

How Should Montgomery County Use Signed Shared Roadways in Master Plans?

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Signed shared roadways are streets that are shared by both bicycles and motor vehicles. In Montgomery County, signed shared roadways are typically implemented with wide outside curb lanes (to provide space for motorists to pass bicyclists within the lane), bikeable shoulders on the side of the road, shared lane (“sharrow”) pavement markings, or on low volume / low speed streets. As Montgomery County moves forward with a new bicycle master plan that focuses on creating a connected, low-stress network, there is a question as to whether to maintain the signed shared roadway as a master-planned bikeway facility. This paper discusses the purpose of signed shared roadways, provides an overview of national guidance, evaluates the current use of signed shared roadways in Montgomery County, presents treatments that implement the signed shared roadway designation, and provides a recommendation for the County’s use of the designation moving forward.

Purpose of Signed Shared Roadways

Signed shared roadways serve three functions for bicyclists:

- Provide wayfinding,
- Are identified on a public bicycle map, or
- Provide some type of treatment on the roadway such as a sharrow and/or regulatory signage in the form of “Bikes May Use Full Lane” signs.

The first function, wayfinding, is helpful for bicyclists who are unfamiliar with the bike network. Wayfinding planning involves the identification of existing good bike routes and development of a detailed signage plan, whereas network master planning identifies the locations for future roadway improvements for bicyclists. Because of these differing goals, the two planning processes are best completed separately. Since it will likely take 10 to 20 years to implement many of the recommendations in a Master Plan, a separate wayfinding plan is needed to help direct bicyclists to major countywide facilities recommended in the master plan. Furthermore, in Montgomery County, wayfinding and network planning are each overseen by different agencies (MCDOT and M-NCPPC, respectively).

The second function, public bicycle maps, help riders navigate as well and is also not a master-planning function. The current Montgomery County bike map produced by the Department of Transportation includes “Bicycle Routes” that are derived from the signed shared roadways in the 2005 bike plan. However, the development of a public bicycle map should also be approached from a network planning perspective, identifying those streets that create a connected network of comfortable riding environments. Such maps may also identify routes and major street crossings by bicyclists’ level of traffic stress if routes of varying levels of stress are included. Given Montgomery County’s goal of creating a connected, low-stress network, the County may wish to produce a public map indicating level of stress for bicyclists as part of an effort separate from the Master Plan.

The third function, identification of locations where pavement markings and signage could be added to supplement existing shared lanes, are not a master plan function in this planning process. This is discussed in the following sections of this paper.

National Guidance on Signed Shared Roadways

The 2012 AASHTO Guide for the Development of Bicycle Facilities notes that shared lanes (another term for shared roadways) exist on all streets where bicycling is not prohibited and designated bicycle space does not exist. The Guide notes a number of characteristics—good pavement, adequate sight distances,

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bicycle-compatible drainage grates—that can make lanes more compatible with bicycling. It also notes that two street types are particularly suitable as shared lanes in their current situation:

- Streets with lower volumes and speeds
- Rural roadways with good sight distance, low volumes and operating speeds of 55 mph or less¹

Shared lanes may be accompanied by signage such as “Share the Road”, “Bikes on Roadway”, or “Bikes May Use Full Lane” signs. The “Share the Road” sign is starting to be discontinued by some transportation agencies, and FHWA recently issued guidance suggesting it is not a best practice.²

Shared lanes, signed or unsigned, do not improve the bicyclist’s experience or change the amount of stress that bicyclists experience on a given street. For instance, the rural roadway example noted above would remain a high-stress environment owing to the speed of traffic.

The Guide further notes that route signage alone will not improve bicyclists’ safety because they do not provide any geometric design changes. In the upcoming update to the Guide, route wayfinding signage will be a separate section from bicycle facility types.

In reality, signed shared roadways are not themselves a facility type. Streets designated as signed shared roadways feature one (or a combination) of the bicycle treatments identified above (wide outside lanes, shoulders, sharrows or signage).

Current Use in Montgomery County

Signed shared roadways have been included as a facility type in Montgomery County bicycle master plans for over 30 years. Currently, there are over 400 miles of roadways in the county designated in this manner. Signed shared roadways are primarily intended to serve a connectivity function in Montgomery County’s planned bicycle network, providing links between other bicycle facilities and destinations. Signed shared roadways were often included on streets where space does not exist to accommodate another exclusive bicycle facility type such as bike lanes or a shared use path. These streets were a combination of low-volume, low-speed neighborhood streets and low- to medium-volume, higher-speed streets that are the only option for connecting to certain destinations.

Some of the master-planned signed shared roadways have been implemented by the County Department of Transportation as wayfinding projects, others are merely indicated on the county bike map as shared roadways. In practice, designated signed shared roadways represent a wide range of street types and network purposes. Some signed shared roadways are so designated because they are already low-speed, low-traffic streets, and some are designated because they are routes already used by bicyclists. Many in this latter category are high-speed roads with no bicycle facilities, which are generally considered high-stress streets for most bicyclists.

Signed shared roadways are implemented through five treatment types today in Montgomery County. The five treatments identified below include two types of signage (wayfinding and regulatory), and two facility types (wide outside lanes and shoulders). Sharrows, are not a facility type, but can provide

¹ Note: Maryland state law prohibits bicycling on roads with speed limits greater than 50 mph. While bicyclists may use the shoulder on these roads, they may only enter travel lanes if making a left turn, crossing the roadway, or if the shoulder is overlaid with a right turn lane, a merge lane, a bypass lane, or any other marking that breaks the continuity of the shoulder.

² http://mutcd.fhwa.dot.gov/knowledge/faqs/faq_part9.htm#signsq5

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multiple functions, are also discussed. The subsequent section makes recommendations about the County's use of each of these treatment types in the master planning process.

Signed Routes: Wayfinding

As discussed above, signed routes that provide wayfinding signage help bicyclists navigate the bicycle network. Additionally, if signage is focused only on existing comfortable routes that avoid high-stress crossings, such routes can help the *Interested but Concerned* part of the population understand how to access the network and navigate to their intended destinations and thus consider choosing to bike rather than travel by another mode. Wayfinding alone, without accommodation separated from vehicular traffic, is not a facility type that improves the bicyclist's comfort on a given street.



Montgomery County DOT has implemented some wayfinding routes

Signed Routes: Regulatory

Bikes May Use Full Lane (BMUFL) signs are regulatory in nature and govern the interactions of bicyclists and drivers on the roadway. This sign permits bicyclists to control the lane and requires that motorists either change lanes to pass or, if passing legally is not an option, wait patiently behind bicyclists. This signage may be used alone or in tandem with sharrow markings on the roadway. County policy regarding BMUFL signs follows the Maryland State Highway Administration Bicycle Policy and Design

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Guidelines.³ As with wayfinding signs, regulatory signs without accommodation separated from vehicular traffic are not considered to be a facility type because the signs do not improve bicyclist's comfort.



Bikes May Use Full Lane signs may be used in tandem with sharrow markings.

Shared Lane Markings (“Sharrows”)

Generally, sharrows serve three primary purposes: 1) Operational: to indicate the recommended location within the travel lane for bicyclists to use; 2) Regulatory: provide a visual cue to remind drivers that bicyclists may be present; and 3) Wayfinding. None of these three functions are master planning functions, but rather considerations for implementation.

It should be noted, however, that implementation has varied among different jurisdictions. For instance, Portland, OR has decided to use sharrows primarily as a wayfinding marking and only on low-volume, low-speed streets. This usage includes bicycle boulevards where additional traffic calming and/or diversion is present. Most other jurisdictions use sharrows to fill gaps in the network, regardless of traffic volume, where other dedicated facilities do not exist. In many cases these are located on higher volume collectors or arterials. To date, Montgomery County has not explicitly identified the function of sharrows in the bicycle network, but the County may wish to explore defining appropriate uses of sharrows through the Bike Master Plan.

Within Montgomery County, sharrow markings are used on a wide variety of roadway types, including roadways formally designated as shared roadways in the 2005 Countywide Bikeways Functional Master

³ http://roads.maryland.gov/ohd2/bike_policy_and_design_guide.pdf

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Plan as well as other roadways not formally designated through the Plan. This may be due, in part, to different transportation agency jurisdiction over roads within the county (e.g. MDSA and MCDOT). For instance, in Silver Spring, MCDOT installed sharrows on the block of Ellsworth Street between Fenton Street and Spring Street. This location has two travel lanes and relatively low traffic speeds and volumes. To pass bicyclists, drivers must encroach on the oncoming travel lane, meaning they must often slow when passing the bicyclist. MDSA installed sharrows on Georgia Avenue, a state highway, just a few blocks away from the Ellsworth Street in Silver Spring. This street has six lanes of high volume traffic that often travels at high speeds outside of congested hours. To pass bicyclists on Georgia Avenue, drivers can encroach on an adjacent travel lane, in the same direction or change lanes entirely, which enables drivers to maintain higher speeds.



Sharrows indicate an appropriate path of travel to bicyclists and encourage drivers to move over to pass.

Bicyclists can tell the difference between roadway types where sharrows are used today (e.g., Ellsworth Street vs. Georgia Ave) and will not be confused by the application of the same facility on widely varying street types. Adult bicyclists can see that traffic volumes and speeds are very different on these two streets and that sharing space with traffic on each street will be a different experience. Sharrows can serve a function for bicyclists in both situations, however, given the Bicycle Master Plan goal of creating a low-stress network, sharrows should only be considered as part of the toolkit for implementing bicycle boulevards on low-volume, low-speed streets and as an interim treatment.

Wide Outside Lanes

Wide outside travel lanes are intended to provide space for both bicyclists and drivers to operate in tandem within the same lane. Standard traffic lanes in Montgomery County are 11 to 12 feet wide, while a wide outside lane is 14 to 14.5 feet wide. Consensus has grown in the bicycle planning and

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engineering field that wide outside lanes do not constitute a facility type. Though more space is provided for a driver to pass a bicyclist, this additional width does not increase a bicyclist's comfort, especially on roadways with high speeds. Additionally, wide lanes tend to increase automobile travel speeds, and may actually make bicyclists less comfortable next to higher speed traffic than on a similar roadway with standard width lanes. Although wide outside lanes were included in the 2012 AASHTO Bike Guide, they are not likely to be included in the upcoming release of this guide. In Maryland, most wide outside lanes were implemented by MDSHA on high-speed, high-volume roadways, but the agency is moving away from viewing wide outside lanes as a bicycle improvement because of better understanding that they do not improve bicyclists' comfort. Although MDSHA does not prioritize the implementation of low-stress bicycle facilities, MDSHA recognizes that a bike lane or shoulder provides a higher level of comfort than a wide outside lane. Some wide outside lanes were also implemented by MCDOT in the past in similar locations.



Wide outside lanes provide more space for drivers to pass bicyclists but do not change the level of comfort experienced by most riders.

Shoulders

A bikeable shoulder is a space outside of the vehicular travel lanes that can be used by bicycles when not occupied by stopped or parked vehicles. Bikeable shoulders can improve comfort on some roadways for some bicyclists, but are not technically a shared roadway because the shoulder provides space for bicyclists outside the automobile travel lane.⁴ Shoulders are more likely to be present in more outlying

⁴ Implementation of bikeable shoulders is often inconsistent, resulting in variable effective widths for bicycle operation. As a result, bicyclists will often be forced to transition into the automobile travel lane, where shoulders narrow or drop, and share the lane with automobiles.

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locations in the county often where posted speed limits are 40 mph and higher.⁵ Shoulders of at least three feet provide some space for bicyclists to avoid riding in the automobile travel lane.



Paved shoulders are present on some rural roads in the county.

Recommendations for Montgomery County

The following recommendations are based on a review of past County planning practices and emerging national best practices, and are provided to inform the Montgomery County Bicycle Master Plan:

1. Discontinue use of signed shared roadway as a facility type.

Signed shared roadways are not a facility type and should not be identified as such. Rather, they are implemented through the treatments identified above. The purpose of a master plan is not simply to identify streets that connect to one another and to destinations, but to identify a set of infrastructure recommendations that will improve the comfort of bicyclists on those streets. With Montgomery County's goal of creating a connected low-stress network, bikeway recommendations should only include those facilities that will create a low-stress environment on streets, no matter what their traffic and roadway characteristics.

2. Recommend the development of a comprehensive wayfinding plan for the County.

Wayfinding should be addressed as a separate planning process from the master plan. Implementation of wayfinding routes is already underway in the County and has been based, in part, on prior identified

⁵ These speeds create higher stress levels for most bicyclists, but riders who are more tolerant of higher traffic stress may be comfortable on roads with higher speeds where either traffic volume is low or shoulders are present.

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signed share roadways. However, in developing the detailed sign plans for routes, planners have found needs to deviate from the identified routes to take advantage of more comfortable crossing locations. A wayfinding plan could help the County identify destinations people will want to access and subsequently identify the most suitable routes for bicycling to those destinations.

3. Discontinue use of signed routes in the master plan.

Neither regulatory signage alone in the form of Bikes May Use Full Lane signs, nor wayfinding signs improve the comfort or connectivity of streets. The identification of signed routes should be completed through a wayfinding plan. The County may wish to consider use of BMUFL signs on a case-by-case basis as discussed in the dual bikeways issue paper.

4. Discontinue use of wide outside lanes as a facility type.

Wide outside lanes do not improve the comfort of a road for bicyclists and may, in fact, decrease comfort by leading to increased automobile travel speeds. This facility type is not compatible with the County's goal of providing a low-stress network.

5. Develop a sharrow use policy.

The County currently does not define the purpose of shared lane markings in its network. The County should develop a sharrow use policy and may frame that policy based upon the two uses outlined below: 1) as part of bicycle boulevards, and 2) as an interim treatment. Both of these uses will be decided by the implementing agency at the time of facility design and are not expected to be outlined in the Bike Master Plan. Sharrows may be appropriate in a range of situations but should not be recommended as an independent facility type in this Master Plan.

Sharrows may be a treatment option on low-volume, low-speed streets designated as bicycle boulevards. In this context, sharrows can serve a wayfinding function and also reinforce bicyclists' right to control the lane.

Additionally, sharrows may be a treatment that is used as an interim marking on streets master-planned for other facilities. For instance, a street may be designated for a separated bike lane and serve a critical network function in connecting to major destinations or other pieces of the bicycle network. However, implementation of the separated bike lane may take years, and in the intervening time, a sharrow can help a segment of the bicycling population navigate high-speed, high-volume roads. The sharrow marking would indicate to drivers that they should expect bicyclists and should change lanes to pass.

6. Recommend other bicycle facilities on some local streets formerly identified as signed shared roadways.

Connectivity is one of the most important characteristics of a bicycle network. Signed shared roadway recommendations in the past have consisted, in part, of local streets that are already comfortable for bicycling. However, these route recommendations were not restricted to those fully connected low-stress routes with comfortable crossings of major streets. Bicycle boulevard, advisory bike lane and/or sharrow recommendations should appear as part of the County's network to improve the comfort of streets. Additionally, the plan should identify those locations where crossing improvements (i.e., signals, medians, crosswalks, etc.) are necessary to provide low-stress crossings that connect low-stress streets to one another.

7. Develop a network of recreational routes for more experienced bicyclists as a separate mapping effort.

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The stated goal of the Bike Master Plan is to create a network of low-stress routes. Thus, identification of on-road recreational routes that do not conform to the County's low-stress definition is outside the scope of this planning process. There may be a need, through a parallel effort, to also identify recreational on-road bike routes for bicyclists who tolerate higher traffic stress. This mapping effort may, in part, highlight those roads with existing paved shoulders that improve the level of comfort for riders.