

MIDBLOCK PATH INTERSECTIONS



People of all ages and abilities engage in walking, bicycling, and other activities on shared use paths. Most paths cross roadways at some point, and these locations have the potential to be the most challenging locations for path users.

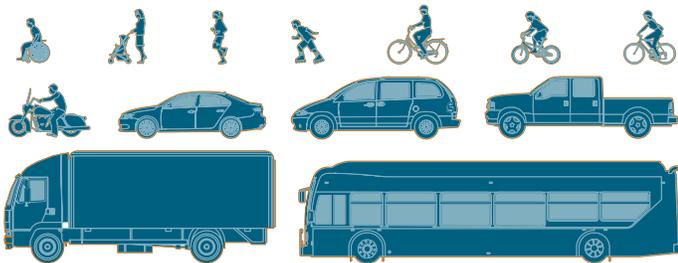
When paths cross roadways midblock, conflicts between path users and roadway users may arise. Roadway users include motorists as well as people bicycling and walking along the road. Much like typical roadway intersections, midblock path and roadway intersections should be designed with sound intersection design principles.

Where inappropriate midblock roadway crossing treatments are applied along shared use paths, path and roadway users may be less likely to comply with traffic controls. For example, the use of stop control where sight lines are adequate may result in non-compliance, when yield control would be more appropriate and match user behavior more closely.

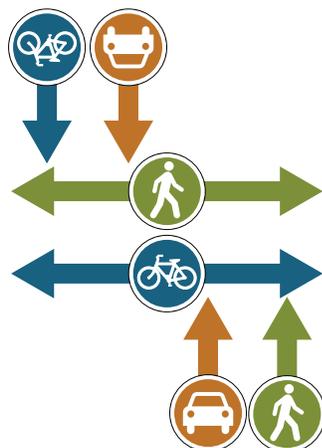
Other potential conflicts may occur where paths intersect roadways at angles, creating challenging sight lines between path and roadway users. Intersection angles should be as close as possible to 90 degrees, providing adequate stopping distances and sight lines for all users.

By designing path and roadway intersections with these principles in mind, many conflicts can be minimized or avoided.

COMMON USERS IN CONFLICT AND TYPICAL CRASH TYPES



Poorly designed path and roadway intersections can contribute to crashes.



GUIDING PRINCIPLES TO REDUCE CONFLICTS

SAFETY

Midblock path intersections should be designed to reduce the likelihood and severity of crashes between path users and between path users and motor vehicles.

ACCOMMODATION AND COMFORT

The intersection should be comfortable for path users of all ages and abilities.

COHERENCE

It should be clear to each mode where and how they are to navigate the intersection.

PREDICTABILITY

The design should be easy-to-understand through predictable behaviors and clear right-of-way assignments.

CONTEXT-SENSITIVITY

The design should support the natural environment, community health, and livability goals.

EXPERIMENTATION

Midblock path intersection traffic controls should be appropriate based on the intersection conditions, path volumes, and roadway volumes.

DESIGN STRATEGIES

An initial assessment of the crossing location should include reviewing the roadway characteristics such as number of lanes, vehicular speeds and volumes, and sight lines. If conditions are extremely challenging for a path crossing, consider adding features to facilitate the crossing such as signalization, re-aligning the path, or providing grade separation.

This design topic addresses paths crossing roadways midblock. These strategies can be applied to similar midblock intersections near schools, transit stations, and at other high pedestrian desire lines. For more information, refer to the design topics on [Network Connectivity](#), [School Access](#), [Multimodal Access to Existing Transit Stations](#), and [Multimodal Access to New Transit Stations](#).

PRIORITY AND CONTROL ASSIGNMENTS

Intersection controls often stop path users, even when stopping might be unnecessary or inappropriate. The proliferation of stop signs on paths has led to a lack of compliance by path users in many communities and may actually diminish safety if ignored where truly needed. Therefore, the least restrictive control that is effective should be used ([MUTCD 2009, Sec. 2B.06](#)). For example, the [MUTCD](#) recommends that “STOP signs should not be used where YIELD signs would be acceptable” ([2009, Sec. 9B.03](#)).

Yield controls may be most appropriate when sight lines are adequate to assess the crossing facility and users may slow or stop to avoid a conflict. Yield control can allow path users to maintain momentum and may result in better compliance.

To assess which crossing approach (the path or the roadway) should have priority, examine relative volumes and facility hierarchy in the transportation network to determine which approach should be made to yield or stop.

When priority is assigned, the least restrictive control that is appropriate should be placed on the lower priority approaches. The [MUTCD](#) provides the following guidance on control devices: “When placement of STOP or YIELD signs is considered, priority at a shared use path and roadway intersection should be assigned with consideration of the following:

- Relative speeds of shared use path and roadway users,
- Relative volumes of shared use path and roadway traffic, and
- Relative importance of shared use path and roadway.

Speed should not be the sole factor used to determine priority, as it is sometimes appropriate to give priority to a high volume shared use path crossing a low volume street, or to a regional shared use path crossing a minor collector street.” ([2009, Sec. 9B.03](#))

CONSIDERATIONS

- A stop-controlled approach should have STOP signs (R1-1) and a stop line.
- A yield-controlled approach should have YIELD signs (R1-2) and yield lines. **1**

- The uncontrolled approach should have warning signs **2** and warning pavement markings. **3**

([AASHTO Bike Guide 2012, pp. 5-38–5-42](#))

INTERSECTION DESIGN

At intersections, paths and roadways should meet as close to 90 degrees as possible. Skewed intersections reduce visibility, maneuverability, and increase crossing distances. The faster the user, the longer the distance needed for that user to slow or stop. The fastest users at the intersection are typically the motor vehicle and bicyclist. These users should determine the needed sight line.

People walking and bicycling along the roadway and wishing to access the path should also be considered. Pedestrians and novice bicyclists will often access a path via an intersecting sidewalk **4**, whereas more experienced bicyclists will often access a path via the roadway. **5** Good intersection design will accommodate all user types who wish to access the path via the intersection by providing ramps and adequate room to turn, or a raised crossing that also functions as a speed table for the roadway.

CROSSING TREATMENTS

A variety of other treatments can enhance the safety and comfort of path intersections. These include traffic calming techniques such as raised crossings or chicanes, pedestrian crossing islands **6**, curb extensions to improve visibility and shorten crossway distances, or widening the path at the crossing to accommodate queuing of path users.

For more information, refer to the design topics on [Enhanced Crossing Treatments](#) and [Traffic Calming and Design Speed](#).

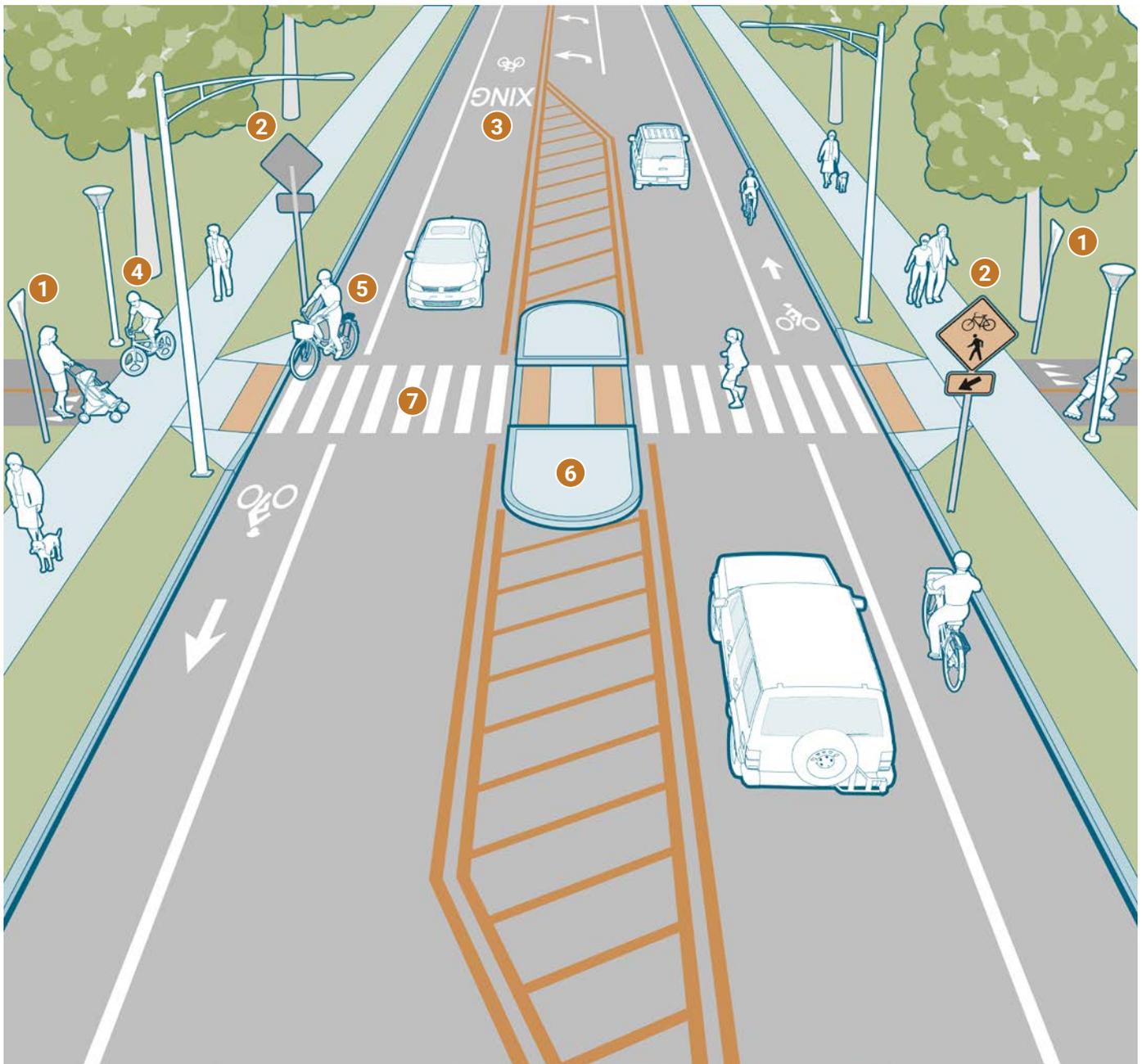
MARKINGS AND SIGNS

Pavement markings and signs can alert roadway and path users to crossings and should be coordinated closely with the crossing control markings and signs. High-visibility crosswalks can improve visibility. **7** Paired with advanced stop or yield lines, high-visibility crosswalks are useful when paths cross roadways with multiple travel lanes to improve sight lines between path users and vehicles in the second or third lane. Additional treatments such as Rectangular Rapid Flashing Beacons or pedestrian hybrid beacons may be justified at some crossings.

Wayfinding signs can be used at intersections to inform path users of the roadway ahead or of key destinations in the vicinity. All wayfinding signs should comply with the [MUTCD](#).

PATH WIDTH

Shared use paths can experience conflicts due to the width of the path. For more information, refer to the design topic on [Shared Use Paths](#).



OBSTRUCTIONS

Objects that may destabilize or distract path users should not be used at intersections since path users must be able to focus their attention on intersecting traffic. Particularly at intersections, path surfaces should be well-maintained and smooth. The intersection approach should be free of obstructions such as bollards, vegetation, and signs.

LIGHTING AND MAINTENANCE

Sufficient lighting is key to ensuring visibility of all modes. Lighting is especially important at unsignalized midblock intersections so pedestrians are visible where the potential for conflict exists. Consideration should be given to lighting for activities during non-daylight hours.

Maintenance should be performed routinely to eliminate uneven surfaces and trim vegetation.

CASE STUDIES

RAISED TRAIL CROSSING BURKE-GILMAN TRAIL SEATTLE, WA

The midblock crossing of 30th Avenue NE and the Burke-Gilman Trail in Seattle, WA was rebuilt in 2014 and included several new design treatments. The trail crossing location is extremely busy with approximately one million trail users per year, which increases the importance for safety and quality design. The key feature of the redesign was a raised trail crossing on 30th Avenue NE, that allows bicyclists to cross the roadway at the same grade as the Burke-Gilman Trail and signifies that trail users are prioritized. The raised intersection was designed to reduce vehicle speeds, create greater visibility, and reduce conflicts between motorists and trail users. The project also included widened sidewalks, new street and trail signs, new curb ramps, and a landscaped buffer between the sidewalk and roadway.



PRIORITIZED PATHWAY CAPITAL CITY TRAIL MADISON, WI

The Capital City Trail is a popular shared use path in Madison, Wisconsin's densely-developed downtown isthmus. The City has made the path crossings safer at many intersections by adding curb extensions, high-visibility crosswalk markings, and warning signs to alert roadway users of the path crossing. The path's permanent bike counters display bicycle volumes in real time. These volumes typically range from 2,500–4,000 bicyclists per day, depending on the day of the week. Currently, bicyclists on the Capital City Trail must yield or stop to motorists at most crossings, but given the path's popularity several crossings have been changed to require motorists to stop for path users. Future path crossings being planned by the City will prioritize path users.



FOR MORE INFORMATION

American Association of State Highway and Transportation Officials. *Guide for the Development of Bicycle Facilities*. 2012.

American Association of State Highway and Transportation Officials. *Guide for the Planning, Design, and Operation of Pedestrian Facilities*. 2004.

Federal Highway Administration. *Guidance Memorandum on Promoting the Implementation of Proven Safety Countermeasures*. 2012.

Federal Highway Administration. *Manual on Uniform Traffic Control Devices*. 2009.

Institute of Transportation Engineers. *Designing Walkable Urban Thoroughfares: A Context Sensitive Approach*. 2010.

United States Access Board. *Proposed Guidelines for Pedestrian Facilities in the Public Rights-of-Way*. 2011.

United States Access Board. *Proposed Guidelines for Pedestrian Facilities in the Public Right-of-Way: Shared Use Paths*. 2013.