 2 | 3 | 4 | 5 |
| | | 4ft to 7ft | 1 | 1 | 2 | 3 | 1 | 2 | 3 | 4 |
| | | 0 ft to <4ft | 1 | 1 | 1 | 2 | 1 | 1 | 2 | 3 |

| Pedestrian Level of Comfort |
|--|
| 8 and higher = Comfortable most of the time |
| 5 - 7 = Tolerable most of the time |
| 4 and lower = Uncomfortable most of the time |

PSL = Pedestrian Scale Lighting; ST=Street Trees

| Additional Considerations to Determine Pedestrian Level of Comfort |
|---|
| 1. Add 1 if additional pedestrian amenities are present (benches, public art, water fountains, wayfinding signage, informational signage, etc.). |
| 2. Add 0.5 if dedicated bike facility is present (buffer from traffic); deduct an additional 0.5 if the bike facility serves All Ages and Abilities (fewer people will ride bikes/scooters on the pedestrian facility). |
| 3. Add 0.5 if on-street parking lane is present adjacent to the facility (buffer from traffic). |
| 4. Add 0.5 for raised driveway crossings. |
| 5. Add 0.5 if street lighting is present. |
| 6. Add 0.5 for Traffic Calming street elements in place (other than on-street parking). |
| 7. Deduct 1 for substandard curb ramps. |
| 8. Deduct 1 for poor surface quality. |
| 9. Deduct 2 for vegetation overgrowth. |
| 10. Deduct 2 if facility is visually secluded from the street. |

Pedestrian Level of Comfort in Suburban Neighborhoods and Industrial Areas

| Road Context | Pathway width | Buffer Width | Pedestrian Environment (within 20ft of back of sidewalk), Street Trees and Pedestrian Lighting | | | | | | | | | | | |
|---|---------------|--------------|--|------------------|------------------|---------------|-------------------------|------------------|------------------|---------------|------------------------------|------------------|------------------|---------------|
| | | | High Wall; Privacy Fence | | | | 16+ ft Building Setback | | | | <15 or 15ft Building Setback | | | |
| | | | PSL & ST: No | PSL: Yes, ST: No | PSL: No, ST: Yes | PSL & ST: Yes | PSL & ST: No | PSL: Yes, ST: No | PSL: No, ST: Yes | PSL & ST: Yes | PSL & ST: No | PSL: Yes, ST: No | PSL: No, ST: Yes | PSL & ST: Yes |
| Posted Speed Limit 25 or less and AADT <9000 | 8+ft | 8ft to >8ft | 5 | 6 | 7 | 8 | 6 | 7 | 8 | 8 | 7 | 8 | 9 | 10 |
| | | 4ft to 7ft | 4 | 5 | 6 | 7 | 5 | 6 | 7 | 8 | 6 | 7 | 8 | 9 |
| | | 0 ft to <4ft | 3 | 4 | 5 | 6 | 4 | 5 | 6 | 7 | 5 | 6 | 7 | 8 |
| | 6-7ft | 8ft to >8ft | 5 | 6 | 7 | 8 | 6 | 7 | 8 | 9 | 7 | 8 | 9 | 10 |
| | | 4ft to 7ft | 4 | 5 | 6 | 7 | 5 | 6 | 7 | 8 | 6 | 7 | 8 | 9 |
| | | 0 ft to <4ft | 3 | 4 | 5 | 6 | 4 | 5 | 6 | 7 | 5 | 6 | 7 | 8 |
| | <6ft | 8ft to >8ft | 2 | 3 | 4 | 5 | 3 | 4 | 5 | 6 | 4 | 5 | 6 | 7 |
| | | 4ft to 7ft | 1 | 2 | 3 | 4 | 2 | 3 | 4 | 5 | 3 | 4 | 5 | 6 |
| | | 0 ft to <4ft | 1 | 1 | 2 | 3 | 1 | 2 | 3 | 4 | 2 | 3 | 4 | 5 |
| Posted Speed Limit 25 or less and AADT 9000 or more | 8+ft | 8ft to >8ft | 5 | 6 | 7 | 8 | 6 | 7 | 8 | 9 | 7 | 8 | 9 | 10 |
| | | 4ft to 7ft | 4 | 5 | 6 | 7 | 5 | 6 | 7 | 8 | 6 | 7 | 8 | 9 |
| | | 0 ft to <4ft | 3 | 4 | 5 | 6 | 4 | 5 | 6 | 7 | 5 | 6 | 7 | 8 |
| | 6-7ft | 8ft to >8ft | 5 | 6 | 7 | 8 | 6 | 7 | 8 | 9 | 7 | 8 | 9 | 10 |
| | | 4ft to 7ft | 4 | 5 | 6 | 7 | 5 | 6 | 7 | 8 | 6 | 7 | 8 | 9 |
| | | 0 ft to <4ft | 3 | 4 | 5 | 6 | 4 | 5 | 6 | 7 | 5 | 6 | 7 | 8 |
| | <6ft | 8ft to >8ft | 1 | 2 | 3 | 4 | 2 | 3 | 4 | 5 | 3 | 4 | 5 | 6 |
| | | 4ft to 7ft | 1 | 1 | 2 | 3 | 1 | 2 | 3 | 4 | 2 | 3 | 4 | 5 |
| | | 0 ft to <4ft | 1 | 1 | 1 | 2 | 1 | 1 | 2 | 3 | 1 | 2 | 3 | 4 |
| Posted Speed Limit 30 or more | 8+ft | 8ft to >8ft | 4 | 5 | 6 | 7 | 5 | 6 | 7 | 8 | 6 | 7 | 8 | 9 |
| | | 4ft to 7ft | 3 | 4 | 5 | 6 | 4 | 5 | 6 | 7 | 5 | 6 | 7 | 8 |
| | | 0 ft to <4ft | 2 | 3 | 4 | 5 | 3 | 4 | 5 | 6 | 4 | 5 | 6 | 7 |
| | 6-7ft | 8ft to >8ft | 4 | 5 | 6 | 7 | 5 | 6 | 7 | 8 | 6 | 7 | 8 | 9 |
| | | 4ft to 7ft | 3 | 4 | 5 | 6 | 4 | 5 | 6 | 7 | 5 | 6 | 7 | 8 |
| | | 0 ft to <4ft | 2 | 3 | 4 | 5 | 3 | 4 | 5 | 6 | 4 | 5 | 6 | 7 |
| | <6ft | 8ft to >8ft | 1 | 1 | 2 | 3 | 1 | 2 | 3 | 4 | 2 | 3 | 4 | 5 |
| | | 4ft to 7ft | 1 | 1 | 1 | 2 | 1 | 1 | 2 | 3 | 1 | 2 | 3 | 4 |
| | | 0 ft to <4ft | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 2 | 3 |

Pedestrian Level of Comfort

7 and higher = Comfortable most of the time

4 - 6 = Tolerable most of the time

3 and lower = Uncomfortable most of the time

PSL = Pedestrian Scale Lighting; ST = Street Trees

Additional Considerations to Determine Pedestrian Level of Comfort

1. Add 0.5 if formal landscaping (other than grass/mulch) is present (buffer zone or building zone).
2. Add 0.5 if aesthetic surface treatments (such as pavers, brick or stamped concrete) are present in the sidewalk zone, buffer zone and/or building zone.
3. Add 0.25 if benches or places to rest are present.
3. Add 0.25 if public art (sculptures or murals) are present.
4. Add 0.25 if additional pedestrian amenities are present (water fountains, wayfinding signage, informational signage, trash cans, etc.)
5. Add 0.5 if dedicated bike facility is present (buffer from traffic); Add an additional 0.5 if the bike facility serves All Ages and Abilities (fewer people will ride bikes/scooters on the pedestrian
6. Add 0.5 if on-street parking lane is present adjacent to the facility (buffer from traffic).
7. Add 0.5 for raised driveway crossings or no driveway crossings.
8. Add 0.5 for Traffic Calming street elements in place (other than on-street parking).
9. Deduct for frequent driveways (3 or more per 100').
10. Deduct 1 for substandard curb ramps at driveways.
11. Deduct 1 for poor surface quality and/or debris.
12. Deduct 2 for vegetation overgrowth.

Pedestrian Level of Comfort in Suburban Centers, Community Business Centers, and Large Institutional Areas

| Road Context | Pathway width | Buffer Width | Pedestrian Environment (within 20ft of back of sidewalk), Street Trees and Pedestrian Lighting | | | | | | | | | | | | | | | |
|---|---------------|--------------|--|------------------|------------------|---------------|--|------------------|------------------|---------------|-----------------------|------------------|------------------|---------------|----------------------|------------------|------------------|---------------|
| | | | High Wall; Privacy Fence | | | | Surface Parking Lot; Auto-Oriented Use; Service Drive/Drive Isle; Vacant Lot | | | | Passive Building Zone | | | | Active Building Zone | | | |
| | | | PSL & ST: No | PSL: Yes, ST: No | PSL: No, ST: Yes | PSL & ST: Yes | PSL & ST: No | PSL: Yes, ST: No | PSL: No, ST: Yes | PSL & ST: Yes | PSL & ST: No | PSL: Yes, ST: No | PSL: No, ST: Yes | PSL & ST: Yes | PSL & ST: No | PSL: Yes, ST: No | PSL: No, ST: Yes | PSL & ST: Yes |
| Posted Speed Limit 25 or less and AADT <3000 | 8+ft | 8ft to >8ft | 7 | 6 | 5 | 4 | 6 | 5 | 4 | 3 | 5 | 4 | 3 | 2 | 4 | 3 | 2 | 1 |
| | | 4ft to 7ft | 8 | 7 | 6 | 5 | 7 | 6 | 5 | 4 | 6 | 5 | 4 | 3 | 5 | 4 | 3 | 2 |
| | | 0 ft to <4ft | 9 | 8 | 7 | 6 | 8 | 7 | 6 | 5 | 7 | 6 | 5 | 4 | 6 | 5 | 4 | 3 |
| | 6 to <8ft | 8ft to >8ft | 8 | 7 | 6 | 5 | 7 | 6 | 5 | 4 | 6 | 5 | 4 | 3 | 5 | 4 | 3 | 2 |
| | | 4ft to 7ft | 9 | 8 | 7 | 6 | 8 | 7 | 6 | 5 | 7 | 6 | 5 | 4 | 6 | 5 | 4 | 3 |
| | | 0 ft to <4ft | 10 | 9 | 8 | 7 | 9 | 8 | 7 | 6 | 8 | 7 | 6 | 5 | 7 | 6 | 5 | 4 |
| | <6ft | 8ft to >8ft | 10 | 8 | 7 | 6 | 8 | 7 | 6 | 5 | 7 | 6 | 5 | 4 | 6 | 5 | 4 | 3 |
| | | 4ft to 7ft | 10 | 9 | 8 | 7 | 9 | 8 | 7 | 6 | 8 | 7 | 6 | 5 | 7 | 6 | 5 | 4 |
| | | 0 ft to <4ft | 10 | 10 | 9 | 8 | 10 | 9 | 8 | 7 | 9 | 8 | 7 | 6 | 8 | 7 | 6 | 5 |
| Posted Speed Limit 25 or less and AADT 3000 or more | 8+ft | 8ft to >8ft | 8 | 7 | 6 | 5 | 7 | 6 | 5 | 4 | 6 | 5 | 4 | 3 | 5 | 4 | 3 | 2 |
| | | 4ft to 7ft | 9 | 8 | 7 | 6 | 8 | 7 | 6 | 5 | 7 | 6 | 5 | 4 | 6 | 5 | 4 | 3 |
| | | 0 ft to <4ft | 10 | 9 | 8 | 7 | 9 | 8 | 7 | 6 | 8 | 7 | 6 | 5 | 7 | 6 | 5 | 4 |
| | 6 to <8ft | 8ft to >8ft | 9 | 8 | 7 | 6 | 8 | 7 | 6 | 5 | 7 | 6 | 5 | 4 | 6 | 5 | 4 | 3 |
| | | 4ft to 7ft | 10 | 9 | 8 | 7 | 9 | 8 | 7 | 6 | 8 | 7 | 6 | 5 | 7 | 6 | 5 | 4 |
| | | 0 ft to <4ft | 10 | 10 | 9 | 8 | 10 | 9 | 8 | 7 | 9 | 8 | 7 | 6 | 8 | 7 | 6 | 5 |
| | <6ft | 8ft to >8ft | 10 | 9 | 8 | 7 | 9 | 8 | 7 | 6 | 8 | 7 | 6 | 5 | 7 | 6 | 5 | 4 |
| | | 4ft to 7ft | 10 | 10 | 9 | 8 | 10 | 9 | 8 | 7 | 9 | 8 | 7 | 6 | 8 | 7 | 6 | 5 |
| | | 0 ft to <4ft | 10 | 10 | 10 | 9 | 10 | 10 | 9 | 8 | 10 | 9 | 8 | 7 | 9 | 8 | 7 | 6 |
| Posted Speed Limit 30 or more | 8+ft | 8ft to >8ft | 9 | 8 | 7 | 6 | 8 | 7 | 6 | 5 | 7 | 6 | 5 | 4 | 6 | 5 | 4 | 3 |
| | | 4ft to 7ft | 10 | 9 | 8 | 7 | 9 | 8 | 7 | 6 | 8 | 7 | 6 | 5 | 7 | 6 | 5 | 4 |
| | | 0 ft to <4ft | 10 | 10 | 9 | 8 | 10 | 9 | 8 | 7 | 9 | 8 | 7 | 6 | 8 | 7 | 6 | 5 |
| | 6 to <8ft | 8ft to >8ft | 10 | 9 | 8 | 7 | 9 | 8 | 7 | 6 | 8 | 7 | 6 | 5 | 7 | 6 | 5 | 4 |
| | | 4ft to 7ft | 10 | 10 | 9 | 8 | 10 | 9 | 8 | 7 | 9 | 8 | 7 | 6 | 8 | 7 | 6 | 5 |
| | | 0 ft to <4ft | 10 | 10 | 10 | 9 | 10 | 10 | 9 | 8 | 10 | 9 | 8 | 7 | 9 | 8 | 7 | 6 |
| | <6ft | 8ft to >8ft | 10 | 10 | 9 | 8 | 10 | 9 | 8 | 7 | 9 | 8 | 7 | 6 | 8 | 7 | 6 | 5 |
| | | 4ft to 7ft | 10 | 10 | 10 | 9 | 10 | 10 | 9 | 8 | 10 | 9 | 8 | 7 | 9 | 8 | 7 | 6 |
| | | 0 ft to <4ft | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 9 | 10 | 10 | 9 | 8 | 10 | 9 | 8 | 7 |

Pedestrian Level of Comfort

3 and lower = Comfortable most of the time

4 - 6 = Tolerable most of the time

7 and higher = Uncomfortable most of the time

PSL = Adequately Spaced Pedestrian Scale Lighting; ST=Street Trees

Additional Considerations to Determine Pedestrian Level of Comfort

| |
|--|
| 1. Deduct 0.5 if formal landscaping (other than grass/mulch) is present (buffer zone or building zone). |
| 2. Deduct 0.5 if aesthetic surface treatments (such as pavers, brick or stamped concrete) are present in the sidewalk zone, buffer zone and/or building zone. |
| 3. Deduct 0.25 if benches or places to rest are present. |
| 3. Deduct 0.25 if public art (sculptures or murals) are present. |
| 4. Deduct 0.25 if additional pedestrian amenities are present (water fountains, wayfinding signage, informational signage, trash cans, etc.) |
| 5. Deduct 0.5 if dedicated bike facility is present (buffer from traffic); deduct an additional 0.5 if the bike facility serves All Ages and Abilities (fewer people will ride bikes/scooters on the pedestrian facility). |
| 6. Deduct 0.5 if on-street parking lane is present adjacent to the facility (buffer from traffic). |
| 7. Deduct 0.5 for raised driveway crossings or no driveway crossings. |
| 8. Deduct 0.5 for Traffic Calming street elements in place (other than on-street parking). |
| 9. Add 1 for frequent driveways (3 or more per 100'). |
| 10. Add 1 for substandard curb ramps at driveways. |
| 11. Add 1 for poor surface quality and/or debris. |
| 12. Add 2 for vegetation overgrowth. |

Pedestrian Level of Comfort in Urban Centers and Transit Station Areas

| Road Context | Pathway width | Buffer Width | Pedestrian Environment (within 20ft of back of sidewalk), Street Trees and Pedestrian Lighting | | | | | | | | | | | | | | | |
|---|---------------|--------------|--|------------------|------------------|---------------|--|------------------|------------------|---------------|-----------------------|------------------|------------------|---------------|----------------------|------------------|------------------|---------------|
| | | | High Wall; Privacy Fence | | | | Surface Parking Lot; Auto-Oriented Use; Service Drive/Drive Isle; Vacant Lot | | | | Passive Building Zone | | | | Active Building Zone | | | |
| | | | PSL & ST: No | PSL: Yes, ST: No | PSL: No, ST: Yes | PSL & ST: Yes | PSL & ST: No | PSL: Yes, ST: No | PSL: No, ST: Yes | PSL & ST: Yes | PSL & ST: No | PSL: Yes, ST: No | PSL: No, ST: Yes | PSL & ST: Yes | PSL & ST: No | PSL: Yes, ST: No | PSL: No, ST: Yes | PSL & ST: Yes |
| Posted Speed Limit 25 or less and AADT <9000 | 12+ft | 8ft to >8ft | 7 | 6 | 5 | 4 | 6 | 5 | 4 | 3 | 5 | 4 | 3 | 2 | 4 | 3 | 2 | 1 |
| | | 4ft to 7ft | 8 | 7 | 6 | 5 | 7 | 6 | 5 | 4 | 6 | 5 | 4 | 3 | 5 | 4 | 3 | 2 |
| | | 0 ft to <4ft | 9 | 8 | 7 | 6 | 8 | 7 | 6 | 5 | 7 | 6 | 5 | 4 | 6 | 5 | 4 | 3 |
| | 10ft | 8ft to >8ft | 8 | 7 | 6 | 5 | 7 | 6 | 5 | 4 | 6 | 5 | 4 | 3 | 5 | 4 | 3 | 2 |
| | | 4ft to 7ft | 9 | 8 | 7 | 6 | 8 | 7 | 6 | 5 | 7 | 6 | 5 | 4 | 6 | 5 | 4 | 3 |
| | | 0 ft to <4ft | 10 | 9 | 8 | 7 | 9 | 8 | 7 | 6 | 8 | 7 | 6 | 5 | 7 | 6 | 5 | 4 |
| | 8-9ft | 8ft to >8ft | 9 | 8 | 7 | 6 | 8 | 7 | 6 | 5 | 7 | 6 | 5 | 4 | 6 | 5 | 4 | 3 |
| | | 4ft to 7ft | 10 | 9 | 8 | 7 | 9 | 8 | 7 | 6 | 8 | 7 | 6 | 5 | 7 | 6 | 5 | 4 |
| | | 0 ft to <4ft | 10 | 10 | 9 | 8 | 10 | 9 | 8 | 7 | 9 | 8 | 7 | 6 | 8 | 7 | 6 | 5 |
| | <8ft | 8ft to >8ft | 10 | 9 | 8 | 7 | 9 | 8 | 7 | 6 | 8 | 7 | 6 | 5 | 7 | 6 | 5 | 4 |
| | | 4ft to 7ft | 10 | 10 | 9 | 8 | 10 | 9 | 8 | 7 | 9 | 8 | 7 | 6 | 8 | 7 | 6 | 5 |
| | | 0 ft to <4ft | 10 | 10 | 10 | 9 | 10 | 10 | 9 | 8 | 10 | 9 | 8 | 7 | 9 | 8 | 7 | 6 |
| Posted Speed Limit 25 or less and AADT 9000 or more | 12+ft | 8ft to >8ft | 8 | 7 | 6 | 5 | 7 | 6 | 5 | 4 | 6 | 5 | 4 | 3 | 5 | 4 | 3 | 2 |
| | | 4ft to 7ft | 9 | 8 | 7 | 6 | 8 | 7 | 6 | 5 | 7 | 6 | 5 | 4 | 6 | 5 | 4 | 3 |
| | | 0 ft to <4ft | 10 | 9 | 8 | 7 | 9 | 8 | 7 | 6 | 8 | 7 | 6 | 5 | 7 | 6 | 5 | 4 |
| | 10ft | 8ft to >8ft | 9 | 8 | 7 | 6 | 8 | 7 | 6 | 5 | 7 | 6 | 5 | 4 | 6 | 5 | 4 | 3 |
| | | 4ft to 7ft | 10 | 9 | 8 | 7 | 9 | 8 | 7 | 6 | 8 | 7 | 6 | 5 | 7 | 6 | 5 | 4 |
| | | 0 ft to <4ft | 10 | 10 | 9 | 8 | 10 | 9 | 8 | 7 | 9 | 8 | 7 | 6 | 8 | 7 | 6 | 5 |
| | 8-9ft | 8ft to >8ft | 10 | 9 | 8 | 7 | 9 | 8 | 7 | 6 | 8 | 7 | 6 | 5 | 7 | 6 | 5 | 4 |
| | | 4ft to 7ft | 10 | 10 | 9 | 8 | 10 | 9 | 8 | 7 | 9 | 8 | 7 | 6 | 8 | 7 | 6 | 5 |
| | | 0 ft to <4ft | 10 | 10 | 10 | 9 | 10 | 10 | 9 | 8 | 10 | 9 | 8 | 7 | 9 | 8 | 7 | 6 |
| | <8ft | 8ft to >8ft | 10 | 10 | 9 | 8 | 10 | 9 | 8 | 7 | 9 | 8 | 7 | 6 | 8 | 7 | 6 | 5 |
| | | 4ft to 7ft | 10 | 10 | 10 | 9 | 10 | 10 | 9 | 8 | 10 | 9 | 8 | 7 | 9 | 8 | 7 | 6 |
| | | 0 ft to <4ft | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 9 | 10 | 10 | 9 | 8 | 10 | 9 | 8 | 7 |
| Posted Speed Limit 30 or more | 12+ft | 8ft to >8ft | 9 | 8 | 7 | 6 | 8 | 7 | 6 | 5 | 7 | 6 | 5 | 4 | 6 | 5 | 4 | 3 |
| | | 4ft to 7ft | 10 | 9 | 8 | 7 | 9 | 8 | 7 | 6 | 8 | 7 | 6 | 5 | 7 | 6 | 5 | 4 |
| | | 0 ft to <4ft | 10 | 10 | 9 | 8 | 10 | 9 | 8 | 7 | 9 | 8 | 7 | 6 | 8 | 7 | 6 | 5 |
| | 10ft | 8ft to >8ft | 10 | 9 | 8 | 7 | 9 | 8 | 7 | 6 | 8 | 7 | 6 | 5 | 7 | 6 | 5 | 4 |
| | | 4ft to 7ft | 10 | 10 | 9 | 8 | 10 | 9 | 8 | 7 | 9 | 8 | 7 | 6 | 8 | 7 | 6 | 5 |
| | | 0 ft to <4ft | 10 | 10 | 10 | 9 | 10 | 10 | 9 | 8 | 10 | 9 | 8 | 7 | 9 | 8 | 7 | 6 |
| | 8-9ft | 8ft to >8ft | 10 | 10 | 9 | 8 | 10 | 9 | 8 | 7 | 9 | 8 | 7 | 6 | 8 | 7 | 6 | 5 |
| | | 4ft to 7ft | 10 | 10 | 10 | 9 | 10 | 10 | 9 | 8 | 10 | 9 | 8 | 7 | 9 | 8 | 7 | 6 |
| | | 0 ft to <4ft | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 9 | 10 | 10 | 9 | 8 | 10 | 9 | 8 | 7 |
| | <8ft | 8ft to >8ft | 10 | 10 | 10 | 9 | 10 | 10 | 9 | 8 | 10 | 9 | 8 | 7 | 9 | 8 | 7 | 6 |
| | | 4ft to 7ft | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 9 | 10 | 10 | 9 | 8 | 10 | 9 | 8 | 7 |
| | | 0 ft to <4ft | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 9 | 10 | 10 | 9 | 8 |

Pedestrian Level of Comfort

3 and lower = Comfortable most of the time

4 - 6 = Tolerable most of the time

7 and higher = Uncomfortable most of the time

PSL = Adequately Spaced Pedestrian Scale Lighting; ST=Street Trees

Additional Considerations to Determine Pedestrian Level of Comfort

- Deduct 0.5 if formal landscaping (other than grass/mulch) is present (buffer zone or building zone).
- Deduct 0.5 if aesthetic surface treatments (such as pavers, brick or stamped concrete) are present in the sidewalk zone, buffer zone and/or building zone.
- Deduct 0.25 if benches or places to rest are present.
- Deduct 0.25 if public art (sculptures or murals) are present.
- Deduct 0.25 if additional pedestrian amenities are present (water fountains, wayfinding signage, informational signage, trash cans, etc.)
- Deduct 0.5 if dedicated bike facility is present (buffer from traffic); deduct an additional 0.5 if the bike facility serves All Ages and Abilities (fewer people will ride bikes/scooters on the facility).
- Deduct 0.5 if on-street parking lane is present adjacent to the facility (buffer from traffic).
- Deduct 0.5 for raised driveway crossings or no driveway crossings.
- Deduct 0.5 for Traffic Calming street elements in place (other than on-street parking).
- Add 1 for frequent driveways (3 or more per 100').
- Add 1 for substandard curb ramps at driveways.
- Add 1 for poor surface quality and/or debris.
- Add 2 for vegetation overgrowth.

Appendix C: Guidance on Bicycle Level of Comfort

Level of Perceived Safety (Willingness to Bicycle on Streets)

| Posted Speed | AADT | On-Street Bicycle Facility Type | | | |
|--------------|-------|---|--|---|--|
| | | No Dedicated Bike Facility (Shared Lane/ Sharrow) | 0 ft - 2 ft Buffer Width (Standard Bike Lane with Single or Double Stripe) | Buffer Width: 3 ft - 5ft (Buffered Bike Lane) | Buffer Width: 6+ ft (Buffered Bike Lane) |
| <25 | <1 | 5 | 5 | 5 | 5 |
| | 1-3k | 4 | 5 | 5 | 5 |
| | 3-6k | 3 | 4 | 4 | 4 |
| | 6-15k | 2 | 3 | 4 | 4 |
| | >15k | 1 | 2 | 3 | 3 |
| 25 | <1 | 4 | 4 | 5 | 5 |
| | 1-3k | 3 | 4 | 4 | 5 |
| | 3-6k | 2 | 3 | 3 | 4 |
| | 6-15k | 1 | 2 | 3 | 3 |
| | >15k | 1 | 1 | 2 | 2 |
| >25 | <1 | 2 | 3 | 3 | 3 |
| | 1-3k | 2 | 2 | 2 | 2 |
| | 3-6k | 1 | 2 | 2 | 2 |
| | 6-15k | 1 | 2 | 2 | 2 |
| | >15k | 1 | 1 | 1 | 2 |

| Level of Perceived Safety (Willingness to Bicycle on Streets) |
|---|
| More than 4 = Comfortable for All Ages and Abilities |
| 3 to 4 = Comfortable for most Youth and Adult Cyclists. Barrier to Cycling for Families with Younger Children, Beginners and some Older Adults. |
| 2 to less than 3 = Uncomfortable for Most Adult Cyclists. Barrier to Cycling for Families Riding with Young Children, Youth, Beginners and some Older Adults. |
| 1 to less than 2 = Very Uncomfortable for most Adults. Barrier to Cycling for Majority of Population. |
| Lower than 1 = For very experienced cyclists only (Approximately 1% of Population). |

| Additional Considerations to Determine Level of Perceived Safety and Willingness to Bicycle |
|---|
| Flex posts in buffer +0.5 |
| Green bike lanes (not just at intersections) +0.25 |
| Street lighting +0.25 |
| Street trees +0.25 |
| 4+ft shoulder is present on a street without bike lanes +0.25 |
| Road is unmarked (no centerline or edge markings) +0.5 |
| Poor surface quality -0.25 |
| No adjacent pedestrian facility, per side. -0.25 |
| On Street Parking next to bike lane with less than 3ft buffer (-1 on commercial streets/ -0.5 on residential streets) |
| More than 1 travel lane per direction -0.5 |
| High-frequency curbside passenger or a freight loading zone is present (including transit stops) -0.25 |
| Narrow roads with limited sight distance due to topography and/or blind curves where no bike facility or shoulder is present -2 |

| Notes |
|---|
| 1. All off-street bicycle facilities (8-12+ft Multi-Use Hard Surface Trail; One-Way Cycletracks and Two-Way Cycletracks) have a Level of Perceived Safety and Willingness to Bicycle rating of 5, though Bicycle Level of Comfort may vary depending on design, land use and roadway context (Refer to facility-specific Bicycle Level of Comfort Rating). |
| 2. Bicycle facilities installed through new construction should serve all Ages and Abilities (Level of Perceived Safety and Willingness to Bicycle rating of more than 4), unless specified otherwise in the Fairfax County Comprehensive Plan or Urban Streetscaping Standards. |
| 3. Lower ranking bicycle facilities may still be installed through maintenance activities or as an interim retrofit. Though they serve fewer bicyclists, they also provide benefits to overall road safety and neighborhood livability by mitigating speeding by narrowing wide travel lanes, improving sight distance for vehicles turning onto the roadway, providing an additional buffer for pedestrians and reducing pedestrian exposure at crossings. |

Bicycle Level of Comfort of All Ages and Abilities on Facilities with High Perceived Safety: Multi-Use Hard Surface Trail Parallel to Street

| Trail Width | AADT | Hard Surface Trail Buffer Width by Land Use Type | | | | | | | | | | | | | | | |
|-------------|-------|--|-------|-------|--------|----------------------------|-------|-------|--------|----------------------------|-------|-------|--------|---------------------|-------|-------|--------|
| | | No Buffer/Curb Abutted | | | | Buffer width: 2 ft to 3 ft | | | | Buffer width: 4 ft to 7 ft | | | | Buffer width: ≥8 ft | | | |
| | | LDRA | SN/IA | SC/CB | UC/TSA | LDRA | SN/IA | SC/CB | UC/TSA | LDRA | SN/IA | SC/CB | UC/TSA | LDRA | SN/IA | SC/CB | UC/TSA |
| 10'> | <1 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| | 1-3k | 4 | 4 | 4 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| | 3-6k | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| | 6-15k | 3 | 3 | 3 | 2 | 4 | 4 | 4 | 3 | 5 | 5 | 5 | 4 | 5 | 5 | 5 | 5 |
| | >15k | 3 | 3 | 3 | 2 | 4 | 4 | 4 | 3 | 5 | 5 | 5 | 4 | 5 | 5 | 5 | 5 |
| 10' | <1 | 5 | 5 | 4 | 3 | 5 | 5 | 5 | 4 | 5 | 5 | 5 | 4 | 5 | 5 | 5 | 4 |
| | 1-3k | 4 | 4 | 4 | 3 | 5 | 5 | 5 | 4 | 5 | 5 | 5 | 4 | 5 | 5 | 5 | 4 |
| | 3-6k | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 5 | 5 | 5 | 4 |
| | 6-15k | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 5 | 5 | 5 | 4 |
| | >15k | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 5 | 5 | 5 | 4 |
| 8'-9' | <1 | 5 | 4 | 3 | 3 | 5 | 5 | 3 | 3 | 5 | 5 | 4 | 3 | 5 | 5 | 4 | 3 |
| | 1-3k | 4 | 3 | 3 | 3 | 4 | 4 | 3 | 3 | 5 | 5 | 4 | 3 | 5 | 5 | 4 | 3 |
| | 3-6k | 3 | 3 | 2 | 2 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 3 | 5 | 5 | 4 | 3 |
| | 6-15k | 2 | 2 | 2 | 2 | 3 | 3 | 2 | 2 | 4 | 4 | 3 | 3 | 5 | 5 | 4 | 3 |
| | >15k | 2 | 2 | 2 | 2 | 3 | 3 | 2 | 2 | 4 | 4 | 3 | 3 | 5 | 5 | 4 | 3 |
| <8' | <1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | 1-3k | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | 3-6k | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | 6-15k | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | >15k | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

Level of Comfort for Bicyclists of All Ages and Abilities

More than 4 = Very Comfortable for all All Ages and Abilities users.

More than 3 to 4 = Less Comfortable for All Ages and Abilities users.

More than 2 to 3 = Tolerable for All Ages and Abilities users.

More than 1 to 2 = Uncomfortable for many All Ages and Abilities users.

1 or Less = Facility is not adequately designed for bicycle use and may be difficult to navigate safely.

LDRA=Low Density Residential Area; SN/IA=Suburban Neighborhood/Industrial Area; SC/CBC/LIA=Suburban Center/Community Business Center/ Large Institutional Area; UC/TSA=Urban Center/Transit Station Area

Note: Higher active transportation user volumes are assumed in Suburban Centers,Community Business Center and Large Institutional Area, with the highest volumes expected in Urban Centers andTransit Station Areas.

Additional Considerations to Determine Bicycle Level of Comfort

1. Add 0.25 if street lighting is present.
2. Add 0.5 if pedestrian scale lighting is present.
3. Add 0.25 if street trees are present.
4. Add 0.25 for raised driveway crossings or no driveway crossings.
5. Add 0.25 if shared use signage and/or bicycle wayfinding signage is present.
6. Deduct 0.5 for frequent driveways (3 or more per 100').
7. Deduct 1.0 if posted speed limit on adjacent street is 35mph or above.
8. Deduct 0.5 for vegetation overgrowth.
9. Deduct 0.25 for poor surface quality and/or debris on facility.
10. Deduct 0.25 for substandard curb ramps at driveways.



Bicycle Level of Comfort of All Ages and Abilities on Facilities with High Perceived Safety: One-Way Cycletracks

| One-Way Cycletrack Width | AADT | One-Way Cycletrack Buffer Width (Between Travel Lane and Bike Facility; Assuming Vertical Separation from Vehicle Traffic or Parking Protected Facility, and Detectable Separation from Pedestrians) by Land Use Type. | | | | | | | | | | | | | | | |
|--------------------------------|-------|--|-------|----------------|--------|----------------------------|-------|----------------|--------|----------------------------|-------|----------------|--------|---------------------|-------|----------------|--------|
| | | No Buffer/Curb Abutted or 1ft Buffer | | | | Buffer width: 2 ft to 3 ft | | | | Buffer width: 4 ft to 7 ft | | | | Buffer width: ≥8 ft | | | |
| | | LDRA | SN/IA | SC/CB C/LIA | UC/TSA | LDRA | SN/IA | SC/CB C/LIA | UC/TSA | LDRA | SN/IA | SC/CB C/LIA | UC/TSA | LDRA | SN/IA | SC/CB C/LIA | UC/TSA |
| >6' | <1 | 5 | 5 | 4 | 4 | 5 | 5 | 5 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| | 1-3k | 5 | 5 | 4 | 4 | 5 | 5 | 5 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| | 3-6k | 4 | 4 | 4 | 3 | 5 | 5 | 4 | 4 | 5 | 5 | 5 | 4 | 5 | 5 | 5 | 5 |
| | 6-15k | 3 | 3 | 3 | 3 | 4 | 4 | 3 | 3 | 5 | 5 | 5 | 4 | 5 | 5 | 5 | 5 |
| | >15k | 3 | 3 | 3 | 3 | 4 | 4 | 3 | 3 | 5 | 5 | 4 | 4 | 5 | 5 | 5 | 5 |
| 6' | <1 | 5 | 4 | 4 | 3 | 5 | 5 | 4 | 4 | 5 | 5 | 4 | 4 | 5 | 5 | 4 | 4 |
| | 1-3k | 4 | 4 | 3 | 3 | 5 | 5 | 4 | 4 | 5 | 5 | 4 | 4 | 5 | 5 | 4 | 4 |
| | 3-6k | 4 | 4 | 3 | 2 | 4 | 4 | 3 | 3 | 4 | 4 | 3 | 3 | 5 | 5 | 4 | 4 |
| | 6-15k | 2 | 2 | 2 | 2 | 3 | 3 | 2 | 2 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 4 |
| | >15k | 2 | 2 | 2 | 2 | 3 | 3 | 2 | 2 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 4 |
| 5'-5.5' | <1 | 4 | 4 | 3 | 2 | 4 | 4 | 3 | 2 | 4 | 4 | 3 | 2 | 4 | 4 | 3 | 2 |
| | 1-3k | 3 | 3 | 2 | 2 | 4 | 4 | 2 | 2 | 4 | 4 | 3 | 2 | 4 | 4 | 3 | 2 |
| | 3-6k | 3 | 3 | 2 | 2 | 3 | 3 | 2 | 2 | 3 | 3 | 3 | 2 | 4 | 4 | 3 | 2 |
| | 6-15k | 2 | 2 | 2 | 2 | 3 | 3 | 2 | 2 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 2 |
| | >15k | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 2 |
| <5' | <1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | 1-3k | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | 3-6k | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | 6-15k | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | >15k | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

| Level of Comfort for Bicyclists of All Ages and Abilities | |
|---|--|
| More than 4 = | Very Comfortable for all All Ages and Abilities users. |
| More than 3 to 4 = | Less Comfortable for All Ages and Abilities users. |
| More than 2 to 3 = | Tolerable for All Ages and Abilities users. |
| More than 1 to 2 = | Uncomfortable for many All Ages and Abilities users. |
| 1 or Lower = | Facility is not adequately designed for bicycle use and may be difficult to navigate safely. |

LDRA=Low Density Residential Area; SN/IA=Suburban Neighborhood/Industrial Area; SC/CBC/LIA=Suburban Center/Community Business Center/ Large Institutional Area; UC/TSA=Urban Center/Transit Station Area

Note:

- Higher active transportation user volumes are assumed in Suburban Centers,Community Business Center and Large Institutional Area, with the highest volumes expected in Urban Centers andTransit Station Areas
- 6.5+ft facility width allows for safe passing of slower users, and supports side-by-side social riding.

| Additional Considerations to Determine Level of Comfort for Bicyclists of All Ages and Abilities | |
|--|--|
| 1. | Add 0.25 if street lighting is present. |
| 1. | Add 0.5 if pedestrian scale lighting is present. |
| 2. | Add 0.25 if street trees are present. |
| 3. | Add 0.25 for raised driveway crossings or no driveway crossings. |
| 4. | Deduct 0.5 for frequent driveways (3 or more per 100'). |
| 5. | Deduct 0.25 if adjacent pedestrian facility is a LOC 4 or lower. |
| 6. | Deduct 0.25 for poor surface quality and/or debris on facility. |
| 7. | Deduct 0.25 for substandard curb ramps at driveways. |
| 8. | Deduct 1.0 if posted speed limit on adjacent street is 35mph or above. |
| 9. | Deduct 1.0 when adjacent road has more than 4 travel lanes and/or intersections spaced more than 1000 feet apart (frequent wrong-way riding likely). |

Bicycle Level of Comfort of All Ages and Abilities on Facilities with High Perceived Safety: Two-Way Cycletracks

| Two-Way Cycletrack Width | AADT | Two-Way Cycletrack Buffer Width (Assuming Hard-scaped Vertical Separation from Vehicular Travel or Parking Protected Facility, and Detectable Separation from Pedestrians) by Land Use Type | | | | | | | | | | | | | | | |
|--------------------------|-------|---|-------|-------|--------|-----------------------------|-------|-------|--------|-----------------------------|-------|-------|--------|---------------------|-------|-------|--------|
| | | Buffer width: 0 ft to <2 ft | | | | Buffer width: 2 ft to <4 ft | | | | Buffer width: 4 ft to <8 ft | | | | Buffer width: ≥8 ft | | | |
| | | LDRA | SN/IA | SC/CB | UC/TSA | LDRA | SN/IA | SC/CB | UC/TSA | LDRA | SN/IA | SC/CB | UC/TSA | LDRA | SN/IA | SC/CB | UC/TSA |
| 12' | <1 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| | 1-3k | 5 | 5 | 4 | 4 | 5 | 5 | 4 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| | 3-6k | 4 | 4 | 4 | 4 | 5 | 5 | 4 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| | 6-15k | 3 | 3 | 3 | 3 | 4 | 4 | 3 | 3 | 5 | 5 | 4 | 4 | 5 | 5 | 5 | 5 |
| | >15k | 3 | 3 | 3 | 3 | 4 | 4 | 3 | 3 | 5 | 5 | 4 | 4 | 5 | 5 | 5 | 5 |
| 10' | <1 | 5 | 5 | 4 | 4 | 5 | 5 | 4 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| | 1-3k | 4 | 4 | 3 | 3 | 5 | 5 | 4 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| | 3-6k | 3 | 3 | 3 | 3 | 5 | 5 | 4 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| | 6-15k | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 5 | 5 | 5 | 5 |
| | >15k | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 5 | 5 | 5 | 5 |
| 8'-9' | <1 | 5 | 5 | 3 | 2 | 5 | 5 | 4 | 3 | 5 | 5 | 4 | 3 | 5 | 5 | 4 | 4 |
| | 1-3k | 4 | 4 | 3 | 2 | 5 | 5 | 4 | 3 | 5 | 5 | 4 | 3 | 5 | 5 | 4 | 4 |
| | 3-6k | 3 | 3 | 2 | 2 | 4 | 4 | 3 | 3 | 5 | 5 | 4 | 3 | 5 | 5 | 4 | 4 |
| | 6-15k | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 4 | 4 | 3 | 3 | 5 | 5 | 4 | 4 |
| | >15k | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 4 | 4 | 3 | 3 | 5 | 5 | 4 | 4 |
| <8' | <1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | 1-3k | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | 3-6k | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | 6-15k | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | >15k | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

| Level of Comfort for Bicyclists of All Ages and Abilities |
|---|
| More than 4 = Very Comfortable for all All Ages and Abilities users. |
| More than 3 to 4 = Less Comfortable for All Ages and Abilities users. |
| More than 2 to 3 = Tolerable for All Ages and Abilities users. |
| More than 1 to 2 = Uncomfortable for many All Ages and Abilities users. |
| 1 or Lower = Facility is not adequately designed for bicycle use and may be difficult to navigate safely. |

LDRA=Low Density Residential Area; SN/IA=Suburban Neighborhood/Industrial Area; SC/CB/C/LIA=Suburban Center/Community Business Center/ Large Institutional Area; UC/TSA=Urban Center/Transit Station Area

Note: Higher active transportation user volumes are assumed in Suburban Centers,Community Business Center and Large Institutional Area, with the highest volumes expected in Urban Centers andTransit Station Areas

| Additional Considerations to Determine Level of Comfort for Bicyclists of All Ages and Abilities |
|--|
| 1. Add 0.25 if street lighting is present. |
| 2. Add 0.5 if pedestrian scale lighting is present. |
| 3. Add 0.25 if street trees are present. |
| 4. Add 0.25 for raised driveway crossings or no driveway crossings. |
| 5. Deduct 0.5 for frequent driveways (3 or more per 100'). |
| 6. Deduct 0.25 if adjacent pedestrian facility is a LOC 4 or lower. |
| 7. Deduct 0.25 for substandard curb ramps at driveways. |
| 8. Deduct 0.25 for poor surface quality and/or debris on facility. |
| 9. Deduct 1.0 if posted speed limit on adjacent street is 35mph or above. |

Appendix D: Guidance on Active Transportation Intersection Level of Comfort and Service

Controlled Crossing - Active Transportation Intersection Level of Comfort

| Posted Speed Limit | Number of Lanes | Enhancements | Standard Markings | High Visibility/Green Markings |
|--------------------|-----------------|-----------------------|-------------------|--------------------------------|
| <25 | 2-3 | Raised Refuge Island | 5 | 5 |
| | | Painted Refuge Island | 5 | 5 |
| | | None | 5 | 5 |
| | 4-5 | Raised Refuge Island | 5 | 5 |
| | | Painted Refuge Island | 4 | 5 |
| | | None | 4 | 5 |
| | 6+ | Raised Refuge Island | 4 | 4 |
| | | Painted Refuge Island | 3 | 4 |
| | | None | 3 | 3 |
| 25 | 2-3 | Raised Refuge Island | 4 | 4 |
| | | Painted Refuge Island | 4 | 4 |
| | | None | 4 | 4 |
| | 4-5 | Raised Refuge Island | 4 | 4 |
| | | Painted Refuge Island | 3 | 4 |
| | | None | 3 | 4 |
| | 6+ | Raised Refuge Island | 3 | 3 |
| | | Painted Refuge Island | 2 | 3 |
| | | None | 2 | 2 |
| >25 | 2-3 | Raised Refuge Island | 3 | 3 |
| | | Painted Refuge Island | 3 | 3 |
| | | None | 3 | 3 |
| | 4-5 | Raised Refuge Island | 3 | 3 |
| | | Painted Refuge Island | 2 | 3 |
| | | None | 2 | 3 |
| | 6+ | Raised Refuge Island | 2 | 2 |
| | | Painted Refuge Island | 1 | 2 |
| | | None | 1 | 1 |

| Level of Comfort |
|--------------------------|
| 5 = Very Comfortable |
| 4 = Somewhat Comfortable |
| 3 = Tolerable |
| 2 = Uncomfortable |
| 1 = Very Uncomfortable |

| Additional Considerations: |
|--|
| Add 0.5 for Lead Pedestrian Interval |
| Add 0.5 for No Right on Red |
| Add 0.25 for Rest in Walk plus Pedestrian Recall |
| Add 0.25 for Bicycle Detection |
| Deduct 0.5 for Left Turn Conflicts |

Pedestrian Signal Level of Service and Likelihood of Noncompliance

| Pedestrian Delay (sec) | Level of Service | Likelihood of Noncompliance |
|------------------------|------------------|-----------------------------|
| <10 | A | Low |
| 10-20 | B | Low |
| >20-30 | C | Moderate |
| >30-40 | D | Moderate |
| >40-60 | E | High |
| >60 | F | Very High |

Notes:

1. Average pedestrian delay at signalized intersections was calculated for the a.m. and p.m. hours.
2. Pedestrians typically experience longer delays crossing the main arterials.
3. Higher delays for pedestrians typically increase the likelihood of noncompliance or crossings outside the crosswalk.
4. Also applies to people on bicycles, scooters and other micromobility devices that are using the pedestrian signal.

Resources:

1. Northeastern University Ped & Bike Crossing Delay Calculator: <https://peterfurth.sites.northeastern.edu/2014/08/02/delaycalculator/>
2. A paper presented at TRB (January, 2015) giving the mathematical basis for the calculator and presenting several signal timing strategies for reducing multi-stage crossing delay. "Delay Estimation and Signal Timing Design Techniques for Multi-Stage Pedestrian Crossings and Two-Stage Bicycle Left Turns," Peter G Furth and Yue (Danny) Wang: <https://bpb-us-w2.wpmucdn.com/sites.northeastern.edu/dist/e/618/files/2014/08/Multi-stage-ped-and-bike-crossings-Nov15.pdf>

Uncontrolled Crossing - Active Transportation Intersection Level of Comfort

| Posted Speed Limit | Number of Lanes | Enhancements | No Marked Crossing | Standard Markings | High Visibility/Green Markings |
|--------------------|-----------------|-----------------------|--------------------|-------------------|--------------------------------|
| <25 | 2-3 | RRFB | N/A | 5 | 5 |
| | | Raised Refuge Island | 4 | 5 | 5 |
| | | Painted Refuge Island | 4 | 5 | 5 |
| | | None | 4 | 4 | 4 |
| | 4-5 | RRFB | N/A | 4 | 4 |
| | | Raised Refuge Island | 3 | 4 | 4 |
| | | Painted Refuge Island | 3 | 3 | 3 |
| | | None | 2 | 2 | 3 |
| | 6+ | RRFB | N/A | Not suitable | Not suitable |
| | | Raised Refuge Island | 2 | 2 | 3 |
| | | Painted Refuge Island | 2 | 2 | 2 |
| | | None | 1 | 1 | 2 |
| 25 | 2-3 | RRFB | N/A | 4 | 4 |
| | | Raised Refuge Island | 4 | 4 | 4 |
| | | Painted Refuge Island | 4 | 4 | 4 |
| | | None | 4 | 3 | 3 |
| | 4-5 | RRFB | N/A | 3 | 3 |
| | | Raised Refuge Island | 3 | 3 | 3 |
| | | Painted Refuge Island | 3 | 2 | 2 |
| | | None | 2 | 1 | 2 |
| | 6+ | RRFB | N/A | Not suitable | Not suitable |
| | | Raised Refuge Island | 1 | 1 | 2 |
| | | Painted Refuge Island | 1 | 1 | 1 |
| | | None | 1 | 1 | 1 |
| >25 | 2-3 | RRFB | N/A | 3 | 3 |
| | | Raised Refuge Island | 3 | 3 | 3 |
| | | Painted Refuge Island | 3 | 3 | 3 |
| | | None | 3 | 2 | 2 |
| | 4-5 | RRFB | N/A | 2 | 2 |
| | | Raised Refuge Island | 2 | 2 | 2 |
| | | Painted Refuge Island | 2 | 1 | 1 |
| | | None | 1 | 1 | 1 |
| | 6+ | RRFB | N/A | Not suitable | Not suitable |
| | | Raised Refuge Island | 1 | 1 | 1 |
| | | Painted Refuge Island | 1 | 1 | 1 |
| | | None | 1 | 1 | 1 |

| Level of Comfort |
|--------------------------|
| 5 = Very Comfortable |
| 4 = Somewhat Comfortable |
| 3 = Tolerable |
| 2 = Uncomfortable |
| 1 = Very Uncomfortable |

