

Advisory Bike Lanes
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Residential streets with higher traffic volumes and speeds can make bicycling uncomfortable for some people. Where space is available, one response could be to add conventional bike lanes to reduce traffic stress. However, many residential two-way roads are too narrow to provide space for two standard width bicycle lanes and two standard width automobile travel lanes. Advisory bike lanes (ABLs) are a way to reduce the stress of bicycling on lower volume and lower speed streets where there is insufficient space for two travel lanes and two bike lanes.



Un-laned, two-way “yield” streets, such as Indian Spring Drive, are common in residential neighborhoods in Montgomery County

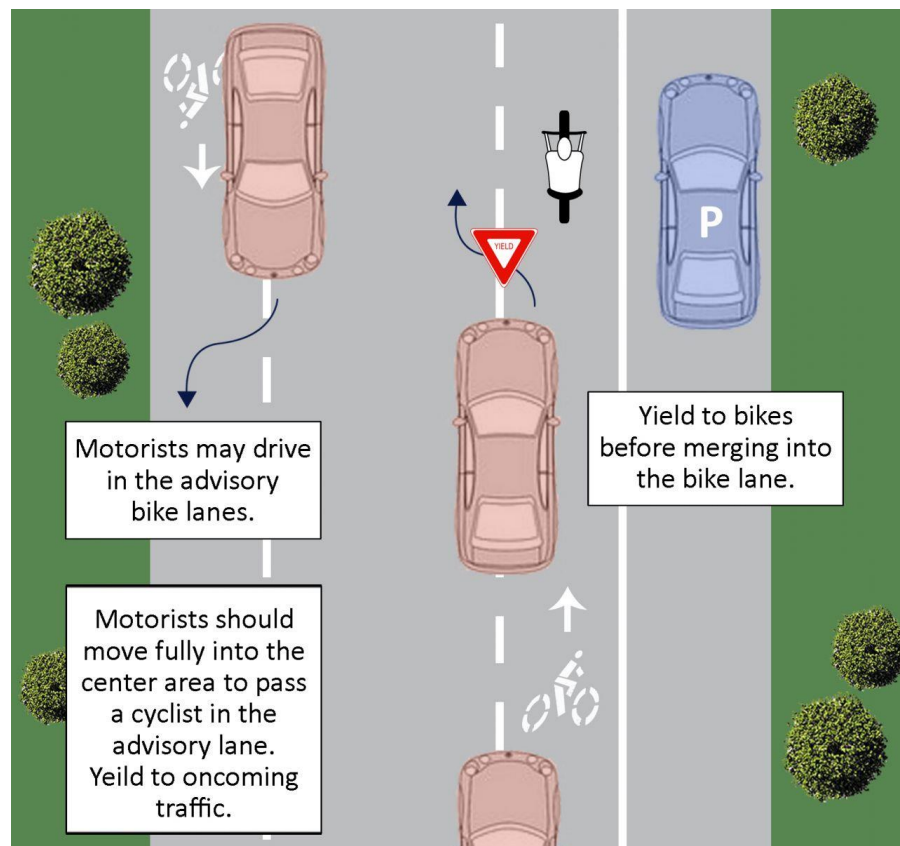
For lower volume, lower speed streets, ABLs are an alternative to a shared lane marking treatment which separates bicyclists from automobile traffic. These streets are marked to provide two separate standard width bicycle lanes, on either side of a single shared (un-laned, two-way “yield” street) motorist travel space, essentially creating a three-lane street cross section. Roadway centerlines are not present in this condition.

The design of streets where ABLs are implemented does not provide sufficient space for motorists to pass each other within the vehicular travel lane and therefore implicitly provides bicyclist priority along a street with ABLs. Motorists are encouraged to drive in the center of the roadway by the ABL pavement markings along the sides of the street. Unlike a standard bike lane where motorists are discouraged from entering the bike lane with a solid lane line, the ABL is continuously dashed to allow motorists to temporarily enter the bike lane to provide oncoming traffic sufficient space to safely pass. This behavior is similar to passing behavior on narrow, un-laned, two-way “yield” streets where traffic lanes are not designated with striping and so motorists must pull to the side (into parking gaps or driveways) to let

Advisory Bike Lanes

DRAFT 04/29/2016

oncoming vehicular traffic pass. Yielding in this fashion is necessary because ABLs reduce the automobile travel space to a width of 12 to 18 feet, less than the typical 20 to 26 feet for two travel lanes.



Yielding patterns in advisory bike lanes. Note that drivers more typically position vehicles in the center lane than in the bike lane except in cases of passing. (City of Minneapolis Graphic)

Some locations where sight lines are not clear, such as hills or curves, may present issues for the implementation of advisory bike lanes. In these cases, some additional modifications may be used to mitigate potential conflicts. For instance, a spot roadway widening or removal of a parking lane at a curve may enable widening of the vehicle travel lane to a width where two automobiles may pass comfortably. Speed humps could also be used at the crest of a hill to further calm traffic speeds and give drivers ample time to react and yield to a vehicle approaching in the opposite direction.

Given that advisory bike lanes remain a relatively new facility type in the U.S., most communities implementing them have also created education campaigns about their use, especially regarding yielding expectations. Drivers and bicyclists can be educated through mailings, door hangers (targeted at nearby residents), on-site flyer handouts and other means. The striped and marked facility is not typically accompanied by signage indicating yield patterns, but this is not precluded by any current guidance. A sign example from Hanover, NH is included in the domestic examples below.

Advisory Bike Lanes

DRAFT 04/29/2016

International Criteria

Advisory bike lanes have been used in numerous European countries in both urban and rural contexts. The guidance below is from the Dutch CROW traffic design manual. This manual specifies use of advisory bike lanes, or “suggestion lanes” as they are referred to in the Netherlands, in a limited context. The key criteria identified in the CROW manual for application of ABLs are speed limit (19 mph) and traffic volume (up to 5,000 average daily traffic)¹. Centerlines are not striped on these streets.

Lane configuration	Daily traffic (veh/day)	Street type and speed limit			
		Urban local street	Urban through street	Rural local road	Fast traffic road
		30 km/h (19 mph)	50 km/h (31 mph)	60 km/h (37 mph)	70+ km/h (44+ mph)
Two-way traffic with no centerline	≤2500	Default layout is advisory bike lanes (shown as “mixed.”)	Bike lane or cycletrack	Advisory bike lane	Cycle track or low-speed service road
	2000–3000				
	3000–5000	Bike lane or cycle track	Bike lane or cycle track ^c		
	>4000			(Does not exist)	
Two lanes (1+1)	any	Bike lane or cycle track	Bike lane or cycle track ^c		
Four lanes (2+2) or more	any	(Does not exist)			

CROW Dutch traffic manual chart for facility application indicates use of advisory lanes for low-speed, low-volume streets.

¹ CROW, *Design Manual for Bicycle Traffic*, p 108.



Advisory bike lanes on a local street in Amsterdam

The City of London’s design guidance specifies that advisory bike lanes be used on streets with low speed limits. For locations with on-street parking, the guidance recommends a minimum bicycle lane width of 6.5 feet. It also recommends the use of a striped buffer between the lane and the parking lane and the placement of bicycle symbols at the outer edge of the advisory bike lane.²

Domestic Examples and Criteria

Advisory bike lanes are a relatively new facility type to the United States, but they have been installed in a number of different contexts around the country. ABLs are not included in the current Manual of Uniform Traffic Control Devices and require experimental approval from the Federal Highway Administration (FHWA) for application. FHWA calls ABLs “dashed bike lanes” and requires two design elements for the request to experiment: bike lane signs and bike lane pavement markings. Additional design elements are recommended or suggested and are available on FHWA’s website.³ Approval has been granted to numerous communities around the country in communities as varied as Hanover, NH (pop. 11, 000) and Minneapolis, MN (pop. 400,000).

Minneapolis, MN

The City of Minneapolis was the first US city to install advisory bike lanes in 2011. This application was on a downtown street that connects to a number of other bike facilities and is the only lower-volume through street in this part of the city. East 14th Street has parking on both sides, and the width varies from 40’ to 44’. Parking is striped at 7’ and the ABLs at 6’. This results in an un-laned automobile travel space of 14’ to 18’. Since their installation, there has been no increase in head-on automobile crashes

² <http://content.tfl.gov.uk/lcds-chapter4-cyclelanesandtracks.pdf>

³ https://www.fhwa.dot.gov/environment/bicycle_pedestrian/guidance/mutcd/dashed_bike_lanes.cfm

Advisory Bike Lanes
DRAFT 04/29/2016

and overall speeds have dropped creating a safer environment for drivers, bicyclists and pedestrians. Currently there are three locations in Minneapolis with ABLs. The other instances are on local residential streets with small pockets of commercial use. The instance on West 46th Street demonstrates that ABLs are compatible with transit use as there is a bus line on this street.

Minneapolis' criteria for ABL installation are:

- Speed limit 30 mph or less (nearly all Minneapolis local streets have 30 mph speed limit)
- ADT under 6,000 vehicles per day
- Parking present on both sides of street

The City has encountered one issue with these installations. In the 14th Street case, drivers were initially unsure whether the street remained two-way, so signage was installed to indicate two-way travel at some intersections.



14th Street in downtown Minneapolis

Edina, MN

The first advisory bike lanes were installed in Edina in 2012 on Wooddale Avenue. This installation was subsequently removed after City staff determined they were not functioning as intended.⁴ The main issue with this installation was that the adjacent parking lane was rarely occupied, presenting a confusing situation to bicyclists and drivers as to where bicyclists should ride. Drivers expected bicyclists to ride in the empty parking lane, and some bicyclists felt uncomfortable maintaining their position 10'

⁴ <http://current.mnsun.com/2013/03/26/edina-council-agrees-to-change-wooddale-bike-lanes/>

Advisory Bike Lanes
DRAFT 04/29/2016

from the curb in the advisory lane when the parking lane was empty.⁵ Advisory bike lanes installed elsewhere in the city have been successful and continue to be in place on West 54th Street in Edina.

Alexandria, VA

Alexandria has the only local example of advisory bike lanes. These lanes were installed on Potomac Greens Drive in 2015 in order to provide a connection between two existing bike facilities. The street width varies and is 42 feet wide at the narrowest point, and stakeholders wanted to preserve parking on both sides. This results in 26 feet remaining for two-way travel for both automobiles and bicycles which is divided into two 5-foot bike lanes and a 16-foot two-way travel way for automobiles.



Potomac Greens Drive in Alexandria

Hanover, NH

Hanover installed its advisory bike lanes as part of a Safe Routes to School effort. These lanes provide space for bicyclists and, in some instances, pedestrians. (Right-of-way is not available for provision of separate pedestrian facilities in the form of sidewalks.) The street where they have been applied is a very low-volume neighborhood residential street with no sidewalk. Prior to installation, pedestrians and bicyclists did ride and walk in the street, but the addition of striping has provided a level of comfort that did not exist before. Parking is sometimes allowed in the advisory bike lanes during events at the nearby sports center, but this is not documented as a major issue. Unlike other U.S. locations, Hanover has also included signage to indicate appropriate yielding patterns for the advisory bike lane street.

⁵ <http://streets.mn/2013/04/17/advisory-bike-lanes-on-wooddale-ave-to-be-removed/>



Signage in Hanover, NH. Credit: Danny Kim

Ancillary Benefits: Reduced speed and automobile volume

Where jurisdictions have removed centerlines to install advisory bike lanes, there is some evidence of both lower automobile traffic speeds and decreased automobile volume. A study by Transport for London found an average decrease of approximately 6 mph with advisory bike lane installation.⁶ A study in Suffolk County, England found a decrease in ADT from 5,600 vehicles/day to 4,500 vehicles/day post installation⁷. The Dutch Institute for Road Safety Research also found a small decrease in automobile speeds with implementation of advisory bike lanes on rural roads.⁸ These rural roads would be similar to some narrow, low-volume roads located in parts of western and northern Montgomery County.

⁶ <http://content.tfl.gov.uk/centre-line-removal-trial.pdf>

⁷ http://www.apbp.org/?page=2009_2_Advisory

⁸ <http://www.swov.nl/rapport/R-2003-17.pdf>

Advisory Bike Lanes

DRAFT 04/29/2016

Criteria for Application in Montgomery County⁹

There may be a limited number of locations where advisory bike lanes are appropriate in Montgomery County. Advisory bike lanes should be reserved for use in locations where space is limited and there is insufficient width to implement both standard bike lanes and vehicular travel lanes. This may result from a desire to maintain on-street parking. Planners and engineers will often be choosing among a number of facility types for lower-volume streets in these situations: primarily bicycle boulevards, shared lane markings and advisory bike lanes. Advisory bike lanes are preferable to other, similar facility types on low-speed roads, where prevailing traffic speeds are slightly higher (25- 30 mph versus 15-20 mph), traffic volumes are low, and where it is not possible to implement either the traffic calming and/or diversion features of a bicycle boulevard. The criteria listed below will help the County decide where to recommend advisory bike lanes. Additionally, this paper recommends five local examples for consideration in Montgomery County.

Number of Travel Lanes

The advisory bike lane facility is only applicable in conjunction with un-laned automobile travel lanes. Streets with existing centerlines will require the centerline be removed prior to the installation of the advisory bike lanes.

Street Width

The un-laned two-way travel space resulting from installation of advisory bike lanes should be 12 to 18 feet. The overall street width may vary based upon the presence of parking on one or both sides of the street.

Posted Speed

Advisory bike lanes should only be implemented on streets with speed limits of 30 mph or less. Most local streets in the county have a speed limit of 25 MPH, and many collector streets have a speed limit of 30 MPH.

Automobile Volumes

Every time automobiles pass each other in opposing directions, there is the potential for a head-on collision. On a road with 6,000 vehicles per day this would occur about every 15 seconds; for this reason the MUTCD requires roads with 6,000 or more vehicles per day to have a striped centerline, designating separate lanes for opposing traffic.¹⁰ This should be the upper bound for streets where advisory bike lanes are recommended.

Reduction of the operating space for two automobiles through implementation of advisory bike lanes further complicates vehicle operations because of the need for yielding.¹¹ Given the number of times a bicyclist would experience being passed by an automobile, advisory bike lanes should be used on streets

⁹ Dimensional criteria for application will be further detailed in the Design Toolkit document that identifies minimum and preferred dimensions and the advantages and disadvantages of different configurations.

¹⁰ See Section 3B.01 Yellow Center Line Pavement Markings and Warrants, Standard 09.

¹¹ Minneapolis has not seen increased head-on collisions where advisory bike lanes have been implemented.

Advisory Bike Lanes

DRAFT 04/29/2016

with 2,000 to 4,000 ADT. Above that traffic volume, the bicyclist may become uncomfortable, but the facility could be used on streets with 4,000 to 6,000 ADT as a more experimental treatment for study.

Parking

Advisory bike lanes may be used on streets with or without on-street parking on one or both sides of the street. Where on-street parking exists, the critical criterion is the extent to which that parking is occupied. Low-occupancy parking lanes adjacent to the ABL may present a confusing situation to bicyclists and drivers as evidenced in the Edina example where drivers expected bicyclists to travel in the empty parking lane and some bicyclists felt uncomfortable maintaining their position outside the parking lane.

Land Use

The criteria laid out in the preceding sections will restrict Montgomery County's usage of advisory bike lanes to local residential streets. Unlike Minneapolis, it is unlikely there are urban commercial streets where these other criteria, especially traffic volume, are met.

Criteria Summary

- Number of motorists travel lanes: Un-laned, bi-directional travel
- Street width: will vary, but must result in un-laned travel way of 12 to 18 feet¹²
- Posted speed: 30 mph or less
- Traffic volume: 2,000 to 4,000 ADT recommended; 4,000 to 6,000 ADT for experimental treatment with evaluation
- On-street parking: If parking present, should be majority occupied majority of the time
- Lane use: Local residential streets

Example Applications in Montgomery County

Each of these locations are possibilities for the application of advisory bike lanes.

**Note: Five locations have been identified and are included in a supplementary KML file for review.*

Locations will be finalized after CAG review and assessment of whether further data on traffic volumes are available.

¹² Advisory bike lane widths both with and without on-street parking will be detailed in the design toolkit.