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Overview

The Washington region has excellent long-distance separated facilities for bicyclists and pedestrians, and an urban core and certain regional activity centers that have good pedestrian and bicycle facilities. On the other hand, many activity centers, not originally designed with pedestrians in mind, have grown dense enough to generate significant



Figure 1: Informal foot path

*Informal Foot-
Paths Show where
People Walk*

pedestrian traffic, and face challenges in terms of providing safe facilities and crossing locations for pedestrians and bicyclists. Other parts of the region have developed at low densities, with separated land uses and indirect routes, which increase pedestrian and bicycle travel time. Pedestrian and bicycle accommodations are not always provided.¹

Bicycle connections with transit are generally good, with bicycle parking, bus bicycle racks, and bikes

permitted on Metrorail at most hours. Walking is the primary mode of access to transit. Conditions for pedestrian access are excellent at many rail stations, though at some rail stations, originally designed primarily with auto and transit access in mind, pedestrian access could be improved. Bus stops in places originally designed primarily for automobiles often have access and safety problems.

Pedestrians are found throughout the region, and pedestrian traffic is increasingly found in places that were not built for it. This section highlights some of the region's successes in providing for bicycling and walking. These successes can serve as examples of what the region needs to serve its pedestrians and bicyclists.

¹ Photo of Informal Path, Southern Avenue, Prince George's County, MD: COG/TPB, Michael Farrell

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Shared-Use Paths²



Figure 2: Mount Vernon Trail

bikes. Well-known trails include the W&OD and Mount Vernon Trails in Virginia, and the C&O Canal, Capital Crescent, and Rock Creek Trails connecting the District of Columbia and Maryland. Many of the region's shared-use paths go through heavily populated areas, connect major employment centers, and get significant commuter traffic. More information on trails in the Washington region can be found at www.bikewashington.org.

The region continues to build new trails along stream valleys and in conjunction with major highway projects, but the remaining inventory of disused rail lines, which often provide the best opportunities for shared-use paths, is fairly small.

Side-Paths³

Side-paths differ from shared-use paths in that they do not have their own right of way, but are closely adjacent to a non-limited access roadway and thus subject to more frequent conflict



Figure 3: Side Path on Fairfax County Parkway

² Photo of Mt. Vernon Trail, Arlington, VA: COG/TPB, Michael Farrell

³ Photo of Sidepath on the Fairfax County Parkway: Photographer Unknown

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with driveways, side streets, and turning traffic. Side-paths differ from sidewalks in that they must be at least eight feet wide and are designed to meet the needs of bicyclists.

The Washington region has approximately 300 miles of side-paths, and there are plans to expand that mileage considerably.

Side-paths meet the need for a separated pedestrian facility and provide separation from traffic that is valued by child and slow-moving cyclists, especially in places where the road has speeds of 40 mph or more and high traffic volumes. However, the AASHTO (American Association of State Highway and Transportation Officials) [Guide for the Development of Bicycle Facilities](#) offers a number of cautions regarding the use of side-paths or wide sidewalks for bicycles. Frequent driveways, especially with poor sightlines, are hazardous to bicyclists on side-paths. Side-paths remove bicyclists from the motorists' line of sight and allow travel against the flow of traffic, so they may increase the potential for conflicts with motor vehicles at intersections. Since the facility is shared with pedestrians, there is also a potential for cyclist-pedestrian crashes. Side-paths are most suitable where driveways and intersections are few and sight-lines are good. Intersection crossings should be designed carefully, with a protected signal phase providing the best level of protection.

Bicycle Lanes

Bicycle lanes are marked lanes in the public right-of-way that are by law exclusively or preferentially for use by bicyclists. Bike lanes are one-way, with a bicycle symbol or arrow indicating the correct direction of travel. The minimum width next to a curb is 4 feet for roadways with no curb or gutter, next to a curb or parked cars 5 feet. Bike lanes are provided on both sides of the street, except for one-way streets, and allow travel only



Figure 4: Bicycle Lane

in the same direction as adjacent motor vehicle traffic. On-street bicycle lanes are generally much less expensive than separated paths. Bike lanes decrease wrong-way riding, define the road space that cyclists are expected to use, increase cyclists' comfort level, and call attention to the presence of cyclists on the roadway. Bicycle lanes are not generally considered safe or adequate for pedestrians, though in rural areas without sidewalks the roadway shoulder serves as both a bicycle lane and as a pedestrian facility.⁴

⁴ Bike lane photo: www.pedbikeimages.org / Dan Burden

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The number of bicycle lanes is growing rapidly. The District of Columbia currently has 60 miles of bicycle lanes, up from 19 miles in 2006, and three in 1995, Arlington County has 24 miles, up from three in 1995, and Montgomery County has 17 miles.⁵ The regional mileage of bicycle lanes can be expected to expand significantly in the future as the District of Columbia, Arlington County, and Montgomery County all have ambitious plans to build more. A map of regional bicycle paths, lanes, and on-road routes can be ordered at www.adcmap.com.

Buffered Bicycle Lanes

A buffered bicycle lane is a bicycle lane with a spatial buffer to increase the distance between the bicycle travel lane and the automobile travel lane or the parking zone. The buffer zone is usually marked with striped paint. Buffered bike lanes are sometimes used where there is higher than normal speeds, traffic volumes or truck volumes, or high-turnover parking. It allows additional space to be provided for bicyclists without creating something that looks like a travel lane to motorists. There are currently none in the Washington region, though that may change soon.

Cycle Tracks

A cycle track is a bicycle-only facility that provides physical separation within the right of way from vehicle travel lanes. Cycle tracks can be either one-way or two-way, on one or



both sides of a street, and are separated from vehicles by wands, bollards, curbs/medians, parked cars, or a combination of these elements. Cycle tracks can either incorporate bicycle-only signal phases at intersections (for 100% separation) or utilize “mixing zones” to merge bicycle and motor vehicle traffic.⁶

Cycle tracks have long been viewed skeptically in the United States, and notably in the AASHTO Guide for the Development of Bicycle

Figure 5: 15th Street NW Cycle Track

⁵ *Countywide Bikeways Functional Master Plan*, March 2005. Maryland-National Capital Park and Planning Commission. Page 12.

⁶ National Association of City Transportation Officials. <http://www.nacto.org/cycletracks.html>

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Facilities, due to the potential conflicts with turning vehicles, and lack of visibility of cyclists to turning vehicles where separated by parked cars.

*Cycle Tracks
Increase
Ridership by 18-
20%*

Cycle tracks have been used in numerous cities in Europe with mixed results.⁷ Installation of cycle tracks was found to result in an increase in collisions at intersections in Copenhagen, which more than offset a decrease in motorist-overtaking collisions and collisions with parked cars, for a net increase in the number of collisions of 9%. However, the same study showed that installing cycle tracks increased bicycle (and moped) ridership 18 to 20 percent.⁸ Installing bike lanes resulted in a 5 to 7% increase in ridership, and a 5% increase in crashes. For both cycle tracks and bike lanes the number of riders can be expected to increase more than the number of crashes.

Riders perceive cycle tracks as safer, and it should be noted that motorist-overtaking collisions, while relatively rare, account for a disproportionate number of serious and fatal injuries.

New York City, Portland, OR, Cambridge, MA, and now the District of Columbia are installing cycle tracks. The first segment of buffered bicycle lane in the District of Columbia was installed in 2009 on 15th Street NW. The District of Columbia is planning a network of such facilities in downtown DC. Space for them is being made by removing travel lanes, as was done on 15th Street NW, which was reduced from four lanes to three.

Dual Facilities

In recognition of the fact that fast-moving cyclists may be better off with an on-road facility, Montgomery County is planning many of its bicycle routes as dual facilities, with both an on-road bike lane and a side-path for pedestrians and slow bicyclists. VDOT's *Northern Virginia Bikeway and Regional Trail Study* recommends that both on- and off-road accommodation be provided.⁹ Under the new routine accommodation policy, VDOT is to provide adequate facilities for pedestrians and bicyclists even if not called for in the local plan.

Where bicycle and pedestrian volume warrant it, and right of way permits, multi-use paths may be split into parallel pedestrian and bicycle paths. This separation allows cyclists and rollerbladers to maintain speed without risk to pedestrians. The Washington

⁷ Jensen, Søren Underlien, Claus Rosenkilde and Niels Jensen. Road safety and perceived risk of cycle facilities in Copenhagen. Available at: http://www.ecf.com/files/2/12/16/070503_Cycle_Tracks_Copenhagen.pdf

⁸ *Cycle Tracks: Lessons Learned*. February 2009. Alta Planning and Design. Page 1.

⁹ *Northern Virginia Regional Bikeway and Trail Network Study*. November, 2003. Virginia Department of Transportation, Northern District Office. Page 19.

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& Old Dominion Trail in Northern Virginia includes several sections with gravel pedestrian paths that parallel the paved shared-use path.

Signed Bicycle Routes

The region has hundreds of miles of signed bicycle routes. Signed routes have the advantage of being inexpensive and informative for cyclists. A signed route has not necessarily had any bicycle-related improvements apart from signing. However, bicycle-friendly features such as paved shoulders, a wide curb lane, or low traffic volumes or speeds *may* be present. The trend with bicycle route signs is to include information on distances to destinations.



Figure 6: DC Bike Route Sign

Long-Distance Bicycle Routes

Several notable long-distance routes promoted by national-level organizations pass through the Washington region. These include the East Coast Greenway, Bicycle Route 1, and the American Discovery Trail. The East Coast Greenway Alliance is promoting what will eventually be a mostly off-road path connecting all the major cities of the East Coast. Currently 20% open for public use, it will span 2,600 miles from Calais, Maine to Key West, Florida. With the exception of the National Capital Mall, the proposed route through the Washington region is not yet signed. Bicycle Route 1 is part of a national network of low-traffic road routes promoted by the Adventure Cycling Association. The American Discovery Trail is a coast-to-coast, recreational, non-motorized trail, which follows the C&O Canal Towpath and the Anacostia River Tributary Trails. All organizations promoting long-distance routes rely on local agencies and organizations to realize their vision.

Exclusive Bus/Bicycle Lanes

Exclusive bus lanes are sometimes used on streets with heavy bus traffic. Bicycles are sometimes permitted to use those lanes. Bus/Bike Lanes can be found in the District of Columbia. Conflicts can occur due to differences in speed between buses and bicyclists.

Bridges

With the completion of the Woodrow Wilson Bridge trail, cyclists may now cross the Potomac River on the capital beltway at between Alexandria.

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Figure 7: Woodrow Wilson Bridge Trail

This new multi-use path allows riders on the Mt. Vernon Trail to access the National Harborplace development in Prince George's County without going on street. Connections are also provided an on-street network of bicycle routes in Prince George's County.

The 14th Street Bridge, the Memorial Bridge, the Theodore Roosevelt Bridge, the Key Bridge, and the Chain Bridge all

have bicycle and pedestrian facilities. In

the north, cyclists and pedestrians may use the ferry at White's Ferry, which connects Montgomery County and Loudoun County. Cyclists may use the US 15 bridge at Point of Rocks and the MD 17 bridge at Brunswick to get across Frederick County and Loudoun County, though they have no separated facilities.

On the Anacostia River separated bicycle and pedestrian facilities of uneven quality are available on the South Capitol Street (Frederick Douglas Memorial) bridge, the 11th Street bridge, the Pennsylvania Avenue Bridge, the East Capitol Street Bridge, and the Benning Road Bridge. The District of Columbia is in the process of upgrading these crossings as these aging bridges are replaced and rebuilt.

On-Line Bicycle and Pedestrian Routing

The last few years have seen a flowering of on-line resources that enable cyclists and pedestrians to locate facilities and plan their routes. For bicyclists, RideTheCity (www.ridethecity.com/dc) is a tool that allows cyclists to point and click their proposed origins and destinations, and choose between a "direct route", a "safe route" and a "safer route". The results show whether a trail, on-street bike lane, or street is being used. "Safer" routes use trails and bike lanes at the expense of increased distance. Ride the City is available only in the New York and DC regions.

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Google maps also provides walking and bicycling directions. The bicycling directions show paths, bike lanes, and on-street bike routes, but offer no options for selecting more direct or safer routes.

Accessed via smart phone, these and other on-line applications can replace paper maps for most purposes.

Bicycles and Public Transit

The region has made tremendous progress integrating bicycling and public transit, with secure bike parking available at most rail stations, bicycles permitted on Metrorail at most times, and most of the buses in the region now equipped with bicycle racks. Specific agency policies and facilities are described below.

Metrorail Guidelines

- Bicycles are permitted on Metrorail (limited to two bicycles per car) weekdays except 7-10 a.m. and 4-7 p.m. Bicycles are permitted all day Saturday and Sunday as well as most holidays (limited to four bicycles per car). Bicycles are not permitted on Metrorail on July 4th or other special events or holidays when large crowds use the system.
- Folding bikes are permitted on Metrorail during rush hours if fully enclosed in a carrying bag.
- No tricycles, training wheels, tandem bicycles or recumbent bicycles are allowed on Metrorail.
- For other Bike on Rail guidelines see:
http://www.wmata.com/getting_around/bike_ride/bikes_rail.cfm

Metrorail Facilities

- For the most up to date information on bicycle parking at Metrorail, go to the [WMATA web site](http://www.wmata.com) and click on the stations tab. You can see which stations have bike racks and lockers. Or go to http://www.wmata.com/getting_around/bike_ride/parking.cfm for a list of stations with bike racks and lockers, and information on how to rent a bike locker.
- Systemwide, WMATA maintains about 1,280 single bike lockers and about 1,600 bike racks - with capacity for about 3,150 bikes. Racks are first come, first

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served. At many downtown stations, local jurisdictions provide additional bike parking near stations.

Metrobus

- All Metrobuses have racks on the front that carry **up to** two bicycles. No permit is required. Instructions for how to use bus bike racks is available at http://www.wmata.com/getting_around/bike Ride/bikes_bus.cfm.
- Metro has adopted [guidelines](#) for the design and placement of bus stops to improve their safety, comfort, accessibility, and efficiency.

Park and Ride

Of the 175 park and ride lots in the Washington DC-MD-VA Metropolitan Statistical Area, about 50 have bike lockers or racks. [Commuter Connections](#) lists information on Park and Ride lots.

Pedestrian Access to Transit

82% of Metrobus passengers walk to transit, and 60% of all Metrorail trips start with the passenger walking to the rail station. However, the quality of pedestrian access to Metrorail and Metrobus is uneven. Many suburban rail stations were built with an emphasis on automobile and bus access. Bus stops are often placed in areas with no sidewalks or available crosswalks. Inventorying conditions and making recommendations for specific locations is beyond the scope of this plan, but there have been a number of efforts to do so, such as MTA's Access 2000 Study, COG/TPB's Walkable Communities Workshops, and efforts in Fairfax County and Montgomery County to improve bus stop safety.

[WMATA](#) has developed a set of *Guidelines for Station Site and Access Planning*, and WMATA has plans to upgrade pedestrian access at Metrorail stations and carry out station-area development. WMATA also finished an inventory of conditions at all its bus stops in 2008. The inventory included information on the presence of bus shelters, sidewalks, and location at a controlled intersection.¹⁰ Suburban bus stops often lack a nearby controlled intersection for safe street crossing, and may also be missing sidewalks. A soon to be completed study on [bicycle and pedestrian access](#) to Metrorail will provide details on pedestrian access to rail transit.

¹⁰ *WMATA Bus Stop Inventory Project*. Kristin Haldeman, Presentation to TPB Access for All Subcommittee, November 2008.

Bike Parking

The District of Columbia, Arlington, Alexandria, and other jurisdictions provide bike racks on public property for short-term bicycle parking. They also require secure long-term bicycle parking to be provided as part of new development.

DC Bike Station



Figure 8: DC Bike Station at Union Station
Photo Credit: COG/TPB



Figure 9: DC Bike Station Interior

In response to demand for secure bicycle parking at Union Station, in 2009 the District of Columbia opened a Bike Station. The facility houses over 100 bicycles in 1,600 sq. ft. of free-standing ultra-modern glass and steel design. It is staffed 66 hours per week and available to members 24/7 for self-service parking. In addition to secure bike parking, the facility also provides a changing room, lockers, bike rental, bike repair, bike rental, and retail sales. The Bikestation location at Union Station allows commuters to take public transportation to the station, pick up their bicycles and go to work, shopping or entertainment.

The DC bike station is a unique structure designed for a particular site. It required an unusual degree of architectural review due to its location on the National Mall. Far less expensive, modular self-service bike parking structures are available.

Bike Sharing

Bike sharing is self-service public bicycle rental. It is similar to a car-sharing system, such as ZipCar, where members pay a fee and have access to any available bike

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throughout the regional system. Unlike earlier “public bicycle” or “yellow bike” programs, which failed due to lack of means of preventing theft, modern bicycle sharing links rentals to a user’s credit card, which can be charged if the bicycle is not returned. Bike sharing has become common and popular in Europe, with programs in dozens of cities.

The District of Columbia has a pilot bike sharing program, [Smartbike](#), with 100 bikes at ten docking stations in downtown DC. The first bike sharing system in North America, Smartbike is a precursor to a much larger system, which will be known as Capital Bikeshare.



Capital Bikeshare will likely (funding permitting) incorporate more than 3000 bicycles at over 300 docking stations in the District of Columbia, Arlington, Alexandria, Fairfax County, Montgomery County, and the City of College Park. The majority of bicycles and stations are expected to be in the District of Columbia and in Arlington.

Capital Bikeshare will have over 3000 bicycles and 300 stations

Capital Bikeshare will use the [Bixi bikeshare](#) system developed in Montreal. Bixi’s solar-powered semi-mobile bike stations require no utility hook-up, which will expedite installation. Capital Bikeshare is currently the largest planned bike share system in the United States.

Outlook

Facilities for bicycling and walking in the Washington region are likely to improve significantly in the future. Federal, regional, state and local policies and transit agency initiatives all call for better and more complete facilities. Bicycle lanes, Cycle Tracks, and dual facilities for pedestrians and bicyclists will become more common, and a major regional bike sharing program will soon be in place in the urban core jurisdictions.