Appendix A. Pedestrian Design Guidelines

The purpose of the Pedestrian Design Guidelines is to integrate existing resources and best practice ideas into one coherent set of guidelines aimed at further improving the pedestrian experience in San Mateo. The Pedestrian Design Guidelines include Americans with Disabilities Act (ADA) requirements and address accessibility needs for pedestrians with limited mobility or assistance devices. These guidelines can be used by policy makers, planners, and the public to guide decisions related to new construction and retrofitting existing infrastructure.

The pedestrian enhancements described throughout these guidelines provide street design best practice guidance, which can enhance the safety, convenience, and mobility for pedestrians. Potential treatments include different design options for pedestrian crossings, pedestrian amenities, and community vitality. The guidelines built upon the City of San Mateo's existing pedestrian-related planning, zoning, and engineering policies. In the cases where the City did not have an adopted policy, recommendations were made based on widely recognized best-practice guidelines and state and federal regulations. However, in all cases, engineering judgment is required in implementing specific projects.

Table of Contents

A.1. Sidewalk Standards - Introduction

Discussion

Sidewalks form the backbone of the pedestrian transportation network. Good street and sidewalk design can foster healthier communities by improving public safety, enhancing mobility, reducing environmental impacts, and building community character.

Sidewalks consist of one or several zones. The zones are named for the primary activity that occurs in the zone. Section A.2 describes the recommended sidewalk zones for San Mateo, which include through, planter/furniture, frontage, and flex-use zones. The presence and width of each zone along a given sidewalk depends on the adjoining roadway type and transportation needs, surrounding land uses, and community needs and desires.

The widths of sidewalks determine the types of pedestrian elements that can be installed and affect the pedestrian activities that occur there. In residential areas, sidewalks four to six feet wide are likely appropriate. In commercial settings with a mix of uses, wider sidewalks are sometimes essential for high pedestrian traffic and/or to accommodate amenities such as street furniture or newspaper stands. Streetscape elements can vary from a simple landscape strip in a residential setting to many elements such as street trees, pedestrian lighting with banners, and benches in areas with larger pedestrian traffic. These Pedestrian Design Guidelines establish eight sidewalk types with varying zones and widths. By standardizing streetscape design by land use, the guidelines ensure that future development of public rights-of-way in San Mateo's residential, commercial, and mixed use areas meet the City's vision for vibrant, healthy pedestrian environments. These guidelines seek to create places that are sensitive to the land use context, distinctive, attractive, and rich in amenities and that provide more convenience and choice for pedestrians. **Table A-1** lists the sidewalk types for residential, commercial, and mixed use land uses. Sections A.3 through A.10 present the different sidewalk types.

A.2. Sidewalk Standards – Overview

Sidewalk Zones

Through Zone: The open, accessible, unblocked right-of-way for pedestrian walkability, usually between the Planter/Furniture Zone and the Frontage Zone.

Planter/Furniture Zone: The portion of the sidewalk closest to the street that provides space for signage, street lights, newsracks, bus waiting areas, benches, parking pay stations, bike parking, street trees, and other sidewalk amenities.

Frontage Zone: The portion of sidewalk directly adjacent to the buildings, which is within City right-of-way but is available to be used by restaurants and businesses for food service seating, planting, or decorative outdoor sales.

Flex Use Zone: Street parking stall or other unused asphalt recaptured to create space for outdoor seating, bike parking, planting, parklets, or other amenities.

Table A-1: Sidewalk Types and Key Characteristics for Residential, Commercial, and Mixed Use Land Uses

SIDEWALK TYPES	RESIDENTIAL	COMMERCIAL	MIXED USE
A - Standard	Landscape strip, parallel parking, small setback		
B - Constrained	Parallel parking, large setback		
C - New Development	Planter/furniture zone, parallel parking, large setback		
A - Sidewalk Along Parallel Parking		Planter/furniture, flex use, and frontage zones	
B - Sidewalk Along Angled Parking		Planter/furniture and flex use zones	
C - New Development		Planter/furniture, flex use, and frontage zones	
A - Mixed Use Zero-Setback Neighborhood			Planter/furniture and frontage zones, landscape strip, travel lane, no parking
B - Mixed Use with Street Parking			Planter/furniture and frontage zones, parallel parking

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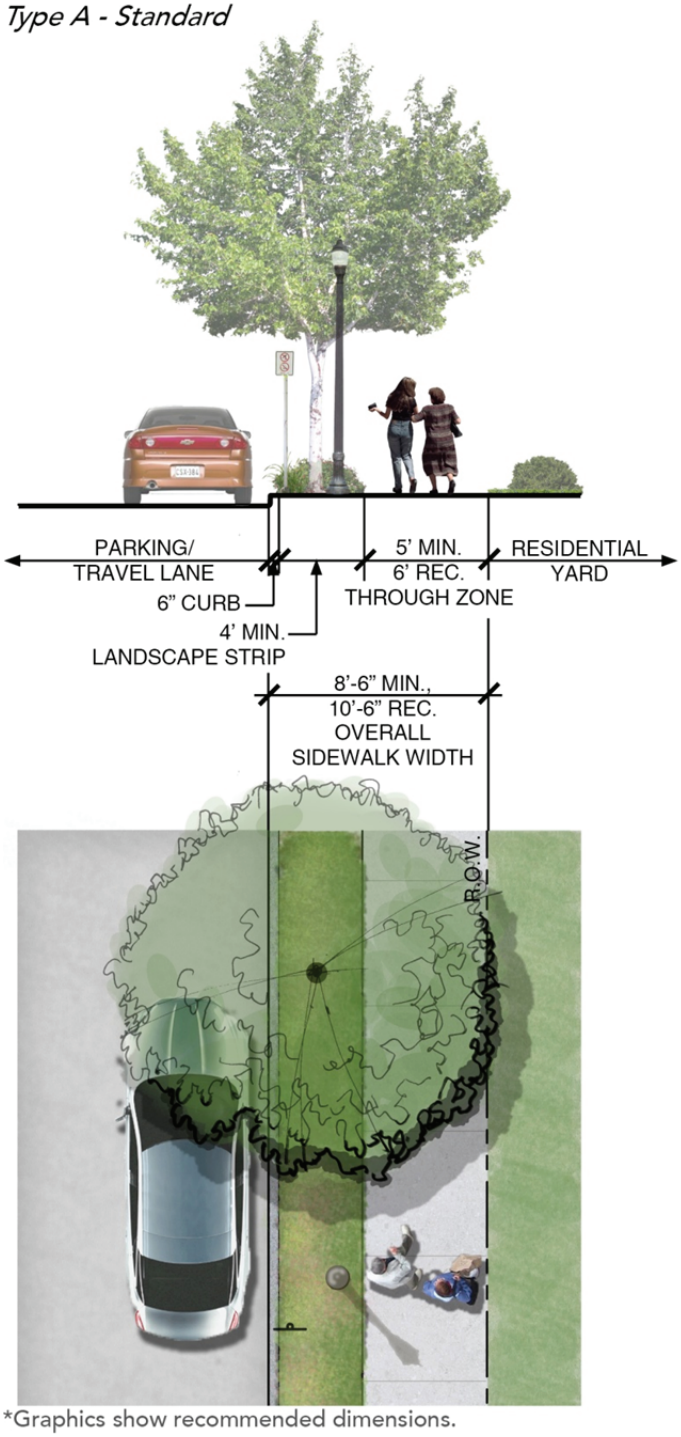
A.3. Sidewalk Standards – Residential Type A Standard

Type A - Standard



*Graphics show recommended dimensions.

NOTES

- Applicable for neighborhoods with higher levels of traffic/ speeds, or where small setbacks disallow tree planting in yard (i.e., apartment complex).

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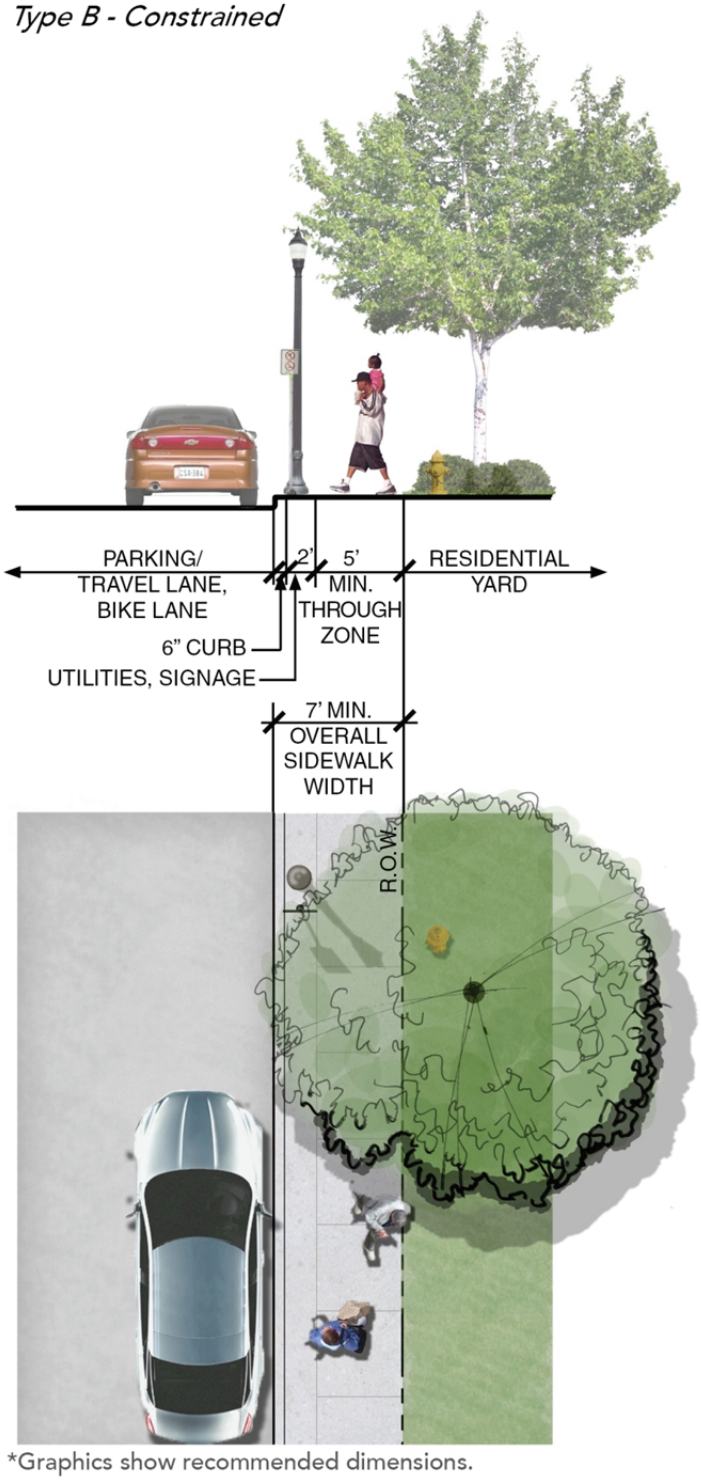
A.4. Sidewalk Standards – Residential Type B Constrained

Type B - Constrained



*Graphics show recommended dimensions.

NOTES

- Applicable for neighborhoods with less than 15 dwelling units per acre, minimum 10' building setback.
- Encourage street tree planting in residential yards
- Applicable to small infill projects or constrained rights of way.
- Due to minimum clearance requirements, utilities and/or signage may be located on the residential side of the through zone. If relocation is necessary, the minimum through zone width must be retained.

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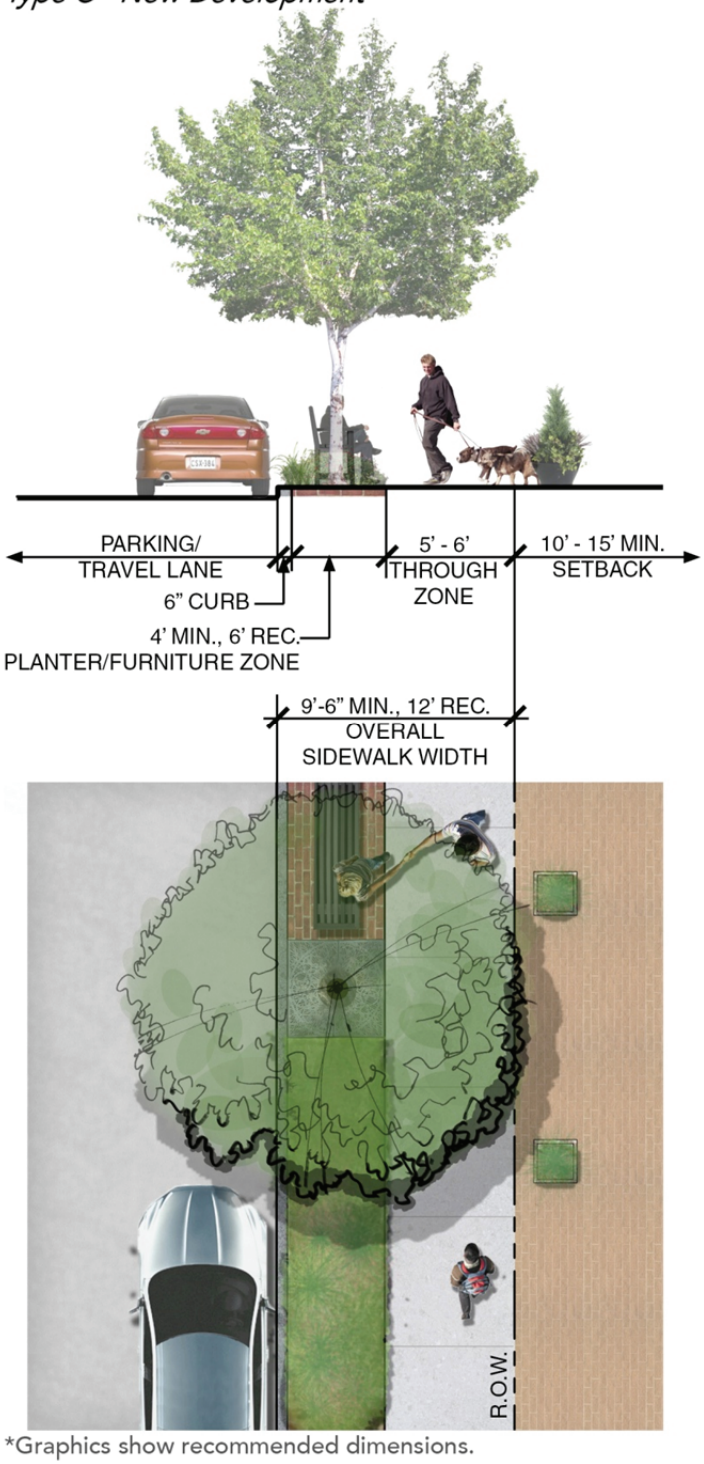
A.5. idewalk Standards – Residential Type C New Development

Type C - New Development



*Graphics show recommended dimensions.

NOTES

- Application for new, higher density neighborhoods with minimum of 10'-15' setback required.
- Locate stormwater treatment features in planter/furniture zone.
- Locate street trees in tree grates within planter/furniture zone.

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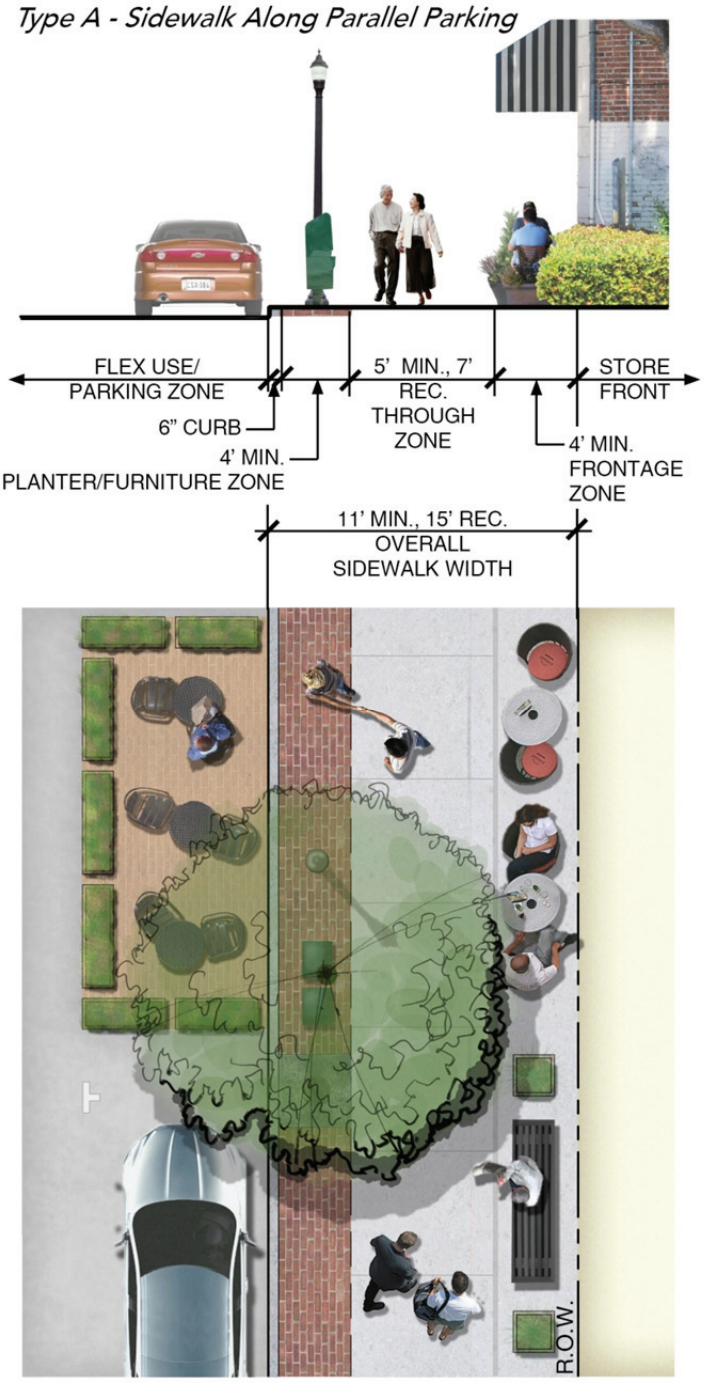
A.6. Sidewalk Standards – Retail/Commerical Type A Parallel Parking



*Graphics show recommended dimensions.

NOTES

- Orient bike parking in planter/furniture zone parallel to sidewalk to remain clear of through zone.
- Amenities located in the planter/furniture zone may include signage, street lights, newsracks, bus waiting areas, benches, parking pay stations, bike parking, street trees, etc.
- Limit building awnings/ overhangs to frontage zone depth.
- Utilize flex use zone for cafe seating (by permit).
- Example - East side of S. B St., between 5th and 7th Ave.

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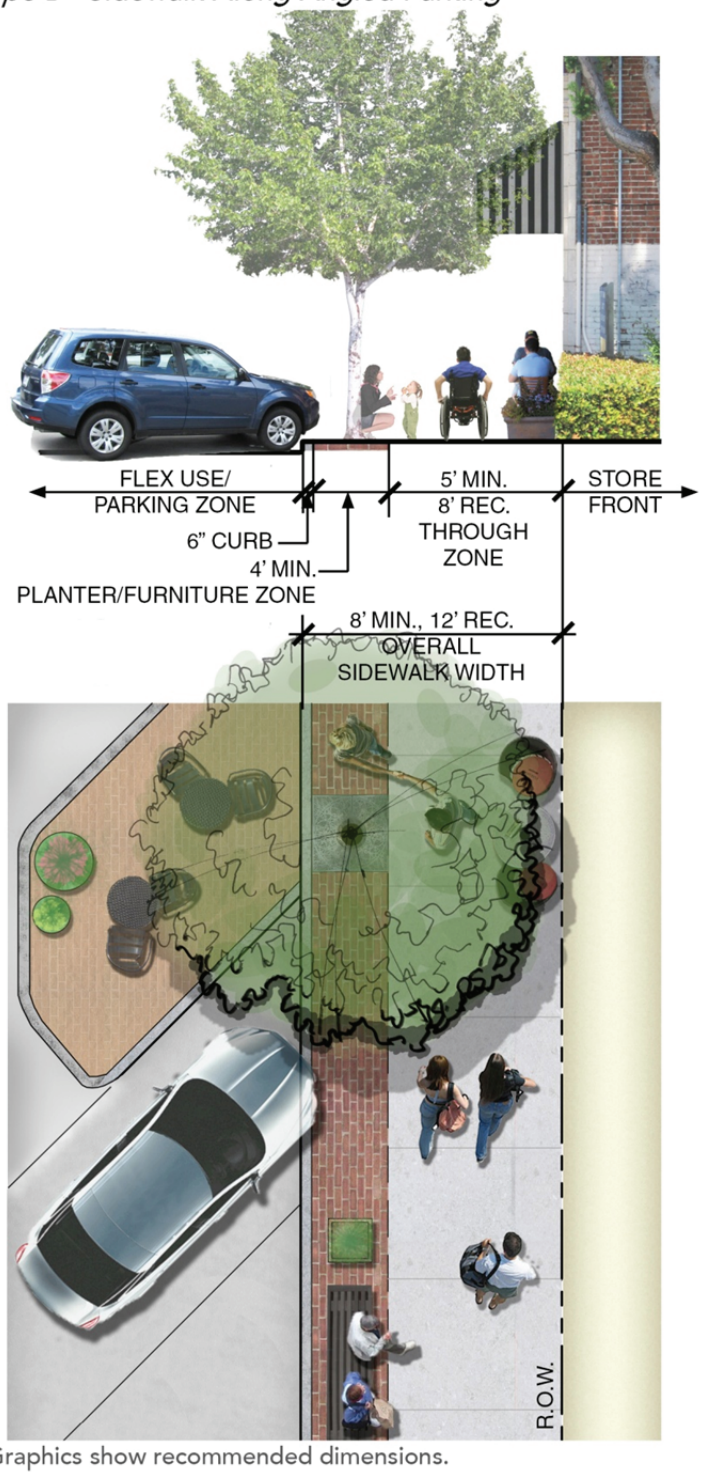
A.7. Sidewalk Standards – Retail/Commerical Type B Angled Parking

Type B - Sidewalk Along Angled Parking



*Graphics show recommended dimensions.

NOTES

- If planter/furniture zone must be less than 4', limit amenities to narrow items such as signs, street lights, and newsracks.
- Place seating and planting in building alcoves and setbacks where available.
- Cafe seating up to 3' wide is allowable at sidewalk only where a minimum 5' through zone can be maintained exclusive of planter/furniture and frontage zones.
- Street trees may also be located in flex use zone.
- Example - East side of S. B Street, between 1st and 5th Avenue.

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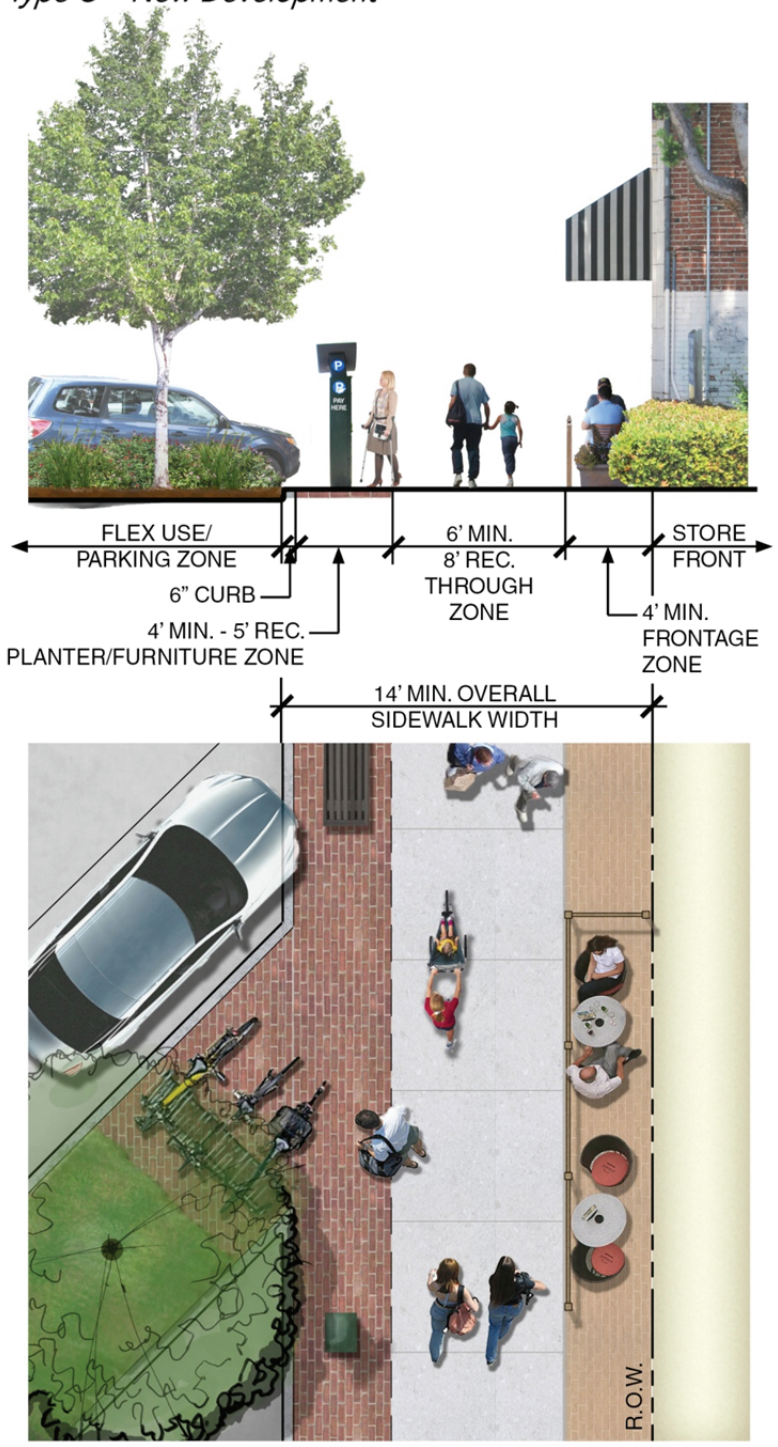
A.8. Sidewalk Standards – Retail/Commerical Type C New Development

Type C - New Development



*Graphics show recommended dimensions.

NOTES

- Locate bike parking and street trees in flex use areas - bulbouts, parklets, etc. - where possible.
- Provide delineation between through and frontage zones through the use of railings, paving, planters, etc.

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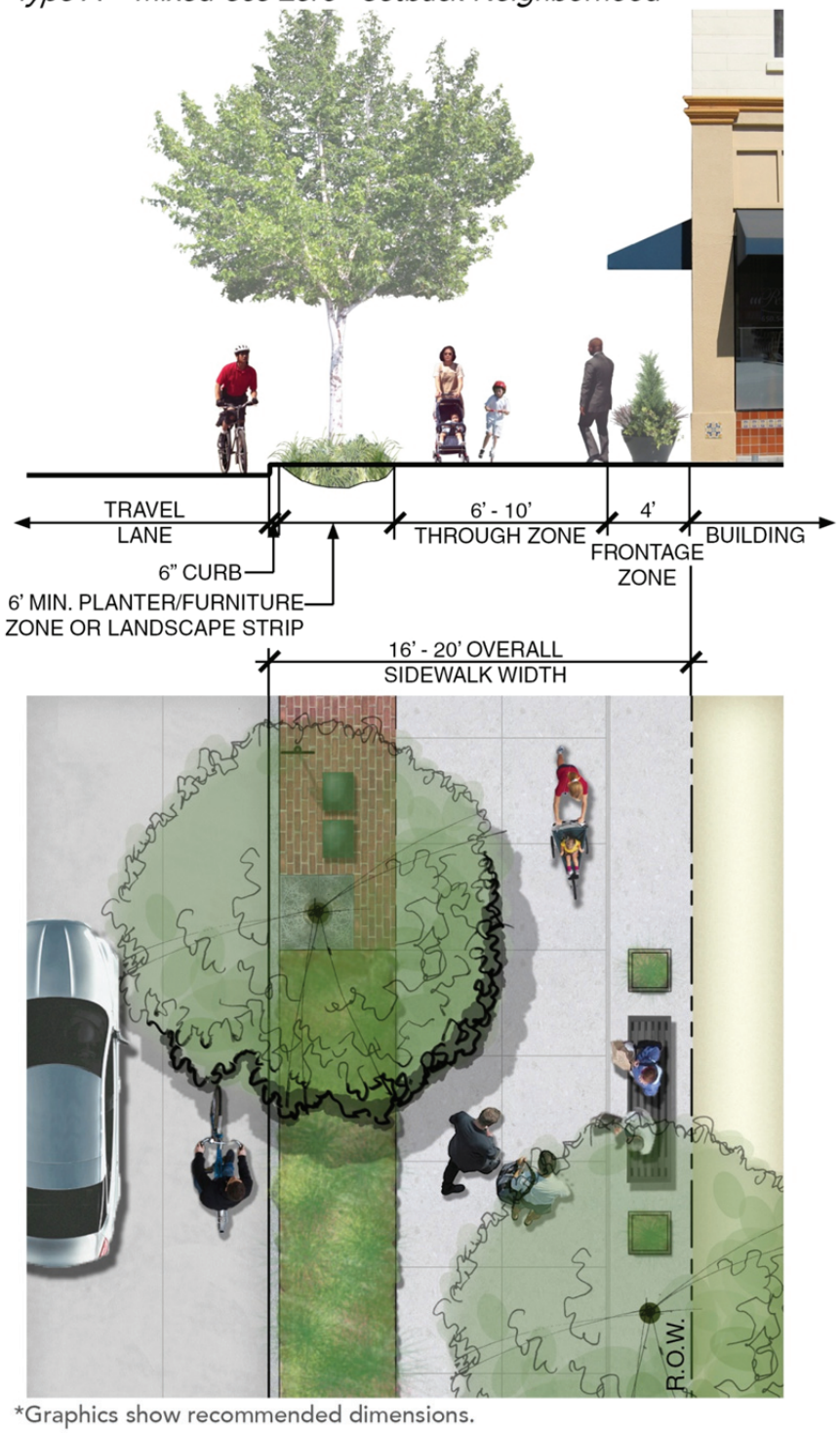
A.9. Sidewalk Standards – Mixed Use Type A Zero Setback

Type A - Mixed Use Zero - Setback Neighborhood



*Graphics show recommended dimensions.

NOTES

- For blocks with no street parking.
- In areas of ground level retail, locate seating and planting amenities in frontage zone.
- Where landscape strip serves as stormwater treatment, strip must be a minimum of 8′ wide.
- Street trees encouraged in frontage zone.

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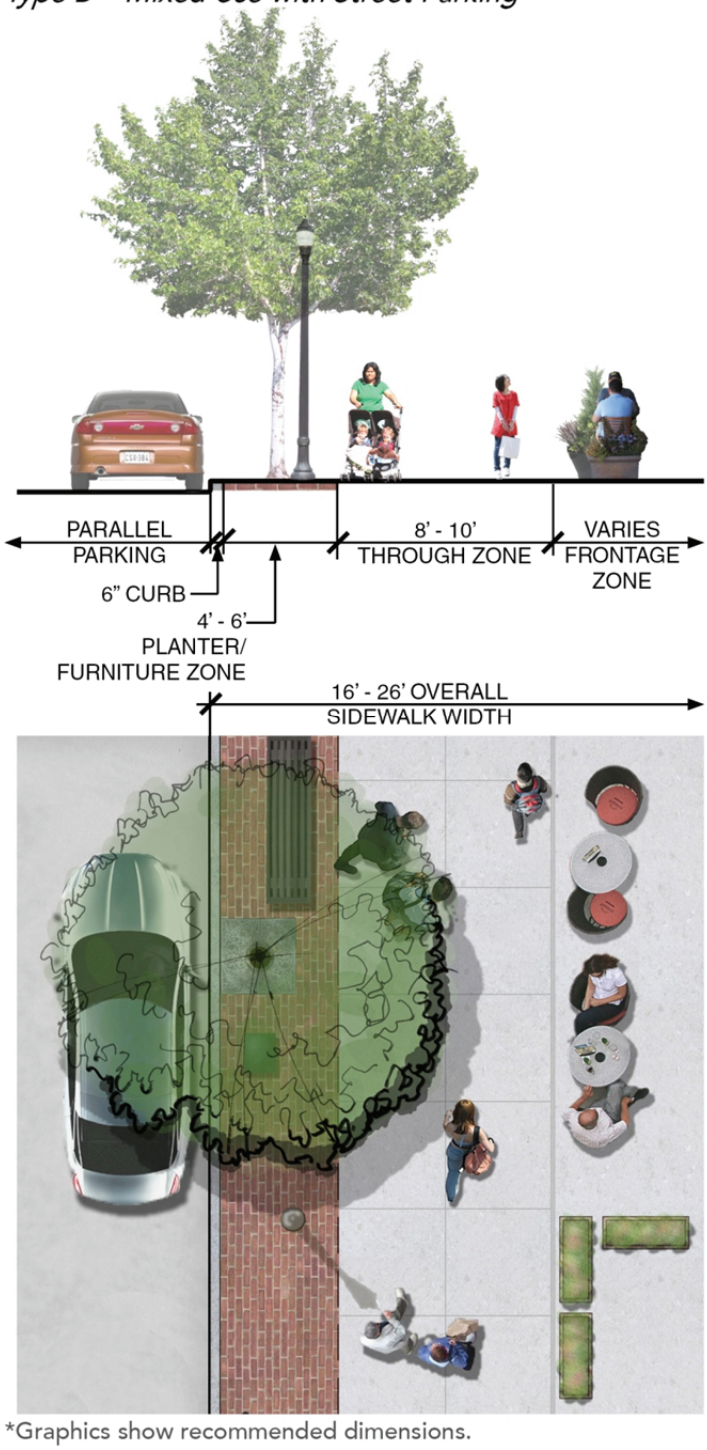
A.10. Sidewalk Standards – Mixed Use Type B Street Parking

Type B - Mixed Use with Street Parking



*Graphics show recommended dimensions.

NOTES

- Locate biofiltration planters and street trees in planter/furniture zone.
- Locate planters, seating, and building-specific amenities in frontage zone.

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A.11. Curb Ramps

Discussion

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.

Design Summary

Orientation and Alignment

Perpendicular curb ramps should be used at large intersections with consideration for curb radius. Curb ramps should be aligned with crosswalks, unless they are installed in as a retrofit and are in an area with low vehicular traffic.

Width

The minimum width of a curb ramp should be 36 inches, in accordance with Americans with Disabilities Act Accessibility Guidelines (ADAAG). Curb ramps should be designed to accommodate the level of use anticipated at specific locations, with sufficient width for the expected level of peak hour pedestrian volumes and other potential users.

Drainage

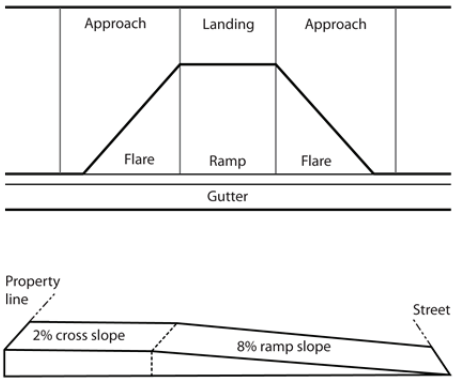
Adequate drainage should be provided to prevent flooding of curb ramps.

Detectable Warnings

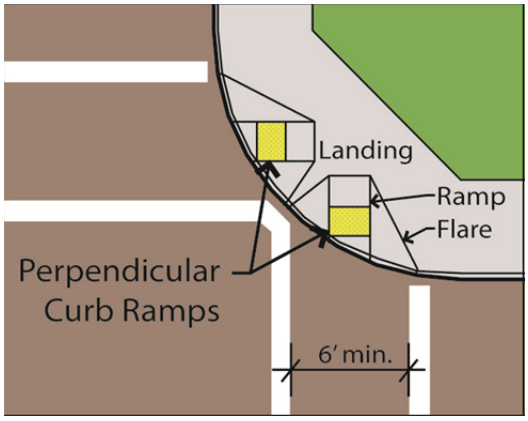
Tactile strips must be used to assist sight-impaired pedestrians in locating the curb ramp. Certain exemptions apply (see ADAAG Section 4.29 and the ADA Access Board Guidelines on Accessible Public Rights of Way).

Detectable warnings shall consist of raised truncated domes with a diameter of nominal 0.9 inches, a height of nominal 0.2 inches and a center-to-center spacing of nominal 2.35 inches and shall contrast visually with adjoining surfaces, either light-on-dark, or dark-on-light. The coefficient of friction of these plates should be at least 0.8 (ADAAG).

Design Example



Curb Ramp Elements



Perpendicular Curb Ramp

Parallel Curb Ramp

A.12. Curb Extensions

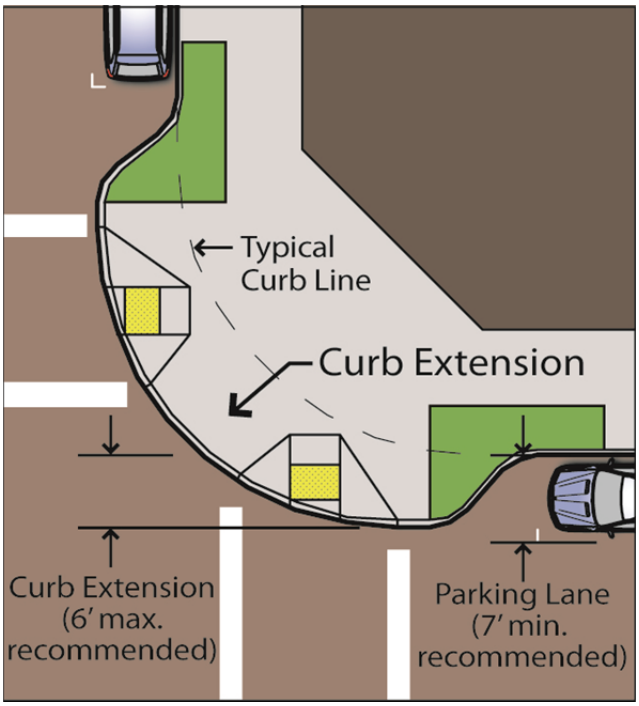
Discussion

Curb extensions are design elements that shorten pedestrian crossing distances and make the pedestrian more visible to roadway users. Curb extensions may be installed on one or both sides of a roadway. Curb extensions installed at alternating frequencies on both sides of a roadway create a "chicane" or "S" curve. Curb extension design should consider roadway drainage.

Design Summary

- Emergency vehicle operators should be consulted to ensure curb extensions do not negatively affect emergency response times.
- Curb extensions should be designed so they allow buses to complete turning movements and load and unload passengers safely.
- Mid-block installation with where pedestrians cross should consider raised crosswalks.
- May be used where there is on-street parking.
- Placement shall not encroach into bike lanes.
- Placement may impact drainage, requiring storm drainage re-engineering.

Design Example



Curb extensions can be used in a variety of locations to calm traffic speeds.

A.13. Standard Crosswalks

Discussion

Crosswalk markings guide pedestrians across roadways by defining and delineating the path of travel. Crosswalk markings also alert motorists and bicyclists of a pedestrian crossing point across roadways not controlled by highway traffic signals or STOP signs. There are a several types of crosswalk markings, including standard (or transverse) markings. Crosswalks may be placed at intersections and at mid-block locations.

The following factors should be considered when determining whether to mark a crosswalk at a particular location:

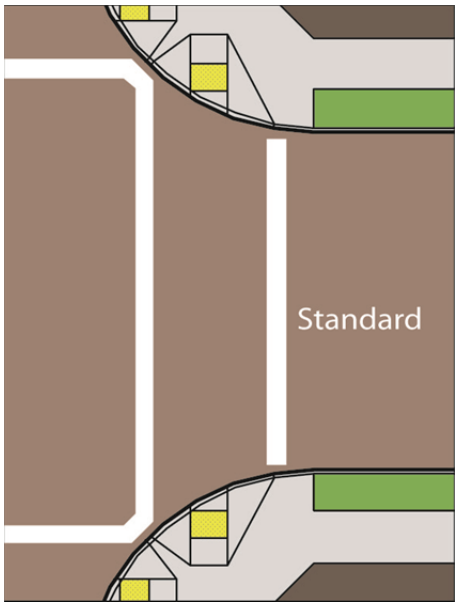
- Vehicular approach speeds from both directions.
- Vehicular volume and density.
- Vehicular turning movements.
- Pedestrian volumes.
- Roadway width.
- Day and night visibility by both pedestrians and motorists.
- Channelization is desirable to clarify pedestrian routes for sighted or sight impaired pedestrians.
- Discouragement of pedestrian use of undesirable routes.
- Consistency with markings at adjacent intersections or within the same intersection.

Motorists generally do not expect mid-block pedestrian crossings. Mid-block crossings are discouraged unless, in the opinion of the engineer, there is strong justification in favor of installation. Particular attention should be given to roadways with two or more traffic lanes in one direction as a pedestrian may be hidden from view by a vehicle yielding the right-of-way to a pedestrian.

Design Summary

- Standard crosswalk lines shall consist of solid white lines not less than 12 inches or greater than 24 inches in width.
- The gap between the lines should not be less than 6 feet.
- Marked crosswalks in a roadway contiguous to a school building or school grounds must be yellow.

Design Example



Standard crosswalk.

A.14. High Visibility Crosswalks

Discussion

There are a number of types of high visibility crosswalks. This Plan recommends continental crosswalks as the City's preferred type. High visibility crosswalks should be used where there is existing or anticipated high pedestrian activity, where slower pedestrians are expected, at uncontrolled crossings, and where a high number of pedestrian-related collisions have occurred.

Installation of high visibility crosswalks should be prioritized at the following location types:

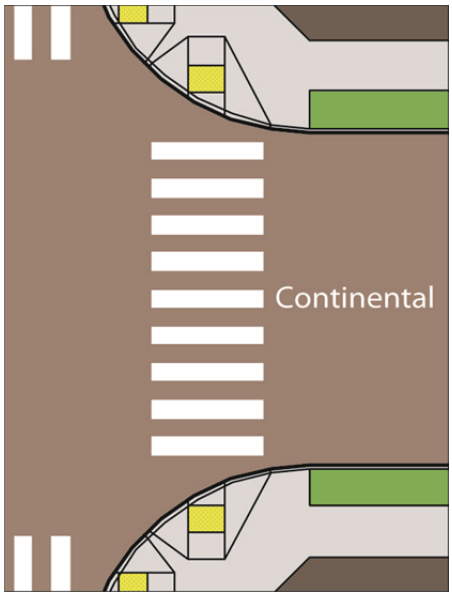
- Senior living facilities and senior centers (within 1/8 mile)
- Adjacent to school buildings and grounds
- Retail corridors
- High pedestrian related collision areas
- Uncontrolled crossings

Retail corridors are places where there is existing and anticipated high pedestrian activity. The majority of pedestrian related collisions occurred Downtown and along El Camino Real, Alameda de las Pulgas, Delaware Street, East Poplar Avenue, and West Hillsdale Boulevard. The recommended locations for high visibility crosswalks are based on the collision data.

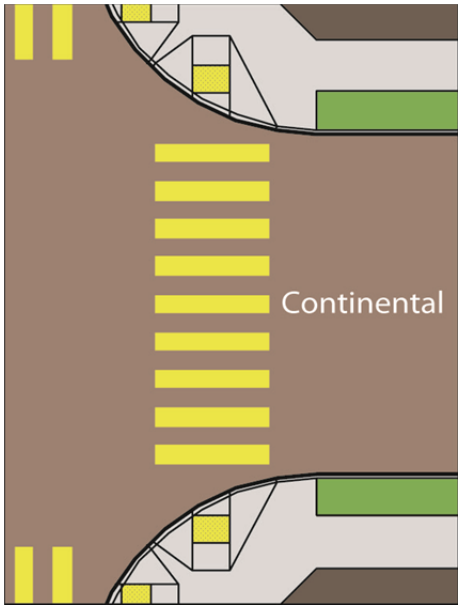
Design Summary

- Continental crosswalk markings are recommended for crosswalks within 1/8 mile of senior living and senior centers, adjacent to school buildings and grounds, retail corridors, high pedestrian related collision areas, at uncontrolled crossings.
- Marked crosswalk in a roadway contiguous to a school building or school grounds be yellow.
- Markings should be no less than six feet wide
- All marked crosswalks at uncontrolled locations have high visibility striping.

Design Example



High visibility continental crosswalk.



High visibility school area continental crosswalk.

A.15. Advance Stop Bars and Advance Yield Lines

Discussion

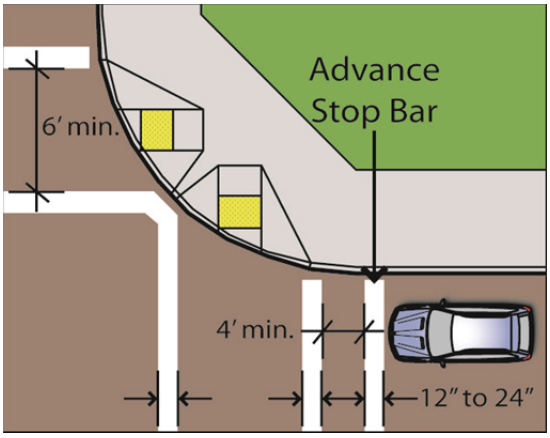
Advance stop bars and advance yield lines should be considered at crosswalks where additional space between crosswalks and stopped motorists is desired. Advance stop bars and advance yield lines increase pedestrian visibility by stopping motor vehicles in advance of marked crosswalks.

Advance stop bars consist of solid white lines extending across the approach lanes to indicate where vehicles should stop. Advance yield lines consist of a row of solid white isosceles triangles pointing toward approaching vehicles extending across approach lanes to indicate where vehicles should yield to pedestrians at uncontrolled locations. Advance yield lines should not place motorists in a position where sight lines are obstructed.

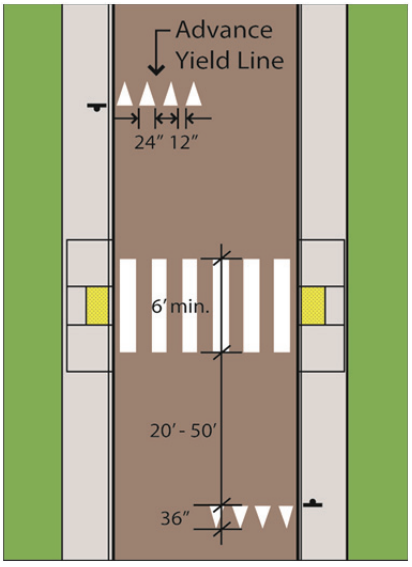
Design Summary

- Advance stop bars should be installed at all controlled intersections.
- Advance yield lines should be installed at all mid-block uncontrolled marked crossings.
- If used, advance stop bars and advance yield lines should be placed a minimum of 4 feet in advance of the nearest crosswalk line at controlled intersections, except for advance yield lines at mid-block crosswalks. In the absence of a marked crosswalk, the advance stop bars and advance yield lines should be placed at the desired stopping or yielding point, but should not be placed more than 30 feet or less than 4 feet from the nearest edge of the intersecting traveled way.
- At an unsignalized mid-block crosswalk, advance yield lines should be placed adjacent to the Yield Here to Pedestrians sign located 20 to 50 feet in advance of the nearest crosswalk line, and parking should be prohibited in the area between the advance yield line and the crosswalk.
- Advance stop bars at mid-block signalized locations should be placed at least 40 feet in advance of the nearest signal indication.

Design Example



Advance stop bars should be installed at least four feet in advance of a crosswalk at controlled intersections.



Advance yield lines should be installed 20-50 feet in advance of an uncontrolled crosswalk.

A.16. Uncontrolled, Mid-Block Crossing Placement and Design

Discussion

The National MUTCD requires yield lines and "Yield Here to Pedestrians" signs at all uncontrolled crossings of a multi-lane roadway. Yield lines are not required by the CA MUTCD but are permitted. The National MUTCD includes a trail crossing sign (W11-15 and W11-15P), which may be used where both bicyclists and pedestrians might be crossing the roadway, such as at an intersection with a shared-use path.

The table at the end of A.16 is a summary for implementing at-grade roadway crossings. The number one (1) indicates a ladder style crosswalk with appropriate signage is warranted. (1/1+) indicates the crossing warrants enhanced treatments such as flashing beacons, or in-pavement flashers. (1+/3) indicates Pedestrian Light Control Activated (Pelican), Puffin, or Hawk signals should be considered.

Design Summary

Placement

Mid-block crosswalks should be installed where there is a significant demand for crossing and no nearby existing crosswalks.

Advance Yield Lines

See Section A.15.

Warning Signs

The Pedestrian Warning (W11-2) sign alerts the road user to unexpected entries into the roadway by pedestrians, and other crossing activities that might cause conflicts.

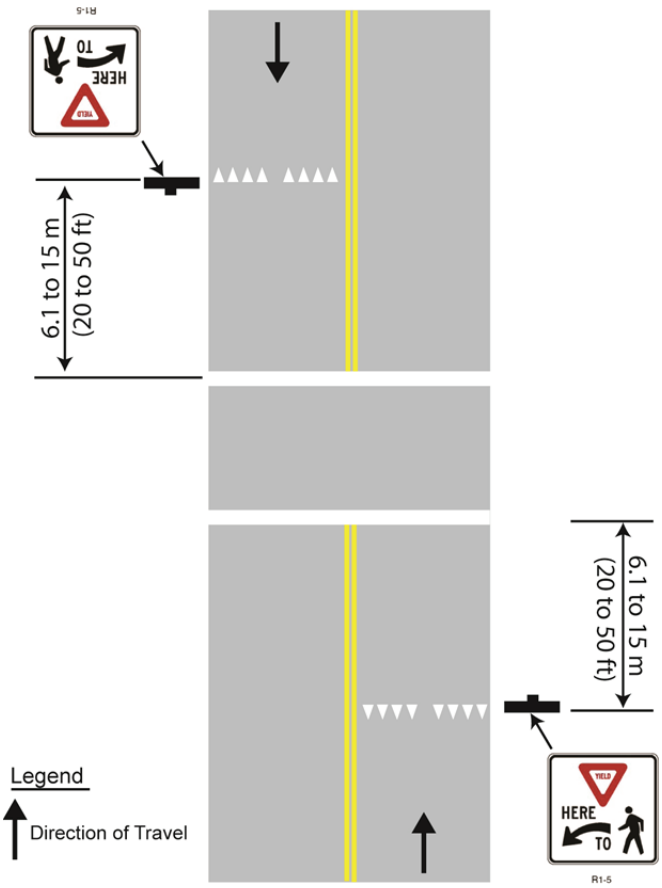
Pavement Markings

A high-visibility crosswalk should be used. Warning markings on the path and roadway should be installed.

Other Treatments

See table on the following page to determine if treatments such as raised median refuges, flashing beacons, or in-pavement flashers should be used.

Design Example



Source: California MUTCD, Figure 3B-15

CA MUTCD Regulatory Signs

Design Example

Recommended Design (continued)

CA MUTCD Warning Signs
(W11-2 and W16-7p)

CA MUTCD School Signs

Guidance

- Caltrans Highway Design Manual
- MUTCD – California Supplement, Part 2
- FHWA Safety Effects of Marked Versus Unmarked Crosswalks at Uncontrolled Locations

Cost

$3,500 (thermoplastic for crosswalk and yield lines, two advance warning signs, two warning signs at crosswalk, two curb ramps)

Treatment Type by ADT and Speed Limits

Roadway Type (Number of Travel Lanes and Median Type)	Vehicle ADT < 9,000			Vehicle ADT (> 9,000 to 12,000)			Vehicle ADT >12,000 to 15,000			Vehicle ADT > 15,000		
	Speed Limit**											
	<30 MPH	35 MPH	40 MPH	<30 MPH	35 MPH	40 MPH	<30 MPH	35 MPH	40 MPH	<30 MPH	35 MPH	40 MPH
2 Lanes	1	1	1/1+	1	1	1/1+	1	1	1+/3	1	1/1+	1+/3
3 Lanes	1	1	1/1+	1	1/1+	1/1+	1/1+	1/1+	1+/3	1/1+	1+/3	1+/3
Multi-Lane (4 or more lanes) with raised median***	1	1	1/1+	1	1/1+	1+/3	1/1+	1/1+	1+/3	1+/3	1+/3	1+/3
Multi-Lane (4 or more lanes) without raised median	1	1/1+	1+/3	1/1+	1/1+	1+/3	1+/3	1+/3	1+/3	1+/3	1+/3	1+/3

*General Notes: Crosswalks should not be installed at locations that could present an increased risk to bicyclists and pedestrians, such as where there is poor sight distance, complex or confusing designs, a substantial volume of heavy trucks, or other dangers, without first providing adequate design features and/or traffic control devices. Adding crosswalks alone will not make crossing safer, nor will they necessarily result in more vehicles stopping for bicyclists and pedestrians. Whether or not marked crosswalks are installed, it is important to consider other facility enhancements (e.g. raised median, traffic signal, roadway narrowing, enhanced overhead lighting, traffic-calming measures, curb extensions), as needed, to improve the safety of the crossing. These are general recommendations; good engineering judgment should be used in individual cases for deciding which treatment to use. For each trail-road way crossing, an engineering study is needed to determine the proper location. For each engineering study, a site review may be sufficient at some locations, while a more in-depth study of pedestrian volume, vehicle speed, sight distance, vehicle mix, etc. may be needed at other sites.

**Where the speed limit exceeds 40 MPH (64.4 km/h), marked crosswalks alone should not be used at unsignalized locations.

***The raised median or crossing island must be at least 4 ft (1.2 m) wide and 6 ft (1.8 m long) to adequately serve as a refuge area for pedestrians in accordance with MUTCD and American Association of State Highway and Transportation Officials (AASHTO) guidelines. A two-way center turn lane is not considered a median.

1 = Type 1 Crossings. Ladder-style crosswalks with appropriate signage should be used.

1/1+ = With the higher volumes and speeds, enhanced treatments should be used, including marked ladder style crosswalks, median refuge, flashing beacons, and/or in-pavement flashers. Ensure there are sufficient gaps through signal timing, as well as sight distance.

1+/3 = Carefully analyze signal warrants using a combination of Warrant 2 or 5 (depending on school presence) and equivalent adult units (EAU) factoring. Make sure to project usage based on future potential demand. Consider Pelican or Hawk signals in lieu of full signals. For those intersections not meeting warrants or where engineering judgment or cost recommends against signalization, implement Type 1 enhanced crosswalk markings with marked ladder style crosswalks, median refuge, flashing beacons, and/or in-pavement flashers. Ensure there are sufficient gaps through signal timing, as well as sight distance.

A.17. Pedestrian Refuge Island

Discussion

Pedestrian refuge islands are raised islands in the middle of the roadway that create a protected space where people may safely pause or wait while crossing a street. Pedestrian refuge islands should be placed at wide multi-lane roadways. Depending on the signal timing, median islands should be considered when the crossing distance exceeds 60 feet, but can be used at intersections with shorter crossing distances where a need has been recognized.

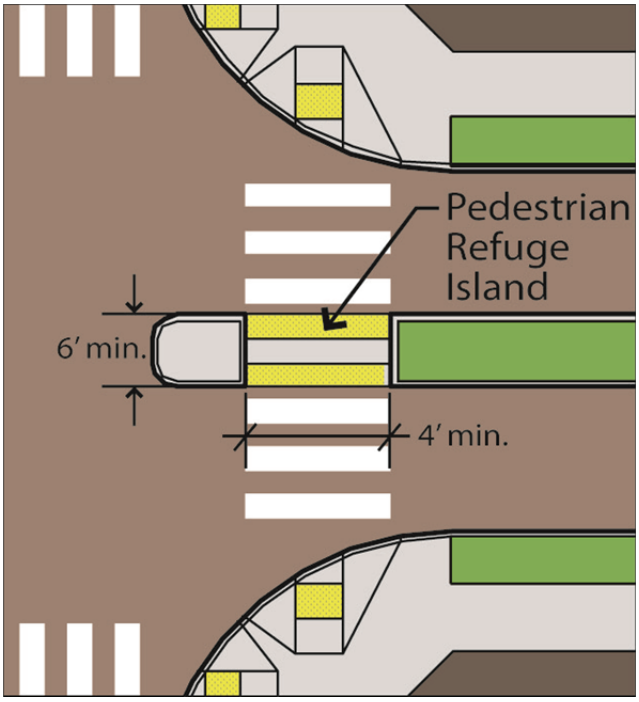
Median "noses" provide additional protection for pedestrians crossing at intersections. Median noses can also prevent vehicles from encroaching into the refuge area when making left turns. However, median noses may not be feasible to install due potential to turning movement restrictions. The CA MUTCD, Caltrans Highway Design Manual, and the ADA Access Board Guidelines do not have any requirement for median noses to be installed at intersection refuge islands. Pedestrian warning signs should be installed in advance of the crosswalk.

Design Summary

ADA Access Board Guidelines on Accessible Public Rights of Way has a section on median islands. The following guidelines are applicable:

- Medians and pedestrian refuge islands in crosswalks shall contain a pedestrian access route, including passing space connecting to each crosswalk.
- Medians and pedestrian refuge islands shall be 6.0 ft minimum in length in the direction of pedestrian travel, wide enough to allow a sense of safety for pedestrians crossing the street.
- Ramped up and cut-through refuge islands should be permitted. Factors to consider include slope, drainage and width of the island. Median curb ramps can add difficulty to crossing for some users.
- Medians and refuge islands should have detectable warnings, with detectable warnings at cut-through islands separated by a 2-foot minimum length of walkway without detectable warnings.

Design Example



Pedestrian Refuge Islands

Median "nose"

A.18. Flex Use Space Parklets

Discussion

Parklets are the temporary repurposing and transformation of on street street parking spaces to extend the sidewalk and create more space for pedestrian amenities or outdoor seating for adjacent restaurants and cafes. The spaces are often in the public right-of-way between the curb and travel lanes in commercial and retail areas. The parklets are intended to increase public space, enhance the pedestrian environment, and improve corridor aesthetics.

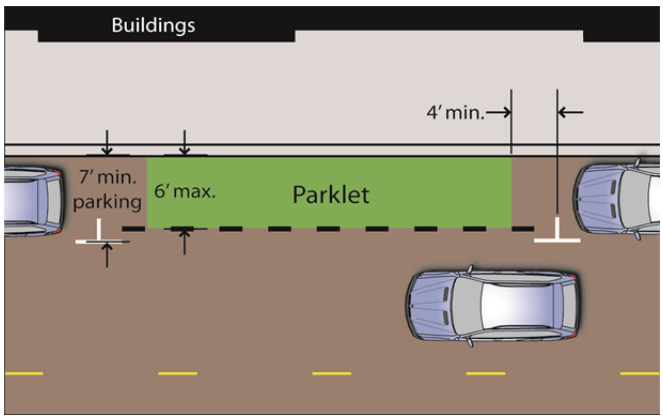
Parklets should be implemented only in areas that have limited public space (e.g., narrow sidewalks or far from parks). The areas should have existing conditions that will attract people to the space, such as retail and high pedestrian activity. The following characteristics are recommended for parklet locations:

- Streets with speed limits under 25mph
- Streets with parking lanes
- Site is not in front of a fire hydrant or would restrict access to utility covers and valves
- Site should be a minimum of two parking spaces or equivalent

Design Summary

- Maximum of six-foot width where there is parallel parking (angled parking areas should be considered on a case by case basis)
- Deck should be flush with the curb, ½" gap maximum
- Wheel stops should be placed four-feet from either end of the parklet and one-foot from the curb
- Reflective hit-posts should be placed on the street side corners
- Provide access to gutter area for cleaning
- Provide access underneath the parklet for drainage
- Outside or street side edge should be visually permeable, railing may be required
- Public seating should be strongly encouraged.

Design Example



Parklet

Parklet in San Francisco

Image source:
http://sfpavementtoparks.sfplanning.org/noe_valley_parklets.html

A.19. Flex Use Space Parklets Materials

Guidelines for Flex Use Space

GUIDELINES

- Planter and/or railing to create separation of space between street and flex use space. Railing or fence to be powder coated black and 36" in height. Planter to be a minimum of 18" tall.
- Site furnishings to be owned by business and are movable to allow multi-use of space. Site furnishing materials are not to be plastic.

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A.20. Guidelines for Regulatory Signage

Discussion

Caltrans categorizes signs into regulatory, warning, and school signs. Regulatory signs inform road users of selected traffic laws or regulations and indicate the applicability of the legal requirements. Pedestrian regulatory signs govern pedestrian and motorist movements, such as "Yield Here to Pedestrians." The signs to the right provide examples of regulatory signs.

Design Summary

- Regulatory signs shall be installed at or near where the regulations apply.
- Yield Here to Pedestrians signs should be installed at advance yield lines.
- In-street Yield to Pedestrian signs should be considered at non-controlled crosswalks where motorists frequently violate pedestrian right of way.
- In-street Yield to Pedestrian signs should be considered at non-controlled crosswalks where motorists frequently violate pedestrian right of way.

Design Example

Design Example (continued)

A.21. Guidelines for Warning Signage

Discussion

Caltrans categorizes signs into regulatory, warning, and school signs. Warning signs call attention to unexpected conditions on or adjacent to a highway or street. Warning signs alert road users to conditions that might call for a reduction of speed or an action in the interest of safety and efficient traffic operations. Pedestrian warning signs should be have a fluorescent yellow green background to call the attention from motorists. The signs to the right provide examples of warning signs.

Design Summary

- Pedestrian warning signs should accompany all non-controlled crosswalks.
- The use of warning signs shall be based on an engineering study or on engineering judgment.

Design Example

Fluorescent yellow green warning sign (W11-2 and W16-7p)

A.22. Guidelines for School Signage

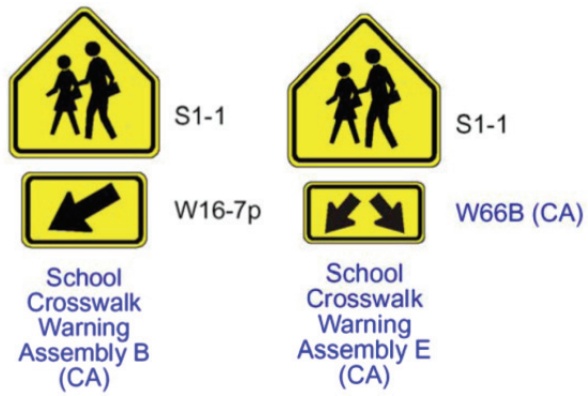
Discussion

Caltrans categorizes signs into regulatory, warning, and school signs. School signs call attention to school area traffic controls. The signs to the right provide examples of school signs.

Design Summary

- The signs used for school area traffic control shall be retroreflectorized or illuminated.
- Signs should be placed in positions where they will convey their messages most effectively without restricting lateral clearance or sight distances. Sign placement should consider highway design, alignment, vehicle speed, and roadside development.
- The School Crosswalk Warning Assembly B(CA) or E(CA) shall be posted at all yellow school crosswalks that are not controlled by a STOP (R1-1) sign, a YIELD (R1-2) sign or a traffic signal.
- The School Crosswalk Warning Assembly B (CA) or E(CA) shall not be used at marked crosswalks other than those adjacent to schools and those on established school pedestrian routes.

Design Example



A.23. Guidelines for Signalized Pedestrian Crossing

Discussion

Pedestrian pushbuttons should be used at any signalized intersection without a dedicated pedestrian phase. Push buttons allow pedestrians to actuate a walk phase.

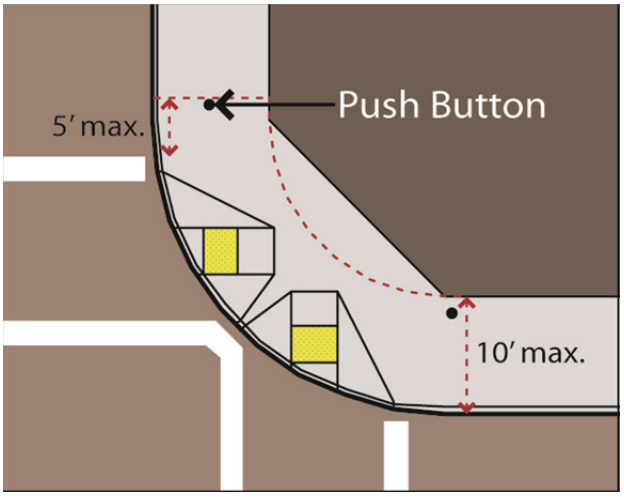
All new and modified traffic signals should include accessible pushbuttons that are large and vibrate during a walk phase for visually impaired pedestrians.

Design Summary

- Push buttons should be located within five feet outside of the transverse crosswalk line extended.
- Push button location should be adjacent to an all weather surface to facilitate accessibility.
- Push buttons should be installed within 10 feet of the curb unless impractical.

Design Example

Pedestrian Push Button



Push button placement

A.24. Crossing Beacons

Discussion

Beacons enhance uncontrolled crosswalks by using devices that call attention to pedestrians. There are two types of crossing beacons recommended in this Plan: the pedestrian hybrid beacon and the rectangular rapid flash beacon.

- Pedestrian hybrid beacons, also known as a HAWK (High intensity Activated crossWalK) Signal. It includes three signal sections, two red circular indications above one yellow circular indication (see upper photo). The signal is dark until activated. When activated, the signal flashes yellow to inform drivers to stop. The signal then becomes solid yellow followed by a duel solid red. It then flashes alternating red flashing as a pedestrian signal head flashes DON'T WALK. HAWK signals are experimental in California. Pedestrian hybrid beacons are FHWA approved and incorporated in the 2012 CA MUTCD.
- Rectangular rapid flashing beacons are also pedestrian actuated devices; however they are mounted adjacent to the roadway (see lower photo). The beacon lights are rectangular LED lights installed below a pedestrian crosswalk sign that flash in an alternating pattern when activated. The beacon is dark when not activated. Caltrans has received approval from the Federal Highway Administration (FHWA) for use of RRFBs on a blanket basis at uncontrolled pedestrian and school crosswalk locations in California, including State highways and all local jurisdictions' roadways.

Design Summary

- Crossing beacons should be installed at all uncontrolled arterial crossing locations.
- Crosswalk warning beacons should be actuated to maximize yield to pedestrian compliance.

Recommended Design

Pedestrian Hybrid Beacon (HAWK)

Rectangular Rapid Flashing Beacon

Image from: http://mutcd.fhwa.dot.gov/resources/interim_approval/ia11/stpetersburgrpt/intro.htm

A.25. Signal Timing

Discussion

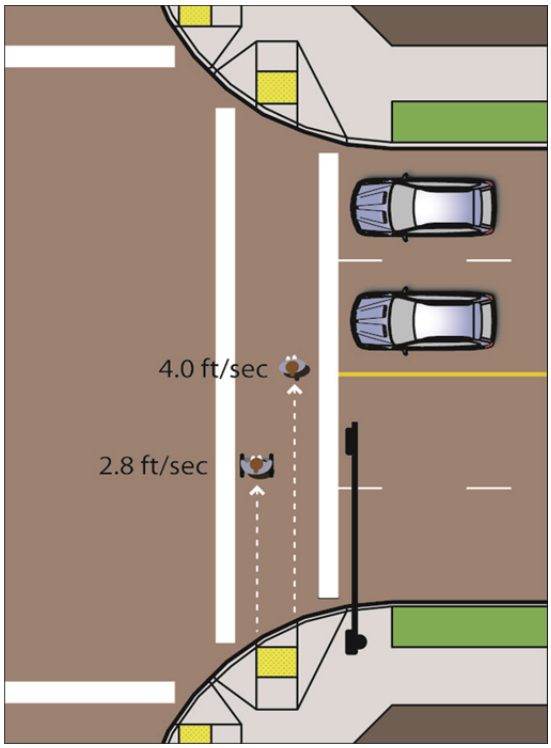
Pedestrian speed determines the duration of a pedestrian phase. CAMUTCD standard pedestrian speed for calculating pedestrian phasing is 4.0 feet per second. The following recommended speeds incorporate current and draft MUTCD recommendations and accommodate slow moving pedestrians such as children, seniors and people with disabilities:

- **Citywide Signal Timing.** The Draft CAMUTCD and the National MUTCD recommend a standard signal crossing time of 3.5 feet per second as a pedestrian speed to accommodate slow moving pedestrians.
- **Signal Timing Near Senior Living Facilities and Schools.** The US Department of Transportation (US DOT) and the Federal Highway Administration (FHWA) recommend in Older Driver Highway Design Handbook a signal timing of 2.8 feet per second to accommodate older pedestrians. The FHWA and the Metropolitan Transportation Commission recommend also recommend a slower crossing rate where concentrations of children are expected.

El Camino Real is a community identified barrier and collision data shows it is the corridor with the most pedestrian related collisions in the City. Signal timing modification to 3.5 feet per second should be expedited at the following intersections: 3rd Avenue at El Camino Real, 5th Avenue at El Camino Real, 25th Avenue at El Camino Real, 31st Avenue at El Camino Real, and 37th Avenue at El Camino Real.

Countdown pedestrian heads display the remaining time of a pedestrian phase, informing crossing pedestrians. Countdown heads are most applicable at multi-lane arterial roadways where pedestrians have a long distance to cross. If a median is provided, pedestrians may rest and wait for the next pedestrian phase to cross the remaining roadway.

Design Example



Standard pedestrian timing should be derived from 3.5 feet per second pedestrian speed.

Design Summary

- A pedestrian speed of 3.5 feet per second should be used as the standard pedestrian crossing speed (except as specified below).
- Signal timing within an eighth of a mile (660 feet) of all senior centers, senior living facilities and schools should be 2.8 feet per second.
- Countdown heads should be installed at multi-lane arterial roadway intersections.
- Countdown head should incorporate audible instructions.

A.26. Leading Pedestrian Interval

Discussion

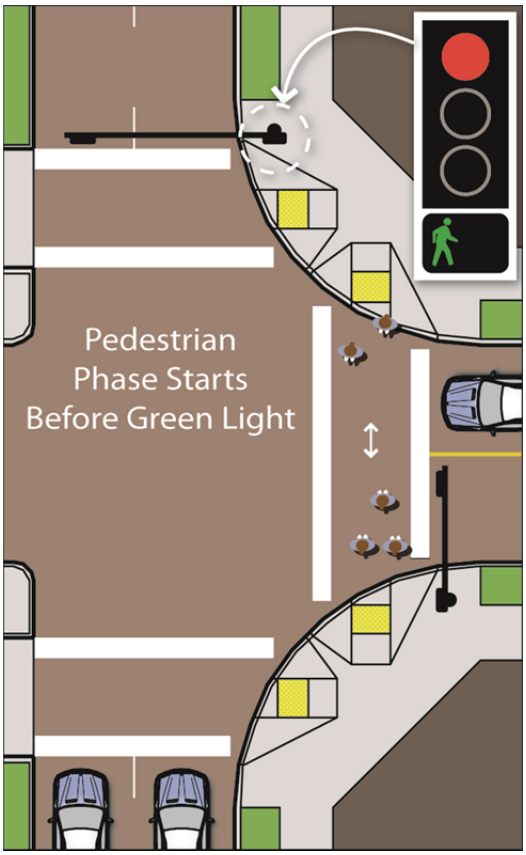
Leading pedestrian intervals provide a pedestrian phase two to four seconds in advance of a green light in the same direction. LPIs increase pedestrian visibility by permitting pedestrians to enter the crosswalk and motorist sight lines before motorists enter the intersection. Without LPIs, pedestrians are at greater risk of motor vehicle collision because they may enter the intersection at the same time as motorists and assume turning motorists can see them.

LPIs are recommended from Tilton Avenue to 5th Avenue and from El Camino Real to Delaware Street; as well as at Delaware and 25th and 37th Avenues. A LPI along El Camino Real will require coordination with Caltrans.

Design Summary

- LPIs should provide two to four seconds of pedestrian phasing before a green light for parallel traffic.
- LPIs should be considered where improved motorist visibility of pedestrians is needed.

Design Example



Leading Pedestrian Interval

A.27. Pedestrian Wayfinding

Discussion

Wayfinding signage that guides pedestrians to destinations throughout the City, such as transit stations and Downtown, is an important feature that promotes connectivity between different travel modes. Wayfinding signage should orient and communicate in a clear, concise and functional manner. It should enhance pedestrian circulation and direct visitors and residents to important destinations. In doing so, the goal is to increase the comfort of visitors and residents while helping to convey a local identity.

Design Summary

- Wayfinding signage should be considered in locations with a concentration of community destinations and moderate pedestrian activity.

Design Example

Wayfinding and Signage

A.28. Materials and Funishings: Street Trees

Street Trees

Refer to the City of San Mateo Street Tree Master Plan for tree placement recommendations.

Acer rubrum

Fraxinus oxycarpa

Koelreuteria paniculata

Ceratonia siliqua

Cercis canadensis

Ginkgo biloba 'Autumn Gold'

SPECIES LIST

Acer davidii
Acer platanoides 'Schwedleri'
Acer rubrum
Aesculus carnea
Betula alba
Carpinus betulus
Casuarina stricta
Celtis australis
Celtis sinensis
Ceratonia siliqua
Cercis canadensis
Cercis siliquastrum
Cinnamomum camphora
Crataegus phaenopyrum
Dodonaea viscosa
Dodonaea viscosa purpurea
Eriobotrya deflexa
Eucalyptus citriodora
Eucalyptus ficifolia
Eucalyptus nicholii
Eucalyptus sideroxylon 'Rosea'
Ficus nitida
Fraxinus holotricha 'Moraine'
Fraxinus oxycarpa 'Raywood'
Fraxinus pennsylvanica 'Marshall'
Geijera parviflora
Ginkgo biloba
Gingko biloba 'Autumn Gold'
Gleditsla triacanthos
Ilex aquifolium
Koelreuteria paniculata
Lagerstroemia indica 'Muskogee'
Laurus nobilis 'Saratoga'
Liriodentron tulipifera
Magnolia grandiflora
Magnolia g. 'Russet'
Magnolia g. 'Samuel Sommer'
Magnolia g. 'San Marino'
Malus floribunda
Maytenus boaria
Melaleuca linariifolia

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A.29. Materials and Funishings: Street Trees (continued)

Street Trees

Lagerstroemia indica 'Muskogee'

Prunus serrulata 'Kwanzan'

Nyssa sylvatica

Pistacia chinensis

Pyrus calleryana

Quercus ilex

SPECIES LIST

Myoporum laetum
Nyssa sylvatica
Pistacia chinensis
Pittosporum undulatum
Photinia fraseri
Prunus blireiana
Prunus caroliniana
Prunus serrulata 'Kwanzan'
Pyrus calleryana 'Aristocrat'
Pyrus calleryana 'Bradford'
Pyrus calleryana 'Capital'
Pyrus calleryana 'Chanticleer'
Pyrus kawakamii
Quercus agrifolia
Quercus coccinea
Quercus ilex
Quercus palustris
Quercus rubra
Quercus shumardii
Quercus suber
Quercus virginiana
Rhus lancea
Sapium sebiferum
Schinus terebinthifolius
Tilia cordata
Tilia cordata 'Greenspire'
Tilia cordata 'Rancho'
Tristania laurina

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A.30. Materials and Funishings: Tree Grates

Tree Grate

TECHNICAL INFORMATION

- Model: Urban Accessories - OT - Title 24, or approved equal

Dimensions: 4'x4'

Material: Standard Cast Iron

Color: Powdercoat RAL 6004 (Black)

Note: Customized to provide two 4" holes for bubbler access, tree stakes, and uplighting.

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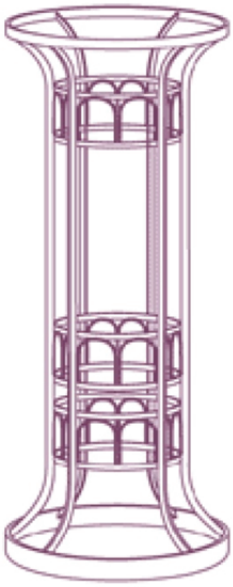
A.31. Materials and Funishings: Tree Guards

Tree Guard

1.

2.



TECHNICAL INFORMATION

1. Model:
   Urban Accessories - AD Tree Guard, or approved equal

   Dimensions: 1'-7"x5'-10"

   Material: Steel

   Color: Powdercoat RAL 6004 (Black)

   Note: For new sidewalk trees with grates only; bolt to tree grates

2. Model:
   Canterbury International - Tree Guards - #1900, or approved equal

   Dimensions: 1'x5'

   Material: Steel

   Color: Powdercoat RAL 6004 (Black)

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A.32. Materials and Funishings: Benches

Bench

TECHNICAL INFORMATION

- Model:
  Wabash Valley - Estate Series - Slat Bench, or approved equal

Dimensions: 72" long

Materials: Steel

Mounting: Surface mount with mounting plate covers

Color: Black powder coat

Callander Associates

A.33. Materials and Funishings: Bollards

Bollard

1.

2.

3.

4.

TECHNICAL INFORMATION

1. & 2. Model: Reliance Foundry Co. Ltd. - #R-7539 Bollard, or approved equal

Dimensions: 10″ base x 36″ height
Material: Ductile Iron
Color: Black semi

3. Model: Quick Crete - Sphere bollard - #QR-22SP, or approved equal

Dimensions: 22″ diameter
Material: Concrete
Color: Charcoal Grey

4. Model: Reliance Foundry Co. Ltd. - #R-7530, or approved equal

Dimensions: 10″ base x 39″ height
Material: Ductile Iron
Color: Black semi

Callander Associates

A.34. Materials and Funishings: Newsracks

Newsrack

TECHNICAL INFORMATION

- Model: Kaspar Sho-Rack - Boulevard, or approved equal

Dimensions: Vary, depending on quantity of dispensers

Materials: Galvanized steel

Mounting: Surface mounted

Color: Green, to match existing

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A.35. Materials and Funishings: Parking Pay Station

Parking Pay Station

TECHNICAL INFORMATION

- Model: To match existing

Color: Green, to match existing

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A.36. Materials and Funishings: Bike Rack

Bike Rack

TECHNICAL INFORMATION

- Model: Secure Site Design, Cycle Sentry Series, BRWS-101, or approved equal

Capacity: 2 bikes

Material: 2-3/8 in. OD tubular steel pipe

Color: Black powder coat

Callander Associates

A.37. Materials and Funishings: Table

Table

TECHNICAL INFORMATION

- Model: Wabash Valley - TR110T - 30" Square Table with matching stool chairs, or approved equal

Dimensions: 30"x 30"

Materials: Steel

Mounting: Surface mount per manufacturer's recommendations

Color: Black powder coat

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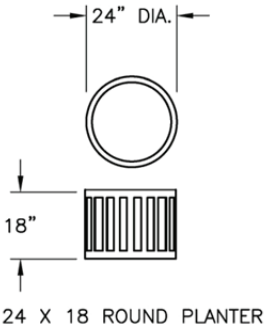
A.38. Materials and Funishings: Planter

Planter



24 X 18 ROUND PLANTER

TECHNICAL INFORMATION

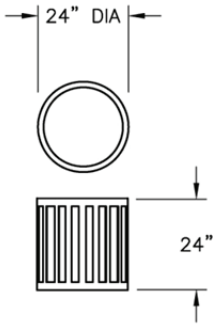
- Model: Wabash Valley - Round Planter #PL100 - #PL106, slat type, or approved equal

Dimensions: Height and width varies

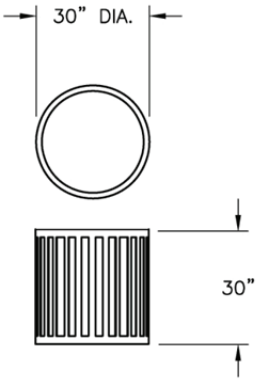
Materials: Fabricated metal with poly-vinyl coating

Mounting: Secure per manufacturer's recommendations

Color: Black



24 X 24 ROUND PLANTER



30 X 30 ROUND PLANTER

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A.39. Materials and Funishings Specialty Paving

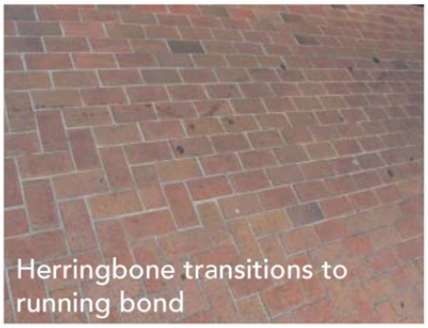
Specialty Paving


Herringbone pattern at intersection


Herringbone pattern at intersection


Herringbone pattern at intersection


Running bond with perpendicular brick band


Herringbone transitions to running bond

TECHNICAL INFORMATION

- Model: McNear Brick and Block - Commercial Series, or approved equal

Color: Tangiers

Pattern: Herringbone at intersections, transitions into running bond at mid-block

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A.40. Materials and Funishings: Standard Paving

Standard Paving

TECHNICAL INFORMATION

- Medium broom finish

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A.41. Materials and Funishings: Pedestrian Scale Lighting

Pedestrian Scale Lighting

TECHNICAL INFORMATION

- Manufacturer: Holophane Washington Series, or approved equal
- Fixture: Post Top with full spin-on cover with standard finial; ribs; bands and medallions
- Color: Midnight Green
- Optics: 150 watt with Type III distribution
- Pole: 14' fluted North Yorkshire style cast aluminum pole, or approved equal
- Base: configured to fit City standard 11" bolt circle pattern, with 1" bolts
- Note: for certain installations as directed by City, pole may be fitted with double luminaires on cross-arms

Callander Associates