



Smithsonian  
National Museum of  
American History

Lemelson Center  
for the Study of  
Invention and  
Innovation

Creating the  
Washington  
Metropolitan  
Bicycle  
Trail Network

path

the innovative





The Smithsonian's Lemelson Center for the Study of Invention and Innovation and the Washington Area Bicyclist Association (WABA) first presented "The Innovative Path" bicycle tour on May 21, 2000. The tour was part of *Re-inventing the Wheel*, a month-long series of programs on the invention of the bicycle and the history of cycling, which, in turn, was part of the Center's 1999-2000 theme "Invention at Play." The Lemelson Center, located at the National Museum of American History, is dedicated to exploring invention in history and encouraging inventive creativity in young people. WABA is a nonprofit organization that promotes better bicycling throughout the national capital region. To obtain additional copies of this publication, call the Center at (202) 357-1593. For a more detailed map of this ride (and information about other trails), contact WABA at (202) 628-2500 or [waba@waba.org](mailto:waba@waba.org), or visit the website [www.waba.org](http://www.waba.org).

## The Innovative Path

**In the words  
of the people  
who promote,  
build, protect,  
and maintain  
bicycle trails.**

**A constantly evolving invention** for nearly 200 years, the bicycle has inspired countless innovative thinkers. From the chain-less, pedal-less draisine, or "hobby horse," of 1817 to the velocipede, or "boneshaker," of the 1860s, the high-wheel bicycle of the 1870s, and the safety bicycle of the 1890s (with chain drive, diamond frame, and low wheels), the 19th century saw a whirlwind of invention affecting the bicycle. In the 1890s alone, at least one-third of all new applications at the U.S. Patent Office were bicycle-related.

But equally important to evolving bicycle technology were good roads, the most fundamental of resources for bicyclists. Roads in the 19th century were a far cry from today's paved





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superhighways. A transportation authority in 1854 described the nation's roads as "inferior to those of any other civilized country." In fact, very little was known in the United States about scientific methods of road construction and maintenance. Trade was primarily local and was conducted on rivers or overland during the winter on ice and snow. Besides rutted dirt and gravel roads, bicyclists in the late 19th century faced other challenges. Claiming that the bicycle frightened horses and endangered pedestrians, many cities passed ordinances forbidding cyclists from riding on public streets or in public parks.

In 1880, representatives from 31 local bicycle clubs met in Newport, R.I., and founded the League of American Wheelmen to "encourage and facilitate touring." Eventually, the league united over 100,000 cyclists to advocate for surfaced roads. Joined by academics, engineers, and motor vehicle manufacturers, the league became a leader in the good-roads movement. In the 20th century, motorists continued and expanded the efforts begun by the cyclists. This eventually led to the national highway system, new methods of construction, and the increased role of the federal government in funding road projects. Although the automobile has long since taken over the highway system, the League of American Bicyclists, the Washington Area Bicyclist Association, and many other nonprofit groups continue to strive for better facilities for cyclists.

Both the bicycle and the trail continue to inspire inventive minds. Present-day bicycle designers have developed many innovations, including cycles for the disabled, folding bicycles, more comfortable equipment, and extreme terrain bicycles, to name but a few. Bicycle facility designers are no less creative, seeking ways to accommodate runners, walkers, and cyclists; to protect environmentally sensitive areas; to preserve historic structures; and to produce attractive, efficient, and safe routes.

Cyclists in the Washington area have access to numerous trails, which are highlighted on this tour. These trails have been constructed, and are maintained, by various federal, state, county, local, and private nonprofit organizations. Each trail has its own innovative features and design challenges—and its own story. Discover these stories as you ride along and consider future innovations that might take place. Take the innovative path.

—Heather Bruce Satrom, Lemelson Center



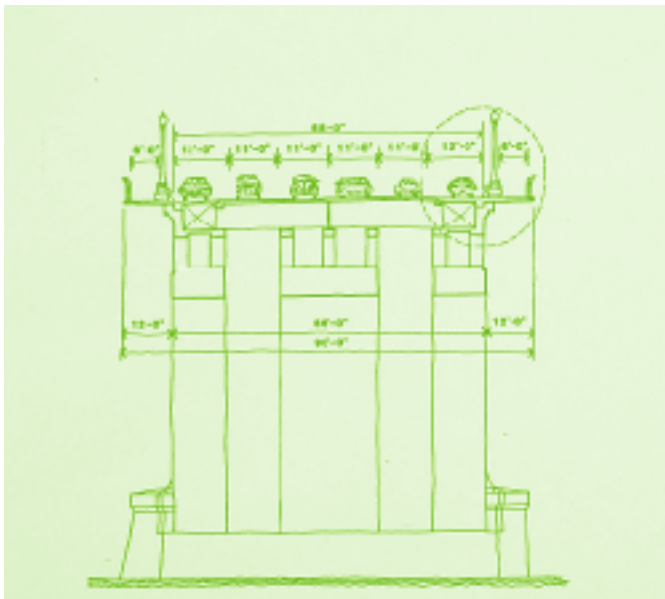
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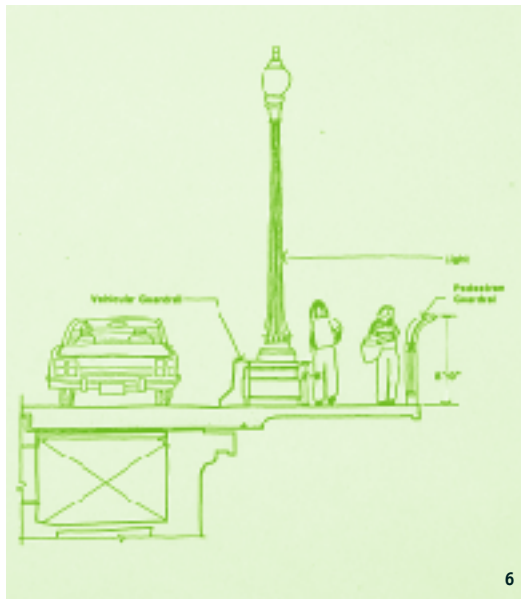
**The Francis Scott Key Bridge** was constructed in 1923 with trolley tracks, extremely wide sidewalks, and only two lanes for cars. By the 1960s, it had been redesigned with six car lanes and only a narrow walkway for pedestrians and bikes. When the Washington Area Bicyclist Association learned in 1982 that the city would re-deck the bridge, the group requested the conversion of one car lane into two bike lanes. City transportation engineers rejected that concept but agreed to seek greater width on the sidewalks. One of the major challenges of the project was to widen the bridge deck to provide a safe environment for both pedestrians and bicyclists crossing the bridge, without compromising the aesthetics of the bridge architecture. Planners realized that the sidewalks would need to be cantilevered out from the original bridge superstructure. The combination of conserving roadway space and cantilevering the sidewalks resulted in widening the sidewalks by ten feet.—*Peter Harnik, president, Washington Area Bicyclist Association*



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Structural engineers from the Parsons Transportation Group addressed the challenge of widening the Key Bridge deck through the innovative use of concrete post-tensioning technology. Concrete post-tensioning was developed as a way to increase the load-carrying capacity of concrete, making it a more versatile material for structural construction. Threaded steel rods or wires, placed in the concrete, are mechanically tightened to induce internal compression forces to counteract tension, or “stretching” forces, which “normal” concrete has very little strength to resist. In the case of the Key Bridge cantilevered sidewalks, the concrete could not even support its own weight without this technology. Now, when cyclists ride over the bridge, the only thing directly below them and the sidewalk is the Potomac River.

—*Ronald A. Fraumeni, structural engineer, the Parsons Transportation Group*



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Although bicyclists and runners have replaced mules and lockkeepers on the Chesapeake and Ohio Canal corridor, the towpath itself has remained relatively unchanged. Built between 1828 and 1850, the canal follows the Potomac River for 184.5 miles from Georgetown to Cumberland, Md. The canal operated until 1924 as a transportation route, primarily hauling coal from western Maryland to the port of Georgetown. In 1954, plans to fill in the canal and convert it to a parkway were subverted when U.S. Supreme Court Justice William O. Douglas organized an eight-day hike along the towpath to publicize its beauty and recreational use. The canal corridor became a National Historic Park in 1971. Hundreds of original structures, including locks, lockhouses, and aqueducts, are reminders of the path's original purpose. The towpath itself, made of clay and crushed stone, provides a nearly level, continuous trail through the Potomac River valley.

—National Park Service



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The Arizona Avenue Bridge is one of the highlights of the Capital Crescent Trail. Constructed between 1880 and 1890, it is the only bridge of its kind in the greater Washington metropolitan area. This 349-foot double-span steel truss bridge crosses both the C&O Canal and Canal Road. It is a fine example of a Double Intersection Pratt and Whipple/Murphy bridge, named after the inventors who first used wrought iron construction, diagonal tension spars, and panel points. The bridge is also innovative in its use of pinned connections instead of riveted construction.

Renovations to the bridge began in 1993 and were completed in 1996. The tracks and ties were removed, and the bridge was reinforced to accommodate maintenance and emergency vehicles. The \$1 million renovation included structural reinforcement, decking, chain link fencing, and lead paint removal. A concrete deck was chosen for durability and to prevent vandalism. Rehabilitation and repair funds from the National Capital Region of the Park Service, and direct congressional appropriation, financed the renovation. A state historic preservation office approved the modifications to the bridge, which meets criteria for nomination to the National Register of Historic Places. Plans are in place to install lighting on the bridge in 2001.

—Rich Metzinger, landscape architect, National Park Service



From 1910 to 1985, freight trains ran along the Georgetown Spur, an 11-mile track from Georgetown to Silver Spring. Following community discussions and public and private fundraising, the National Park Service and Montgomery County purchased the corridor in

1986 and converted the abandoned rail spur into a 10-foot-wide paved multi-use trail. Construction began in June 1993 and was completed in June 1996. The Coalition for the Capital Crescent Trail, representing 40 conservation, recreation, and neighborhood groups, has been the primary private nonprofit advocate for the trail's establishment. It is one of more than 700 rail-to-trail projects nationwide.—*Coalition for the Capital Crescent Trail*

Some path construction along the Capital Crescent Trail, including on the bridge over River Road, was funded by federal transportation money, as authorized by the Transportation Equity Act (TEA-21) of 1998. States and metropolitan areas decide which projects they wish to fund, often as a direct result of local advocacy efforts. Across the nation, there has been a dramatic increase in the use of federal funds for bicycle and pedestrian projects and programs.—*John Fegan, bicycle and pedestrian program manager for the Federal Highway Administration and for the Office of the Secretary of the U.S. Department of Transportation.*



In 1910 the B&O Railroad completed the segment of the Georgetown Branch rail line from Chevy Chase (where it had terminated) to Georgetown; the train tracks passed under a bridge on Wisconsin Avenue in Bethesda. In 1965 a developer acquired the "air rights" over the railroad right-of-way and constructed the Air Rights Building over the tracks, on the east side of Wisconsin Avenue next to the bridge. The Apex Building was subsequently built over the tracks on the west side. The result was a tunnel for trains, more than 800 feet long.

By 1997, the Capital Crescent Trail was completed from Georgetown to Woodmont Avenue near the west side of the tunnel. The Georgetown Branch Interim Trail was open on the east side of the tunnel, but the tunnel was closed, and trail users had to make a hazardous crossing through Wisconsin Avenue traffic to make the connection. After intensive lobbying by the Coalition for the Capital Crescent Trail and others, in early 1998 the Montgomery County Council voted support for the project. Because of a curve in the tunnel, user safety demanded good fencing, good lighting, and long sight lines. The coalition provided additional funding, and the tunnel opened for trail use in August 1998.—*John Dugger, vice chair, Coalition for the Capital Crescent Trail*

The Georgetown Branch Interim Trail tunnel below the Bethesda Air Rights and Apex buildings presented a number of design challenges, ranging from right-of-way constraints to security and drainage problems. Foremost among them is the fact that Montgomery County acquired this portion of the Georgetown Branch railroad right-of-way as a





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severely width-restricted easement. The right-of-way along this portion narrows to 30 feet, half the typical width for the Georgetown Branch right-of-way. The tunnel itself is punctuated with load-bearing columns and privately owned walls, limiting the path alignment. Another significant design problem involved security for trail users—a problem that was solved with high intensity lighting and security fencing that is locked after 10 p.m. Other challenges included graffiti prevention, aesthetics, and the crossing of Bethesda Avenue at the western end.—*Rob Klein, senior planner, Montgomery County Department of Public Works and Transportation*



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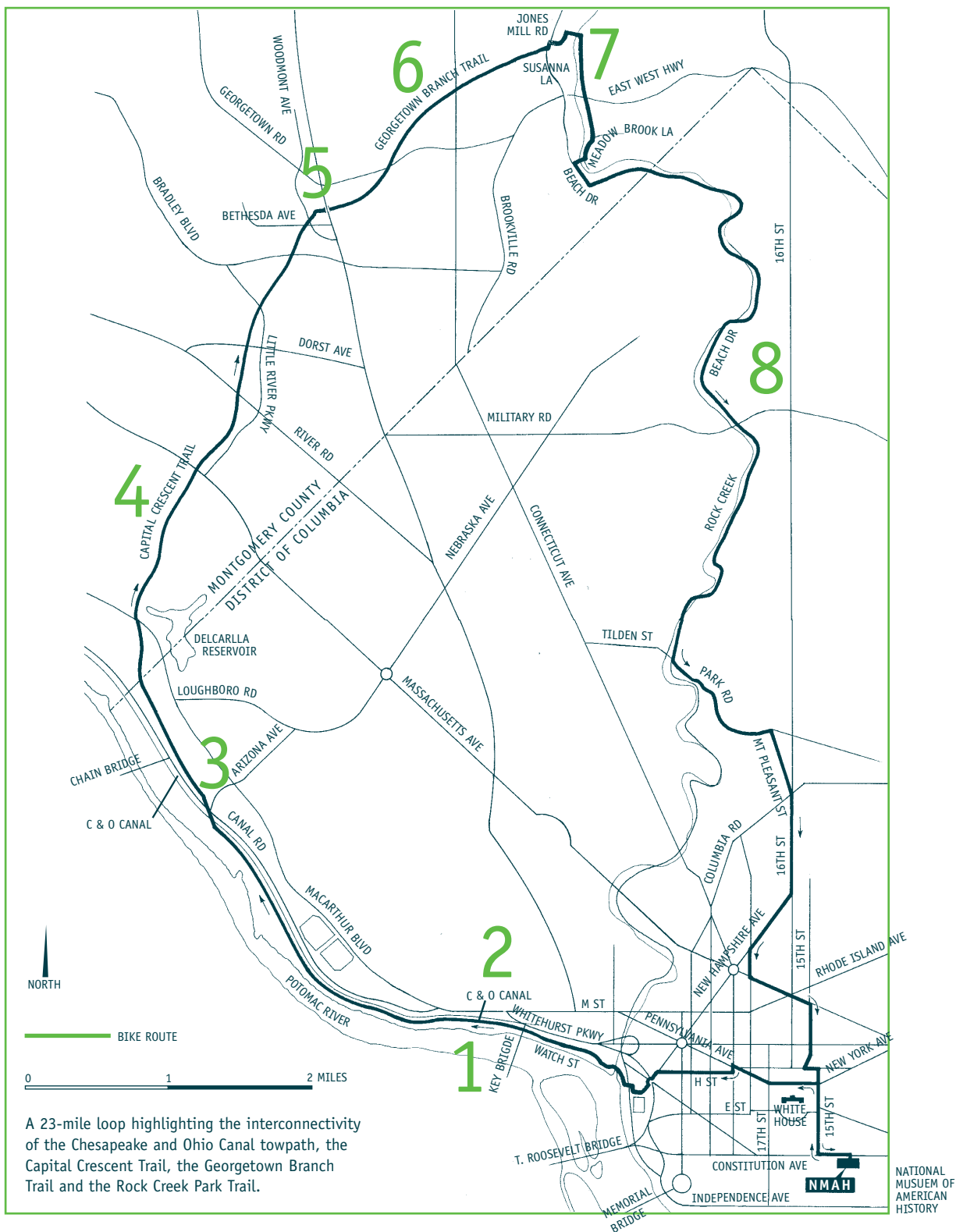


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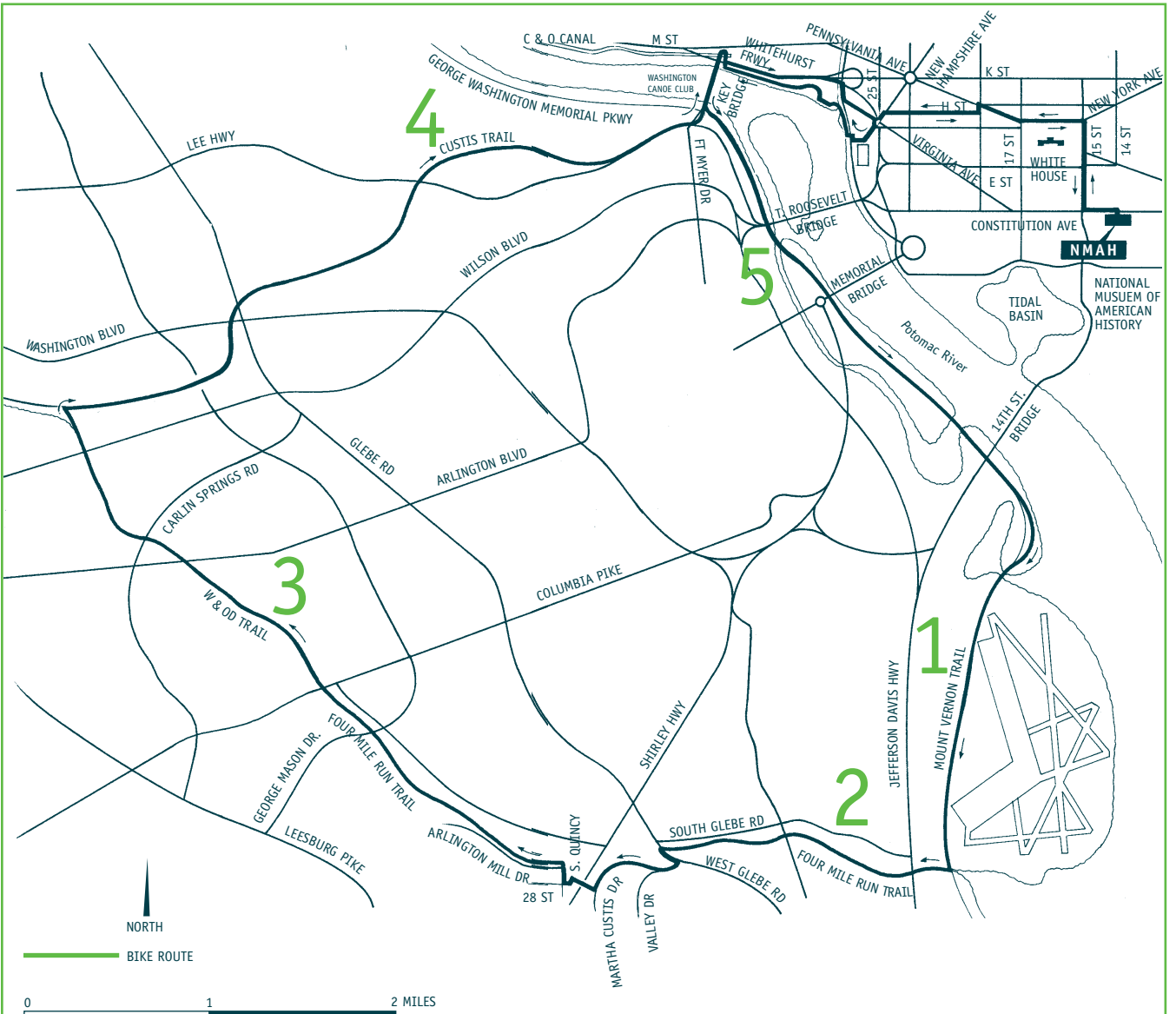
**The Georgetown Branch Interim Trail** in Bethesda, Md., is a 10-foot-wide, 4-mile-long, crushed-stone-surfaced trail that connects the Capital Crescent Trail (from Georgetown), the Rock Creek Park Trail, and an on-street bike route leading to the Metro station in downtown Silver Spring. The trail is built on a former railroad right-of-way purchased by Montgomery County in 1990 from CSX Transportation Company under provisions of the National Rails-to-Trails Act. Parts of the freight rail line had existed since 1904. In October 1992, the Potomac Electric Power Company began work on the first half-mile of the trail in Bethesda, Md., at no cost to the county. This was in exchange for the county's approval of the installation of underground power distribution lines under nearby residential streets. The first off-street segments of the trail were constructed in 1996, after the tracks and ties were salvaged.

The trail has a crushed stone rather than a permanent asphalt surface because the county council funded it on the condition that it is an interim transportation use. This was done so that the trail would not become a procedural obstacle to future federal transit funds if a decision were made to go ahead with a proposed light rail line and permanent parallel trail in this corridor. The interim trail cost \$1 million to build and was funded by Montgomery County with limited funding assistance from the Capital Crescent Trail Coalition and the Columbia Country Club. The section through the country club has special fencing to protect trail users from errant golf balls, as well as golf cart underpasses. At three locations, where the trail crosses busy roads, special care was taken to route trail users via signalized intersections.—*Edward Daniel, Washington Metropolitan Area Transit Authority Affairs liaison for the Montgomery County Department of Public Works*

# The DC/Maryland Loop







A 22-mile loop highlighting the interconnectivity of the Mount Vernon, Four Mile Run, Washington and Old Dominion, and Custis trails.



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**The B&O Railroad trestle** was constructed over the Rock Creek stream valley in 1892, as part of a plan to create a route to the south around Washington. As first constructed, the trestle was 1400 feet long and 67 feet high—the largest span of this type in the B&O system. In 1904, much of the trestle was replaced by fill, leaving a 281-foot central span, 69 feet high. The trestle was rebuilt in 1928 and again in 1972 after damage by Tropical Storm Agnes. It was also damaged by arson in 1967.



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The original plans to build a railroad to the south never materialized beyond Georgetown, and in 1985 the last train ran over the trestle. Today it is closed as unsafe. In 1999, the Coalition for the Capital Crescent Trail sponsored development of a preliminary engineering design to repair the trestle and open it for trail use. The design merges elements of the existing truss substructure with modern concrete decking and fencing to create a 14-foot-wide trail—plans that comply with the latest national standards for trail facilities. By using much of the existing substructure, the bridge can be rebuilt at a fraction of the cost of a new bridge without damaging environmentally sensitive Rock Creek Park.—*Wayne Phyllaier, chair, Coalition for the Capital Crescent Trail*



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**Congress established Rock Creek Park** in 1890 “as a public park or pleasure ground for the benefit and enjoyment of the people of the United States.” It was a favorite spot for horse-and-buggy outings and, after the roads were paved in the early 1900s, for scenic drives and bicycling. Beach Drive, the creek-side road, initially traversed Rock Creek by numerous fords, including Millhouse Ford north of Military Drive and two fords just south of the Zoo; thus, the road was often impassable after heavy rains. This natural check on automobile use helped to preserve the park’s character. But in 1966 tunnel construction replaced the last two fords and provided a high-speed, all-weather link between the Rock Creek and Potomac Parkway and Montgomery County. Winding and scenic Beach Drive became a commuter route in earnest, home to rush-hour traffic jams and numerous accidents involving speeding motorists.

The heightened environmental awareness of the 1960s and 70s spawned efforts to return Rock Creek Park to something of its original splendor. In 1966, advocates first persuaded the Park Service to close Beach Drive on Sunday mornings. The park’s first bicycle trails appeared in the late 1960s and early 70s. The Park Service, supported by the Washington Area Bicyclist Association and the People’s Alliance for Rock Creek, proposed permanent closure of Beach Drive to commuter automobile traffic in the early 1980s. Though the plan was never fully carried out, the Park Service did begin closing three sections of Beach Drive on weekends and holidays in 1981. This clever system blocks through traffic while permitting full automobile access to the park. The People’s Alliance has revived the idea of full-time restrictions on automobile commuting. This proposal would extend the closures to weekdays and once again make Rock Creek Park the way Congress intended it to be—7 days a week.—*Bill Freese, People’s Alliance for Rock Creek*



**George Washington Memorial Parkway**, which extends 38 miles along the Potomac River, was established to protect the river and the cultural landscapes and historic resources associated with George Washington and the nation's capital. The first section of the parkway, Mount Vernon Memorial Highway, opened in 1932 and extends from Memorial Bridge to Mount Vernon, Washington's home.

The parkway's recreational facilities have increased and improved over the years. Additions include the Columbia Island Marina, the Washington Sailing Marina, the Belle Haven Marina, Fort Hunt Park, and the picnic areas at Belle Haven and Collingwood. The proposed bridle and pedestrian paths included in the original plans were never completed, but the outdoor recreation boom of the 1960s and 1970s led to the construction of a combined bikepath/footpath, or multi-use trail, stretching 18.5 miles parallel to Mount Vernon Memorial Highway.

The National Park Service built the trail with extensive volunteer participation. A gravel path running from the 14th Street Highway Bridge to Alexandria was completed in April 1972 at a cost of \$27,000. This provided a safer, more attractive, and more permanent alternative to the Park Service's policy of closing two lanes of the highway for bicycle and pedestrian use on Sundays from 8 a.m. to 2 p.m.



Before the multi-use trail was opened, more than 5,000 people took advantage of this option each week. The popularity of the Washington-to-Alexandria trail encouraged the Park Service to extend it from Alexandria to Mount Vernon. Construction of that segment began in September 1972, and the path was completed in 1974. An extensive network of timber bridges and boardwalks was built to carry the trail over uneven ground and ecologically sensitive areas, such as Dyke Marsh. The trail's popularity soon required replacement of the original cinder surface with a more durable asphalt pavement.

In the 1980s, a northern segment of the multi-use trail was built from Columbia Island (in the Boundary Channel west of the 14th Street Bridge) to the Theodore Roosevelt Island parking lot and Key Bridge. An overpass of the parkway, constructed by the National Park Service and the Commonwealth of Virginia's Division of Parks and Recreation in 1988, provides a safe and direct connection with Rosslyn, Va. Additional trail connections were built at Crystal City and Four Mile Run in Arlington County. Rest stops with water and benches were added in several locations along the trail with the assistance of local organizations and neighbors.—*Tim Davis, historian, Historic American Engineering Record, National Park Service*

Over the years, the National Park Service has refined its technique of developing and constructing multipurpose trails for a variety of users, including runners, walkers, skaters and bicyclists. Trail surfaces went from dirt to blue stone to asphalt, and the best information on trail design known at the time was incorporated into each phase of construction. As use increased, so did conflicts with other users,





vehicles, and historic and natural resources. In addition, the American Association of State Highway and Transportation Officials developed new standards for trails such as the Mount Vernon Trail. These standards, which affect trail width, surface materials, and sight lines, are being incorporated into trail improvements where possible. When questions of safety or potential resource damage arise, the National Park Service seeks innovative solutions.



A major recent innovative solution is the construction of two bridges at the north end of Ronald Reagan Washington National Airport. The bridges, which opened in April 2000, raised the Mount Vernon Trail above the roadway, so that bicyclists and pedestrians no longer must cross in front of airport traffic.

—Audrey F. Calhoun, superintendent, George Washington Memorial Parkway



**The Four Mile Run Trail** is Arlington's oldest bicycle and pedestrian trail and was one of the first to be constructed in the Washington area. The first section of the trail was built in 1968 and was incrementally extended in the late 1960s and early 1970s. The trail was initially built with a crushed rock surface but was later repaved with asphalt for all-weather use. The trail has undergone widening and enhancement to accommodate the expanding number of users. Creation of the Four Mile Run Trail not only provided a new bicycle and pedestrian facility, it also established a means of linking five existing Arlington County parks that border the stream.—Ritch Viola, Arlington County bicycle and pedestrian coordinator, Arlington Public Works





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### The right-of-way on

which the Washington and Old Dominion Trail runs has seen many changes and uses over time. For approximately 110 years, the railroad shaped the growth pattern of much of Northern Virginia and provided industry, agriculture, and commuters with a quick route into Alexandria and Washington. In 1974, five years after the railroad was abandoned, the first mile-long section of the W&OD Trail was built and was immediately popular. Now 26 years old and 45 miles long, the W&OD provides an off-road escape for three million cyclists, walkers, joggers, horseback riders, and skaters each year.



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One of the latest uses of the right-of-way is also one of the oldest. In the 19th century, the first telegraph and telephone lines were strung along the railroad lines. Not only were they accessible, they were also direct routes to the towns and cities they were intended to serve. Today, utilities find trails, such as the W&OD, safe and uncongested paths on which to provide services to the public. Trail management agencies must be careful when allowing utilities use of the trail corridor to ensure that the trail is not damaged or disrupted. A new technology that helps with this is directional boring, a system in which conduits and pipes are run underground while workers above follow their progress and make directional changes to avoid problems.—Paul McCray, W&OD trail manager



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**The Custis Trail**, commonly referred to as the I-66 Trail, is innovative in several respects. It was the first bicycle and pedestrian trail built within the right-of-way of an interstate highway; in fact, a condition of the federal approval for the construction of I-66 was that the highway had to include a bicycle and pedestrian trail along its length within Arlington County. The trail is unique in that it has lights and is intended for day and night use by pedestrians and bicycle commuters. Along with the Four Mile Run and W&OD trails in Arlington, the Custis Trail has numbered and color-coded location markers placed about every one-tenth mile along the trails. The marker sign designations are used by the county's emergency communication center to give specific coordinates to personnel when responding to calls for assistance on the trails. The Custis Trail also was one of the first trails in the Washington area to have marked centerlines and posted trail rules.

—Ritch Viola, Arlington County bicycle and pedestrian coordinator,  
Arlington Public Works



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**Providing safe, inspirational facilities** for recreation in national parks inevitably affects the very resources the National Park Service is charged with protecting. The challenge is to determine how much impact is necessary or can be tolerated. Bike paths, such as the boardwalk trail near Theodore Roosevelt Island, cut through important and often sensitive resources, from wetlands to archaeological sites. Trail construction poses several risks to vegetation and nesting birds. The materials of the trails can also cause problems. Recycled plastics would likely be washed to the bottom of the river during a flood, while creosote and pressure-treated wood (to prevent algae growth and rot) are somewhat toxic in a wetland environment.

Fortunately, new techniques for digitally mapping resources, and better information about those resources, help planners determine what types of facilities are appropriate for an area and how to site a facility to minimize impact on hydrological systems and sensitive species. In a wetland area, trees may be closer to the path's edge than on non-wetland trails. There may be more curves in the trail to avoid massive grading projects. Pre-construction geotechnical work may be done with a small bobcat or by hand with an auger instead of with large machinery. The aesthetics of placing a trail lightly on the land is better understood, and equipment and materials that lessen the impact are more readily available, than ever before. Yet the design and construction of bike paths in sensitive environments is still a question of, "Is it the right thing to do, and if so, how can we do it best?"—Ann Brazinski, *natural resource specialist and*

*Dan Sealy, natural resource manager, National Park Service*

## Further Reading and Resources

### BOOKS

*A Social History of the Bicycle*, Robert A. Smith, 1972.

*First Highways of America*, John L. Butler, 1995.

*Greater Washington Area Bicycle Atlas*, Washington Area Bicyclist Association. Edited by Jim McCarthy and Sharon Gang, 1998.

*Historic Resource Study*, Jere L. Krakow, U.S. Department of the Interior/National Park Service, 1990.

*The League of American Wheelmen and the Good-Roads Movement, 1880-1905*, Phillip P. Mason, 1957.

*Wheels and Wheeling, The Smithsonian Cycle Collection*, Smith Hempstone Oliver and Donald H. Berkebile, first published in 1953.

### WEBSITES

Arlington County Bike Page  
[www.co.arlington.va.us/dpw/planning/bike.htm](http://www.co.arlington.va.us/dpw/planning/bike.htm)

Capital Crescent Trail  
[www.cctrail.org/](http://www.cctrail.org/)

Chesapeake & Ohio Canal National Park  
[www.nps.gov/choh/](http://www.nps.gov/choh/)

Federal Highway Administration Bicycle and Pedestrian Web Site  
[www.fhwa.dot.gov/environment/bikeped/index.htm](http://www.fhwa.dot.gov/environment/bikeped/index.htm)

Georgetown Branch Trail  
[www.co.mo.md.us/photos/trail/tail.htm](http://www.co.mo.md.us/photos/trail/tail.htm)

George Washington Memorial Parkway  
[www.nps.gov/gwmp/](http://www.nps.gov/gwmp/)

League of American Bicyclists  
[www.bikeleague.org/](http://www.bikeleague.org/)

Lemelson Center for the Study of Invention and Innovation  
[www.si.edu/lemelson](http://www.si.edu/lemelson)

National Museum of American History  
[www.americanhistory.si.edu/](http://www.americanhistory.si.edu/)  
(Two exhibits feature bicycles: "Road Transportation" and "Material World")

Northern Virginia Planning District Commission  
[www.nvpdc.state.va.us/](http://www.nvpdc.state.va.us/)

Parsons Engineering and Construction Company  
[www.parsons.com](http://www.parsons.com)

Rock Creek Park  
[www.nps.gov/rocr/rocrmaps.htm](http://www.nps.gov/rocr/rocrmaps.htm)

Washington and Old Dominion Trail  
[www.nvrpa.org/](http://www.nvrpa.org/)

Washington Area Bicyclist Association  
[www.waba.org](http://www.waba.org)



## Credits

Maps by Bob Flanagan

**COVER:** Multi-use trail along the George Washington Memorial Parkway south of Belle Haven. The curves were designed for scenic effect and to slow down bicyclists. *Tim Davis, National Park Service.*

- 1 Participants in one of America's first organized bicycle tours line up with their ordinaries on the road outside Readville, Mass., in 1879. The first rider is Charles E. Pratt, first president of the League of American Wheelmen. The second man is Albert A. Pope, manufacturer of the Columbia bicycle. *National Museum of American History. SI photo 38370.*
- 2 Cyclists on a sociable, or side-by-side, tricycle, possibly members of Washington's Capitol Bicycle Club, probably in the 1880s. *National Museum of American History. SI photo 79-1668.*
- 3 Bicycle race in or near Washington, D.C., circa 1925. *National Photo Company Collection, Prints and Photographs Division, Library of Congress.*
- 4 Construction of the Key Bridge sidewalks in 1987. Post-tensioning equipment is used to stress the steel tendons in the sidewalk/bikepath, providing additional strength. *D.C. Department of Public Works and Parsons Transportation Group.*
- 5 The Key Bridge under construction, circa 1923. Designed for two vehicular lanes, two streetcar tracks, and two sidewalks, it replaces the old wooden Aqueduct Bridge. *D.C. Department of Public Works and Parsons Transportation Group.*
- 6 Architectural drawing of the Key Bridge modification, showing the restoration of the 8-foot sidewalks/bikepaths that were lost in a 1955 bridge modification when the streetcars vanished and the sidewalks "shrank" to make way for six lanes of automobile traffic. *D.C. Department of Public Works and Parsons Transportation Group.*
- 7 Re-enactors with mule-driven barge, on the C&O Canal towpath at Great Falls Tavern in Maryland. *John Satrom.*
- 8 An aqueduct along the C&O Canal towpath. *John Satrom.*
- 9 Steam locomotive on the Arizona Avenue Bridge, 1948. *Leonard Rice.*
- 10 Train on the Arizona Avenue Bridge, November 1966. *William Duvall.*
- 11 Looking toward Bethesda Avenue from the Bethesda trail-head of the Capital Crescent Trail, February 1999. *Heather Andersen, Washington Area Bicyclist Association.*
- 12 Train going under the Air Rights tunnel in Bethesda, November 1966. *William Duvall.*
- 13 Train going under the Air Rights tunnel, October 1972. *William Duvall.*
- 14 Georgetown Branch Trail west of Connecticut Avenue in Chevy Chase. *G. Frederick Stork.*
- 15 Bridge near Wisconsin Avenue on the Georgetown Branch Trail. *G. Frederick Stork.*
- 16 Railroad trestle in Rock Creek Park from below, circa 1942. *Paul Westhaver.*
- 17 Hurricane Agnes flood damage to the trestle, October 1972. *William Duvall.*
- 18 Boys riding bicycles across a ford in Rock Creek Park, May 1942. *Farm Security Administration, Office of War Information Photograph Collection, Prints and Photographs Division, Library of Congress.*
- 19 East front of Mount Vernon. *Mount Vernon Ladies' Association.*
- 20 Mount Vernon Trail along the Potomac waterfront, adjacent to Columbia Island. *John Satrom.*
- 21 Mount Vernon Memorial Highway around the time of its completion in 1932. *U.S. Bureau of Public Roads Collection, National Archives.*
- 22 & 23 Mount Vernon Trail bridge at National Airport, April 2000. *E. Taylor/Metropolitan Washington Airports Authority.*
- 24 Mount Vernon Memorial Highway, near Four Mile Run, circa 1932. *U.S. Bureau of Public Roads Collection, National Archives.*
- 25 Cyclist on the Four Mile Run trail in Madison Manor Park. *Ritch Viola, Arlington Public Works.*
- 26 The last passenger train on the W&OD, in Rosslyn, Va., May 31, 1951. *William Streit, W&OD Trail.*
- 27 W&OD diesel locomotive at Glen Carlyn in Arlington, Va., 1958. *David Marcham.*
- 28 & 29 Cyclist on the Custis Trail in Arlington, Va. *Ritch Viola, Arlington Public Works.*
- 30 Cyclist on the boardwalk trail near Theodore Roosevelt Island. *John Satrom.*



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