

# BICYCLE FACILITY CLASSIFICATION

MOST



OFF-STREET  
TRAILS

STREAM  
VALLEY PARK  
TRAILS



SIDEPATHS

SEPARATED  
BIKE  
LANES

SEPARATION  
FROM TRAFFIC



BUFFERED  
BIKE LANES

ADVISORY  
BIKE LANES

BIKE  
LANES

CONTRA  
FLOW  
BIKE LANES



SHARED  
STREETS

NEIGHBOR-  
HOOD  
GREENWAYS

PRIORITY  
SHARED  
LANE  
MARKINGS



LEAST



Capital Crescent Trail

# TRAILS



Trails are paths that are located outside of the road right-of-way. They provide two-way travel designated for walking, bicycling, jogging and skating.

Trails are typically 10 feet wide, but can vary between 8 feet (in constrained locations) and 14 feet wide (where usage is likely to be higher). On trails with very high levels of walking and bicycling, spaces for pedestrians and bicyclists are often separated to reduce conflicts and improve comfort. In these situations, trail can be widened to between 15 and 24 feet wide.

Trails include **off-street trails** and **stream valley park trails**.





*Bethesda Trolley Trail*

# OFF-STREET TRAILS



OFF-STREET  
TRAILS

STREAM  
VALLEY PARK  
TRAILS

**Off-street trails** are shared use paths located outside of the road right-of-way that provide two-way travel for people walking, bicycling, and other non-motorized users.

## Benefits

- Provide a bicycling environment suitable for all ages and abilities.
- Tend to have fewer at-grade crossings than other bikeways.

## Typical Application

- Often located within existing or unused railroad rights-of-way or utility rights-of-way, land dedicated for planned but unbuilt “paper” streets and through public land.

## Examples in Montgomery County

- Bethesda Trolley Trail
- Capital Crescent Trail





Rock Creek Trail

# STREAM VALLEY PARK TRAILS



**Stream valley park trails** are shared use paths located outside of the road right-of-way and provide two-way travel for people walking, bicycling, and other non-motorized users.

## Benefits

- Provide a bicycling environment suitable for all ages and abilities.
- Tend to have fewer at-grade crossings than other bikeways.

## Typical Application

- Located along stream valley parks.

## Examples in Montgomery County

- Rock Creek Trail
- Sligo Creek Trail
- Matthew Henson Trail





*Separated Bike Lanes on Woodglenn Drive, North Bethesda*

# SEPARATED BIKEWAYS



Separated bikeways provide physical separation from traffic and include **sidepaths** and **separated bike lanes**.

Once the decision is made to provide a separated bikeway, planners must determine whether the bikeway should also be separated from pedestrians.

**Pedestrian demand will be the primary consideration for determining whether a separated bikeway should be implemented as a sidepath or a separated bike lane.**

All other things being equal, **sidepaths** will be recommended where observed or anticipated pedestrian demand is lower, since conflicts between people walking and bicycling will be infrequent.

**Separated bike lanes** will be recommended where pedestrian volumes are observed or anticipated to be higher.

**Another closely related factor is the land use type and density of the surrounding environment.** **Sidepaths** tend to be more appropriate in suburban areas where pedestrian travel is less and where pedestrian movements tend to be more predictable. In urban areas,



## TYPICAL APPLICATION



TRAFFIC LANES  
**3+ LANES**



POSTED SPEED  
LIMIT  
**30 MPH OR  
FASTER**



TRAFFIC  
**6,000+  
VEHICLES  
PER DAY**



ON-STREET  
PARKING  
TURNOVER  
**FREQUENT**



BIKE LANE  
OBSTRUCTION  
**LIKELY TO  
BE  
FREQUENT**



**DESIGNATED  
AS TRUCK  
OR BUS  
ROUTE**

pedestrian travel is characterized by meandering and stop-and-go movements as people socialize, enter and exit stores, dine outdoors, access transit or walk to and from on-street parking. Pedestrians movements are less predictable in urban locations, so providing **separated bike lanes** and sidewalks is recommended in the vicinity of commercial and higher-density mixed-use areas and major transit facilities.





*Sidepath on MacArthur Boulevard, Bethesda*

# SIDEPATHS



**Sidepaths** are shared use paths located parallel to and within the road right-of-way. They provide two-way travel designated for walking, bicycling, jogging and skating. Sidepaths are typically 10 feet wide, but can vary between 8 feet (in constrained locations) and 14 feet wide (where usage is likely to be higher). Sidepaths are separated from motorized traffic by a curb, barrier or landscaped panel.

## Benefits

- More attractive to a wider range of bicyclists than striped bikeways on higher volume and higher speed roads.

## Typical Application

- See section overview.
- Adjacent to the roadway.
- Recommended on higher volume and higher speed roads where pedestrian volumes are low, including suburban streets.

## Examples in Montgomery County

- MacArthur Boulevard
- Key West Avenue
- Olney-Laytonsville Road
- Briggs Chaney Road





*Separated Bike Lanes on Nebel Street, North Bethesda*

# SEPARATED BIKE LANES



**Separated bike lanes** are exclusive bikeways that combine the user experience of a sidepath with the on-street infrastructure of a conventional bike lane. They are physically separated from motor vehicle traffic and distinct from the sidewalk. They operate one-way or two-way.

Separated bike lanes can provide different levels of separation:

- Separated bike lanes with flexible delineator posts (“flex posts”) alone offer the least separation from traffic and are appropriate as an interim solution.
- Separated bike lanes that are raised with a wider buffer from traffic provide the greatest level of separation from traffic, but will often require road reconstruction.
- Separated bike lanes that are protected from traffic by a row of on-street parking, such as shown in the image of Woodglen Avenue, offer a high-degree of separation, but would benefit from additional design features.

## Benefits

- More attractive to a wider range of bicyclists than **striped bikeways** on higher volume and higher speed roads.
- Eliminate the risk of a bicyclist being hit by an opening car door.
- Prevent motor vehicles from driving, stopping or waiting in the bikeway.
- Provide greater comfort to pedestrians.

## Typical Application

- See section overview.
- Adjacent to the roadway.
- Recommended on higher volume and higher speed roads where pedestrian volumes are high, including higher density areas, commercial and mixed-use development, and near major transit stations.

## Examples in Montgomery County

- Woodglen Drive
- Nebel Street
- Spring Street (forthcoming)





*Bike Lanes on Battery Lane, Bethesda*

# STRIPED BIKEWAYS



BUFFERED  
BIKE LANES

BIKE  
LANES

ADVISORY  
BIKE LANES

CONTRA  
FLOW  
BIKE LANES

**Striped bikeways** are designated spaces for bicycling that are distinguished from traffic lanes and shoulders by striping and pavement markings. Until a few years ago, **conventional bike lanes** were the gold standard of North American bicycle planning in urban areas. But over the past few years, a variety of new bike lane types have arisen, including **buffered bike lanes** and **advisory bike lanes**. Collectively, this reports refers to the variety of bike lanes as striped bikeways.

While striped bikeways remain a useful tool to reduce traffic stress, they are insufficient to attract “interested but concerned” bicyclists in many environments because they do not provide sufficient separation from traffic and are often obstructed by motorized vehicles.



## TYPICAL APPLICATION



TRAFFIC LANES  
**3 LANES  
OR FEWER**



POSTED SPEED  
LIMIT  
**30 MPH OR  
SLOWER**



TRAFFIC  
**9,000  
VEHICLES  
PER DAY  
OR FEWER**



ON-STREET  
PARKING  
TURNOVER  
**INFREQUENT**



BIKE LANE  
OBSTRUCTION  
**LIKELY TO BE  
INFREQUENT**

**WHERE A  
SEPARATED  
BIKEWAY IS  
INFEASIBLE OR  
NOT DESIRABLE**





*Buffered Bike Lanes on East Capitol Street SE, Washington, DC*

# BUFFERED BIKE LANES



BUFFERED  
BIKE LANES

BIKE  
LANES

ADVISORY  
BIKE LANES

CONTRA  
FLOW  
BIKE LANES

**Buffered Bike Lanes** are conventional bicycle lanes paired with a designated buffer space separating the bicycle lane from the adjacent motor vehicle travel lane and/or parking lane to increase the comfort of bicyclists.

## Benefits

- Provides greater separation between motor vehicles and bicyclists.
- Provides space for one bicyclist to pass another without encroaching into the adjacent motor vehicle travel lane.
- Encourages bicyclists to ride outside of the door zone when the buffer is between parked cars and the bike lane.
- Provides a greater space for bicycling without making the bike lane appear so wide that it might be mistaken for a travel lane or a parking lane.
- Appeals to a wider cross-section of bicycle users.

## Typical Application

- See section overview.

## Examples in Montgomery County

- None





# CONVENTIONAL BIKE LANES



BUFFERED  
BIKE LANES

BIKE  
LANES

ADVISORY  
BIKE LANES

CONTRA  
FLOW  
BIKE LANES

**Conventional bike lanes** (or simply bike lanes) are portions of the roadway that have been designated by striping, signage and pavement markings for the preferential or exclusive use of bicyclists. They are typically 5 to 6 feet wide in Montgomery County.

**Climbing lanes** include a conventional bike lane in the uphill direction and a shared lane in the downhill direction. These lanes are used to improve safety on hills where there is a higher speed differential between bicyclists and motor vehicles.

## Benefits

- Increases bicyclist comfort and confidence on busy streets.
- Creates separation between bicyclists and automobiles.
- Increases predictability of bicyclist and motorist positioning and interaction.
- Increases total capacities of streets carrying mixed bicycle and motor vehicle traffic.
- Visually reminds motorists of bicyclists' right to bicycle in the street.

## Typical Application

- See section overview.

## Examples in Montgomery County

- Dufief Mill Road
- Battery Lane
- Bonifant Road
- Fairland Road
- Marinelli Road





*Advisory Bike Lanes on Potomac Green Drive, Alexandria, Virginia*

# ADVISORY BIKE LANES



**Advisory Bike Lanes** are dashed bike lanes that allow motorists to temporarily enter the bike lane to provide oncoming traffic sufficient space to safely pass on narrow, unlaned roads in residential areas.

## Benefits

- Require less space to implement than conventional bike lanes.
- Encourage motorists to safely pass bicyclists.
- Visually reminds motorists of bicyclists' right of way in the street.
- Removing the center line reduces the speed of motor vehicles.
- Are likely to reduce traffic speeds.

## Typical Application

- Where there is insufficient space for conventional bike lanes and two lanes of traffic.
- Residential land uses.
- Number of travel lanes: un-laned, bi-directional streets.
- Street width: The un-laned two-way travel space should be 12 to 18 feet wide.
- Posted speed: 30 mph or less.
- Traffic: 2,000 to 4,000 vehicles per day.
- Parking: May be used on streets with or without on-street parking.

## Examples in Montgomery County

- None





Contra-Flow Bike Lane on Cedar Avenue

# CONTRA-FLOW BIKE LANES



BUFFERED  
BIKE LANES

BIKE  
LANES

ADVISORY  
BIKE LANES

CONTRA  
FLOW  
BIKE LANES

**Contra-Flow bike lanes** are bike lanes designed to allow bicyclists to ride in the opposite direction of motor vehicle traffic. They convert a one-way traffic street into a two-way street: one direction for motor vehicles and bikes, and the other for bikes only.

## Benefits

- Enable bicyclists to travel against traffic on one-way streets.

## Typical Application

- See section overview.
- One-way streets.

## Examples in Montgomery County

- Cedar Street





*Bikeable Shoulders On Clarksburg Road in Boyds.*

# BIKEABLE SHOULDERS



**Bikeable shoulders** are portions of the roadway that accommodate stopped or parked vehicles, emergency use, bicycles and motor scooters and pedestrians where sidewalks do not exist. Bikeable shoulders of at least four feet in width can improve comfort on some roadways for some bicyclists. They are most appropriate in rural locations in the county, often where posted speed limits are 40 mph and higher.

Bikeable shoulders do not create low-stress environment on roads where the posted speed limit exceeds 30 mph.

## Benefits

- Provide separation from traffic.
- Intended primarily for recreational bicyclists.

## Typical Application

- Primarily found in rural locations.
- Posted Speed Limit:  $\geq 40$  mph

## Examples in Montgomery County

- River Road
- New Hampshire Avenue from MD 198 to MD 108
- Norwood Road from MD 182 to MD 650





# SHARED ROADS



SHARED  
STREETS

NEIGHBOR-  
HOOD  
GREENWAYS

PRIORITY  
SHARED  
LANE  
MARKINGS

Shared Roads are bikeways that share space with automobiles. They include **neighborhood greenways** in suburban areas, **shared streets** in urban areas and **priority shared lane markings** where there is insufficient space for a dedicated bikeway. Of course, all streets where bicycles share space with automobiles are de facto shared roads, but only some are master-planned.





Bell Street, Seattle (Source: NACTO)

# SHARED STREETS



SHARED  
STREETS

NEIGHBOR-  
HOOD  
GREENWAYS

PRIORITY  
SHARED  
LANE  
MARKINGS

**Shared streets** constitute an urban design approach where pedestrians, bicycles and motor vehicles can comfortably coexist. They prioritize pedestrian and bicycle movement by slowing vehicular speeds and communicating clearly through design features that motorists must yield to all other users. Motorists are considered “guests” in this environment.

## Benefits

- Create conditions where pedestrians and bicyclists can walk or ride on the street and cross at any location, as opposed to at designated locations.

## Typical Application

- Low traffic volume, low traffic speed and high pedestrian volume streets.

## Examples in Montgomery County

- None.





*A neighborhood greenway on SE Lincoln Street in Portland, Oregon. Source: Toole Design Group*

# NEIGHBORHOOD GREENWAY



**Neighborhood greenways** (also called bicycle boulevards) are streets with low motorized traffic volumes and speeds, designed and designated to give walking and bicycling priority. They use signs, pavement markings and speed and volume management measures to discourage through trips by motor vehicles and create safe, convenient crossings of busy arterial streets.

Neighborhood greenways incorporate several design elements:

- Traffic diverters at key intersections to reduce through motor vehicle traffic while permitting passage for through bicyclists.
- At two-way, stop-controlled intersections, priority assignment that favors the neighborhood greenway, so bicyclists can ride with few interruptions.
- Neighborhood traffic circles and mini-roundabouts at minor intersections to slow traffic but allow bicyclists to maintain momentum.
- Traffic-calming to lower motor traffic speeds.

## Benefits

- Attractive to a wide range of bicyclists.
- Reduce the speed and volume of traffic.
- Prioritize walking and bicycling at minor street crossings.
- Improve safety and reduce delay for walking and bicycling at major street crossings.

## Typical Application

- Posted Speed Limit:  $\leq 25$  mph.
- Context: areas where through traffic can be diverted to parallel streets.
- Street pattern: where a continuous route for bicycling is possible.

## Examples in Montgomery County

- None.
- Wayfinding signs to guide bicyclists along the route and to key destinations.
- Shared-lane markings (sharrows) where appropriate to alert drivers to the path bicyclists need to take on a shared roadway.
- Crossing improvements where the boulevard crosses major streets (including traffic signals, median refuges and curb extensions).





Market Street, San Francisco (Source: Toole Design Group)

# PRIORITY SHARED LANE MARKINGS



**Priority shared lane** markings communicate bicyclist priority within a shared lane and guide bicyclists to ride outside of the door zone. Colored backing and more frequent spacing make priority shared lane markings more conspicuous than standard shared lane markings (sharrows). This treatment does not improve most bicyclists' comfort in shared lanes with traffic.

They can be installed in limited instances on roadways where it is not feasible to install bicycle lanes, separated bike lanes, or shared use paths, but it is desirable to communicate bicyclists priority within a shared lane.

## Benefits

- Make bicyclists more conspicuous in locations where it is not possible to provide a low-stress bikeway.

## Typical Application

- Narrow streets with high on-street parking turnover, typically those with ground floor retail and dining or on low-speed, low-volume frontage roads.
- Separated bike lane mixing zones where a protected intersection is not provided.

## Examples in Montgomery County

- None.