

Appendix C. Pedestrian Design Guidelines

The pedestrian design guidelines provide design requirements for compliance with the Americans with Disabilities Act (ADA), as well as design recommendations intended to create inviting, walkable environments for pedestrians. In addition to recommendations for better pedestrian design, implementation of the ADA design requirements outlined in this chapter will provide a foundation of accessible pedestrian facilities which will make better pedestrian environments for not only the disabled, but everyone who walks.

State and Federal Guidelines

The design of many streetscape elements is regulated by state and federal law. Traffic control devices must follow the procedures set forth in the California Manual of Uniform Traffic Control Devices (CA MUTCD), while elements such as sidewalks and curb cuts must comply with guidelines implementing the ADA.

MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES

San Benito COG jurisdictions follow the procedures and policies set out in the CA MUTCD. Traffic control devices include traffic signals, traffic signs, and street markings. The manual covers the placement, construction, and maintenance of devices. The CA MUTCD emphasizes uniformity of traffic control devices to protect the clarity of their message. A uniform device conforms to regulations for dimensions, color, wording, and graphics. Uniformity also means treating similar situations in the same way.

AMERICANS WITH DISABILITIES ACT

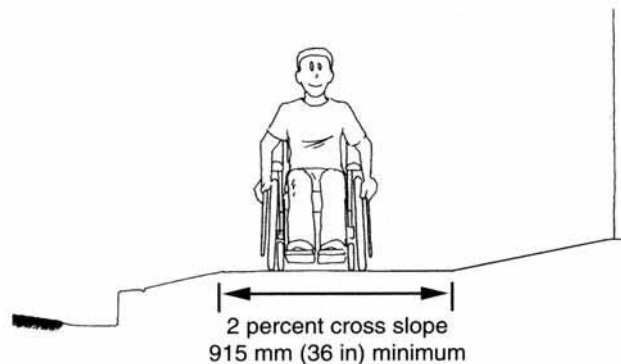
Title II of the Americans with Disabilities Act (ADA), signed into law in 1990, is a civil rights act that prohibits public entities from discrimination on the basis of disability. Newly constructed facilities must be free of architectural barriers that restrict access or use by individuals with disabilities. Cities in California uses two technical standards for accessible design: the Americans with Disability Act Accessibility Guidelines (ADAAG), adopted by the Department of Justice for places of public accommodation and commercial facilities covered by Title 3 of the ADA, and the California Title 24 State Accessibility Standards, State Architectural Regulations for Accommodation of the Physically Handicapped in Public Facilities.

ADA Sidewalks and Trail - Grade and Cross Slope

Description

Making sidewalks and trails ADA compliant involves ensuring that the grade and the cross slope of the sidewalk or trail is safe for disabled users. Gentle grades are preferred to steep grades due to issues of control, stability and endurance. The cross slope is significant for issues of control, not only for wheelchair users, but for those with difficulty walking as well.

Graphic



Potential Applications

- All sidewalks, especially those on uneven or steep terrain.

Guidelines

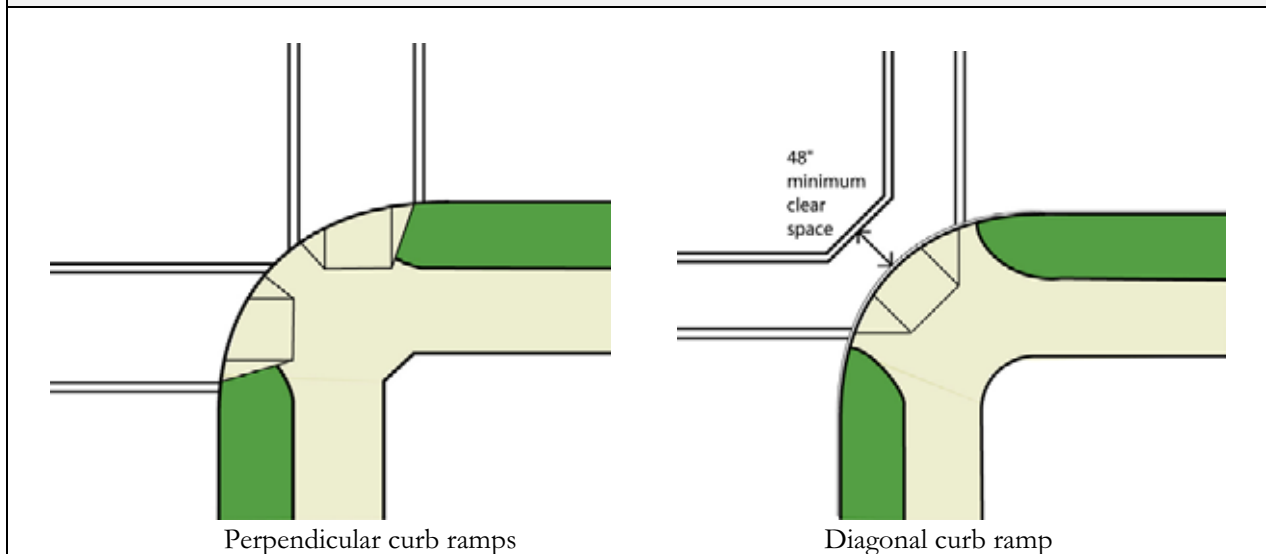
1. Cross slope should not exceed 2 percent.
2. Longer, steeper grades should have landings every 400 feet where people can rest.

ADA Curb Ramp Design and Location

Description

Curb ramps are necessary for people who use wheelchairs to access sidewalks and crosswalks. ADA requires the installation of curb ramps in new sidewalks, as well as retrofitting existing sidewalks. Curb ramps may be placed at each end of the crosswalk (perpendicular curb ramps), or between crosswalks (diagonal curb ramps). The ramp may be formed by drawing the sidewalk down to meet the street level, or alternately building up a ramp to meet the sidewalk.

Graphic



Potential Applications

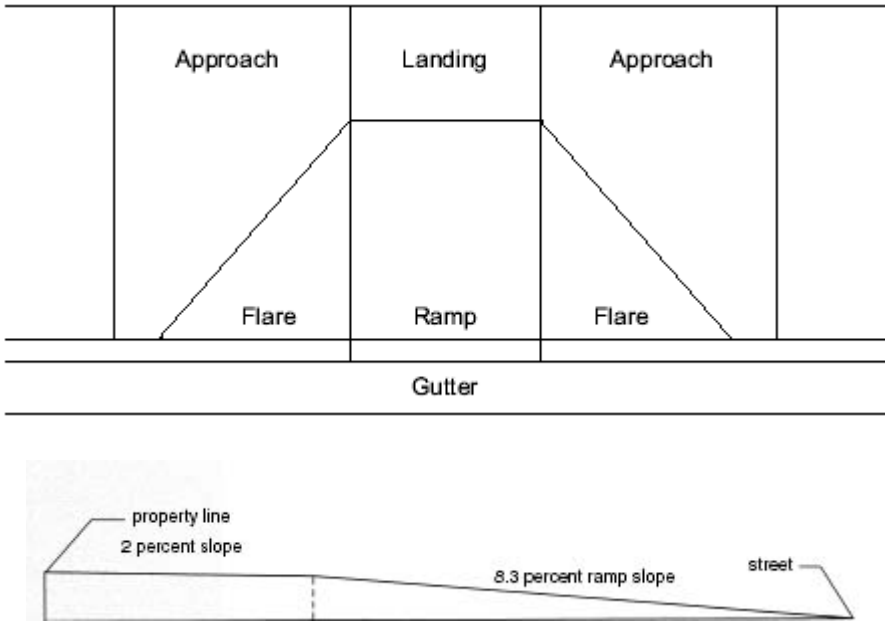
- All intersections.
- Midblock crossings.
- Multi-use path and roadway intersections.

Guidelines

1. Perpendicular curb ramps should be used at large intersections. Curb ramps should be aligned with crosswalks, unless they are installed in a retrofitting effort and are located in an area with low vehicular traffic.
2. The minimum width of a curb ramp should be 36 inches, in accordance with ADAAG Guidelines.

ADA Curb Ramp Components and Slope

Description
<p>The main components of curb ramps are the landing, approach, flare, ramp and gutter, and are necessary to provide a gentle transition between the curb and sidewalk. Various ramp designs may be used to regulate the slope of the ramp.</p>

Graphic
 <p>The graphic consists of two diagrams. The top diagram is a cross-section of a curb ramp showing four distinct sections: two 'Approach' sections on the outer edges, a central 'Landing' section, and two 'Flare' sections connecting the approaches to the landing. The ramp itself is labeled 'Ramp' and is situated above a 'Gutter'. The bottom diagram shows a cross-section of a curb ramp with a 'property line' on the left and a 'street' on the right. The ramp has a '2 percent slope' and an '8.3 percent ramp slope'.</p>
<p>NOTE: Use Caltrans Standards</p>

Potential Applications
<ul style="list-style-type: none"> ▪ All intersections. ▪ Midblock crossings. ▪ Multi-use trail and roadway intersections.

Guidelines
<ol style="list-style-type: none"> 1. Curb ramps should be designed to accommodate the level of use anticipated at specific locations, e.g. sufficient width for the expected level of peak hour pedestrian volumes and other potential users. 2. Adequate drainage should be provided to prevent flooding of curb ramps. 3. Tactile strips must be used to assist sight-impaired pedestrians in locating the curb ramp.

Sidewalk Design

Description
<p>Sidewalks are comprised of four zones: curb, furnishings, through pedestrian, and frontage. The curb zone abuts the street and provides a buffer between the sidewalk and the street. The furnishings zone lies between the through zone and the curb zone and provides a location for street furniture and other public amenities such as trash receptacles, bicycle racks, lighting, news racks, and water fountains. The through pedestrian zone is the sidewalk space for walking and is located between the furnishings zone and the frontage zone. The through pedestrian zone is the widest zone and should be clear of obstructions at all times. Finally, the frontage zone provides a transition between the building or property line and the through zone. The frontage zone may feature furniture and act as an outdoor extension of restaurants or cafés.</p>
Potential Applications
<ul style="list-style-type: none"> ▪ All sidewalk locations.
Guidelines
<ol style="list-style-type: none"> 1. Sidewalks should be located on both sides of the street. 2. Sidewalks should be constructed of durable, slip-resistant materials, like Portland cement. 3. Sidewalk zones should be clearly delineated—furniture should not be placed in the curb zone, etc. 4. The through pedestrian zone should be kept clear of obstructions at all times. 5. While the width of the curb, furnishings and frontage zones may be adjusted to reflect the needs of the site, the through zone should always occupy the majority share of the sidewalk space, and should be at least 5' wide in all locations. 6. Meandering sidewalks should be avoided, as straight sidewalk segments provide pedestrians with the most direct route possible between destinations. 7. General maintenance should be conducted regularly to repair cracks and gaps and remove debris, which can present safety hazards to pedestrians.

Sidewalk and Pathway Materials

Description

Sidewalks are generally constructed of Portland cement concrete. Sidewalk surfaces should be firm, stable and slip-resistant when dry. Some sidewalks are designed using decorative materials, such as brick or cobblestone. Although these surfaces may improve the aesthetic quality of the sidewalk, they may make mobility difficult for wheelchair users and create vibration. Brick and cobblestone also have a tendency to buckle, creating a tripping hazard and requiring increased maintenance. For these reasons, brick and cobblestone sidewalks are not recommended. Creative alternatives to brick sidewalks include concrete sidewalks with brick trim, which preserves the decorative quality of brick but is an easier surface to negotiate; or colored asphalt or concrete stamped to look like brick.

Graphic



Sidewalk with brick trim

Potential Applications

- All sidewalk corridors.

Guidelines

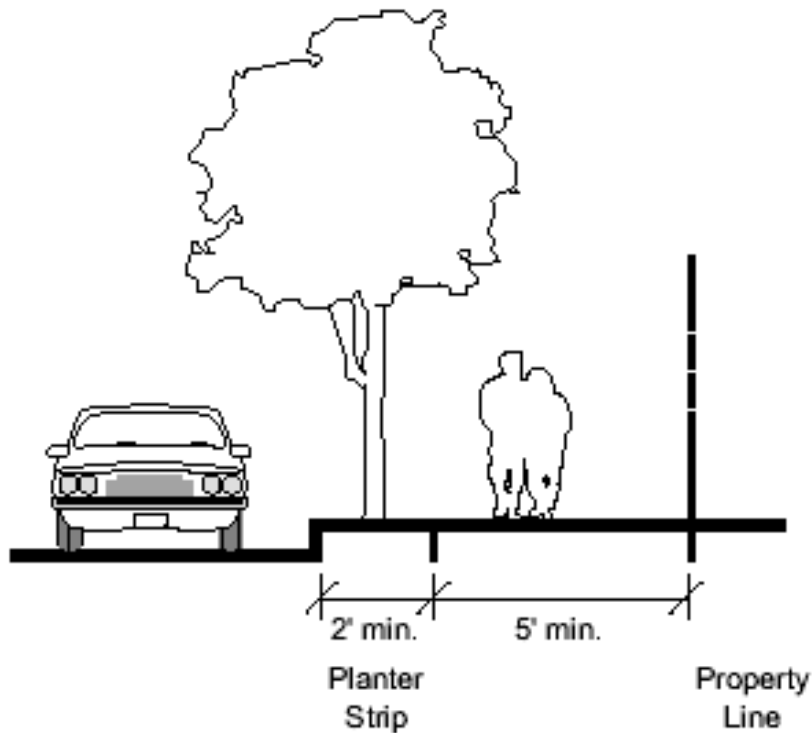
1. See Sidewalk Design above for additional sidewalk design details.

Sidewalk Zones - Residential

Description

Residential sidewalks are generally narrower than commercial zone sidewalks, and priority should be given to the through pedestrian zone's width in residential sidewalk design. Residential sidewalks do include the other sidewalk zones, such as for placement of utility boxes in the furnishings zone, yet these zones are less prominent than in commercial areas where furnishings and frontage zones may feature ample seating and amenities like newsstands.

Graphic



Potential Applications

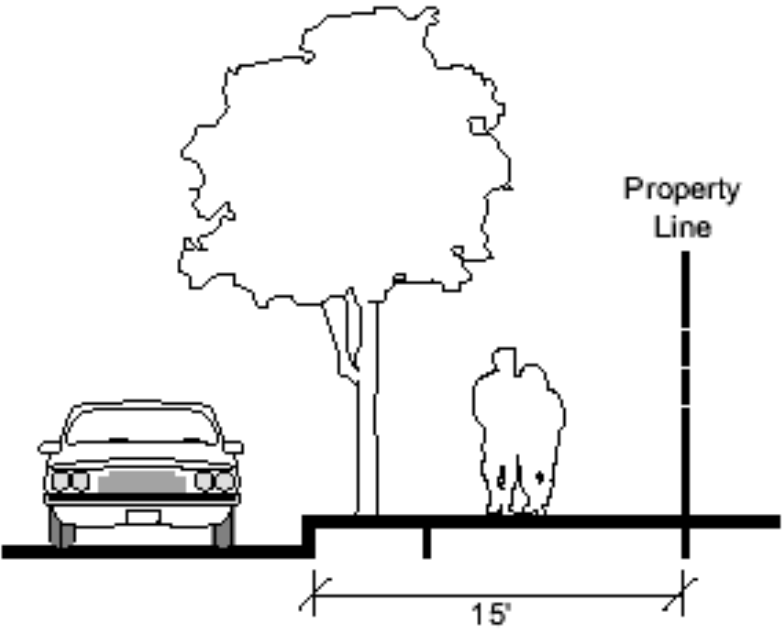
- Residential areas

Guidelines

1. See also guidelines Sidewalk Design - Sidewalk Zones.
2. 2' minimum planter strip is recommended on all collector and arterial roadways to provide a buffer to pedestrians.

Sidewalk Zones - High Density

Description
<p>Medium to high-density pedestrian zones located in areas with commercial or retail activity like Downtown Hollister provide excellent opportunities to develop an inviting pedestrian environment. The frontage zone in retail and commercial areas may feature seating for cafés and restaurants. The furnishings zone may feature seating, as well as newspaper racks, water fountains, utility boxes, lampposts, street trees and other landscaping. The medium to high-density pedestrian zone should provide an interesting and inviting environment for walking as well as window shopping.</p>

Graphic


Potential Applications
<ul style="list-style-type: none"> ▪ Sidewalks in commercial zones should have an entire width of approximately 15 feet.

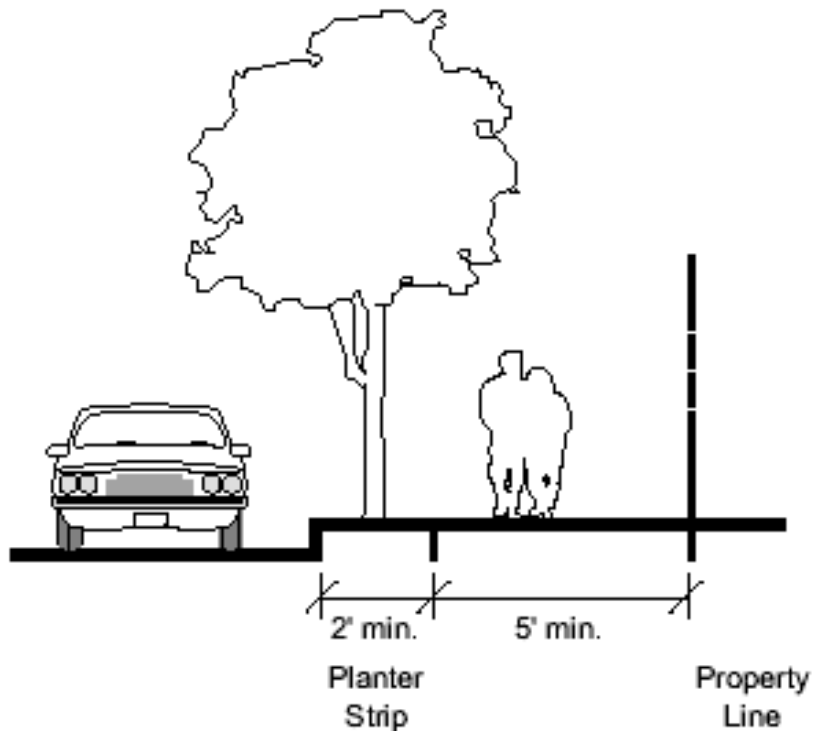
Guidelines
<ol style="list-style-type: none"> 1. See guidelines for Sidewalk Design – Sidewalk Zones.

Sidewalk Zones - Industrial Zones

Description

Sidewalks through industrial zones are essential components of the pedestrian network. Industrial zones and arterial roadways often experience heavy truck traffic which is both unpleasant and potentially dangerous for pedestrians. Providing a broad furnishings zone will help separate pedestrians from heavy vehicle traffic. A limited frontage zone is appropriate for industrial zones and arterial roadways because there is a reduced need for seating or street-side vending in these locations.

Graphic



Potential Applications

- Industrial areas or zones.
- Along arterial roadways or other routes with heavy truck traffic.

Guidelines

1. The furnishings zone, in combination with the curb zone, should provide a minimum 2 foot buffer between the pedestrian through zone and heavy traffic on industrial or arterial roadways.
2. See also Sidewalk Design – Sidewalk Zones.

Sidewalk Design - Furniture

Description

Street furniture is an integral part of good pedestrian design and walkable neighborhoods. The design and placement of street furniture should take into consideration the security, comfort and convenience of the user. Street furnishings should always be accessible to the disabled, and should be sited in a manner that preserves the width of the through zone.

Graphic



Potential Applications

- All sidewalks with a ten foot minimum width necessary to accommodate a furnishings zone.
- Sidewalks with significant pedestrian volumes.

Guidelines

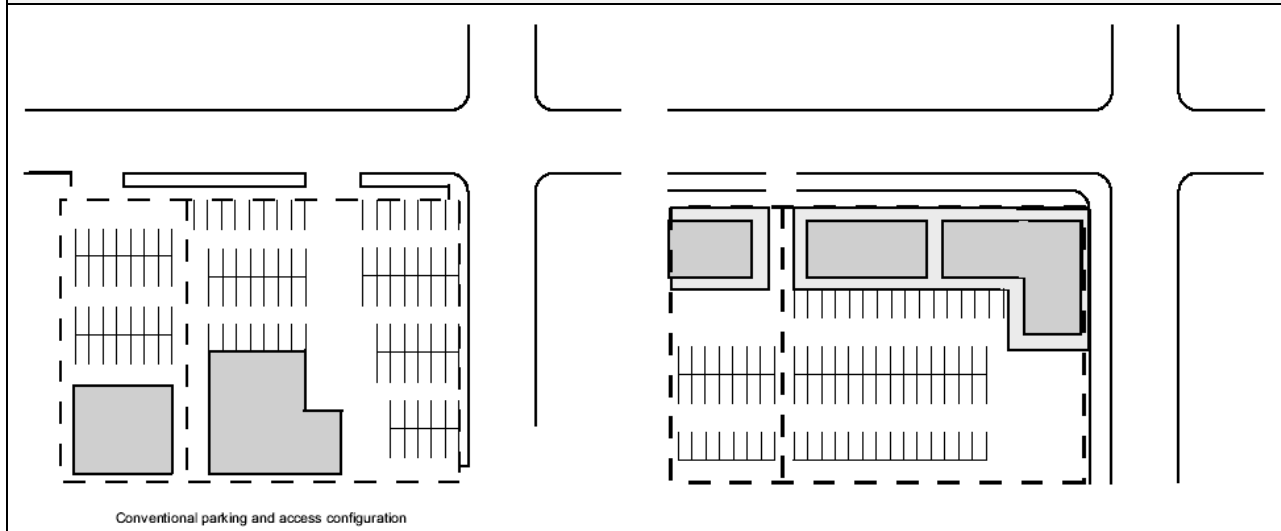
1. Sidewalk amenities should be located within the Furnishings or Frontage Zones as described in Sidewalk Design – Sidewalk Zones.
2. Seating should be provided adjacent to major destination points, such as restaurants, where they are often necessary and where they will be used frequently.
3. Seating and other amenities should be made of durable, high-quality materials which visually reinforce community identity and the design of nearby buildings.
4. Sidewalk bulb-outs can be used to accommodate additional street furniture in high-use areas.
5. Street furnishing design and location should consider car overhangs and door movement when placed near the curb and be located at the ends of the on-street stalls rather than the center.
6. No sidewalk amenity should reduce the clear width of a sidewalk or walkway to less than 4 feet.
7. To aid the visually disabled, use colors that contrast with the sidewalks color and surroundings.
8. Design and location of streetscape amenities should comply with ADA requirements.

Sidewalk Design - Driveways and Curb Cuts

Description

Driveways in locations with significant pedestrian traffic become conflict zones for motorists and pedestrians. Motorists exiting and entering driveways often do not see pedestrians approaching from a perpendicular direction, as they are focused on locating gaps in traffic in order to proceed. In addition, lengthy driveways and curb cuts may present cross slope or grade challenges to disabled persons. ADA standards should be used in the construction and retrofitting of all driveways and curb cuts.

Graphic



Potential Applications

- All sidewalks with driveways and curb cuts.
- Pedestrian sidewalks adjacent shopping centers and other retail sites with multiple driveway entrances.
- Residential neighborhoods with variable development patterns leading to frequent driveways and curb cuts.

Guidelines

1. Curb cuts for two-way traffic should not be wider than 26 feet, with an exception for curb cuts that provide frequent access for semi-trucks.
2. In nonresidential pedestrian supportive areas, there should be no more than one curb cut per 200 linear feet of street frontage.

Crosswalk Placement

Description
<p>One of the most effective means of turning an important corridor into a community "spine" or "seam," rather than a "divider," is providing for safe street crossings. Communities frequently elect to install crosswalks at limited locations, such as only on certain legs of an intersection, or infrequently across a multi-lane arterial in order to promote vehicular circulation. These decisions do not eliminate pedestrian use of these roadways and intersections, but rather make travel more difficult for existing pedestrians. Advances in pedestrian design in recent years have increased the visibility and effectiveness of pedestrian crossings in protecting pedestrian safety, making installation of pedestrian crosswalks appropriate in many locations where traffic engineers once considered them inappropriate. Roadway geometry, traffic volumes and speeds, and signal configuration and timing must be carefully considered as a part of all new crosswalk installations and retrofits. The diagram below shows general guidelines for crosswalk placement on multiple roadway types.</p>

Potential Applications
<ul style="list-style-type: none"> ▪ All intersections.

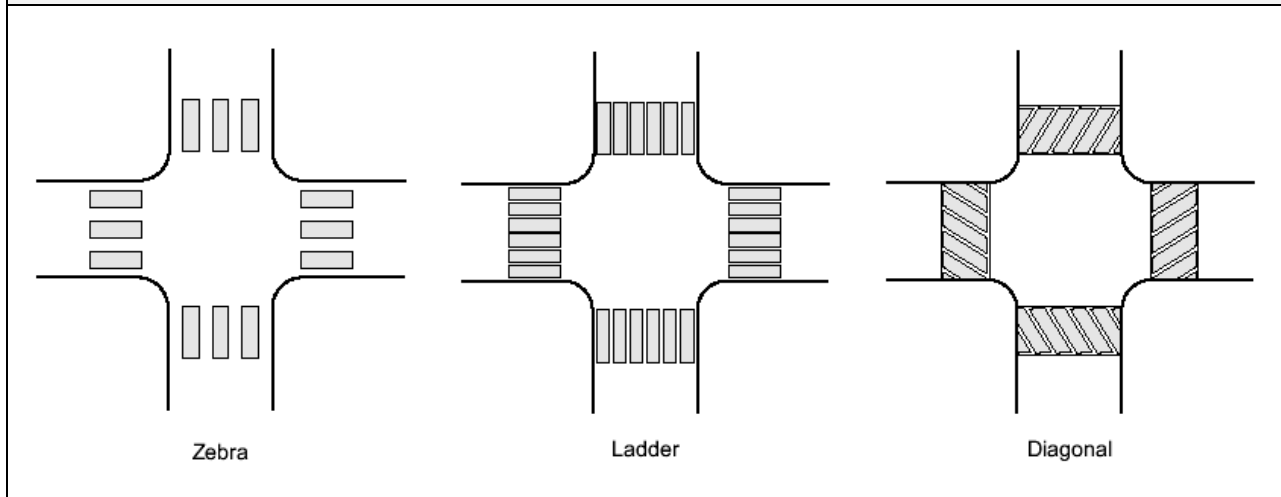
Guidelines
<ol style="list-style-type: none"> 1. Guidelines for installation of marked crosswalks at uncontrolled intersections based on traffic volumes, pedestrian volumes, speed and number of lanes are addressed in the next section. 2. The width of crosswalks should be a minimum of 12 feet wide. Unless small-scale intersection conditions dictate otherwise widths should be increased where there is a greater amount of pedestrian activity. 3. Crosswalks should be adequately lit. 4. Marked crosswalks should be considered for uncontrolled crossing locations if there are no controlled crossings (by a traffic signal or stop sign) within 600 feet of the proposed crossing location (provided that the other guidelines presented here are met.) 5. Unless circumstances dictate otherwise, marked crosswalks should be provided at all signalized intersections where pedestrian crossing equipment is provided. 6. Marked crosswalks alone are insufficient (i.e., without traffic-calming treatments, traffic signals, pedestrian signals (when warranted) or other substantial crossing improvements presented in these guidelines) and should not be used under the following conditions: <ul style="list-style-type: none"> • Where the speed limit exceeds 40 mph. • On a roadway with four or more lanes without a raised median or crossing island that has (or will soon have) an ADT of 12,000 vehicles per day or greater. • On a roadway with four or more lanes with a raised median or crossing island that has (or will soon have) an ADT of 15,000 vehicles per day or greater. 7. Special crosswalk markings should be used in order to increase the visibility of the crosswalk and on uncontrolled approaches to un-signalized intersections. These special markings are generally more appropriate on roads where the adjacent land use may divert drivers' attention. 8. Traffic signals should provide pedestrians, including seniors, the disabled, and children, with adequate time to cross the street or at least reach a pedestrian refuge in the middle of the street. An average walking speed which has been used historically is 4 feet/second to determine signal duration. However, a reduced speed such as 3.0 or 3.25 feet/second should be applied to compensate for the elderly and disabled. 9. Signal timing in #8, will have to be balanced with signal frequency. Ideally, pedestrian signals should be at a cycle frequency such as 60 to 90 seconds in order to dissuade jaywalking.

Crosswalk Striping at High-Volume Intersections

Description

Crosswalks at intersections should be striped in a manner that alerts motorists to the presence of pedestrians. The striping pattern should reflect the level of pedestrian traffic and location of the crosswalk. Ladder crosswalks should be used in high-traffic pedestrian areas, while crosswalks with parallel line striping should be used at low-traffic residential intersections. Parallel line striping should be adequate for most signalized or stop controlled intersections, although ladder striping may be used if necessary (for example, if the site has a history of pedestrian collisions).

Graphic



Potential Applications

- All high-volume intersections with pedestrian traffic.

Guidelines

1. In locations with significant pedestrian activity, crosswalks should be placed no further than 195-295 feet apart, and no closer than 145 feet apart.
2. In other locations with limited (but some) pedestrian activity, crosswalk frequency may be varied but should not exceed 395 feet without a crosswalk.
3. The stripes in parallel pavement marking crosswalks should be placed 10 feet apart. In situations where the crosswalk must be narrower, the minimum distance for parallel striping is 6 feet apart.
4. Ladder pavement markings should feature 2 foot wide by 10 foot long bars.

Pedestrian Warning Signage

Description
Pedestrian warning signage should accompany all pedestrian infrastructure improvements. Pedestrian warning signage may be placed on existing signposts (if appropriate) to reduce visual clutter.

Graphic


Potential Applications
<ul style="list-style-type: none"> ▪ All pedestrian facilities.

Guidelines
<ol style="list-style-type: none"> 1. Pedestrian signs should be installed according to the guidelines set forth in the CA MUTCD. 2. Pedestrian crossing signs (W54) should be used adjacent to all unexpected pedestrian crossing areas. 3. One drivers-side sign is appropriate on two-lane lower speed roads. 4. Two signs facing each direction should be installed on roads with more than two lanes, higher speed roads, or roadways with medians (with one sign on the median where medians exist, otherwise on the opposite side of the street). 5. The color of all pedestrian crossing signs should be "Fluorescent Yellow-Green" per (CA MUTCD). 6. Overhead pedestrian crossing signs should be installed on streets with four or more lanes or two or three lane roads with widths greater than 50 feet at crossings where pedestrian crossing activity is more than 50 to 100 crossing per hour or where sight distance of the driver may not allow view of roadside signs. 7. Pedestrian symbol signs (W11-2) should be installed in advance of pedestrian crossings at isolated crossing areas. These signs are typically not used in urban areas at intersections or where motorists would normally expect pedestrians. 8. Warning signage should be placed on existing signposts if possible to reduce visual clutter.

Pedestrian Signals

Description

Pedestrian signals ensure that pedestrians are given adequate time to cross the roadway and are not stranded in the crosswalk by signal lights with insufficient crossing time. Pedestrian push buttons, like the one shown below, should be accessible to people in wheelchairs and easy to find for the sight impaired. Depending on intersection configuration, location, and use, a variety of visual crossing indicators can be used.

Graphic



Pedestrian pushbutton, pedestrian countdown signal, vibrotactile pushbutton.

Potential Applications

- All high volume signalized intersections where pedestrian crossings are permitted.

Guidelines

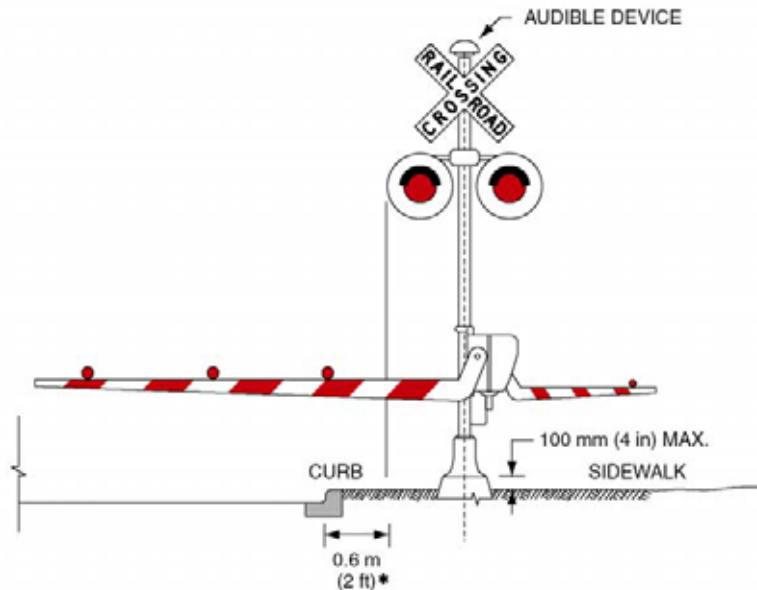
1. Pedestrian push buttons should be located at the level top of the curb ramp cut at approximately 40 inches off the ground.
2. Pedestrian pushbuttons should be located where sight impaired pedestrians can easily find them.
3. Vibrotactile pedestrian signals should be provided wherever sight-impaired pedestrians are expected.
4. All pedestrian signal placement complies with Caltrans and ADA guidelines.

Railroad Crossings

Description

At-grade railroad tracks can be hazardous for pedestrians to cross. Improvements can be made to alert pedestrians that they are crossing tracks and that there is an oncoming train. One example is recommended in the Projects Chapter of this Plan, truncated domes at crossings. Truncated domes help alert pedestrians as they are walking to cross the tracks with some caution. There are also other improvements that can help warn pedestrians of railroad crossings, such as signage. Railroad crossing warning signs can be placed near the sidewalk/railroad crossing. Another improvement is an arm that crosses the sidewalk when a train is approaching like arms that lower to stop vehicles approaching at-grade crossings. The graphic below shows how these railroad arms are attached to the same pole as the arm to stop vehicles and they cross the sidewalk, warning pedestrians of a train.

Graphic



Potential Applications

- All high volume pedestrian crossings of railroads

Guidelines

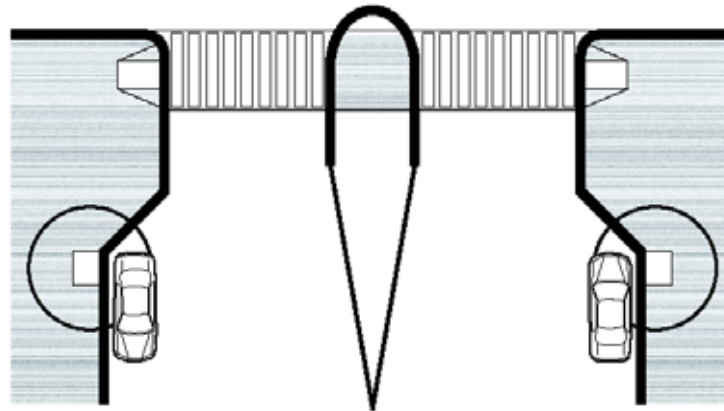
1. The pedestrian path should be at a 90 degree angle to the tracks.
2. The crossing surface should be smooth and flat to prevent wheelchair casters from dropping into the flangeway gap.
3. Detectable warnings such as truncated domes, flashing light signals, signs, and audible sounds should be used.

Pedestrian Refuge Islands

Description

Pedestrian refuges in wide or busy streets can improve safety for pedestrians and vehicles. They are defined as areas within an intersection or between lanes of traffic where pedestrians may safely wait until vehicular traffic clears, allowing them to cross a street. These islands are particularly helpful for seniors, the disabled, and children who may be unable to cross the street during the available signal time. Another benefit to pedestrians is that it can significantly reduce delay in crossing unsignalized intersections since the pedestrian need only search for vehicles in one direction at a time.

Graphic



Pedestrian refuge island at an intersection

Potential Applications

- Intersections with high vehicular traffic volumes and pedestrian traffic.
- Wide roadways where a two legged crossing will increase ability of pedestrians to cross roadways taking advantage of traffic gaps, without modifications to adjacent intersection signal timing.
- Multi-use path crossings of multi-lane roadways.

Guidelines

1. Detectable warnings such as truncated domes, flashing light signals, signs, and audible sounds should be used.
2. Pedestrian refuge islands should be installed at crossings of streets with 4 or more lanes, where a demonstrated crossing demand exists, and where it is feasible to provide a refuge island.
3. Pedestrian refuge islands should be installed at crossings of streets with two to three lanes, with traffic volumes higher 7,500 vehicles per day, and speeds greater than 35 mph.
4. Refuge islands should be a minimum of four feet wide by eight feet long. This is an absolute minimum that should not be used at multi-use path crossings or other locations where bicycle traffic may be anticipated.
5. Pedestrian refuge islands should be well illuminated.
6. Some type of vertical element should be provided on the island including trees, bollards, landscape features, or sign posts.
7. Pedestrian refuge islands should be ADA compliant; where it is not possible to include ramps and waiting pads that meet ADA requirements, waiting areas should be at-grade with the roadway.

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