

# DESIGN GUIDELINES

## Appendix K



## INTRODUCTION

This chapter presents best practice strategies for the types of pedestrian and bicycle facilities recommended as part of the Plan's recommended projects and programs. The guidelines in this chapter focus on topics that are especially relevant to the City of Irwindale in promoting active transportation. These topics include:

- Use of development standards to integrate new infrastructure into existing developed areas (e.g., business parks and residential neighborhoods) lacking basic infrastructure such as sidewalks, marked crosswalks, and street lighting;
- Guidance for future transit-oriented development projects of all scales to ensure they support multi-modal travel and quality first/last mile connections; and
- Strategic approaches to provide enhanced pedestrian facilities and amenities within limited right-of-ways along high-traffic arterial routes.

This chapter will also outline cutting-edge practices and recent trends in bicycle and pedestrian infrastructure design while ensuring consistency with existing City plans and policies such as the Irwindale Commercial and Industrial Design Guidelines. If necessary, we will note when design guidelines presented in this Plan supersede existing guidelines from the Commercial and Industrial Design Guidelines. Additionally, the guidelines in this chapter will promote Irwindale-specific treatments such as the city's unique sidewalks composed of curvilinear pathways between decorative rock surfaces, and will investigate ways to further incorporate place-specific treatments into other pedestrian and bicycle facilities.

## COMPLETE STREETS

In September of 2008, the California Complete Streets Act of 2008 was signed into law. Complete streets are roads designed to accommodate all users, including pedestrians, bicyclists, children, senior citizens, persons with disabilities, transit riders, and motorists. The legislation requires that cities and counties include complete streets policies as part of their General Plans so that roadways are designed to safely accommodate all users. In 2016, the City of Irwindale adopted a Complete Streets Policy further supporting the development of Complete Streets in Irwindale. The guidelines in this chapter support pedestrian and bicycle improvements that follow Complete Streets principles and provide accessibility for pedestrians of all mobility abilities.

## PEDESTRIAN GUIDELINES

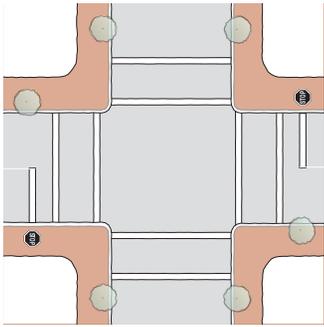
The Pedestrian Design Guidelines are based upon the federal and State (California Title 24) accessibility standards. The Americans with Disabilities Act (ADA) of 1990 prohibits public agencies from discriminating against individuals with disabilities. All public facilities in Irwindale must comply with the Americans with Disabilities Act Accessibility Guidelines (ADAAG) and the State of California Code of Regulations Title 24. The California Disabled Accessibility Guidebook (CalDAG) synthesizes the recommendations from both sources and is the basis for many of the following guidelines. Similarly, the pedestrian network is influenced by State and national standards for transportation design set by the California Manual on Uniform Traffic Control Devices (CA MUTCD) and the American Association of State Highway and Transportation Officials' (AASHTO) Guide for the Development of Bicycle Facilities and Guide for the Planning, Design, and Operation of Pedestrian Facilities.



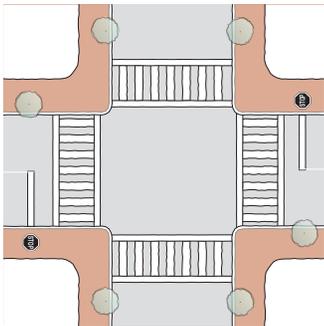
Decorative crosswalk and lighting on Irwindale Avenue near City Hall.



Unique Irwindale sidewalk treatment along Irwindale Avenue with meandering sidewalks, seating, pedestrian scale lighting, landscaping, and shade-providing landscaping



Transverse crosswalk striping



Ladder-type crosswalk striping



Continental crosswalk with advance stop line

## CROSSINGS

Pedestrian crossings benefit both pedestrians and drivers in a number of ways. They guide pedestrians to safe crossing locations, provide important links for pedestrian connectivity, and prepare drivers for the potential of encountering a pedestrian. Well-designed pedestrian crossings are useful, compact, and visible.

- **Useful:** Pedestrian crossings should be useful in that they are placed in response to pedestrian need or desire. The usefulness of crosswalks should be carefully considered based upon the surrounding land uses and the safety of preferred crossing locations.
- **Compact:** The more compact a pedestrian crossing is, the less time a pedestrian is in potential conflict with vehicles. Keeping pedestrian crossing distances compact by incorporating narrow turning radii, discouraging free right turns, and narrowing roadway width with curb extensions (also known as bulb outs) which extend the sidewalk into the adjacent parking lane, are all methods of reducing the crossing distance.
- **Visible:** The pedestrian crossing should be clearly marked, and pedestrians in crossings and waiting to use crossings should be clearly visible. Motorists' visibility of pedestrians is generally described as sight distance; as a general rule, pedestrians should be clearly visible by motorists for at least 250 feet.

### Crosswalk Markings

Crosswalk markings can be either painted or thermoplastic, which is a plastic-based material applied to the road surface. Thermoplastic markings are generally a preferred option because of their

increased durability, reflectivity, and lack of toxic solvents.

**Transverse Striping:** Transverse striping is the conventional type of crosswalk marking and the most commonly used crosswalk type in the City of Irwindale.

**Ladder and Continental Striping:** To enhance motorists' visibility of the crosswalks and to support yielding to pedestrians, the use of high-visibility crosswalks such as ladder or continental types is recommended for most locations. Ladder-type crosswalk markings consist of two parallel lines with ladder bars striped across the width of the crosswalks. Continental crosswalk markings consist of wide (typically 24") bars and lack the "rails" of ladder crossings. Ladder or continental striping is especially useful to enhance crossings at uncontrolled intersections and midblock locations, including those in commercial corridors, near transit stops and stations, and near schools and parks. High-visibility crosswalk treatments are recommended at all uncontrolled crossing locations within ¼ mile of a school.

**Decorative Pavement:** Decorative pavement materials utilize color, textures and patterns to distinguish crosswalks, enhance the pedestrian experience, and provide "placemaking" opportunities. Several intersections in Irwindale currently utilize decorative treatments, including the busy intersection of Irwindale Avenue and Arrow Highway. At crossing locations with decorative treatments, white striping should also be used to delineate the crosswalk and enhance visibility of the crosswalk. In general, decorative crosswalks should be considered secondarily to treatments such as ladder or continental striping. Where decorative treatments are used, they should provide a high color contrast with the surrounding pavement.



Stop-controlled crossing with continental crosswalk markings



Ladder-type crosswalk with in-pavement flashing lights in a school zone



This crosswalk treatment using white paint on light gray pavement results in insufficient visibility due to low contrast between the materials.



Ladder-type crosswalk

High-visibility crosswalks at controlled intersections can be paired with advance stop bars, which provides a cue for drivers to stop well in front the crosswalk, keeping the crosswalk clear and providing some buffer between vehicles and pedestrians in the crosswalks.

### Crossings at Controlled Intersections or Midblock Locations

The following are recommendations for treatments at crossing locations where vehicle movement is controlled by signalization or stop signs.

- **Signalized Intersections:** Standard crosswalk markings (two white lines) should be installed on all approaches of the intersection. Advance stop bars should be included in advance of the crosswalk. Advance stop bars are 12-inch white lines generally installed 7 feet prior to a crosswalk. The stop bars help to prevent drivers from stopping and/or encroaching on the crosswalk.
- **Stop-Controlled Intersections:** Standard crosswalk markings should be installed at all controlled approaches. Enhanced visibility measures (high-visibility crosswalks) should be located at locations adjacent to major destinations, schools, and in locations with potential pedestrian safety concerns.

### Crossings at Uncontrolled Intersections

The California Vehicle Code states that the driver of a vehicle shall yield the right-of-way to a pedestrian crossing the roadway within any marked crosswalk or at any unmarked (not striped) crossing at an intersection, except if directed otherwise. The crossings discussed in this section are located at intersections without traffic controls (uncontrolled intersections), including both marked and unmarked crossings, and at marked mid-block crossings.

It is recommended that marked crosswalks be included at any uncontrolled intersection if the location is farther than 300 feet from a controlled crossing location with a marked crosswalk, and if the location has the required 250-foot sight distance and has no other safety concerns for a crosswalk. Additionally, pedestrian demand can identify the need for a marked crosswalk.

In addition, the following enhancements are appropriate at uncontrolled intersections that need additional safety improvements.

- Curb extensions at locations where increasing pedestrian visibility will improve the safety of the crosswalk. Curb extensions are further described below.
- Overhead signs and flashing beacons showing the universal pedestrian symbol, including both standard yellow, fluorescent yellow, and LED displays, that hang from a mast arm that extends over the street. Flashing red or yellow beacons enhance overhead signs.
- Raised crosswalks, which have the dual purpose of slowing traffic (similar to a speed table, which is a long speed hump with center flat section) and improving visibility of pedestrians. Since the crosswalk is at the same level as the sidewalk, there is no additional need for curb ramps.
- Pedestrian activated in-pavement lighted crosswalks accompanied by a flashing sign at the crosswalk and advanced flashing sign increase the number of vehicles yielding to pedestrians.
- Pedestrian-actuated signals at uncontrolled intersection crossings or in areas where pedestrians need greater visibility at a crosswalk. Pedestrian actuated signals are pedestrian push buttons which activate a crosswalk light or traffic signal to turn.

### Visibility at Crossings

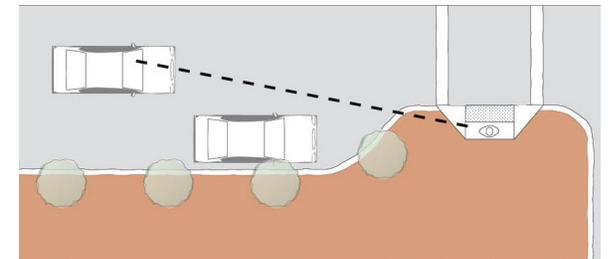
Visibility of pedestrians at intersection crossings is important for the safety of all roadway users. Visibility is a great concern at crossing locations where parked cars, street furnishings, utilities and landscaping can potentially obstruct the line of sight for pedestrians and motorists. Pedestrians should have an unobstructed view of oncoming vehicles, and vehicles need to easily see pedestrians approaching or waiting at a crossing. Because of their lower height, pedestrians in wheelchairs and small children are especially difficult for drivers to see at an intersection. The following recommendations will improve the visibility of pedestrians at an intersection.

- Parking adjacent to intersections and crosswalks should be prohibited for a minimum of 20 feet from the crosswalk. On streets with higher speeds and at locations with previous collision history or noted visibility issues, this distance should be increased. The CA MUTCD defines stopping sight distance requirements based on the approaching speed of vehicles.
- Street furniture, utility boxes and poles, signal poles, signage, trees, and newspaper racks all have the potential to reduce visibility at corners. It is recommended that no solid opaque object that is taller than 32 inches be allowed within 10 feet of a crosswalk or 20 feet of an unmarked intersection. Utility poles, street trees, or signs should not be allowed within 5 feet of a crosswalk or 10 feet of an unmarked intersection.
- Street trees to be planted adjacent to an intersection should be chosen based upon their characteristics. They should be fast growing, upward branching, and a minimum of 30 feet tall at mature height. All street trees should be maintained and pruned to provide adequate visibility.

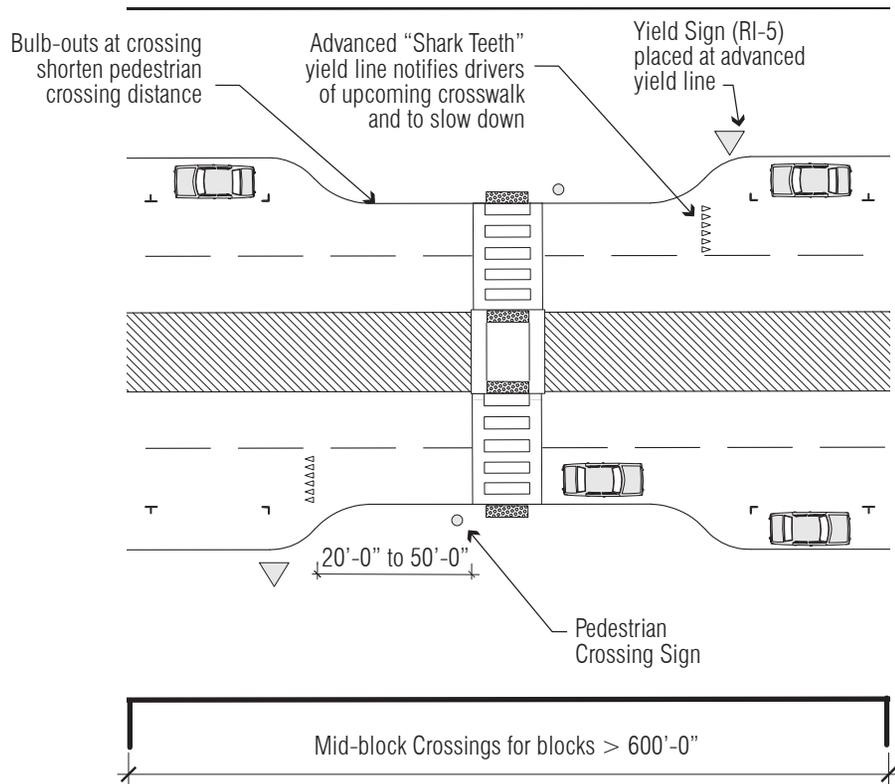
- Curb extensions can be used at corners to widen the sidewalk and allow the pedestrian to safely get closer to cars to improve their visibility, as shown in the image below. When street amenities or other objects might obstruct the visibility at a corner, curb extensions should be considered.



Rectangular Rapid Flashing Beacon (RRFB)



Curb extensions can help improve pedestrian visibility to motorists.



Typical configuration of a mid-block crossing

## CURB RAMPS

Curb ramps are an important link in providing accessibility and creating connectivity throughout the pedestrian network. Curb ramps are required wherever a pedestrian path crosses a curb, typically at every corner of an intersection. Without curb ramps, curbs can create barriers for people with many types of mobility limitations. However, people with visibility limitations often rely on the curb for navigation and to identify the transition between the sidewalk and street; curb ramps can obscure

this information. Given these conflicting interests, specific design strategies should be followed to ensure a safe and accessible environment for all users. The design of curb ramps is limited by site constraints, and it may not be possible to incorporate the ideal design in every situation. The following section presents best practice design strategies and options for creating suitable design when an optimal design cannot be accommodated.

The type of curb ramp used is dependent upon the location. The most common types of curb ramps

are perpendicular curb ramps, returned-curb curb ramps, and diagonal curb ramps, as shown in the images on page 5-7.

### Perpendicular Curb Ramps

- The most common type of curb ramp is a perpendicular curb ramp, which is designed so that the ramp is perpendicular to the curb and directly in line with the crosswalk. Perpendicular curb ramps require the sidewalk to be wide enough to accommodate the width of the ramp and the minimum 4-foot landing area. The minimum width of the sidewalk required to accommodate a perpendicular curb ramp is dependent upon the height of the curb. The slope requirements for the flared sides depend on the width of the sidewalk at the top of the ramp. If the landing area is 4 feet or more, then the flared sides may slope up to 10 percent (1:10) but not more. Perpendicular curb ramps without sufficient landings create barriers because they force individuals to travel over the ramp flare, which is inaccessible.

### Returned-Curb Curb Ramps

- Returned-curb curb ramps are perpendicular curb ramps that are used when pedestrians are not required to walk across the ramp, such as when the curb ramp is within a landscaped zone adjacent to the sidewalk. Returned-curb curb ramps have returned curbs, rather than flared curbs, on one or either side of the ramp. Returned curbs are the vertical sides to the ramp, continuing the street curb up onto the sidewalk and ending at the landing. Returned curb ramps are favorable for pedestrians with vision impairments because the curbs provide informative cues.

## Diagonal (Bidirectional) Curb Ramps

A diagonal curb ramp is a single curb ramp that is located at the apex of the corner radii at an intersection. Diagonal curb ramps are aligned so that the pedestrian traveling down the ramp will be diagonally facing the intersection and will need to maneuver to the right or left to travel within the crosswalk. Similar to parallel curb ramps, diagonal curb ramps require a level landing at the top of the ramp and can include returned curbs. Diagonal curb ramps require a minimum of 2 feet of straight curb located on each side of the curb ramp and within the marked crossing. Diagonal curb ramps require that both crosswalks direct pedestrians to the landing below the curb ramp. It is necessary that the crosswalk stripes meet and delineate a 4-foot clear space at the base of the curb ramp.

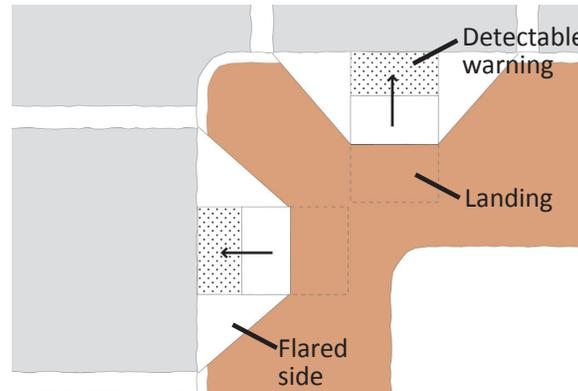
### Best Practices

The best practice for pedestrians is to have perpendicular curb ramps with either a flared sidewalk or returned curbs. Perpendicular curb ramps require wide enough sidewalks to provide a top landing, which allows pedestrians not using the curb ramps to continuously walk across a level surface. Additionally, perpendicular curb ramps position users on a direct path along a crosswalk and are positioned within the center of a crosswalk. Perpendicular curb ramps should be used at all locations within Irwindale that have wide enough sidewalks to accommodate the minimum design requirements. If a location does not have the space to accommodate the minimum design requirements, the use of curb extensions or widening the sidewalk at the back of the walk should be considered before utilizing another form of curb ramp.

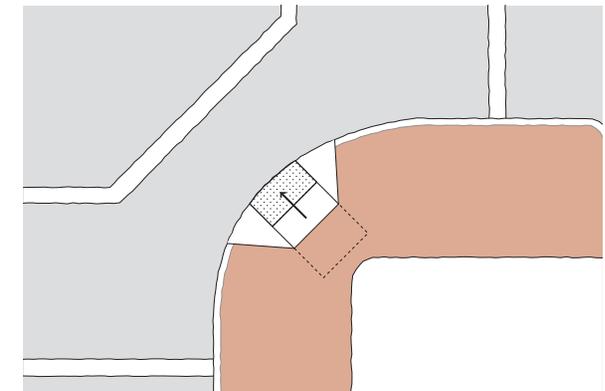
Diagonal curb ramps are not recommended because they direct pedestrians into the street at

a diagonal orientation, requiring the pedestrian to enter the street and be exposed to traffic before turning to proceed within the crosswalk. Additionally, diagonal curb ramps make it more difficult for pedestrians with limited visibility to orient to the path of the crosswalk. Diagonal curb ramps

should only be designed when the limitations of the location demands, such as areas with a narrow turning radius. Diagonal curb ramps may be acceptable as retrofits in residential areas where traffic volumes are very low.



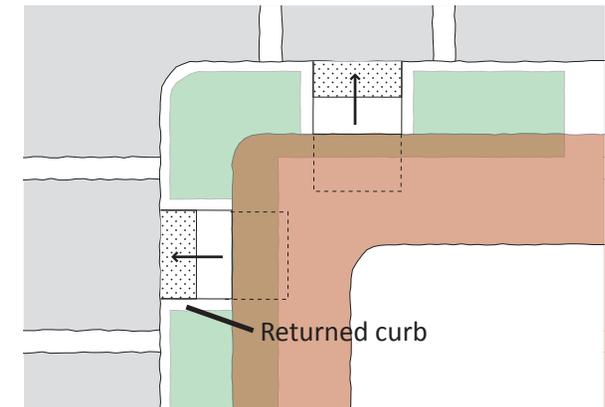
Perpendicular curb ramps - preferred



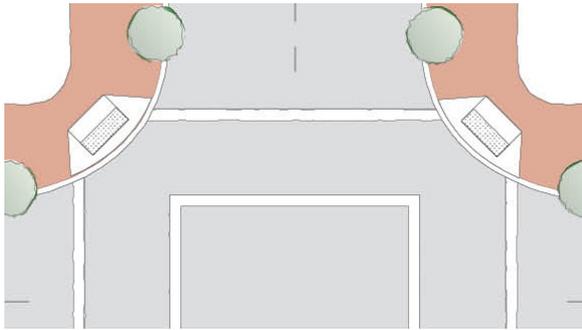
Diagonal curb ramp



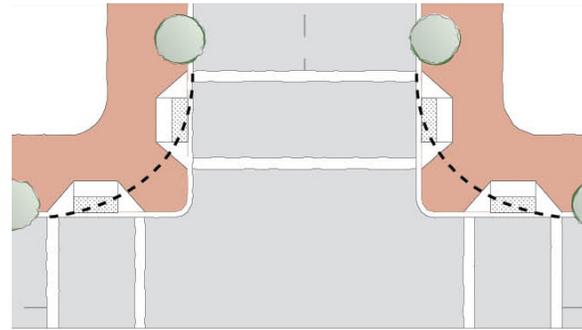
Perpendicular curb ramp and grooved border at a crosswalk (preferred)



Returned-curb ramps



Larger turning radii widen pedestrian crossing and can make it difficult to add perpendicular curb ramps rather than diagonal curb ramps (shown above).



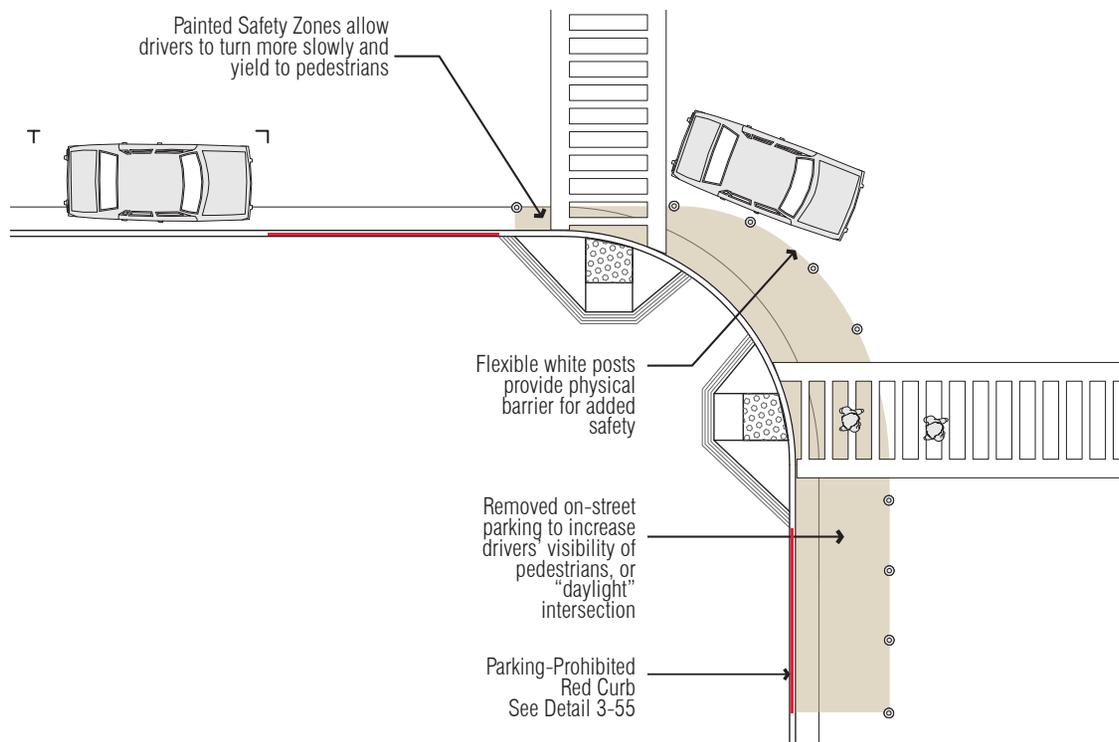
Smaller turning radii reduce the pedestrian crossing distance and create more sidewalk room for perpendicular curb ramps.

## TURNING RADIUS

The size of a corner turning radius has a significant effect on the operation and safety of an intersection, as shown on the images on this page. Areas with high volumes of truck traffic, such as Irwindale, often require larger turning radii to accommodate turning movements for long vehicles. However, as the curb radius increases, drivers are able to make right turns at higher speeds and incomplete stops become more frequent. A larger curb radius also widens the walking distance for pedestrians. Intersections with smaller turning radii promote slower traffic speeds, shorten the pedestrian walking distance, and provide for more sidewalk space at corners. The additional sidewalk space at corners allows for perpendicular curb ramps to be used.

The general rule for choosing a corner turning radius should be to choose the smallest possible, acknowledging that each location has a unique set of factors – including the need to accommodate truck turning movements – that determine the appropriate radius. The turning radius should accommodate the expected amount and type of traffic for safe turning speeds.

Turning radius recommendations are provided in *A Policy on Geometric Design of Highways and Streets (AASHTO)*. Historically, these minimum turning radii have been exceeded in order to facilitate the efficient movement of larger vehicles. However, recent interest in balancing the needs of pedestrians and bicyclists highlight the need to adhere to minimum turning radii standards and consider alternative ways to accommodate vehicles with larger turning radii. The following are recommendations for the design of curb radii on residential and commercial streets:



Temporary installation of an extended curb using flexible white posts, reducing crossing distance and curb radius.

- At locations with curbside parking a 10-foot radius is recommended.
- At locations with no parking lane, a maximum 20-foot radius is recommended.

Potential alternatives to accommodate vehicles with larger turning radii are:

- Move stop lines back from the intersection.
- Allow vehicles that cannot navigate a tight turning radius to turn into the out-of-lane roadway.
- Add a parking lane adjacent to the corner to increase the relative turning radius.

## CURB EXTENSIONS AND PEDESTRIAN SAFETY ISLANDS

Curb extensions extend the sidewalk into the roadway, effectively narrowing the roadway and widening the pedestrian zone. They can occur at intersections (called bulb-outs) or at mid-block locations.

### Curb Extensions at Intersections (Corner Bulb-Outs)

Curb extensions at intersections are beneficial because they increase motorists' visibility of pedestrians, reduce the distance pedestrians have to walk across an intersection, provide space for perpendicular curb ramps, reduce corner turning radii, and provide extra sidewalk space for street furnishings or landscaping. Corner curb extensions (bulb-outs) also reduce the capacity to park illegally at corners and crosswalks. Curb extensions should be considered for implementation at any pedestrian crossing location where they would help to improve pedestrian safety or provide extra room to allow for the construction of an accessible curb ramp that otherwise could not be implemented.

### Curb Extensions at Mid-Block Locations

Curb extensions at mid-block pedestrian crossings, like corner curb extensions, improve visibility of pedestrians and reduce crossing distances. They are also used as a traffic calming measure to narrow the street.

The design of mid-block curb extensions should adhere to the following guidelines:

- Curb extensions should extend the existing sidewalk for a maximum of 6 feet into the street adjacent to parallel parking, or 12 feet adjacent to diagonal parking.
- Curb extensions should be designed to exercise special care not to create conflicts between bicyclists and pedestrians. Where bike lanes exist adjacent to a curb extension, the bike lane should be painted continuously adjacent to the curb extension.
- The return of the curb extension to the existing curb should be designed as a concave return with a radius of approximately 12 to 16 feet. This curve in the return will facilitate easier street sweeping and prevent the corner from accumulating large amounts of trash. The minimum radius possible should be considered during design to reduce impacts to parking.

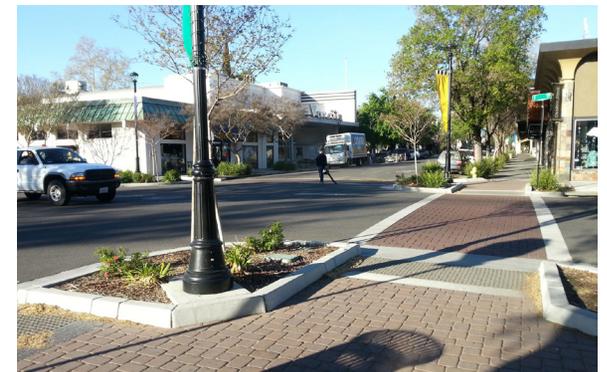
When planning for corner or mid-block curb extensions, it is important to consider the existing curb, gutter, and drainage. Relocating on-street storm drains may be required when implementing curb extensions, which can significantly increase construction costs. An alternative, less expensive design would be to construct the curb extension as an island and span the sidewalk to the island with a grate. This may initially be a cost saving device, but it can increase the cost of future maintenance.



Corner bulbout with landscaping.



Curb-extension near an intersection



Corner bulbout with landscaping and decorative pavement



Pedestrian safety island at a midblock crossing



Pedestrian safety island at signalized intersection

## Pedestrian Safety Island

A pedestrian safety island provides a safe space in the middle of the street at pedestrian crossings. They are especially useful on streets with higher traffic speeds and volumes, and larger roadway widths. They are typically a roadway-level “cut through” between sections of a raised center median.

- A safety island should be at least 6 feet wide, but preferred width is 8-10 feet.
- The cut-through should equal the width of the crosswalk.
- Medians at intersections should have a “nose” extending past the crosswalk toward the intersection

## PEDESTRIAN SIGNALS

### Signal Timing

The CA MUTCD recommends that controlled crossings should be timed for a walking speed of 3.5 feet per second, measured from the top of the curb ramp on one side of the street to the top of the curb ramp on the opposite side of the street. However, a pedestrian’s walking speed is dependent upon many factors, including age and mobility. Pedestrian signal crossing times should be adjusted accordingly near major activity destinations, at intersections that are unusually long or difficult to navigate, and adjacent to any location that might have a higher proportion of pedestrians with slower walking speeds, such as senior centers. At all signalized crossing locations, countdown signals should be used as a default.

### Accessible Pedestrian Signals

The CA MUTCD defines an Accessible Pedestrian Signal (APS) as “providing in non-visual format (such as audible tones, verbal messages, and/or

vibrating surfaces).” They are used to help guide pedestrians with impaired vision and/or hearing. Most pedestrian crossings in the City of Irwindale lack these features. The following Accessible Pedestrian Signal guidelines are based upon the National Highway Research Program’s Guidelines for Accessible Pedestrian Signals.

The recommended features for an APS include:

- Push Button Locator Tone: The tones are intended to notify pedestrians approaching the crosswalk that they need to press the button to get a WALK indication. CA MUTCD recommends locator tones that sound at one second intervals.
- Tactile Arrow: Tactile arrows are required to indicate which crosswalk is controlled by which push button. The arrow should be aligned in the direction of travel on the crosswalk.
- Actuation Indication: Actuation indication allows the pedestrian to know that they have activated the push button. This may be in the form of either a tone or speech message.
- Audible WALK Indication: Audible WALK indication tone should be activated for duration of the walk interval. It is recommended to repeat ten times per second and differ from locator tone in its repetition rate.
- Vibrotactile WALK indication: The vibrotactile arrow indicates the WALK interval to persons who have both vision and hearing limitations. The push button or raised arrow on the APS vibrates during the WALK interval.
- Response to Ambient Sound: It is recommended that all APS are responsive to ambient sound by increasing the volume to be heard above ambient noise levels.

- **Push Button Information Message:** Push button information messages provide users with the name of the street controlled by the signal.
- **Louder Signal (Beaconing Signal):** A louder signal is to assist pedestrians who have vision and hearing impairments. A louder signal is typically activated by an extended button press.

The location of an APS is important to prevent ambiguity about which crosswalk is being signaled. Ideally, there are two push buttons (one for each direction) on one corner, which are mounted on two separate poles. Mounting the APS on a traffic signal is acceptable as well. The optimal location for a push button-integrated APS meets the following criteria:

- The optimal APS location is between 1.5-6 feet from the edge of the curb, with a maximum of 10 feet from the curb.
- The optimal location of the APS is between the furthest (extended) crosswalk line and the curb ramp, with the maximum distance of 5 feet from the edge of the furthest (extended) crosswalk line.
- The APS should be located adjacent to a level all-weather surface.
- The control face and tactile arrow should be carefully aligned with the direction of travel.
- At corners with two APS, they should be separated by a minimum of 10 feet.
- The optimal height for the placement of APS is between 32-42 inches. The CA MUTCD recommends a mounting height of 3.3 feet (40 inches).

### Additional Strategies for Pedestrian Signalization

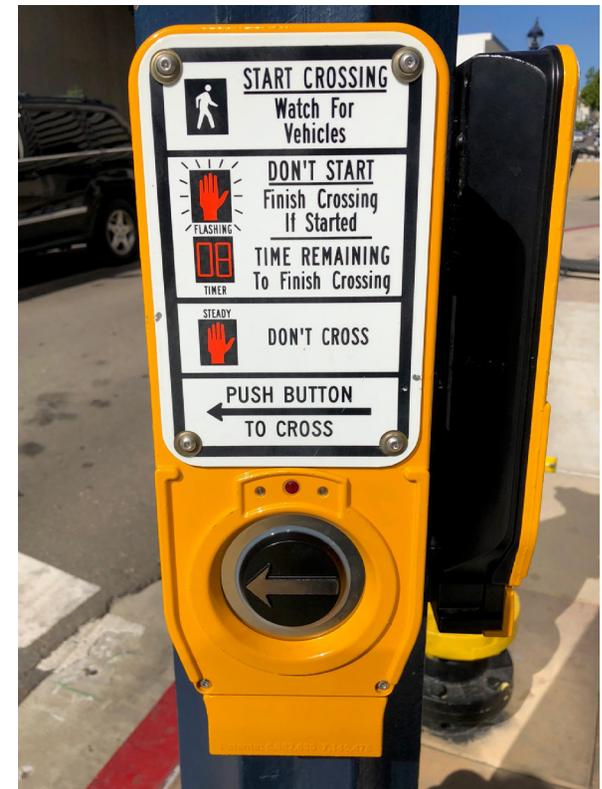
There are several innovative treatments for pedestrian signals that help to enhance safety at pedestrian crossings. Pedestrian crossings that might require innovative treatments are intersections with high volumes of pedestrians, a history of pedestrian and vehicle collisions, or extra wide intersections. Innovative treatments include:

- **Leading Pedestrian Interval** provides pedestrians with a WALK signal while the parallel traffic still has a red stop light. This allows pedestrians to establish themselves in the crosswalk, increasing their visibility, and reducing conflicts between pedestrians and turning vehicles.
- **“No Right Turn on Red” Restrictions** for vehicles reduce pedestrian-vehicle conflicts at locations with high numbers of pedestrians. Drivers who are turning right on red are concentrating on looking to their left to find a gap in oncoming traffic, thus not seeing the pedestrian

that may be crossing in front of them. Additionally, right turns on red create confusing information for individuals with limited vision, as traffic sounds help them to orient and navigate the intersection. This type of treatment should be considered on a case-by-case basis; limiting right turns on red reduces roadway capacity and may increase congestion or cause traffic diversions.



Countdown signal



Vibrotactile push button



Landscaping and seating area contributing to a pleasant pedestrian environment in Seattle, WA.



Meandering sidewalk with pedestrian lighting in Irwindale

### Sidewalks in Irwindale

The design guidelines presented in this document seek to enhance existing sidewalks in Irwindale, which have some deficiencies including lack of buffers between the sidewalk and vehicles on the roadway, lack of shade and landscaping, and lack of other amenities such as seating and pedestrian-scale lighting. In addition, many industrial/business park locations are missing sidewalks on one or both sides of the street (see chapter 2: Existing Conditions).

Because existing right-of-way widths are limited and vehicle lane reduction is often not possible due to traffic volumes, it is generally difficult to expand sidewalks in Irwindale. However, the City should consider opportunities to utilize public or private easements adjacent to the sidewalk in order to expand the pedestrian environment in pedestrian-oriented locations such as Arrow Highway and Irwindale Avenue (especially near the Metro Gold Line station).

The inclusion of streetscape and safety enhancements described in these design guidelines will support comfort and safety for people traveling along Irwindale sidewalks.

### Adding Sidewalks to Developed Areas

The addition of new sidewalks is recommended for several streets in Irwindale industrial and business parks, as described in Chapter 4 (Network Recommendations). This can be accomplished through development requirements, by which property owners are required to provide pedestrian amenities when completing redevelopment projects. In addition, the City can seek funding to install sidewalks through a variety of grant programs described in Chapter 6 (Funding and Implementation).

### Placemaking with Public Realm Design

Irwindale can continue providing unique streetscape elements such as its meandering sidewalks installed by private property owners as a requirement for the development permit. The Irwindale Commercial and Industrial Design Guidelines provides relevant guidance (see page 13).

Related guidelines from the City of Irwindale  
Commercial and Industrial Design Guidelines:

The provision of unique and uniform streetscape improvements throughout a designated area creates an identifiable image. The streetscape is the relationship of all elements visible to the pedestrian and motorist within the urban environment. Public and private streetscape improvements are the elements that tie together all private development. Compatibility with the public realm is required. The site shall be organized to encourage pedestrian circulation. Walkways should be attractive and embellished with landscaping, ornamental light fixtures, furniture, trellises, and/or other decorative features.

**Streetscape Furniture and Elements:**

- ▶ Minor, freestanding streetscape elements should consist of simple design elements.
- ▶ Materials, shapes, and colors should be compatible with the design of adjacent structures.
- ▶ Outdoor furniture and site fixtures shall conform to the architectural theme.

- ▶ Where possible, these streetscape elements should be combined into a contiguous composition, which, as a whole, reflects the design guidelines.
- ▶ Seating is an important amenity that should be provided in both the industrial and commercial areas. Seating in the public right-of-way should coordinate with other streetscape furnishings.

**Streetscape Elements**

- ▶ Removable bollards are encouraged in locations where emergency access may be necessary. Bollards should be used to separate pedestrians from vehicular traffic areas and to light sidewalk surfaces. Bollard design should coordinate with other streetscape furnishings.
- ▶ Pots and planters shall be durable and have natural color tones that complement the adjacent structures and be located where pedestrian flow will not be obstructed.



Images of streetscape elements from Irwindale Commercial & Industrial Guidelines



Mid-block curb extension with seating, planters, landscaping, and decorative paving.



Examples of pedestrian scale lighting

[Related guidelines from the City of Irwindale Commercial and Industrial Design Guidelines:](#)

**Materials and Colors**

In order to preserve and protect the City's Hispanic heritage, while promoting and enriching the community's quality of life, guidelines have been established to preserve the community's cultural values and historical identity. The City of Irwindale is proud of the strong Hispanic heritage claimed by the majority of its longstanding residents. To support and promote this pride, as well as to pay homage to those missionaries who settled in the San Gabriel Valley during the 18th century, architectural styles that have roots in the early California Mission Style are appropriate for the community.

**Primary Materials**

The use of the following primary materials is encouraged:

- ▶ *Stucco - sand finished or lightly troweled; and*
- ▶ *Masonry - slump stone or brick.*
- ▶ *Color. A unified and harmonious scheme of colors can greatly enhance the imagery of the City. The following standards for color are recommended:*
- ▶ *Solid Stucco Building Walls - white, light buff, beige, salmon, warm grays;*
- ▶ *Heavy Wood Timber - dark brown stain*

**Street Furnishings**

Sidewalk amenities such as street furniture create a welcoming environment for pedestrians. Amenities such as trash receptacles, benches, signage, and drinking fountains all contribute to the character and sense of community. Amenities should be concentrated in areas where they will be used by the highest number of pedestrians. When locating amenities, it is important to understand that an area's needs may change over time.

The following guidelines should influence the location and choice of street furniture amenities:

- Sidewalk amenities should be located outside of the path of travel to ensure accessibility.
- The location of amenities should be carefully coordinated with the location of other objects within the sidewalk such as utility vaults and light poles.
- In general, the City should utilize a consistent palette of street furniture and amenities. However, a customized design palette can be part of a placemaking effort for a residential neighborhood, commercial district, trails access point, etc.
- Placement of amenities should respond to, and not hinder, adjacent on-street parking or transit boarding zones.

[Pedestrian-Scale Lighting](#)

Pedestrian-scale street lighting will not only help improve security but will also add to the character of the street and neighborhood. Sidewalks and landscaped areas should be lit to enhance safety and comfort. The following guidelines should influence the placement choice of pedestrian-scaled lighting.



Landscaping strip in a sidewalk extension



Example pedestrian wayfinding signage

Sidewalks should be illuminated through the use of pedestrian-scaled pole fixtures (10 to 14 feet in height) or fixtures attached to the face of the buildings.

- The type and size of fixture should be consistent along a single block.
- Placement of lighting should not interfere with the pedestrian path of travel and should not distract or interfere with vehicular circulation.
- Street lamps should be oriented toward the ground and designed with “dark sky” technology to help preserve views of the night sky and minimize glare.

### Landscaping and Trees

Landscaping and trees contribute greatly to a more attractive and comfortable pedestrian environment. In addition to their aesthetic benefits, they improve comfort for people traveling on the sidewalk by providing shade and reducing heat, and they have clean air benefits as well. Because of Irwindale’s dry climate, it is not feasible (or water-wise) to provide the type of shade trees planted in other climates. Shade trees that may require irrigation are especially beneficial in high pedestrian areas such as the train station area and the city center, at bus shelters, and near schools. Irwindale’s dry climate provides a challenge for establishing and maintaining vegetation, but through the utilization of drought-tolerant plantings, proper maintenance, and irrigation when necessary, Irwindale can provide road users – especially pedestrians – a more comfortable and attractive urban environment.

- The vegetation chosen for the pedestrian network should reflect the identity of Irwindale and be climate appropriate.

- Drought tolerant plants and trees with minimal water and maintenance requirements should be chosen to reduce water consumption and maintenance costs.
- Due to Irwindale’s dry climate, even drought-tolerant trees require regular irrigation until they are well established. Where desirable, trees should be placed within irrigated planting areas and tree wells. Alternatively, trees can be watered during the dry season by water truck and/or by using slow-release tree watering bags.
- Trees should be located in tree wells at least 5’x5’ in size to ensure a sufficient permeable area
- Tree grates should be located as to not disrupt the minimum 4 feet of sidewalk. The openings in tree grates should be a maximum of ½ inch wide.
- When planting vegetation within planting strips or tree wells it is important that the planting areas do not create tripping hazards.

### Pedestrian Wayfinding

Wayfinding programs can be used to provide signage to enhance pedestrian mobility throughout the city; they can provide directional information to guide pedestrians to special destinations such as parks/trails, job centers, cultural or commercial amenities, transit stops, and Metro stations. Signs can be used to convey spatial information through the use of maps and written directions.

The placement and number of signs is as important as the information they convey, and poor placement or excessive signage can reduce their effectiveness and create a cluttered street environment. As for all other physical features in the sidewalk area, wayfinding signage should comply with required

clearances from other street elements to comply with ADA accessibility requirements.

- Wayfinding signage should have a distinct and coordinated design that reflects the culture and character of Irwindale
- Wayfinding signage should be provided at major transit stops and along walking routes to transit stations. They should be visible to transit users without negatively affecting accessibility.
- Signage should utilize clear, concise and consistent language and provide easy-to-understand information graphically.
- Kiosks in public areas provide valuable information such as maps, bulletin boards, and community announcements. They may be located in any of the following areas:

#### Bus Stop Waiting Areas

Bus stops should have amenities that provide comfort and safety for transit riders while they wait for buses to arrive, and to provide a pleasant entry into the pedestrian environment for people departing the bus. At a minimum, bus stops should have seating for at least four people. Shade-providing bus shelters and trees are desirable at any bus stop, and they should be provided at the more popular bus stops in the City. Currently, many of the busier bus stops in Irwindale have existing bus shelters, some of which are designed uniquely for Irwindale and function as placemaking devices. Similar treatments at additional bus stops in the City should be considered based on the number of bus boardings and alightings (exiting the bus) and available physical space along the sidewalk area.

Bus bulbs are curb extensions that add valuable space that can be used for transit amenities such as

shelters, benches, kiosks, and landscaping, ensuring they do not encroach on the sidewalk path of travel. Because of limited right-of-way widths in the city, there are limited locations in Irwindale where this treatment would be feasible, and where benefits outweigh costs. Any installation of a bus bulb, as any curb extension, would come after significant analysis of need as well as physical feasibility.

#### Related Guidelines from the City of Irwindale Commercial and Industrial Design Guidelines:

- To help establish a unique theme for the downtown area, bus shelter designs shall be consistent with the Design Guidelines.

#### Public Art

Public art placed in the pedestrian realm can provide visual interest and enjoyment for all users of the street. Art can be located anywhere in the sidewalk area (except the pedestrian path of travel) and on exterior building walls that are adjacent to or nearby the sidewalk area. Art for public benefit can be encouraged on private property, especially murals painted on or applied to blank building walls.

- Public art can be incorporated into utilitarian street elements (e.g., landscaping, light standards, benches, trash receptacles, bicycle parking facilities, and utility boxes).

#### Related Guidelines from the City of Irwindale Commercial and Industrial Design Guidelines:

- Fine art amenities such as decorative fountains, sculptures, tile mosaics and specialized wall treatments shall be required and shall complement the architectural design of the structure.
- Project builders shall submit drawings and material samples for art amenities to the Planning Commission for approval.

#### Lighting

- Lighting in public areas must conform to the Irwindale Municipal Code.
- A cast iron pole and traditional Spanish lantern style is recommended as an appropriate ambient fixture for commercial and industrial areas.
- Black or dark brown colors are suitable when cast iron or anodized aluminum poles are used.



Image from the Irwindale Commercial and Industrial Design Guidelines showing design of streetscape elements appropriate for Irwindale

## TRAILS

### Accessibility & Trail Planning

The Santa Fe Dam Recreation Area and the San Gabriel River Trail provide recreational opportunities to the public and are key attractions in Irwindale. Combined, the features attract users with varying interests from across the region. The Santa Fe Dam recreation Area offers an entry point for the San Gabriel River Trail, the paths leading up to the dam and the trail are heavily utilized by cyclists and pedestrians, and occasionally equestrian users. Due to the varying users that come through the trail, it is important to ensure accessibility. Whether designing a trail or a shared-use path, the City should consider the needs of people with disabilities and should optimize trail/path access whenever possible. Below are some recommendations:

- The needs of people with disabilities should be considered at every stage, from design to construction;
- If reconstructing a path or trail, ensure accessible design and ADA requirements are incorporated;
- Optimize trail access points to people with disabilities;
- Actively seek opportunities to increase the accessibility of existing trails, shared use paths, and supporting facilities;
- Provide trail information in multiple formats;
- Address the design pathways that lead up to trails/paths provide the same standard accessibility as provided on the path itself; and
- All recreation trails should be surfaced with a material that is firm and stable. Refer to Table XX for a detailed matrix regarding surface material.

### Trailhead Design

Trailheads indicate the entry points of trails, and often integrate built facilities such as parking, bicycle racks, information kiosks that include trail accessibility information, sign posts, restrooms, and drinking water sources. The trailhead access points leading up to the San Gabriel River Trail should incorporate design elements and infrastructure that preserve its uses for cyclists, pedestrians, and equestrian users. Trailhead traffic is managed by restricting the size or the configuration of the area, typically with barriers. In order to preserve the trail for its intended purpose and users, built infrastructure such as gates, bollards, or medians are designed to limit access of motorized trail users and vehicles. Trails and trailheads that are designed to be accessible particularly for people with disabilities should conform to ADA guidelines. When applicable, signage is incorporated at the trailhead and/or along trails to indicate accessibility, motor vehicle restrictions, and wayfinding. Trailheads require routine maintenance, including removing debris, repair surfaces and fencing, drainage. During maintenance, accessibility should be enhanced whenever possible.

Kiosks can be considered at trailheads. They can be located primarily at the beginning and end of a route, and are typically standalone structures that provide shade, seating, trail information, and site-specific data. In addition, kiosks located at major trail connections or intersections allow users access to associated routes. These are usually smaller and blend in with site.

### User Conflicts

As trail and shared-use path users have particular interests, there is potential for conflict at shared use paths and trails due to the convergence of multiple



A raised boardwalk providing a level, firm and stable surface



Natural surface trail with firm and stable surface.

Table 5-1: Firmness, Stability, and Slip Resistance for a Variety of Common Trail Surfacing Materials

SURFACE MATERIAL	FIRMNESS	STABILITY	SLIP RESISTANT (DRY CONDITIONS)
ASPHALT	firm	stable	slip resistant
CONCRETE	firm	stable	slip resistant*
SOIL WITH STABILIZER	firm	stable	slip resistant
PACKED SOIL WITHOUT STABILIZER	firm	stable	not slip resistant
SOIL WITH HIGH ORGANIC CONTENT	soft	unstable	not slip resistant
CRUSHED ROCK (3/4" MINUS) WITH STABILIZER	firm	stable	slip resistant
CRUSHED ROCK WITHOUT STABILIZER	firm	stable	not slip resistant
WOOD PLANKS	firm	stable	slip resistant
ENGINEERED WOOD FIBERS	moderately firm	moderately stable	not slip resistant
GRASS OR VEGETATIVE GROUND COVER	moderately firm	moderately stable	not slip resistant
ENGINEERED WOOD FIBERS THAT DO NOT COMPLY WITH ASTM F1951	soft	unstable	not slip resistant
WOOD CHIPS (BARK, CEDAR, GENERIC)	moderately firm to soft	moderately stable to unstable	not slip resistant
PEA GRAVEL OR 1-1/2" MINUS AGGREGATE	soft	unstable	not slip resistant
SAND	soft	unstable	not slip resistant

\*A broom finish significantly improves the slip resistance of concrete.

Source: FHWA

types of users and their varying needs. To minimize conflict for all users including people with disabilities, the City should be aware of design solutions that can reduce conflict. Conflicts can be minimized by:

- Providing informational signage that outlines rules of conduct and permitted users;
- Consider the needs of people with disabilities, in addition to all of the users permitted;
- Provide facilities for all users, including racks or lockers for cyclists;
- Ensure the width and surface of the trail or shared use path are appropriate for all allowed users; and
- Consider providing alternate paths for different types of users, or separate users especially if traveling at different speeds.

### Signage

Signage is a significant component of trail, trailhead, and shared-use path design as it indicates permitted users, rules of conduct, and wayfinding. Signage at trailheads should also provide accessibility information to provide users with clear guidance about trail conditions (e.g., grade, cross-slope, surface type, width and obstacles) that might affect accessibility. Trails that meet accessibility provisions should be designated with a universally understood symbol for “accessible trail”. Signs should be incorporated into the design of the trail or shared-use path in a simple universal format that is understood by all users. Typically, signs are designed with limited graphics and text, yet still provide information about the trail or path conditions.



Conflict sign along public trail



Multi-use trail signage



Multi-use trail signage



Pedestrians and cyclists along a multi-use path

## BICYCLE GUIDELINES

Bikeway planning and design in California typically relies on the guidelines and design standards established by Caltrans as documented in “Chapter 1000: Bikeway Planning and Design” of the HDM. Chapter 1000 follows standards developed by AASHTO and the Federal Highway Administration (FHWA), and identifies specific design standards for various conditions. These standards provide a good framework for future implementation but may not always be feasible given specific constraints. Bikeway design and planning standards are continually changing and expanding. Despite this, most agencies adopt the Caltrans or AASHTO standards as a minimum.

### TYPES OF BICYCLE FACILITIES

- Based on the California Streets and Highways Code, Caltrans identifies three types of bikeways, as described and illustrated below.
- Class I bikeways (Multi-Use Paths) are separated completely from motor vehicle traffic but may be shared with pedestrians.
- Class II bikeways (Bike Lanes) are striped in the

roadway for the exclusive use of bicycles. Vehicle and pedestrian cross-flow are permitted. The striping is supported by pavement markings and signage.

- Class III bikeways (Bike Routes) are located on roadways shared with motor vehicles. Bike routes are designated by signage and/or shared roadway bicycle markings (sharrows).
- Class IV bikeways (Cycle Tracks) are located in or adjacent to a roadway and separated from traffic by a physical barrier (e.g., bollards, on-street parking, planters, and raised medians). The 2011 National Association of City Transportation Officials (NACTO) Urban Bikeway Design Guide recommends that a bike lane sign CA MUTCD signage type R3-17 be used for a Class IV bikeway.

### CLASS I BIKEWAYS: MULTI-USE PATHS

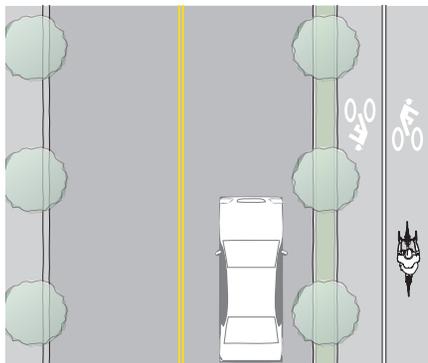
Multi-use paths are rights-of-way completely separated from streets that is shared by people walking, bicycling, or using other forms of non-vehicle transportation. These paths are an



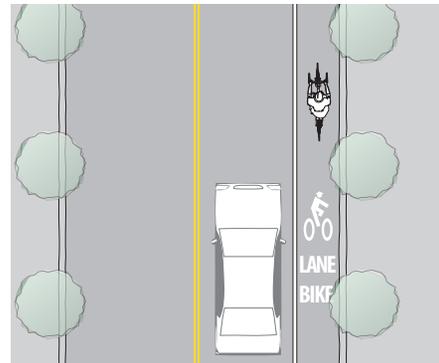
Multi-use path (San Gabriel River Trail in Irwindale)



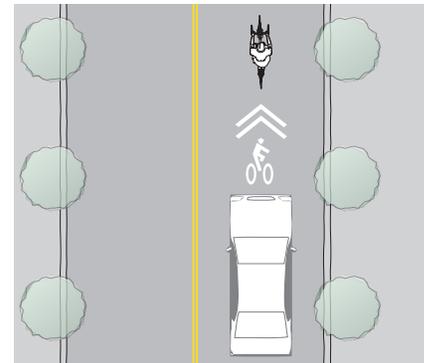
Multi-use path



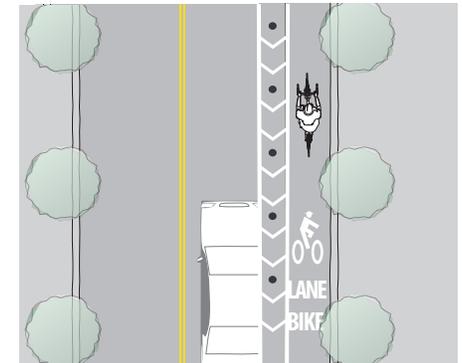
Class I (Bike Path)



Class II (Bike Lane)



Class III (Bike Route)



Class IV (Cycle Track)

important component of every bikeway network because they can provide a car-free environment for a large portion of a bicycling trip. The San Gabriel River Trail is the key Class I Bikeway in Irwindale today, and additional Class I paths are recommended as part of the Irwindale Active Transportation Plan.

Within a bikeway network, Class I bike paths can be highly useful in closing gaps where the existing vehicular roadway network limits connectivity, such as through large blocks or traversing a park.

Two-way bike paths must be a minimum of 8 feet wide with an additional two foot-wide shoulder, required by Caltrans standards. A minimum width of 12 feet is preferable when moderate volumes of pedestrian traffic are expected along the path. A separate path for pedestrians may be appropriate if high volumes of pedestrian traffic are expected. Asphalt or concrete should be used for the bicycling path, while decomposed granite can be used for a separated pedestrian path and the pathway shoulder.

### Signage for Class I Bike Paths

- **Pavement Markings:** When bike paths are of sufficient width for two lanes, lane markings should be used. A solid yellow or white 4-inch-wide stripe may be used to separate the two directions of travel where passing is not permitted. A broken yellow or white line with a 1-to-3 segment-to-gap ratio should be used where passing is permitted.
- **Signage:** Signage should be used at multi-use path roadway crossings to alert drivers of pedestrians and bicyclists. Signage should be placed along the roadway in advance of a crossing to alert drivers to the upcoming intersection with bicyclists and pedestrians. CA MUTCD recom-

mends that signage type R44A (CA) be installed along Class I bikeways. Destination and directional signs should be provided at important locations along bike paths. These signs can include mileage to a destination, mark upcoming junctions, or contain directional arrows.

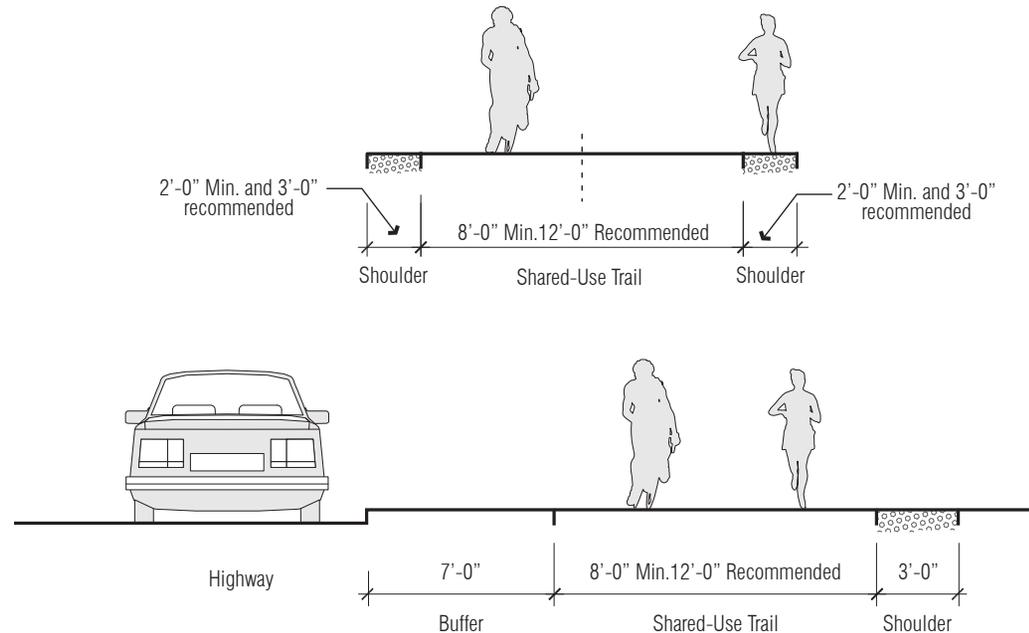
### Class I Bike Path Crossings

- Based on the AASHTO and CA MUTCD guidelines for crossing treatments, the primary objective for crossings is a safe and convenient intersection for all mode types. When paths cross roadways at intersections, they should be assigned the same traffic control as the parallel roadway. For example, if the parallel roadway has a green/walk signal, the path should also have a green/walk

signal at the same time. A leading green/walk signal time for path users is recommended to give pedestrians and bicyclists a visible head start and to avoid potential conflicts with vehicle movement. If the path is crossing an all-way stop intersection, then STOP signs should be placed along the path at each intersection approach. At

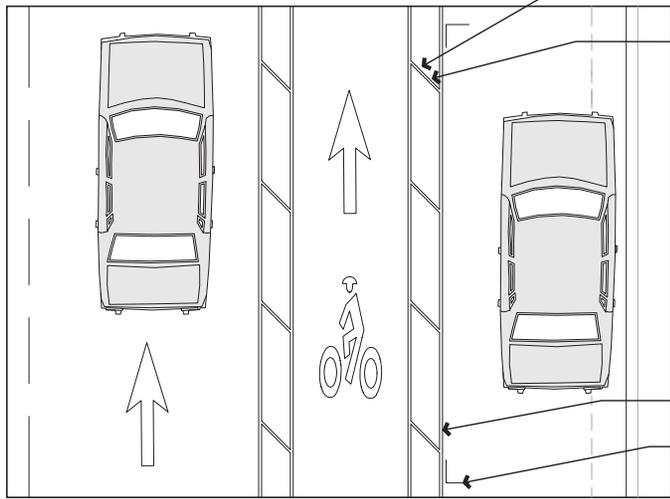


Example MUTCD signage for bike paths



Typical configurations of Class I Bikeways (Multi-Use Paths)

BUFFERED CLASS II BIKE LANE

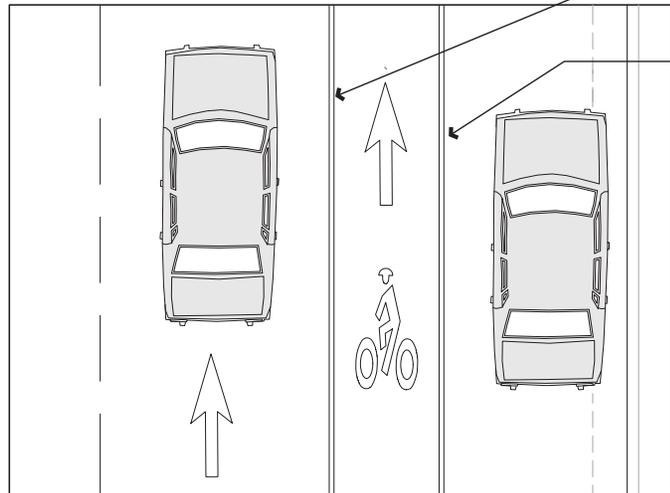


White chevron or diagonal marking between two solid white lines for buffers 4' or more in width

4" solid white hatching every 10' to 40' at an angle of 30 to 45 degrees. Increasing the frequency of markings can help improve motorist compliance.

6" Solid White Line  
Optional 4" White Markings for Parking Tees

STANDARD CLASS II BIKE LANE



6" solid white line on interior

Optional 4" solid white line provides separation between bike lane and parking lanes, reducing potential door zone conflicts

uncontrolled intersections, STOP or YIELD signs should be used to give right-of-way to either the path or the roadway.

## CLASS II BIKEWAYS: BIKE LANES

Bike lanes are typically used on streets with higher traffic volumes or greater speeds, where adequate roadway widths can accommodate them. Bike lanes improve conditions for bicyclists in the corridor by delineating a dedicated right-of-way for bicyclists that is separate from the travel lane.

Variables on the roadway, including on-street parking, curb and gutters, and roadway speeds, influence the width and design of bike lanes. The following Class II bike lane widths are recommended:

### Bike Lanes Adjacent to On-street, Parallel Parking:

- Marked parking stalls or continuous parking stripe: Bike lanes should be a minimum of 5 feet wide, required by Caltrans standards, but 6 feet is preferred. Many jurisdictions prefer a minimum six foot bike lane to provide extra space for bicyclists to keep them safely outside the door zone. The door zone refers to the area where bicyclists are vulnerable to being hit by an opening car door.

### Bike Lanes Adjacent to Curb and Gutter:

- A minimum 5 foot width with a standard gutter. However, it is preferred to maintain a minimum of 2 ½ foot clear surface beyond the gutter.
- Roadway speeds impact recommended bike lane widths at the following levels:
  - 35 mph or less: 5 foot bike lanes
  - 40 to 50 mph: 6 foot bike lanes

Typical configurations of a standard bike lane (top) and a buffered bike lane (bottom)

- On Roadways without Curb and Gutter: The minimum width is 4 feet. At locations where motor vehicle speeds exceed 35 mph, lane width should be increased to a minimum of 5 feet, although at least 6 feet is desired.

### Striping and Signage for Class II Bike Lanes

Bicycle lanes have unique signage requirements that are included in chapter nine of the California Manual of Uniform Traffic Control Devices (MUTCD). The MUTCD should be consulted during the design of any facility.

- Pavement striping: Bike lane striping should allow bicyclists to follow a straight path. Bike lanes along roads with parking permitted should not be directed toward the curb at intersections. A six inch-wide, solid white line should be used at the right edge of the outside travel lane to designate the portion of the roadway for bicyclists. A six inch-wide, solid white line should also be striped between the bike and vehicular parking lane. At an intersection where right turns are permitted, the bike lane line should terminate 100 to 200 feet prior to the intersection or be substituted by a dashed line marked up to the intersection.
- “BIKE LANE” pavement markings should be used to further define bike lane space for bicyclists and motorists. These should be placed at the start of all bike lanes, on the far side of each intersection, and at other desired locations. The bike lane pavement marking should include a directional arrow and one of the accompanying word or bicycle symbols.
- Bikeway signage: Bike lane signs (CA MUTCD R81) should be placed at the beginning of each

designated bike lane, on the far side of arterial intersections, at major changes in direction, and at ½ mile intervals. The BEGIN (CA MUTCD R81A) and END (CA MUTCD R81B) signs may be used below the required R81-sign to mark the beginning or end of a bike lane. If bike lane pavement markings are used it is not necessary to include the bike lane sign at each pavement marking. Signs may also be used to state BICYCLE WRONG WAY (CA MUTCD R5-1b) on the back of bike lane signs to reinforce appropriate traffic flow for bicyclists.

- Painted buffers along bicycle lanes can enhance safety and comfort by providing spatial separation from moving vehicles and parked vehicles. Buffers between the bike lane and parked vehicles protect the bicyclist from collisions when drivers
- Intersections with Turn Lanes: Bicycle lane pockets provide a marked route for bicyclists to avoid potential conflicts with turn-only lanes. An alternate treatment is a sharrow, or “shared right-of-way” marking, in the through lane adjacent to the right-turn lane.

#### Colored Pavement

An additional enhancement to bike lane markings includes coloring sections of bike lanes with green paint. This is especially beneficial in high-conflict areas such as intersections and driveways to alert motorists to the presence of bicyclists and bike lanes.



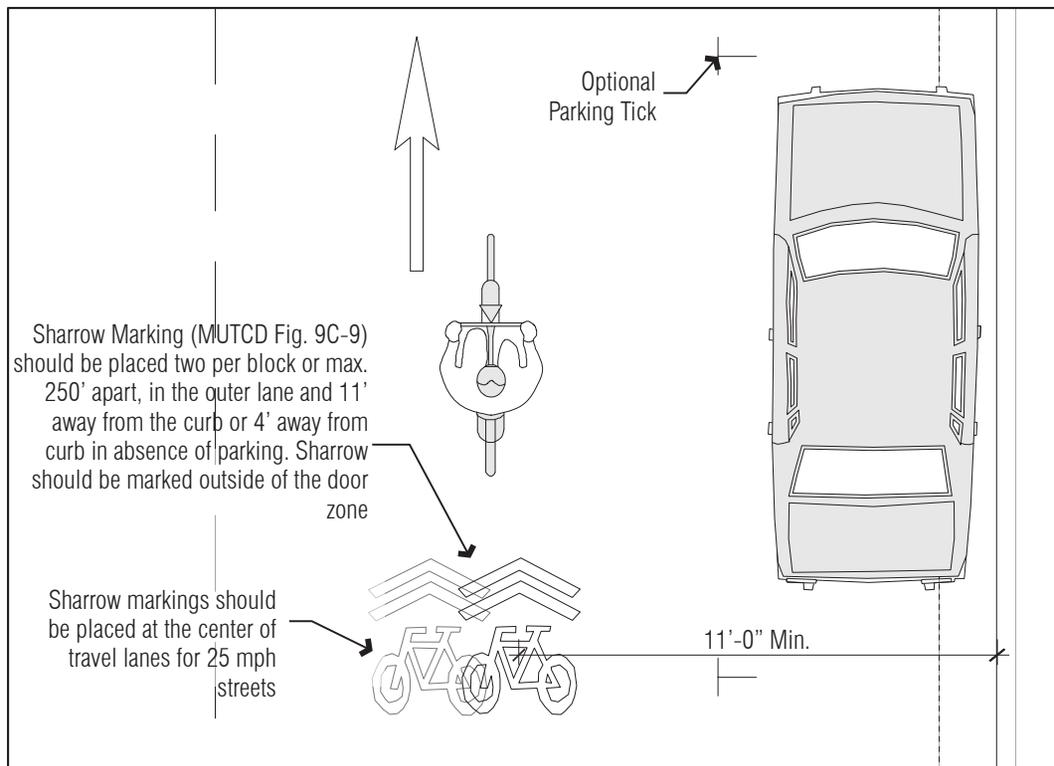
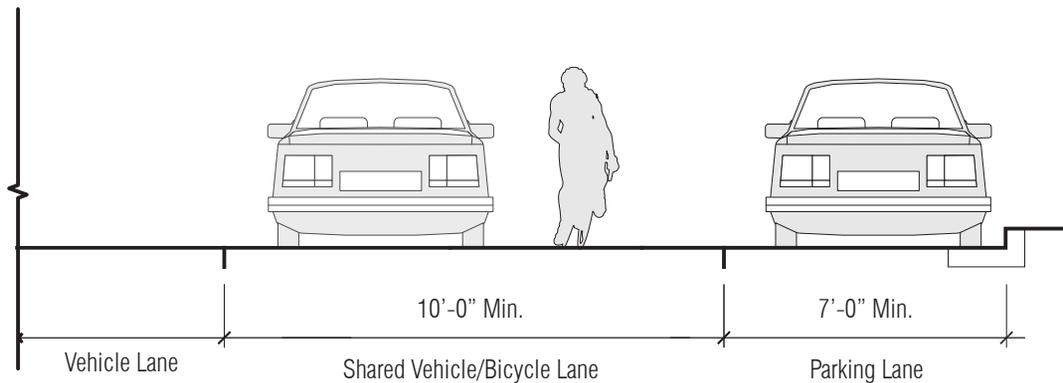
Bike lane with colored pavement



Bike lane with two buffered areas: one between the bike lane and vehicle travel lane, and another between the bike lane and parked vehicles.



Example MUTCD signage for Class II bike lanes



Class III Bikeway diagram

### Bicycle Detection at Actuated Traffic Signals

Detection at actuated traffic signals provides bicyclists the ability to trigger a traffic signal, rather than activating a pedestrian push button or illegally crossing a red light. These signals should be provided where possible, particularly along bikeways. Bicycle detection can be provided with bicycle-sensitive loop detectors or video detection that prompt traffic signals to change. A bicycle detector symbol must be painted on the roadway to show bicyclists where they should be located to trigger the detection.



Bicycle loop detector (above) and sign (below)





Class III Bikeway (shared route) with green painted sharrow



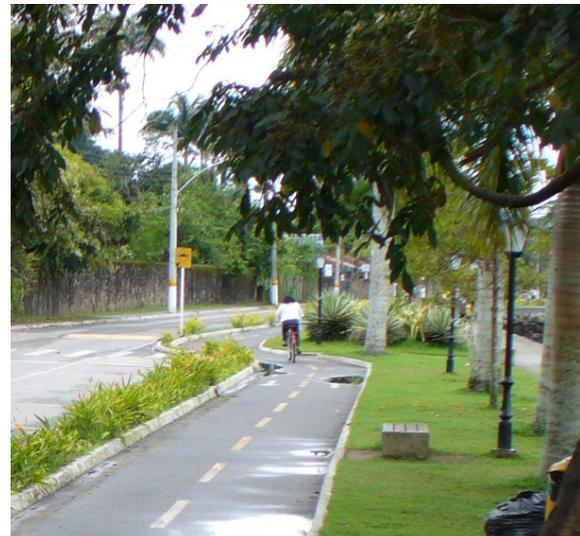
Example MUTCD signage for shared routes



Class III bikeway (shared route) with "sharrow" pavement marking



Class IV bikeway (cycle track) separated by planters



Two-way class IV bikeway (cycle track)

## CLASS III BIKEWAYS: BIKE ROUTES

Class III bike routes are located in roadways shared with cars, and routes are designated with signs and pavement markings only; there is no dedicated bike lane. Wider curb lanes, pavement maintenance, and traffic calming measures make them suitable for shared use. Class III bike routes are most useful on lower-volume roadways such as residential streets. These routes typically connect to other bike lanes, and are an integral component to ensure continuous bicycle networks.

A 14 foot minimum lane width is recommended for Class III bike routes. Lane width is determined from the edge stripe to the lane line or the gutter joint to the lane line. If 15 feet or more is available for the lane next to the curb line, striping the bike lane as a Class II facility should be considered. Streets with speed limits above 25 mph should not be designated as Class III bike routes.

### Signage for Class III Bike Routes

- **Pavement Markings:** Although Class III Bike Routes do not have required pavement markings, the shared roadway bicycle marking or "sharrow" can be used on a Class III bike route or on a roadway with no bikeway designation. Sharrows are on-street markings that reinforce the bikeway designation. These markings are put in place to help bicyclists avoid the hazard of the door zone and to alert road users of the location a bicyclist should occupy within the travelway. Although, according to the CA MUTCD, sharrows are only used on roadways with on-street parking, they can be used on roadways without on-street parking but with high volumes of bicycle traffic and when other options are not available.

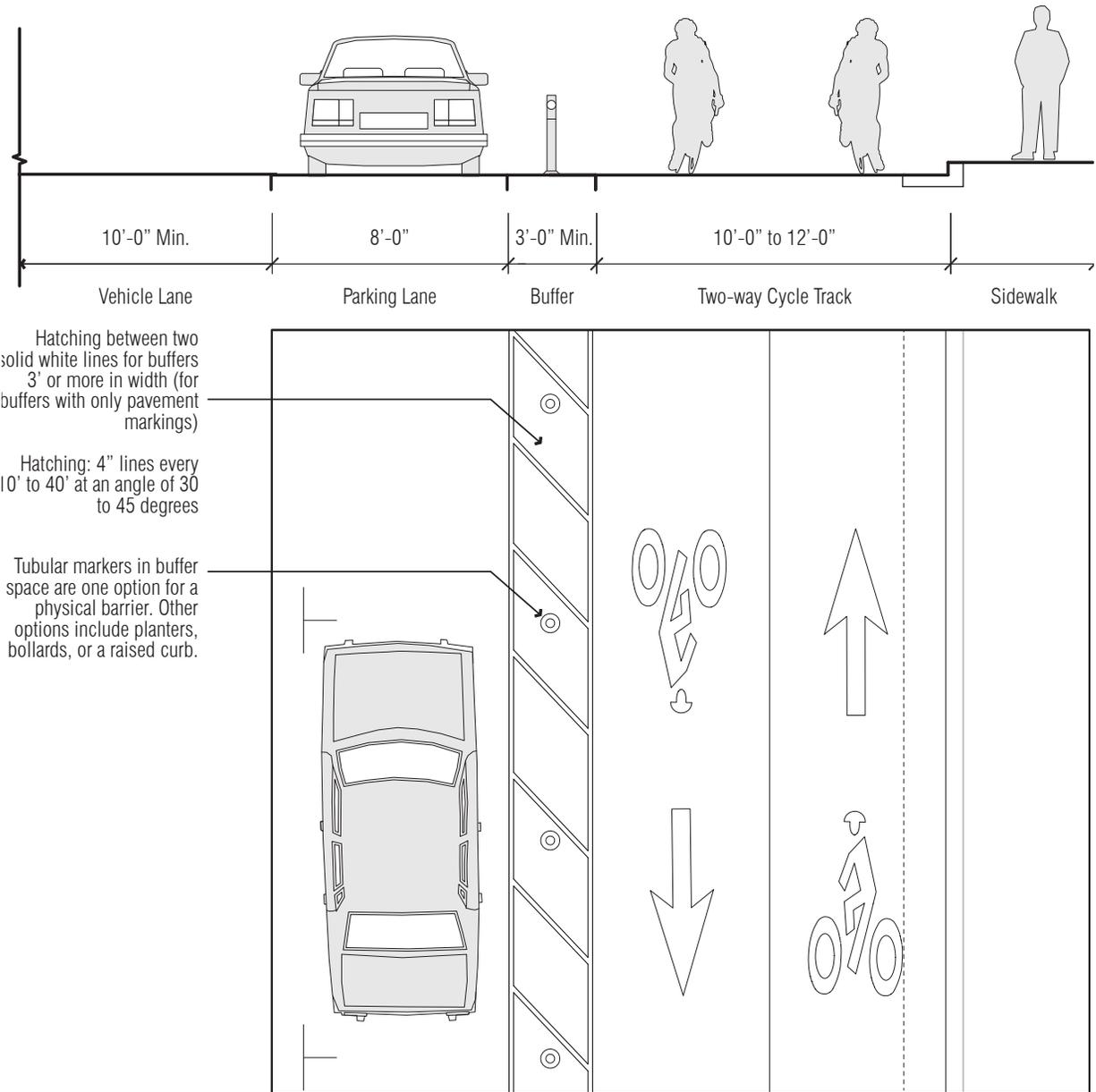
- Shared roadway bicycle markings (sharrows) should be placed so that the centers of markings are a minimum of 11 feet from curb face or edge of paved shoulder. They should be used immediately after an intersection and spaced at intervals of 250 feet thereafter.
- The “Bicycle May Use Full Lane” sign may be used on Class III bike routes to inform road users that bicyclists may be present in the travel lane.

## CLASS IV BIKEWAYS: CYCLE TRACKS

Class IV bikeways, or cycle tracks, are on-street bikeways that include physical barriers between the bikeway and moving traffic. Although they are typically located on the paved roadway, cycle tracks effectively provide a separated path using on-street infrastructure to create a lane exclusively for bicyclists. Such bike lanes provide the most protection for cyclists particularly novice and vulnerable cyclists such as children. Cycle tracks can be separated from vehicle travel lanes by a variety of physical methods including bollards, planters, raised median, or on-street parking. Class IV bikeways may be designed for either one- or two-way travel.

### One-Way Class IV Bikeways

One-way Class IV bikeways are recommended along streets if traditional bikeways would cause cyclists to feel unsafe due to high traffic volumes or speeds. They may also be considered along streets if conflicts at intersections could be better managed using traffic calming features such as parking lane setbacks, bicycle markings, and other signaled intersection treatments. One-way separated bikeways have distinct design features:



Class IV separated by planters

- Pavement markings symbols and/or arrow markings must be placed at the beginning of the separated bikeway and at intervals along the facility based on engineering judgment to define the bike direction. (CAMUTCD 9C.04)
- 7 foot width preferred in areas with high bicycle volumes or uphill sections to facilitate safe passing behavior (5 foot minimum). (HDM 1003.1(1))
- 3 foot minimum buffer width adjacent to parking lines (2 foot minimum when adjacent to travel lanes), marked with 2 solid white lines (DIB 89, 2015).

### Two-Way Class IV Bikeways

Two-way bikeways may be considered along streets with high traffic volumes, high motor vehicle speeds, high bicycle volumes, high incidences of wrong-way cycling, few cross-traffic conflicts, and/or on streets that connect to shared use paths. Two-way separated bikeways have the following design features:

- 12 foot operating width preferred (10 ft minimum) width for two-way facility. In constrained locations an 8 foot minimum operating width may be considered.
- Adjacent to on-street parking, a 3 foot minimum width channelized buffer or island shall be provided to accommodate opening doors. (NACTO, 2012) (CAMUTCD 3H.01, 3I.01)
- A separation narrower than 5 feet may be permitted if a physical barrier is present. (AASHTO, 2013)
- **Colored pavement:** An additional enhancement to bike lane markings includes coloring sections of bike lanes with green paint. This is es-

pecially beneficial in high-conflict areas such as intersections to alert motorists to the presence of bicyclists and bike lanes.

## ROUTE WAYFINDING & SIGNAGE FOR BIKEWAYS

Wayfinding signs should be provided at important locations along all bikeways. These signs can include mileage and travel time to destinations, mark upcoming junctions, identify best routes to destinations, and provide a placemaking opportunity with themed signage.

A network of wayfinding elements consists of cohesive and comprehensive signs and pavement markings that guide cyclists to their destinations along bikeways. Signs and pavement markings are located at key points along bicycle routes – typically at the junction of two or more bikeways and at locations leading to and along bicycle routes. There are multiple benefits to developing a wayfinding system, for example:

- Increases familiarity with the bikeway network;
- Identifies the best routes to destinations as well as mileage and travel time to destinations; and
- Serves as a form of marketing, providing consistent imagery and branding of the bikeway system.

Wayfinding signs could potentially direct cyclists to a variety of key destinations, including schools, public transit stations, retail centers, local or regional parks and trails, or medical centers. NACTO has categorized bicycle wayfinding signs into three types:

- **Confirmation Signs** indicate to cyclists that they are on the intended route. The signs may include destinations, distance, and/or travel time. Confir-

mation signs do not include directional arrows. Placement suggestions are noted below.

- Every quarter to half mile on off-street facilities
  - Every 2 to 3 blocks
  - Within 150 ft of a Decision or Turn sign
  - Placed after turns, to confirm destinations
- **Turn Signs** specify where a bikeway turns from one street onto another street. Turn signs typically include destinations and arrows.
    - Placed on near side of intersections in advance of where bike routes turn
  - **Decision Signs** mark the intersection of two or more bikeways. The signs may include destinations, arrows, distances and travel times.
    - Placed on near-side of intersections in advance of junction with another bicycle route



Example wayfinding signs

### Pavement Markings

Pavement markings can be installed to demarcate routes, separation of lanes, indicate assigned travel paths, supplement directional signage, and to provide route information. Pavement markings are at times easier to see than signs due to parking or plant overgrowth, therefore markings may be more useful depending on the circumstances or design. Pavement markings also help bicyclists navigate difficult turns and provide guidance for crossing maneuvers. When pavement markings and signs are used to reinforce each other in a complementary fashion, they create the basic elements of a bikeway.



Two-way class IV bikeway with pavement markings



Bike box demarcated with colored pavement



Class II Bikeway with colored pavement & markings at a conflict zone approaching an intersection

## **BICYCLE PARKING**

Safe and secure bicycle parking is a critical component to most bicycle trips, and thus in promoting bicycle use. The following describes typical bicycle parking units for both long- and short-term parking.

### **Short-Term Bicycle Parking**

Short-term bicycle parking is intended for bicyclists that plan to leave their bicycle for only a few hours. Short-term parking is generally provided with bicycle racks and is appropriate at shopping areas, libraries, and other places where the typical parking duration is about two hours or less. Bike racks should support the bicycle upright and in two places, enabling the frame and one or both wheels to be secured.

- **Inverted U-Rack:** This is a relatively low-cost device that provides a location to lock a bicycle. The U-rack is generally preferred because it can provide the greatest area of support for the bicycle, is less likely to result in damage to the bicycle frame, and is easiest for access. It also allows the bike to be attached at both the frame and the wheels.
- **Other Bicycle Racks:** Bicycle racks come in many shapes and sizes and can be manufactured to complement any design scheme. Racks should be designed to allow the user to lock the bicycle frame as well as each wheel to the rack.

### Related Guidelines from the City of Irwindale Commercial and Industrial Design Guidelines:

- ▶ *Bicycle racks should be selected that are durable, visually subdued and coordinate with other streetscape furnishings.*

### Bicycle Rack Placement

Bike racks should be visibly located and near intended destinations. Bike racks are typically installed on the sidewalk or plaza spaces, but they should be placed outside of the typical pedestrian travel path. Some communities are providing bicycle parking in the street, within space converted from a vehicle parking space. Typically, parking for 10 bicycles can be provided in one vehicle space.

The following guidelines for bike rack placement should be followed to ensure that they are safe from vandalism, are easily accessible to bicyclists, avoid adversely impacting pedestrian circulation, and can be used to their maximum design capacity:

- Racks should not be obscured by landscaping, fences, or other obstructions.
- Racks should be in a well-lit location at night to protect both the bicycle and the user.
- To enhance “eyes on the street” safety for people using the bicycle racks, visibility should be provided to at least one of the following: security guard, station agent, parking garage attendants, clerks, vendors, or passing pedestrians.
- Ground surface of the bicycle parking area should be an all-weather surface such as asphalt or concrete; care should be taken when using other materials that can become slippery when wet.
- Racks should be located outside the typical pedestrian travel path, with additional room for bicyclists to maneuver outside the pedestrian way.
- Racks should be of a minimum height to increase their visibility to pedestrians.
- Racks should be located at enough distance from motor vehicles to prevent damage to parked bicycles and motor vehicles.

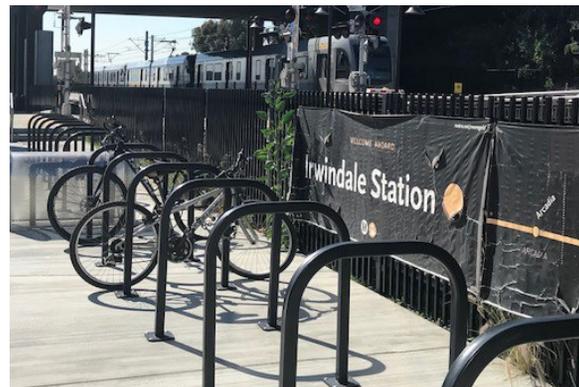
### Long-Term Bicycle Parking

Long-term bicycle parking protects the entire bicycle and its components from theft, vandalism, and the weather. Long-term parking is appropriate for a few hours use up to a full day and overnight, and is usually found at employment or transit centers. Bicycle lockers, bike cages or rooms, and bike stations with valet parking are examples of long-term parking.

- **Bicycle Locker:** Bicycle lockers are covered storage units that can be locked individually, providing secure parking for one bicycle. Lockers that are accessed with a key can be assigned or reserved for the use of one individual. Electronic lockers allow on-demand access to the locker when it is needed and, consequently, more efficient use of the parking space. Users must have a bicycle parking card to use the lockers, and a nominal parking fee is generally charged.
- **Locked Bike Cage:** A locked bike cage or room provides long-term secure bicycle parking at



Decorative bicycle racks can enliven the public realm



“Inverted U” bicycle racks at Irwindale Station



Typical “Inverted U” bicycle rack on a sidewalk



Bike cage



Bike lockers

high-use locations such as transit stations and job centers. Access should be limited to employees or residents with the use of a key, code, or access card. For additional security, it is recommended that bike racks be installed within the cage or room.

## SHARED ACTIVE TRANSPORTATION

Shared Active Transportation refers to station-based (“docked”) bike share systems as well as “dockless” systems for bicycles and scooters. In docked bike share systems, users pick up and return bikes at strategically-located stations, typically placed on the street in lieu of vehicle parking, or on street-adjacent property. In bike or scooter dockless systems, users locate a bike or scooter using a mobile application, and then leave it at their trip-end location. To date, these small vehicles include: bikes, e-bikes, scooters, and e-scooters, and other vehicles may be under development. Typically, Shared Active Transportation small vehicles are stored in the public right-of-way.

Shared bikes and scooters can be a valuable local transportation option, especially in the way they provide useful “first/last mile” transportation options. While there are many topics related to the challenges of dockless programs, this document focuses on guidance related to the physical environment – in particular how docked and dockless bike share and scooter share programs are best integrated into the public right-of-way. General Guidance

- The National Association of City Transportation Officials (NACTO) has provided a set of general policy provisions related to shared active transportation. Key provisions related to the use of

the public right-of-way are listed below and have been edited for relevance to Irwindale. (Complete policy recommendations can be located via the NACTO website at [www.nacto.org](http://www.nacto.org).) Bike share companies and other mobility service providers are only allowed to operate in the public right-of-way with legal permission (e.g. license, permit, contract) from the City or relevant local government.

- Cities should reserve the right to establish operating zones and fine companies for bikes and equipment found outside of those designated areas.
- Cities should require companies to remove small vehicles (e.g. damaged, abandoned, improperly placed etc) within contractually agreed-upon time frames and assess penalties for failure to do so.
- Cities should require companies to come to agreement with the city on procedures and protocol for: extreme weather and emergencies (e.g., floods, earthquakes, fires, etc); special events (e.g., events and parades); maintenance (e.g., trash removal) for small vehicle parking zones.
- Companies shall place a customer service contact phone number, answered 24 hours a day, 7 days a week, on all small vehicles and other equipment (e.g. signage, racks etc), which connects the public to local management and operations teams.

### Docked Bicycle Share Stations

If bicycle share stations are considered in the future, the City of Irwindale should refer to best practices such as these guidelines developed by NACTO:

- On-street bike share stations can be placed



Bike Share Stations located on a wide sidewalk outside of the pedestrian path of travel



Bike Share Stations located in the vehicle parking lane



Dockless bicycle parked on the sidewalk outside of the pedestrian path of travel

anywhere where parked cars would go. Standard station plates (i.e. not angled) can be used in parking lanes that are 8' wide or greater.

- Most cities allow on-street bike share stations in no parking and no standing zones (“red zones”) when they do not conflict with moving travel lanes or pose other, location specific issues.
- Because the stations have a lower profile than parked cars, stations do not create sight obstructions. They can be used at intersections to increase pedestrian visibility and safety. Extra care should be used in systems that feature map panels.
- Typically, the payment kiosk should be oriented to face the curb so that users can access the kiosk from the sidewalk.
- On-street stations can create space for other amenities such as private bike parking and seating.
- On-street stations can be key features in larger traffic calming projects and can be placed in medians and floating parking lanes to demarcate and protect pedestrian and cyclist space.
- Wheelstops, stone blocks, flexible delineators, and/or painted buffers are all commonly used to protect on-street stations from moving vehicles. Stone blocks or planters can replace wheelstops on cobble surfaces or other places where wheelstops cannot be installed.
- Station plates should not cover utility access points. However, the bikes can sit on utility points and drainage covers. Bridging and blank plates can create gaps to provide pedestrian access, accommodate loading or avoid obstructions and utilities (see Materials and Design Elements).

- When using angled station plates, the station should be angled so that riders back the bike out into the travel lane and are facing in the direction of traffic (similar to front-in-angle-parking for cars).

### Dockless Bicycle/Scooter Share

With dockless shared active transportation, bicycles, scooters, and other small vehicles are “parked” in the public right of way in an unrestricted manner. In terms of their placement in the public right-of-way, there are safety and aesthetic concerns with dockless systems, mostly resulting from users leaving them in improper locations such as within the sidewalk path of travel, in landscaped areas, leaning against street poles, etc. This requires cities and local governments to designate places where these vehicles may be parked.

If dockless active transportation is considered in the future, the City of Irwindale should designate specific locations where these vehicles may be parked and require the dockless system companies to actively monitor adherence. Because of Irwindale’s narrow sidewalks and subsequent lack of available space, the City should consider a “lock to” option for bike sharing that requires users to place (and lock) the bicycle against a bicycle rack or other fixed object outside the pedestrian pathway. Scooters and other shared active transportation vehicles could also be required to be parked at designated bike parking locations or newly designated “shared transportation parking pods”.

NACTO has developed a set of possible guidelines that cities can consider for enforcing parking rules for shared active transportation vehicles:

- **Unrestricted:** Small vehicles (e.g. bikes and scooters) can be left anywhere that doesn’t block ADA-required sidewalk space.



If parked on the sidewalk, scooters should be located outside the pedestrian path of travel



Dedicated scooter parking located on a curb extension in Santa Monica

- **Encouraged Placement:** Small vehicles can be left most places with some limitations and can depend on the geographic area (e.g. only in the “furniture zone,” or more restrictions in crowded pedestrian areas like CBDs).
- **Lock-to:** Small vehicles are required to be locked to a fixed object.
- **In the Street:** Small vehicles are parked within a demarcated space on the street (e.g., street corrals), such as in a car-parking spot. Some cities have repurposed no-parking zones near intersections for bike and bike share parking, as they have a lower profile and do not interfere with the line of sight for pedestrians or drivers.
- **Painted boxes:** Small vehicles can be parked at designated spaces in or near the sidewalk (but outside of the pedestrian path of travel) designated by painted pavement markings
- **Signed Sidewalk Racks:** Specifically designated parking areas indicated by signage.
- **Geo-Fencing:** Provides control and designates where bikes can be ridden or parked based on GPS tracking. While this strategy can be useful today, it can be more effective in the future as advances in tracking technology allow a finer degree of accuracy.