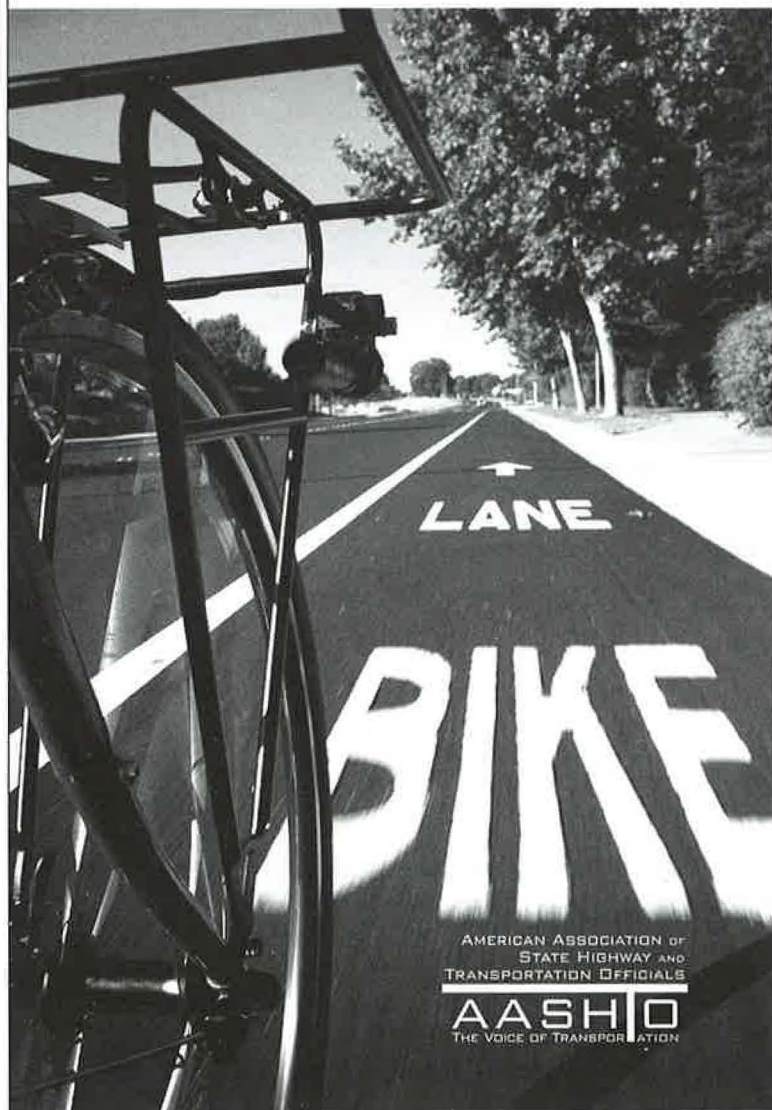


Guide for the Development of Bicycle Facilities

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STATE HIGHWAY AND
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5.2.2 Shared Use Paths Adjacent to Roadways (Sidepaths)

While it is generally preferable to select path alignments in independent rights-of-way, there are situations where existing roads provide the only corridors available. Sidepaths are a specific type of shared use path that run adjacent to the roadway, where right-of-way and other physical constraints dictate. Children often prefer and/or are encouraged to ride on sidepaths because they provide an element of separation from motor vehicles. As stated in Chapter 2, provision of a pathway adjacent to the road is not a substitute for the provision of on-road accommodation such as paved shoulders or bike lanes, but may be considered in some locations in addition to on-road bicycle facilities. A sidepath should satisfy the same design criteria as shared use paths in independent rights-of-way.

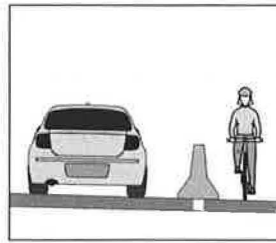
The discussion in this section refers to two-way sidepaths. Additional design considerations for sidepaths are provided in Section 5.3.4. Utilizing or providing a sidewalk as a shared use path is undesirable. Section 3.4.2 highlights the reasons sidewalks generally are not acceptable for bicycling. It is especially inappropriate to sign a sidewalk as a shared use path if doing so would prohibit bicyclists from using an alternate facility that might better serve their needs. In general, the guiding principle for designing sidewalks should be that sidewalks intended for use by bicyclists should be designed as sidepaths, and sidewalks not intended for use by bicyclists should be designed according to the AASHTO *Guide for the Planning, Design, and Operation of Pedestrian Facilities* (2).

Paths can function along highways for short sections, or for longer sections where there are few street and/or driveway crossings, given appropriate separation between facilities and attention to reducing crashes at junctions. However before committing to this option for longer distances on urban and suburban streets with many driveways and street crossings, practitioners should be aware that two-way sidepaths can create operational concerns. See Figure 5-4 for examples of potential conflicts associated with sidepaths. These conflicts include:

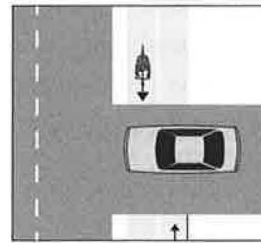
1. At intersections and driveways, motorists entering or crossing the roadway often will not notice bicyclists approaching from their right, as they do not expect wheeled traffic from this direction. Motorists turning from the roadway onto the cross street may likewise fail to notice bicyclists traveling the opposite direction from the norm.
2. Bicyclists traveling on sidepaths are apt to cross intersections and driveways at unexpected speeds (i.e., speeds that are significantly faster than pedestrian speeds). This may increase the likelihood of crashes, especially where sight distance is limited.
3. Motorists waiting to enter the roadway from a driveway or side street may block the sidepath crossing, as drivers pull forward to get an unobstructed view of traffic (this is the case at many sidewalk crossings, as well).
4. Attempts to require bicyclists to yield or stop at each cross-street or driveway are inappropriate and are typically not effective.
5. Where the sidepath ends, bicyclists traveling in the direction opposed to roadway traffic may continue on the wrong side of the roadway. Similarly, bicyclists approaching a path may travel on the wrong side of the roadway to access the path. Wrong-way travel by bicyclists is a common factor in bicycle-automobile crashes.

6. Depending upon the bicyclist's specific origin and destination, a two-way sidepath on one side of the road may need additional road crossings (and therefore increase exposure); however, the sidepath may also reduce the number of road crossings for some bicyclists.
7. Signs posted for roadway users are backwards for contra-flow riders, who cannot see the sign information. The same applies to traffic signal faces that are not oriented to contra-flow riders.
8. Because of proximity of roadway traffic to opposing path traffic, barriers or railings are sometimes needed to keep traffic on the roadway or path from inappropriately encountering the other. These barriers can represent an obstruction to bicyclists and motorists, impair visibility between road and path users, and can complicate path maintenance.
9. Sidepath width is sometimes constrained by fixed objects (such as utility poles, trash cans, mailboxes, and etc.).
10. Some bicyclists will use the roadway instead of the sidepath because of the operational issues described above. Bicyclists using the roadway may be harassed by motorists who believe bicyclists should use the sidepath. In addition, there are some states that prohibit bicyclists from using the adjacent roadway when a sidepath is present.
11. Bicyclists using a sidepath can only make a pedestrian-style left turn, which generally involves yielding to cross traffic twice instead of only once, and thus induces unnecessary delay.
12. Bicyclists on the sidepath, even those going in the same direction, are not within the normal scanning area of drivers turning right or left from the adjacent roadway into a side road or driveway.
13. Even if the number of intersection and driveway crossings is reduced, bicycle-motor vehicle crashes may still occur at the remaining crossings located along the sidepath.
14. Traffic control devices such as signs and markings have not been shown effective at changing road or path user behavior at sidepath intersections or in reducing crashes and conflicts.

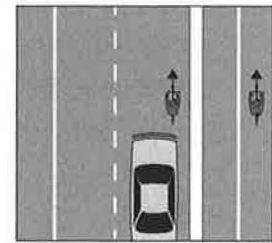
For these reasons, other types of bikeways may be better suited to accommodate bicycle traffic along some roadways.



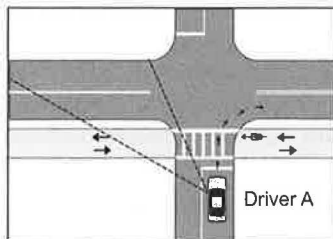
Barriers, while needed in tight spaces, can narrow both roadway and path, and create hazards.



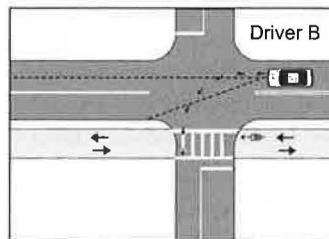
Stopped motor vehicles on side streets or driveways may block the path.



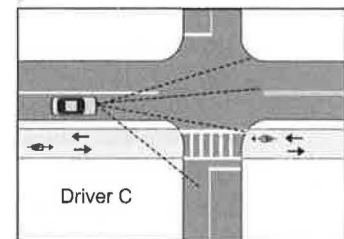
Some bicyclists may find the road cleaner, safer, and more convenient. Motorists may believe bicyclists should use a sidepath.



Right turning Driver A is looking for traffic on the left. A contraflow bicyclist is not in the driver's main field of vision.



Left turning Driver B is looking for traffic ahead. A contraflow bicyclist is not in the driver's main field of vision.



Right turning Driver C is looking for left turning traffic on the main road and traffic on the minor road. A bicyclist riding with traffic is not in the driver's main field of vision.

Figure 5-4. Sidepath Conflicts

Shared use paths in road medians are generally not recommended. These facilities result in multiple conflicting turning movements by motorists and bicyclists at intersections. Therefore, shared use paths in medians should be considered only where these turning conflicts can be avoided or mitigated through signalization or other techniques.

Guidelines for Sidepaths

Although paths in independent rights-of-way are preferred, sidepaths may be considered where one or more of the following conditions exist:

- The adjacent roadway has relatively high-volume and high-speed motor vehicle traffic that might discourage many bicyclists from riding on the roadway, potentially increasing sidewalk riding, and there are no practical alternatives for either improving the roadway or accommodating bicyclists on nearby parallel streets.
- The sidepath is used for a short distance to provide continuity between sections of path in independent rights-of-way, or to connect local streets that are used as bicycle routes.
- The sidepath can be built with few roadway and driveway crossings.
- The sidepath can be terminated at each end onto streets that accommodate bicyclists, onto another path, or in a location that is otherwise bicycle compatible.

Bishop's Lodge Rd
X - does not apply (bike lanes will be included)
X - 2.4 mile long sidepath does not connect any particular facilities
X - about 45 road or driveway crossings along the way

In some situations, it may be better to place one-way sidepaths on both sides of the street or highway, directing wheeled users to travel in the same direction as adjacent motor vehicle traffic. Clear directional information is needed if this type of design is used, as well as appropriate intersection design to enable bicyclists to cross to the other side of the roadway. This can reduce some of the concerns associated with two-way sidepaths at driveways and intersections; however, it should be done with the understanding that many bicyclists will ignore the directional indications if they involve additional crossings or otherwise inconvenient travel patterns.

A wide separation should be provided between a two-way sidepath and the adjacent roadway to demonstrate to both the bicyclist and the motorist that the path functions as an independent facility for bicyclists and other users. The minimum recommended distance between a path and the roadway curb (i.e., face of curb) or edge of traveled way (where there is no curb) is 5 ft (1.5 m). Where a paved shoulder is present, the separation distance begins at the outside edge of the shoulder. Thus, a paved shoulder is not included as part of the separation distance. Similarly, a bike lane is not considered part of the separation; however, an unpaved shoulder (e.g., a gravel shoulder) can be considered part of the separation. Where the separation is less than 5 ft (1.5 m), a physical barrier or railing should be provided between the path and the roadway. Such barriers or railings serve both to prevent path users from making undesirable or unintended movements from the path to the roadway and to reinforce the concept that the path is an independent facility. A barrier or railing between a shared use path and adjacent highway should not impair sight distance at intersections, and should be designed to limit the potential for injury to errant motorists and bicyclists. The barrier or railing need not be of size and strength to redirect errant motorists toward the roadway, unless other conditions indicate the need for a crashworthy barrier. Barriers or railings at the outside of a structure or a steep fill embankment that not only define the edge of a sidepath but also prevent bicyclists from falling over the rail to a substantially lower elevation should be a minimum of 42 in. (1.05 m) high. Barriers at other locations that serve only to separate the area for motor vehicles from the sidepath should generally have a minimum height equivalent to the height of a standard guardrail.

When a sidepath is placed along a high-speed highway, a separation greater than 5 ft (1.5 m) is desirable for path user comfort. If greater separation cannot be provided, use of a crashworthy barrier should be considered. Other treatments such as rumble strips can be considered as alternatives to physical barriers or railings, where the separation is less than 5 ft (1.5 m). However, as in the case of rumble strips, an alternative treatment should not negatively impact bicyclists who choose to ride on the roadway rather than the sidepath. Providing separation between a sidepath and the adjacent roadway does not necessarily resolve the operational concerns for sidepaths at intersections and driveways. See Section 5.3.4 for guidance on the design of sidepath intersections.

5.2.3 Shared Use with Mopeds, Motorcycles, Snowmobiles, and Horses

Although in some jurisdictions it may be permitted, it is undesirable to mix mopeds, motorcycles, or all-terrain vehicles with bicyclists and pedestrians on shared use paths. In general, these types of motorized vehicles should not be allowed on shared use paths because of conflicts with slower moving bicyclists and pedestrians. Motorized vehicles also diminish the quiet, relaxing experience most users seek on paths. Motorized wheelchairs are an exception to this rule, and should be permitted to access shared use paths. In cases where mopeds or other similar motorized users are permitted and are expected to use the pathway, providing additional width and improved sight lines may reduce conflicts. Signs that emphasize appropriate user etiquette may also be useful.

5.3.4 Sidepath Intersection Design Considerations

This section presents several design measures that may be considered when designing sidepath intersections. Depending upon motor vehicle and pathway user speeds, the width and character of the adjacent roadway, the amount of separation between the pathway and the roadway, and the characteristics of conflict points, sidepath travel may involve lesser or greater likelihood of motor vehicle collisions for bicyclists than roadway travel. This section concludes with additional details on the operational challenges of sidepath intersections, building upon the challenges described in Section 5.2.2.

The first and most important step in the design of any sidepath is to objectively assess whether the location is a candidate for a two-way sidepath. Guidance on this issue is given in Section 5.2.2.

At-grade intersections of roadways and driveways with sidepaths, especially those with two-way sidepaths, have inherent conflicts that may result in bicycle-motor vehicle crashes. When ap-