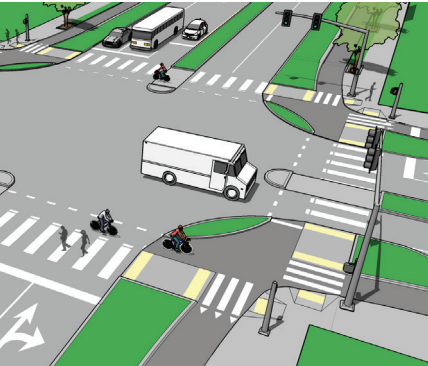


Bicyclists at Intersections

Several techniques can improve the safety and operations of bicyclists at intersections. Traffic control devices such as **signage, roadway markings** and **signals**, or **geometric design features** can reduce ambiguity for all roadway users and draw attention to the presence of bicyclists. Many of these strategies are found in the Caltrans Complete Intersections Guide. Some techniques are relatively new or newly approved in California. A few examples are provided here.



RENDERING OF PROTECTED INTERSECTION

Protected Intersections

Separated bikeways at intersections can be designed as a protected intersection—providing greater separation and protection for bicyclists and minimizing the number of conflict points with motor traffic. Corner islands keep bicyclists to the right, placing them downstream of the cross street and allowing right-turning motorists to complete a turn before interacting with bicyclists. Bicycle crossings are placed next to, but separated from, pedestrian crossings. Protected intersections can facilitate left turns for bicyclists by providing a waiting area to complete the crossing in two stages.

REFERENCE: CALTRANS DESIGN INFORMATION BULLETIN 89 – CLASS IV BIKEWAY GUIDANCE, SECTION 2.2, FHWA SEPARATED BIKE LANE PLANNING AND DESIGN GUIDE, CHAPTER 5, STEP 4



BROADWAY, OAKLAND

Bike Signals

A bicycle signal is a traffic signal that uses bicycle signal faces and directs bicyclists to take specific actions when there are no conflicting movements. Use of bicycle signal faces is analogous to using pedestrian signal heads. Implementation is based on engineering judgment.

REFERENCE: CAMUTCD SECTION 4D.104(CA); FHWA INTERIM APPROVAL IA-16; NACTO URBAN BIKEWAY DESIGN GUIDE/ SIGNALS



TIBURON BLVD, STATE ROUTE 131, TIBURON

Intersection Bike Boxes

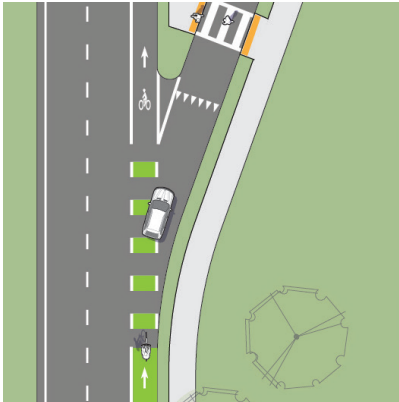
The intersection bike box, a designated area on the approach to a signalized intersection, provides bicyclists a space to wait in front of stopped motor vehicles during the red signal phase so that they are more visible to motorists at the start of the green signal phase.

REFERENCE: FHWA INTERIM APPROVAL IA-18; NACTO URBAN BIKEWAY DESIGN GUIDE/ INTERSECTIONS/ BIKE BOXES.

Two-Stage Turn Queue Boxes

Two-stage turn queue boxes offer bicyclists a way to make left turns at multi-lane intersections by separating the turn into two moves, which is helpful for bicyclists who are uncomfortable merging across multiple lanes of traffic to make a left.

REFERENCE: FHWA INTERIM APPROVAL IA-20; NACTO URBAN BIKEWAY DESIGN GUIDE/ INTERSECTIONS/ TWO-STAGE TURN QUEUE BOXES

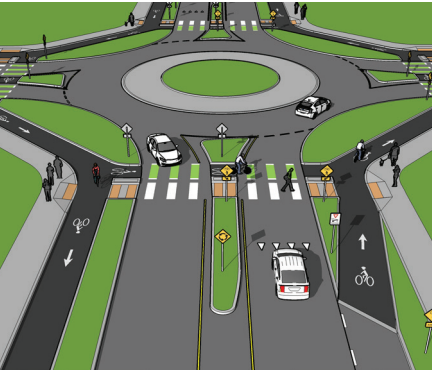


RENDERING OF CONFLICT AREA WITH GREEN PAVEMENT

Green-Colored Pavement Through Conflict Areas

Green-colored pavement can be used on Class II or Class IV bikeways. When bikeways cross intersections or motorists need to merge across a bikeway, green-colored markings become dashed. This can be useful at ramp intersections to increase visibility and draw attention to the presence of bicyclists.

REFERENCE: FHWA INTERIM APPROVAL IA-14; CAMUTCD FIGURE 9C-103(CA)



RENDERING OF ROUNDABOUT

Bicyclists at Roundabouts

Roundabouts are circulatory intersections where motorists and bicyclists yield to enter. While roundabouts have been shown to reduce the number and severity of crashes overall, it is important to design them for all users by minimizing the design speed and the number of lanes and conflict points to reduce exposure for all users. . Bicyclists are allowed to take the lane with vehicle traffic, but can also be provided a separated bikeway or a shared use path that circulates around the roundabout to reduce the level of stress. While single-lane roundabouts are easier for bicyclists to navigate, multilane roundabouts require additional considerations at conflict points and bikeway crossings.

REFERENCE: NCHRP REPORT 672: ROUNDABOUTS, AN INFORMATIONAL GUIDE; MASSDOT SEPARATED BIKE LANE PLANNING AND DESIGN GUIDE



A GUIDE TO

Bikeway Classification

JULY 2017



Path

Class I bikeways, also known as bike paths or shared-use paths, are facilities with exclusive right of way for bicyclists and pedestrians, away from the roadway and with cross flows by motor traffic minimized. Some systems provide separate pedestrian facilities.

Class I facilities support both recreational and commuting opportunities. Common applications include along rivers, shorelines, canals, utility rights-of-way, railroad rights-of-way, within school campuses, or within and between parks.

REFERENCE: HDM INDEX 1003.1;
CAMUTCD SECTION 9C.03



Vine Trail, Napa Valley



Bay Bridge Trail, Oakland

Bike Route

Class III bikeways, or bike routes, designate a preferred route for bicyclists on streets shared with motor traffic not served by dedicated bikeways to provide continuity to the bikeway network. Bike routes are generally not appropriate for roadways with higher motor traffic speeds or volumes. Bike routes are established by placing bike route signs and optional shared roadway markings (sharrow) along roadways.

REFERENCE: HDM INDEX 1003.3;
CAMUTCD SECTION 9C.07



2nd St, Oakland



Milvia St, Berkeley

Bicycle Boulevard

A Bicycle Boulevard is a shared roadway intended to prioritize bicycle travel for people of all ages and abilities. Bicycle Boulevards are typically sited on streets without large truck or transit vehicles, and where traffic volumes and speeds are already low, or can be further reduced through traffic calming.

REFERENCE: NACTO URBAN BIKEWAY DESIGN GUIDE/
BICYCLE BOULEVARDS; CAMUTCD SECTION 9C.07

Bike Lane

Class II bikeways are bike lanes established along streets and are defined by pavement striping and signage to delineate a portion of a roadway for bicycle travel. Bike lanes are one-way facilities, typically striped adjacent to motor traffic travelling in the same direction. Contraflow bike lanes can be provided on one-way streets for bicyclists travelling in the opposite direction.

REFERENCE: HDM INDEX 301.2;
CAMUTCD SECTION 9C.04



State Route 12, the Springs Region of Sonoma



Sloat Blvd, State Route 35, San Francisco

Buffered Bike Lane

A buffered bike lane provides greater separation from an adjacent traffic lane and/or between the bike lane and on-street parking by using chevron or diagonal markings. Greater separation can be especially useful on streets with higher motor traffic speeds or volumes.

REFERENCE: CAMUTCD SECTION 9C.04, FIGURE 9C-104(CA); NACTO URBAN BIKEWAY DESIGN GUIDE/
BIKE LANES/ BUFFERED BIKE LANES

Separated Bikeway/ Cycle Track

A Class IV separated bikeway, often referred to as a cycle track or protected bike lane, is for the exclusive use of bicycles, physically separated from motor traffic with a vertical feature. The separation may include, but is not limited to, grade separation, flexible posts, inflexible barriers, or on-street parking. Separated bikeways can provide for one-way or two-way travel.

By providing physical separation from motor traffic, Class IV bikeways can reduce the level of stress, improve comfort for more types of bicyclists, and contribute to an increase in bicycle volumes and mode share.

REFERENCE: CALTRANS DESIGN INFORMATION BULLETIN 89 – CLASS IV BIKEWAY GUIDANCE; FHWA SEPARATED BIKE LANE PLANNING AND DESIGN GUIDE; NACTO URBAN BIKEWAY DESIGN GUIDE/ CYCLE TRACKS



Fulton St, Berkeley



Division St, San Francisco