Central County Complete Streets Design Guidelines

Final Complete Streets Design Guidelines
May 8, 2017

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PlaceWorks
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With-
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County of Alameda
City of Hayward
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1. INTRODUCTION
As part of the Alameda County Central County Complete Streets Implementation project (CCCS), this Complete Streets Design Guidelines document helps ensure that Central County street designs consider the full range of users on every street and accommodate these users wherever possible. The goal of these design guidelines is to help staff from the three Central County jurisdictions (San Leandro, Hayward, and Alameda County) clearly understand how to implement complete streets for each street type, for different modal priorities, and for varying contexts.

**Planning Context**

The Central County Complete Streets Design Guidelines seek to build on the street typology developed as part of the Alameda County Transportation Commission (Alameda CTC) Multimodal Arterial Plan (MAP). Through the MAP, Alameda CTC – in close partnership with local jurisdictions, transit operators, and other stakeholders – developed a typology that extends across the entire arterial and collector network in Alameda County.

The MAP street typology consists of three primary components: a street type overlay that classifies streets according to whether vehicular traffic is primarily regional or local serving; a land use overlay that classifies streets according to the fronting land use; and a multimodal overlay that identifies whether the street is part of a designated transit, bicycle, or truck route, or is an area of high pedestrian emphasis. Based on these three components, each arterial and collector street segment is assigned a hierarchical modal priority. Each of the five major modes (auto, transit, bike, pedestrian, and trucks) was ranked 1 through 5 for each street segment. The modal priority seeks to clarify which modes receive limited right-of-way or control parameters such as design speed. It should be noted that multiple modes may be accommodated on a street, even if the mode is not the highest priority. Depending on available right-of-way, a lower priority mode may mean that the mode receives a less dedicated facility or a more limited allocation of space, or may not be accommodated.

The MAP document is intended to provide a planning framework. It is anticipated that as the plan is implemented via project-level design development and community engagement, specific recommendations may evolve. Designers should think through the most appropriate selection of dimensions and project elements for a particular street and location, and the MAP is not intended to preclude context sensitive design.
The Central County Complete Streets Design Guidelines utilize the modal priorities and land use classifications assigned to the Central County Street Network through the MAP. These priorities are used to help a designer identify appropriate allocation of right-of-way width, relationship of street zones to each other, and selection of design elements in a logical series of steps, as discussed below.

How to Use this Document

This Complete Streets Design Guidelines document provides guidance for complete streets implementation on arterial, collector, and local streets in Central County. Figure 1 shows the structure and flow of this document. Design Considerations for arterial and collector streets are classified by highest modal priority and local streets are classified by land use typology.

Before referencing this document, the designer should first determine the highest modal priority and/or land use typology for a given corridor, using the MAP maps on Figures 2 and 3. Zoomed in maps for focus areas are provided on Figures 4, 6, 8, and 10. On these maps, every arterial and collector street located within the Central County is color coded to show its assigned first modal priority for either auto, bicycle, pedestrian, transit, or trucks. Furthermore, all lands in the Central County area are color coded by land use typology; a local corridor’s land use typology is determined by its location.

1. After identifying the corridor’s highest modal priority or land use typology, the designer should begin by reviewing the corridor’s applicable Street Type Illustrative Section, which provides a general understanding of the intended spatial relationships of the various street components or “zones.” Each Street Type Illustrative Section contains recommended zone widths based on modal priority or connections between opposite sidewalks.

2. Next, the designer should refer to the appropriate Street Type Design Consideration sheet, which provides a list of design considerations for each street zone, cross-referencing relevant design guideline details. Zones include a Pedestrian Zone, Curb Zone, Bicycle Zone, Parking Zone, Vehicle Zone, Median Zone, and Crossing Zone.

3. Designers should consult local bicycle and pedestrian plans for local corridor street designs.

4. The final section of the document is a glossary of design guideline details to be used in the design and implementation of various complete street components.

### STREET ZONE DEFINITIONS

<table>
<thead>
<tr>
<th>Zone</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pedestrian Zone</strong></td>
<td>The pathway on the sidewalk accessible for pedestrian travel, measured from back of sidewalk to curb zone.</td>
</tr>
<tr>
<td><strong>Curb Zone</strong></td>
<td>The area of the sidewalk that buffers the Pedestrian Zone from the roadway. It is measured from the pedestrian zone to face of the curb. This zone can contain street furnishings, landscaping, bike parking, bus stops, utilities, etc.</td>
</tr>
<tr>
<td><strong>Bicycle Zone</strong></td>
<td>The designated area on the roadway for bicycle travel and right-of-way. This zone is often delineated by striping and pavement markings.</td>
</tr>
<tr>
<td><strong>Parking Zone</strong></td>
<td>The area of the roadway designated for on-street parking. This zone is adjacent to the sidewalk to provide close access from the parked vehicle to the Pedestrian Zone.</td>
</tr>
<tr>
<td><strong>Vehicle Zone</strong></td>
<td>The area of the roadway where motorized vehicles, such as cars, buses, and trucks, travel. This zone varies in number of travel lanes depending on the street type and land use typology context.</td>
</tr>
<tr>
<td><strong>Median Zone</strong></td>
<td>The buffer on the roadway separating two vehicle zones, measured from face of the curb to face of the curb. This zone often contains landscaping and provides traffic calming on wider streets.</td>
</tr>
<tr>
<td><strong>Shared Vehicle and Bicycle Zone</strong></td>
<td>This zone is used and shared between motorized vehicles and bicycles. Bicyclists should ride closer to the adjacent curb, while drivers should yield to a bicyclist’s speed or maintain an adequate distance when passing.</td>
</tr>
<tr>
<td><strong>Crossing Zone</strong></td>
<td>The area on the street that provides access for pedestrians to travel across roadways. This zone includes street intersections as well as crossing connections between opposite sidewalks.</td>
</tr>
</tbody>
</table>
STREET TYPE ILLUSTRATIVE SECTIONS

The Illustrative Sections provide an overview of each street type: arterial, collector, and local. This overview includes the relevant street zones, the min./max. and recommended widths of the street zones, and typical number of vehicle lanes.

STREET TYPE DESIGN CONSIDERATIONS

The Design Considerations are classified by either modal priority or land use typology for each street type. They provide guidance on the types of facilities that should be considered for each street zone. Design guideline details are cross-referenced in a table at the bottom of each page.

DESIGN GUIDELINE DETAILS

The Design Guideline Details provide detailed drawings of facilities referenced in the Design Considerations chapter. Drawings may also show variation in design depending on other factors, including land use context, street location, speed limit, and others.
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FIGURE 2  MULTIMODAL ARTERIAL PLAN FIRST MODAL PRIORITY AND LAND USE TYPOLOGY MAP FOR CENTRAL COUNTY

Legend
First Modal Priority
Arterials and Collectors
Auto
Bicycle
Pedestrian
Transit
Trucks

CCCS Land Use Typology
Industrial
Rural and Open Space
Suburban
Urban
Hayward & San Leandro City Limits
Central County Study Area
Alameda County Boundary

August 10, 2016
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FIGURE 4  ALAMEDA COUNTY, EAST: FIRST MODAL PRIORITY
FIGURE 7  ALAMEDA COUNTY, SOUTH: SECOND MODAL PRIORITY
FIGURE 8  ALAMEDA COUNTY, WEST: FIRST MODAL PRIORITY

Legend
First Modal Priority
- Arterials and Collectors
  - Auto
  - Bicycle
  - Pedestrian
  - Transit
  - Trucks

CCCS Land Use Typology
- Industrial
- Rural and Open Space
- Suburban
- Urban

Hayward & San Leandro City Limits
Central County Study Area
Alameda County Boundary
FIGURE 9  ALAMEDA COUNTY, WEST: SECOND MODAL PRIORITY

Legend
Second Modal Priority
- Arterials and Collectors
  - Auto
  - Bicycle
  - Pedestrian
  - Transit
  - Trucks

CCCS Land Use Typology
- Industrial
- Rural and Open Space
- Suburban
- Urban

Hayward & San Leandro City Limits
Central County Study Area
Alameda County Boundary

September 29, 2016
FIGURE 10  CITY OF HAYWARD: FIRST MODAL PRIORITY

Legend
First Modal Priority
- Arterials and Collectors
  - Auto
  - Bicycle
  - Pedestrian
  - Transit
  - Trucks
CCCS Land Use Typology
- Industrial
- Rural and Open Space
- Suburban
- Urban

Hayward & San Leandro City Limits
Central County Study Area
Alameda County Boundary
2. STREET TYPE

ILLUSTRATIVE SECTIONS &
DESIGN CONSIDERATIONS
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The purpose of this sheet is to convey how zones relate to each other rather than to prescribe design components (e.g., the number of lanes and the presence of on-street parking).

See “Arterial and Collector Street Design Considerations” on the following pages for discussion of the spatial street zones and dimensions indicated below.

<table>
<thead>
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<td></td>
<td>MIN.</td>
<td>REC.</td>
<td>MIN.</td>
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</tr>
<tr>
<td>Auto</td>
<td>4 ft.</td>
<td>6 ft.</td>
<td>2 ft.</td>
<td>2 ft.</td>
<td>5 ft.</td>
<td>8 ft.</td>
</tr>
<tr>
<td>Bicycle</td>
<td>4 ft.</td>
<td>6 ft.</td>
<td>2.5 ft.</td>
<td>4 ft.</td>
<td>6 ft.</td>
<td>8 ft.</td>
</tr>
<tr>
<td>Pedestrian</td>
<td>4 ft.</td>
<td>8 ft.</td>
<td>2.5 ft.</td>
<td>4 ft.</td>
<td>5 ft.</td>
<td>8 ft.</td>
</tr>
<tr>
<td>Transit</td>
<td>4 ft.</td>
<td>8 ft.</td>
<td>4 ft.</td>
<td>4 ft.</td>
<td>5 ft.</td>
<td>8 ft.</td>
</tr>
<tr>
<td>Trucks</td>
<td>4 ft.</td>
<td>6 ft.</td>
<td>2 ft.</td>
<td>2 ft.</td>
<td>5 ft.</td>
<td>8 ft.</td>
</tr>
</tbody>
</table>

Notes:
[1] Reference table on page 3-21 and 3-22 for recommended bike lane and on-street parallel parking lane widths based upon more specific contexts, including total available width or posted speed limit.
[2] Parking Zone could include on-street parallel parking, angled parking or back-in diagonal parking for streets with bicycle facilities. Vehicle lanes adjacent to angled parking should be wider than standard recommended lane widths. See design guidelines for and angled parking on pages 3-41 and 3-42.
[3] Reference table on page 3-44 for recommended vehicle lane widths based upon more specific contexts, including posted speed limit and the presence of a bike lane.
[4] Vehicle lanes adjacent to a median and curb zones should be 11” wide or 1” wider than the minimum lane width.
[5] The illustrative street section shows an optional class IV cycle track.
[6] All streetscape improvements should refer to C.3 stormwater requirements.

The provided minimum, maximum, and recommended zone widths are targets. Due to limitations in existing street right-of-way, some of these target zone widths may not be achievable.

Crossing Zone is not shown in the illustrative section above.
STREET TYPE ILLUSTRATIVE SECTION

COLLECTOR STREET

2 to 4 lanes

The purpose of this sheet is to convey how zones relate to each other rather than to prescribe design components (e.g., the number of lanes and the presence of on-street parking).

See “Arterial and Collector Street Design Considerations” on the following pages for discussion of the spatial street zones and dimensions indicated below.

Notes:
[1] Reference table on page 3-21 and 3-22 for recommended bike lane and on-street parallel parking lane widths based upon more specific contexts, including total available width or posted speed limit.
[2] Parking Zone could include on-street parallel parking, angled parking or back-in diagonal parking for streets with bicycle facilities. Vehicle lanes adjacent to angled parking should be wider than standard recommended lane widths. See design guidelines for angled parking on pages 3-41 and 3-42.
[3] Reference table on page 3-44 for recommended vehicle lane widths based upon more specific contexts, including posted speed limit and the presence of a bike lane.
[4] Vehicle lanes adjacent to a median should be 11’ wide or 1’ wider than minimum lane width.
[5] All streetscape improvements should refer to C.3 stormwater requirements.

The provided minimum, maximum, and recommended zone widths are targets. Due to limitations in existing street right-of-way, some of these target zone widths may not be achievable.

Crossing Zone is not shown in the illustrative section above.
<table>
<thead>
<tr>
<th>STREET ZONE</th>
<th>DESIGN CONSIDERATIONS</th>
</tr>
</thead>
</table>
| PEDESTRIAN  | ▪ Provide a narrower Pedestrian Zone to allow more right-of-way for vehicle travel lanes  
                ▪ Where retail uses face the street, provide a Pedestrian Zone with the wider recommended width |
| CURB        | ▪ Provide a narrower Curb Zone, including landscaping and utilities, to allow more right-of-way for vehicle travel lanes, but still allocating adequate space for street trees, parking meters, street furnishings, and pedestrian unloading |
| BICYCLE     | ▪ It is recommended to provide a bicycle facility such as a Class II Bike Lane or Class II Enhanced Buffered Bike Lane, or a Class IV Protected Bike Lane in urban land use context, although a Bicycle Zone is not required |
| PARKING     | ▪ If and when possible, accommodate on-street parallel or angled parking |
| VEHICLE     | ▪ Provide wider vehicle travel lanes to accommodate through and higher traffic speeds |
| MEDIAN      | ▪ Where there is a median, provide a narrower median with median landscaping to allow more right-of-way for vehicle travel lanes, but still allocating adequate space for trees, maintenance, and irrigation water efficiency |
| CROSSING    | ▪ Design corner treatments with a larger curb radius to accommodate through and higher traffic speeds as well as emergency vehicle access, truck and transit turning, and street maintenance  
                ▪ Provide pedestrian refuge islands at pedestrian crossings  
                ▪ Consider use of beacons, signals, and other traffic control devices at mid-block crossings |

### RELEVANT DESIGN STANDARD DETAILS

<table>
<thead>
<tr>
<th>Standard</th>
<th>Page</th>
<th>Description</th>
</tr>
</thead>
</table>
| Landscaping and Utilities | p. 3-11 | Class II and Class II Enhanced Buffered Bike Lanes pp. 3-20 to 3-27  
| On-street Parallel Parking | p. 3-40 | Class IV Protected Bike Lanes pp. 3-31 to 3-35  
| Corner Treatments | p. 3-52 | Pedestrian Refuge Island p. 3-49  
|  |  | Mid-block Crossing p. 3-55  

**ARTERIAL AND COLLECTOR STREET DESIGN CONSIDERATIONS**

**Auto Modal Priority**

**STREET DESIGN CONSIDERATIONS**

**CENTRAL COUNTY COMPLETE STREETS IMPLEMENTATION DESIGN GUIDELINES**

2-5
STREET ZONE | DESIGN CONSIDERATIONS
--- | ---
**PEDESTRIAN** | ▪ Provide a narrower Pedestrian Zone to allow more right-of-way for the bicycle facility in the Bicycle Zone

**CURB** | ▪ Provide a wider Curb Zone to accommodate off-street bike parking with bike racks and/or bike lockers, especially in urban and suburban land use typologies with high activity uses. Curb Zone should still allow adequate space for street trees, parking meters, street furnishings, and pedestrian unloading.
▪ Consider incorporating street lighting guidelines to provide visibility and safety for bicyclists

**BICYCLE** | ▪ It is acceptable to provide a narrower Bicycle Zone with a Class II Bike Lane with signage on streets with a narrower overall street width
▪ It is recommended to provide a wider Bicycle Zone to include a buffer between the Bicycle and Vehicle Zones and/or between the Bicycle and Parking Zones (Class II Enhanced Buffered Bike Lane or Class IV Protected Bike Lane in an urban land use context). Where opportunity coincides with planning, consider providing a Class I Bikeway.
▪ It is recommended to provide bicycle facility amenities such as bike boxes and green bike lanes in an urban land use context and high conflict areas

**PARKING** | ▪ Where parking is provided, allow more total available width to provide a buffer between the bike lane and on-street parallel or angled parking lane
▪ Consider back-in angled parking to also help avoid conflicts with adjacent bike facility

**VEHICLE** | ▪ Provide narrower vehicle travel lanes to slow traffic for better bicyclist safety and to allow wider right-of-way for bicycle facilities

**MEDIAN** | ▪ Where there is a median, provide a narrower median to allow more right-of-way for bicycle facilities, but still allocating adequate space for trees, maintenance, and irrigation water efficiency

**CROSSING** | ▪ Design corner treatments with a smaller curb radius to slow vehicle traffic and create more space for bicycle amenities in the Curb Zone, while still accommodating emergency vehicle access and street maintenance
▪ Provide protected intersections at high-conflict intersections of streets with Class IV Protected Bike Lanes
▪ It is recommended to provide bike detection, bike boxes, and green bike lanes in high conflict areas

**RELEVANT DESIGN STANDARD DETAILS**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Page Numbers</th>
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<tr>
<td>Bike Racks and Lockers</td>
<td>p. 3-38</td>
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<tr>
<td>Class II Bike Lane Signage</td>
<td>p. 3-23</td>
</tr>
<tr>
<td>Bike Box</td>
<td>p. 3-36</td>
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<tr>
<td>On-street Parallel Parking</td>
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<td>Corner Treatments</td>
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<tr>
<td>Street Lighting</td>
<td>p. 3-13</td>
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<tr>
<td>Class IV Protected Bike Lanes</td>
<td>pp. 3-31 to 3-35</td>
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<td>Green Bike Lane</td>
<td>p. 3-28</td>
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<tr>
<td>On-street Angled Parking</td>
<td>p. 3-41</td>
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<td>Protected Intersection</td>
<td>p. 3-53</td>
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<tr>
<td>Class II and Class II Enhanced Buffered Bike Lanes</td>
<td>pp. 3-20 to 3-27</td>
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<tr>
<td>Class I Bikeway</td>
<td>p. 3-19</td>
</tr>
<tr>
<td>Total Available Width</td>
<td>p. 3-21</td>
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<tr>
<td>Back-in Angled Parking</td>
<td>p. 3-42</td>
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<tr>
<td>Bike Detection</td>
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</table>
### ARTERIAL AND COLLECTOR DESIGN CONSIDERATIONS

#### Pedestrian Modal Priority

<table>
<thead>
<tr>
<th>STREET ZONE</th>
<th>DESIGN CONSIDERATIONS</th>
</tr>
</thead>
</table>
| **PEDESTRIAN** | - Provide a wider Pedestrian Zone to accommodate wide pedestrian throughways, especially in locations where retail uses face the street  
- Consider implementing pedestrian channeling devices such as pedestrian barriers and dividers for pedestrian traffic |
| **CURB** | - Provide a wider Curb Zone, including landscaping and utilities, to allow for signage and street furnishings such as benches, pedestrian lighting, banners, gateway features, planters, and street furniture to encourage active ground floor activity  
- Consider incorporating landscaping, including green infrastructure/stormwater guidelines, for vegetation in the Curb Zone  
- Consider incorporating street lighting guidelines to provide visibility and safety for pedestrians |
| **BICYCLE** | - It is recommended to provide a bicycle facility such as a Class II Bike Lane, although a bicycle zone is not required |
| **PARKING** | - Accommodate on-street parallel or angled parking to allow drivers convenient access to the adjacent Pedestrian Zone and to provide buffer from moving traffic |
| **VEHICLE** | - Provide narrower vehicle travel lanes to slow traffic, provide better safety for pedestrians in the Pedestrian Zone and at street crossings, and allow wider sidewalks and room for traffic calming design features |
| **MEDIAN** | - Where there is a median, provide a narrower median to allow room for wide Pedestrian and Curb Zones especially in an urban land use context with active retail frontage at the ground level (i.e. sidewalks, landscaping, street furniture, outdoor dining furniture)  
- Consider incorporating median landscaping and/or green infrastructure/stormwater guidelines for vegetation in the Median Zone |
| **CROSSING** | - Design corner treatments with a smaller curb radius to slow vehicle traffic, shorten the pedestrian crossing distance, and create more space for pedestrians, while still accommodating emergency vehicle access and street maintenance  
- Provide pedestrian refuge islands at pedestrian crossings, mid-block crossings near major destinations, and where there are long distances between street intersections  
- Consider daylighting intersections such as installing Painted Safety Zones at intersections and crossings where sightlines are poor  
- Provide high visibility crosswalks that incorporate special treatment such as colored or textured pavement and striping, especially along busy streets in urban and suburban land use context  
- Provide traffic calming design features to slow traffic for improved pedestrian safety, including bulb-outs |

### RELEVANT DESIGN STANDARD DETAILS

<table>
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<tr>
<th>Design Standard</th>
<th>Page Numbers</th>
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| Signage | p. 3-10  
| Street Furnishings | p. 3-12  
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| Green Infrastructure/Stormwater | p. 3-14 to 3-15  
| Street Lighting | p. 3-13  
| Class II Bike Lanes | pp. 3-20 to 3-27  
| On-street Parallel Parking | p. 3-40  
| On-street Angled Parking | p. 3-41  
| Corner Treatments | p. 3-52  
| Pedestrian Refuge Island | p. 3-49  
| Mid-block Crossing | p. 3-55  
| Daylighting | p. 3-56  
| Painted Safety Zone | p. 3-57  
| Crosswalks | p. 3-51  

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*STREET DESIGN CONSIDERATIONS • CENTRAL COUNTY COMPLETE STREETS IMPLEMENTATION DESIGN GUIDELINES*
### Street Zone Design Considerations

<table>
<thead>
<tr>
<th>Street Zone</th>
<th>Design Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pedestrian</strong></td>
<td>- Provide a wider Pedestrian Zone to allow more room for pedestrians to wait for, board, and alight transit vehicles</td>
</tr>
<tr>
<td><strong>Curb</strong></td>
<td>- Provide a wide Curb Zone to accommodate bus stops, including furniture and wayfinding kiosks for better transit accessibility for pedestrians</td>
</tr>
</tbody>
</table>
| **Bicycle** | - It is recommended to provide a bicycle facility such as a Class II Bike Lane, although a bicycle zone is not required  
- Consider a protected bikeway facility to minimize bus and bicycle weaving |
| **Vehicle** | - Provide a wider Vehicle Zone to allow wider outside travel lanes to accommodate and allow for dedicated bus-only/rapid transit lanes, bus bulbs, and bus pull outs |
| **Median** | - Where a median is present, provide a wider median to allow for transit turning movements |
| **Crossing** | - Design corner treatments with a large curb radius to allow for transit turning movements in the outer travel lanes, while still accommodating emergency vehicle access and street maintenance  
- Provide pedestrian refuge islands at pedestrian crossings  
- Frequently space crossing opportunities with crosswalks at all stops |

### Relevant Design Standard Details

<table>
<thead>
<tr>
<th>Feature</th>
<th>Page</th>
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<tbody>
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<td>Bus Stops</td>
<td>p. 3-9</td>
</tr>
<tr>
<td>Class II Bike Lanes</td>
<td>pp. 3-20 to 3-27</td>
</tr>
<tr>
<td>Dedicated Bus-only Lane</td>
<td>p. 3-45</td>
</tr>
<tr>
<td>Bus Bulb</td>
<td>p. 3-17</td>
</tr>
<tr>
<td>Bus Pull-out</td>
<td>p. 3-16</td>
</tr>
<tr>
<td>Corner Treatments</td>
<td>p. 3-52</td>
</tr>
<tr>
<td>Pedestrian Refuge Island</td>
<td>p. 3-49</td>
</tr>
<tr>
<td>STREET ZONE</td>
<td>DESIGN CONSIDERATIONS</td>
</tr>
<tr>
<td>--------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>PEDESTRIAN</td>
<td>▪ Provide a narrower Pedestrian Zone to accommodate lower pedestrian traffic in an industrial land use typology</td>
</tr>
<tr>
<td>Curb</td>
<td>▪ Provide a narrower Curb Zone to accommodate lower pedestrian traffic, but still providing a buffer for pedestrians from passing truck traffic</td>
</tr>
<tr>
<td>BICYCLE</td>
<td>▪ It is recommended to provide a bicycle facility such as a Class II Bike Lane, although a bicycle zone is not required</td>
</tr>
<tr>
<td></td>
<td>▪ Bike lane facilities on Truck Modal Priority Streets should consider effects on truck turning radii at intersections</td>
</tr>
<tr>
<td>PARKING</td>
<td>▪ Accommodate on-street parallel or angled parking to allow truck loading</td>
</tr>
<tr>
<td>VEHICLE</td>
<td>▪ Provide a wider Vehicle Zone to allow a wider outside travel lane for accommodating through traffic for larger vehicles such as trucks</td>
</tr>
<tr>
<td>MEDIAN</td>
<td>▪ Where there is a median, provide a wider median to allow for truck turning movements</td>
</tr>
<tr>
<td>CROSSING</td>
<td>▪ Design corner treatments with a large curb radius to allow for truck turning movements in the outer travel lanes, while still accommodating emergency vehicle access and street maintenance</td>
</tr>
<tr>
<td></td>
<td>▪ Consider truck turning treatments such as mountable curbs/truck aprons or recessed STOP bars to accommodate large vehicle off-tracking</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>RELEVANT DESIGN STANDARD DETAILS</th>
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<tbody>
<tr>
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<td>pp. 3-20 to 3-27</td>
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<td>Corner Treatments</td>
<td>p. 3-52</td>
</tr>
<tr>
<td>On-street Parallel Parking</td>
<td>p. 3-40</td>
</tr>
<tr>
<td>Truck Turning</td>
<td>p. 3-58</td>
</tr>
<tr>
<td>On-street Angled Parking</td>
<td>p. 3-41</td>
</tr>
</tbody>
</table>
STREET TYPE ILLUSTRATIVE SECTION

LOCAL STREET

2 lanes

The purpose of this sheet is to convey how zones relate to each other rather than to prescribe design components (e.g., the number of lanes and the presence of on-street parking).

See “Local Street Design Considerations” on the following pages for discussion of the spatial street zones and dimensions indicated below.

<table>
<thead>
<tr>
<th>LAND USE TYPOLOGY</th>
<th>PEDESTRIAN ZONE</th>
<th>CURB ZONE</th>
<th>PARKING ZONE</th>
<th>SHARED VEHICLE AND BICYCLE ZONE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MIN.</td>
<td>REC.</td>
<td>MIN.</td>
<td>REC.</td>
</tr>
<tr>
<td>Urban</td>
<td>4.5 ft.</td>
<td>8 ft.</td>
<td>2.5 ft.</td>
<td>4 ft.</td>
</tr>
<tr>
<td>Suburban</td>
<td>4.5 ft.</td>
<td>6 ft.</td>
<td>2.5 ft.</td>
<td>4 ft.</td>
</tr>
<tr>
<td>Rural and Open Space</td>
<td>4.5 ft.</td>
<td>6 ft.</td>
<td>2.5 ft.</td>
<td>2 ft.</td>
</tr>
<tr>
<td>Industrial</td>
<td>4.5 ft.</td>
<td>6 ft.</td>
<td>2.5 ft.</td>
<td>2 ft.</td>
</tr>
</tbody>
</table>

Notes:
[1] Parking Zone could include on-street angled parking or back-in diagonal parking for streets with bicycle facilities. Design guidelines for angled parking can be found on pages 3-41 and 3-42.
[2] Vehicles could also include buses and trucks.
[3] All streetscape improvements should refer to C.3 stormwater requirements.

The provided minimum, maximum, and recommended zone widths are targets. Due to limitations in existing street right-of-way, some of these target zone widths may not be achievable.

Crossing Zone is not shown in the illustrative section above.
### STREET ZONE

<table>
<thead>
<tr>
<th>STREET ZONE</th>
<th>DESIGN CONSIDERATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PEDESTRIAN</strong></td>
<td>• Provide a wider Pedestrian Zone to encourage pedestrian activity</td>
</tr>
<tr>
<td><strong>CURB</strong></td>
<td>• Provide a wider Curb Zone, including landscaping and utilities, to allow for street furnishings such as benches, pedestrian lighting, banners, gateway features, planters, and street furniture</td>
</tr>
<tr>
<td><strong>PARKING</strong></td>
<td>• If and when possible, accommodate on-street parallel parking or angled parking for nearby residents and users of commercial and office buildings</td>
</tr>
<tr>
<td><strong>SHARED VEHICLE AND BICYCLE</strong></td>
<td>• Provide wider vehicle travel lanes to allow enough space for a vehicle to safely share right-of-way with and pass a bicyclist</td>
</tr>
<tr>
<td></td>
<td>• It is recommended to provide a shared use bicycle facility such as a Class III Bike Route or Class III Enhanced Bicycle Boulevard on streets with higher traffic volumes and speeds</td>
</tr>
<tr>
<td></td>
<td>• Consider implementing shared streets with slow vehicle and bicycle traffic</td>
</tr>
<tr>
<td><strong>CROSSING</strong></td>
<td>• Design corner treatments with a smaller curb radius to slow vehicle traffic, shorten the pedestrian crossing distance, and create more space for pedestrians, while still accommodating emergency vehicle access and street maintenance</td>
</tr>
<tr>
<td></td>
<td>• Consider daylighting intersections at intersections and crossings where sightlines are poor</td>
</tr>
<tr>
<td></td>
<td>• Provide high visibility crosswalks and signalized pedestrian crossings at crossings with low visibility, high amount of traffic, and/or near key destinations such as schools and commercial areas, especially along busy streets</td>
</tr>
</tbody>
</table>

### RELEVANT DESIGN STANDARD DETAILS

<table>
<thead>
<tr>
<th>Design Standard</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Landscaping and Utilities</td>
<td>p. 3-11</td>
</tr>
<tr>
<td>Street Furnishings</td>
<td>p. 3-12</td>
</tr>
<tr>
<td>On-street Parallel Parking</td>
<td>p. 3-40</td>
</tr>
<tr>
<td>On-street Angled Parking</td>
<td>p. 3-41</td>
</tr>
<tr>
<td>Class III Bike Route</td>
<td>p. 3-29</td>
</tr>
<tr>
<td>Class III Enhanced Bicycle Boulevard</td>
<td>p. 3-30</td>
</tr>
<tr>
<td>Shared Street Crosswalks</td>
<td>p. 3-46</td>
</tr>
<tr>
<td>Corner Treatments</td>
<td>p. 3-52</td>
</tr>
<tr>
<td>Daylighting</td>
<td>p. 3-56</td>
</tr>
</tbody>
</table>
## LOCAL STREET DESIGN CONSIDERATIONS

### Suburban Land Use Context

<table>
<thead>
<tr>
<th>STREET ZONE</th>
<th>DESIGN CONSIDERATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PEDESTRIAN</strong></td>
<td>• Provide a wider Pedestrian Zone to encourage pedestrian activity</td>
</tr>
<tr>
<td><strong>CURB</strong></td>
<td>• Provide a wider Curb Zone, including a planting strip, to allow for street furnishings such as benches, pedestrian lighting, banners, gateway features, planters, and street furniture</td>
</tr>
<tr>
<td><strong>PARKING</strong></td>
<td>• If and when possible, accommodate on-street parallel parking for nearby residents</td>
</tr>
<tr>
<td><strong>SHARED VEHICLE AND BICYCLE</strong></td>
<td>• Provide wider vehicle travel lanes to allow enough space for a vehicle to safely share right-of-way with and pass a bicyclist</td>
</tr>
<tr>
<td></td>
<td>• It is recommended to provide a shared use bicycle facility such as a Class III Bike Route on streets with higher traffic volumes and speeds</td>
</tr>
<tr>
<td><strong>CROSSING</strong></td>
<td>• Design corner treatments with a smaller curb radius to slow vehicle traffic, shorten the pedestrian crossing distance, and create more space for pedestrians, but still accommodating emergency vehicle access and street maintenance</td>
</tr>
<tr>
<td></td>
<td>• Provide high visibility crosswalks and signalized pedestrian crossings at crossings with low visibility, high amount of traffic, and/or near key destinations such as schools and commercial areas, especially along busy streets</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RELEVANT DESIGN STANDARD DETAILS</th>
<th>PAGES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planting Strip</td>
<td>p. 3-11</td>
</tr>
<tr>
<td>Street Furnishings</td>
<td>p. 3-12</td>
</tr>
<tr>
<td>On-street Parallel Parking</td>
<td>p. 3-40</td>
</tr>
<tr>
<td>Class III Bike Routes</td>
<td>pp. 3-29 to 3-30</td>
</tr>
<tr>
<td>Corner Treatments</td>
<td>p. 3-52</td>
</tr>
<tr>
<td>Crosswalks</td>
<td>p. 3-51</td>
</tr>
</tbody>
</table>
## Local Street Design Considerations

### Rural and Open Space Land Use Context

<table>
<thead>
<tr>
<th>STREET ZONE</th>
<th>DESIGN CONSIDERATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PEDESTRIAN</strong></td>
<td>▪ Provide a narrower Pedestrian Zone with rural solutions for pedestrian facilities to accommodate lower pedestrian traffic</td>
</tr>
<tr>
<td><strong>CURB</strong></td>
<td>▪ Provide a narrower Curb Zone to accommodate lower pedestrian traffic</td>
</tr>
<tr>
<td><strong>PARKING</strong></td>
<td>▪ On-street parking is optional if it is needed to serve fronting land uses</td>
</tr>
</tbody>
</table>
| **SHARED VEHICLE AND BICYCLE** | ▪ Provide narrower vehicle travel lanes to accommodate lower traffic volumes  
 ▪ It is optional to provide a shared use bicycle facility such as a Class III Bike Route or a wide shoulder that bikes can use |
| **CROSSING**                 | ▪ Provide high visibility crosswalks at crossings with low visibility and/or near key destinations such as schools and commercial areas            |

### Relevant Design Standard Details

| Rural Solutions for Pedestrian Facilities | p. 3-7 | Class III Bike Routes | pp. 3-29 to 3-30 | Crosswalks | p. 3-51 |
### LOCAL STREET DESIGN CONSIDERATIONS

#### Industrial Land Use Context

<table>
<thead>
<tr>
<th>STREET ZONE</th>
<th>DESIGN CONSIDERATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PEDESTRIAN</strong></td>
<td>- Provide a narrower Pedestrian Zone to accommodate lower pedestrian traffic</td>
</tr>
<tr>
<td><strong>CURB</strong></td>
<td>- Provide a narrower Curb Zone to accommodate lower pedestrian traffic, but still protect pedestrians from passing truck traffic</td>
</tr>
<tr>
<td><strong>PARKING</strong></td>
<td>- Accommodate on-street parallel parking to allow truck loading</td>
</tr>
<tr>
<td><strong>SHARED VEHICLE AND BICYCLE</strong></td>
<td>- Provide narrower vehicle travel lanes to accommodate lower traffic volumes  &lt;br&gt; - It is optional to provide a shared use bicycle facility such as a Class III Bike Route or a wide shoulder that bikes can use</td>
</tr>
<tr>
<td><strong>CROSSING</strong></td>
<td>- Design corner treatments with a large curb radius to allow for truck turning movements in the outer travel lanes  &lt;br&gt; - Provide high visibility crosswalks at crossings with low visibility and/or near key destinations such as schools and commercial areas  &lt;br&gt; - Consider installing improvements for truck turning such as mountable curbs and recessed STOP bars at intersections with heavier truck traffic</td>
</tr>
</tbody>
</table>

#### RELEVANT DESIGN STANDARD DETAILS

<table>
<thead>
<tr>
<th>Design Standard</th>
<th>Page Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>On-street Parallel Parking</td>
<td>p. 3-40</td>
</tr>
<tr>
<td>Class III Bike Routes</td>
<td>pp. 3-29 to 3-30</td>
</tr>
<tr>
<td>Corner Treatments</td>
<td>p. 3-52</td>
</tr>
<tr>
<td>Crosswalks</td>
<td>p. 3-51</td>
</tr>
<tr>
<td>Truck Turning</td>
<td>p. 3-58</td>
</tr>
</tbody>
</table>

---

**Industrial Land Use Context**

- **Pedestrian Zone**: Narrower zone to accommodate lower pedestrian traffic.
- **Curb**: Narrower zone to accommodate lower pedestrian traffic, ensuring protection from truck traffic.
- **Parking**: Accommodate on-street parallel parking for truck loading.
- **Shared Vehicle and Bicycle**: Narrower travel lanes for lower traffic volumes, option for shared use bicycle facility.
- **Crossing**: Design corner treatments with large radius, high visibility crosswalks, and improvements for truck turning.

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**Local Design Considerations**

- **Industrial Land Use**: Specific considerations for industrial areas, including narrower zones and improved infrastructure for safety and functionality.

---

**Relevant Design Standards**

- **On-street Parallel Parking**: Page 3-40
- **Class III Bike Routes**: Pages 3-29 to 3-30
- **Corner Treatments**: Page 3-52
- **Crosswalks**: Page 3-51
- **Truck Turning**: Page 3-58
3. GLOSSARY
OF DESIGN GUIDELINE DETAILS
This page is intentionally blank
PEDESTRIAN ZONE
Notes:
1. Pedestrian Zone should be free of any obstacles, gaps, or deformities which make them non-traversable for pedestrians. Location of a bus shelter, bench, or other permanent fixtures shall ensure a 3’ minimum clear path for pedestrian travel.
2. Width of Pedestrian Zone should be wider for streets with higher pedestrian volumes.
4. The above design guideline is a recommendation for complete streets implementation and does not supersede a jurisdiction’s existing standards.
5. Objects in the buffer area between the vehicle lane and the pedestrian zone need to be 18 to 22 inches from the face of the curb (measure from the object on the curb side) and maintain ADA access from the back of the object to the back of the Pedestrian Zone.
Notes:
1. Consider implementing pedestrian channeling devices for pedestrian traffic when adjacent to high-speed vehicle lanes and where there is no Parking Zone.
2. Bollards are typically 4" to 10" in diameter and should be painted in colors other than grey to be easily visible. Decorative bollards may vary in form and size.
4. The above design guideline is a recommendation for complete streets implementation and does not supersede a jurisdiction’s existing standards.
Pedestrian Channeling Devices: Dividers at Surface Parking Lots

Notes:
1. Recommended for sidewalks adjacent to surface parking to provide visual separation and to focus physical access to and from parking areas.
2. Railings should be a minimum of 2'-6" to 3'-6" in height and minimum of 70 percent open to limit non-visible areas for safety. Solid walls can be 1'-6" to 2'-8" in height.
3. The above design guideline is a recommendation for complete streets implementation and does not supersede a jurisdiction’s existing standards.
4. Zoning regulations should be considered in development of any barriers or fencing for property and sidewalks.
Notes:
1. If parking is allowed, vehicles should park on the opposite shoulder from the pedestrian facility.
2. Rural streets often do not have curbs and gutters. The above are suggested solutions for implementing pedestrian improvements in rural areas.
3. The above design guideline is a recommendation for complete streets implementation and does not supersede a jurisdiction’s existing standards.
Bus Stops: Far Side Bus Stop

Far side stop placement is generally preferred as it reduces instances of buses waiting for traffic signals, reduces conflicts with right turning vehicles, and reduces frequency of pedestrians crossing the street in front of buses.

Near side placement may be preferred in selected instances, such as if major destinations are better aligned with a near side stop or if a low ridership route intersects a high ridership route. Nearside placement would also minimize walking distance for transferring riders.

Notes:
1. Far side bus stops are recommended over near side bus stops for complete streets implementation. Context consideration should be given to trip generators and Pedestrian Zones when determining far side versus near side bus stops.
3. The above design guideline is a recommendation for complete streets implementation and does not supersede a jurisdiction’s existing standards.
4. Design should consider bus stop use of articulated buses and a high incidence of multiple buses arriving simultaneously. Some bus stops may need to be longer than 60 feet.
Signage

Notes:
1. Signage, wayfinding, traffic, or other should be kept clear of the Pedestrian Zone.
2. Signs may be placed on both sides of the road if special emphasis is required.
4. The above design guideline is a recommendation for complete streets implementation and does not supersede a jurisdiction’s existing standards.
5. Objects in the buffer area between the vehicle lane and the Pedestrian Zone need to be 18 to 22 inches from the face of the curb (measure from the object on the curb side) and maintain ADA access from the back of the object to the back of the Pedestrian Zone.
Trees should be placed 5' from underground utility lines for clearance.

Above ground utility boxes should be located in the curb zone and 1' min. away from curb face.

Notes:
2. The above design guideline is a recommendation for complete streets implementation and does not supersede a jurisdiction’s existing standards.
3. Use of native plant species is recommended. Trees should be selected considering their form, mature size, color, and texture. Accent trees, flowering species, with overarching canopies and medium density foliage are appropriate on wider streets such as boulevards. Trees with upright and columnar form are appropriate for narrow streets and medians.
Notes:
1. All items, including trash cans, benches, and other street furnishings, should be placed at least 18" from curb face.
2. Street furnishings should be placed every 200’ along commercial streets and should maintain a minimum 4’ clear accessible route.
4. The above design guideline is a recommendation for complete streets implementation and does not supersede a jurisdiction’s existing standards.
5. Street furnishings should be confined to Curb Zone to maximum extent possible to minimize encroachment into pedestrian clear path of travel.
DESIGN GUIDELINE

Street Lighting

Light fixtures should be selected based on street and sidewalk widths. They may be placed parallel or in a staggered pattern depending upon the illumination required for the street.

Notes:
1. Consider incorporating street lighting standards to provide visibility and safety for pedestrians.
3. The above design guideline is a recommendation for complete streets implementation and does not supersede a jurisdiction’s existing standards.
Notes:
1. Consider incorporating landscaping standards, including green infrastructure/stormwater requirements, for vegetation in the Curb Zone.
3. The above design guideline is a recommendation for complete streets implementation and does not supersede a jurisdiction’s existing standards.
4. Square feet of the biotreatment area should be a minimum of 4% of total impervious drainage area.
Green Infrastructure and Stormwater: At Parking

Notes:
1. Consider incorporating landscaping standards, including green infrastructure/stormwater requirements, for vegetation in the Curb Zone.
3. The above design guideline is a recommendation for complete streets implementation and does not supersede a jurisdiction’s existing standards.
4. Square feet of the biotreatment area should be a minimum of 4% of total impervious drainage area.
DESIGN GUIDELINE

Bus Facilities: Bus Pull-out

Bus pull-outs are generally not preferred as they reduce pedestrian space and force buses to pull back into traffic. Bus pull-outs may be warranted if high-speed traffic presents rear-end collision risks.

Notes:
1. Bus pull outs should be implemented on streets with a wider vehicle zone that allow for wider outside travel lanes.
3. The above design guideline is a recommendation for complete streets implementation and does not supersede a jurisdiction’s existing standards.
Bus bulbs eliminate delays to buses from pulling out of and back into traffic. Bus bulbs also create pedestrian waiting space and can enable shelters to be moved out of the Sidewalk Zone. Bus bulbs may also create on-street parking spaces as transition/taper zones are not needed.

Notes:
2. The above design guideline is a recommendation for complete streets implementation and does not supersede a jurisdiction’s existing standards.
BICYCLE ZONE
DESIGN GUIDELINE

Class I Bikeway

Class I Bikeways provide a completely separated right-of-way for the exclusive use of bicycles and pedestrians with crossflow minimized.

Notes:
1. Class I Bikeways are to be considered where opportunity coincides with planning.
2. A wider shoulder can attract more pedestrian traffic and potentially reduce conflicts with bicyclists on the bike path.
4. The above design guideline is a recommendation for complete streets implementation and does not supersede a jurisdiction’s existing standards.
Notes:
1. It is recommended to provide a bicycle facility such as a Class II Bike Lane on all arterial and collector streets, although a Bicycle Zone is not required.
2. It is acceptable to provide a Class II Bike Lane with signage for streets with a narrower overall street width.
3. It is recommended to provide a wider Bicycle Zone to include a buffer between the Bicycle and Vehicle Zones or between the Bicycle and Parking Zones.
5. The above design guideline is a recommendation for complete streets implementation and does not supersede a jurisdiction’s existing standards.
**Notes:**

1. Total available width indicates the combined width of the bike lane, parking lane, and optional buffer measured from the curb face to the outside bike lane stripe.
2. 12’ and 13’ total available widths apply to parking lanes with metered parking only. All other total available widths apply to parking lanes for both metered and unmetered parking.
3. If illegal parking within bike lanes is an issue, a 5’ bike lane may be recommended.
4. When the bike lane is adjacent to a curb and gutter, it is recommended to maintain a minimum of 2.5’ clear surface beyond the gutter.
5. When adjacent to a guardrail or other physical barrier, provide an additional 2’ of lane width clearance.
6. Many jurisdictions prefer a 6’ minimum bike lane to provide extra space for bicyclists to keep them safely outside the door zone and to ensure bicyclists are not riding in the gutter. The door zone refers to the area where bicyclists are vulnerable to being hit by an opening car door in the parking lane.
8. The above design guideline is a recommendation for complete streets implementation and does not supersede a jurisdiction’s existing standards.

---

### Class II Bike Lanes: Total Available Width

<table>
<thead>
<tr>
<th>TOTAL AVAILABLE WIDTH (feet)</th>
<th>PARKING LANE WIDTH (feet)</th>
<th>BIKE LANE WIDTH (feet)</th>
<th>BUFFER WIDTH (feet)</th>
<th>METERED PARKING TEES FROM CURB FACE DISTANCE (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 [2]</td>
<td>7</td>
<td>5</td>
<td>0</td>
<td>7</td>
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<tr>
<td>13 [2]</td>
<td>8</td>
<td>5</td>
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<td>8</td>
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<tr>
<td>14</td>
<td>9</td>
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<td>7</td>
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<td>8</td>
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<tr>
<td>20</td>
<td>11</td>
<td>6</td>
<td>3</td>
<td>9</td>
</tr>
</tbody>
</table>

*If there is 19’ or 20’ of available width, buffers on both sides of the bike lane can be added."
### BIKE LINES: MODAL PRIORITIES AND POSTED SPEED LIMITS

#### RECOMMENDED BIKE LANE WIDTHS (feet)
FOR VARIOUS ARTERIAL/COLLECTOR MODAL PRIORITIES AND POSTED SPEED LIMITS

<table>
<thead>
<tr>
<th>POSTED SPEED LIMIT:</th>
<th>25 mph</th>
<th>30 to 35 mph</th>
<th>40 to 45 mph</th>
<th>&gt; 50 mph</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BICYCLE PRIORITY STREETS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Class II Bike Lane</td>
<td>6 ft.</td>
<td>8 ft.</td>
<td>10 ft.</td>
<td>12 ft.</td>
</tr>
<tr>
<td>Class II Buffered Bike Lane [1]</td>
<td>9 ft.</td>
<td>11 ft.</td>
<td>13 ft.</td>
<td>15 ft.</td>
</tr>
<tr>
<td>Class IV Separated Bikeway with Raised Curb on Both Sides [2][3]</td>
<td>8 ft.</td>
<td>8 ft.</td>
<td>8 ft.</td>
<td>8 ft.</td>
</tr>
<tr>
<td>Class IV Separated Bikeway with Raised Curb on Only One Side</td>
<td>6 ft.</td>
<td>6 ft.</td>
<td>6 ft.</td>
<td>6 ft.</td>
</tr>
<tr>
<td><strong>ALL OTHER MODAL PRIORITIES</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Class II Bike Lane</td>
<td>5 ft.</td>
<td>6 ft.</td>
<td>8 ft.</td>
<td>10 ft.</td>
</tr>
<tr>
<td>Class II Buffered Bike Lane [1]</td>
<td>8 ft.</td>
<td>9 ft.</td>
<td>11 ft.</td>
<td>13 ft.</td>
</tr>
<tr>
<td>Class IV Separated Bikeway with Raised Curb on Both Sides [2][3]</td>
<td>7 ft.</td>
<td>7 ft.</td>
<td>7 ft.</td>
<td>7 ft.</td>
</tr>
<tr>
<td>Class IV Separated Bikeway with Raised Curb on Only One Side</td>
<td>5 to 6 ft.</td>
<td>5 to 6 ft.</td>
<td>5 to 6 ft.</td>
<td>5 to 6 ft.</td>
</tr>
</tbody>
</table>

#### Notes:
1. Width includes the buffer width since the allocation of width between the bike lane versus the buffer strip can vary.
2. Indicated width does not include the width of the separation buffer strip since this can vary considerably depending on the design. The separation buffer width typically varies from as little as 3’ with only flexible stanchions (tubular markers) to as much as 12’ with on-street parking.
3. There is no change in width of Class IV facilities based on speed limit since cyclists are not riding adjacent to the traffic and still have to interact with motorists at intersections.
4. If on-street parking is permitted, an additional 8’ is necessary for the (parallel) parking lane.
5. All widths are for one-way bikeways.
6. The above design guideline is a recommendation for complete streets implementation and does not supersede a jurisdiction’s existing standards.
**Pavement Markings**

**Bike lane striping** should allow bicyclists to follow a straight path outside of the motor vehicle tread path.

- Bike lanes along roads with parking permitted should not be directed toward the curb at intersections.
- A 6 to 8 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.
- An optional solid white line can also be used at the outside of the bike lane between the bike and parking lanes.
- 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 (Figures 1 and 2).
- Another option for pavement marking includes colored bike lanes. Colored bike lanes can be used in high-conflict areas to alert motorists to the presence of bicyclists and bike lanes.
- Markings can be painted or treated with thermoplastic. Thermoplastic paving is a preferred option because of its increased durability, reflectivity, and lack of toxic solvents.

**Signage**

- The bike lane signs (CA MUTCD R81) as shown in Figure 3 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 (Figure 4). 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 – See Figure 5) on the back of bike lane signs to reinforce appropriate traffic flow for bicyclists.

Notes:
**DESIGN GUIDELINE**

**Class II Bike Lanes: Striping and Pavement Markings**

- **MINOR INTERSECTION**
  - Normal solid white line
  - Optional normal solid white line
  - Signage optional if pavement markings used

- **SIGNALIZED INTERSECTION**
  - 50’ to 200’ dotted line at bus stops and where right turns are permitted
  - Normal solid white line
  - Optional normal solid white line
  - Signage optional if pavement markings used

**Notes:**
2. The above design guideline is a recommendation for complete streets implementation and does not supersede a jurisdiction’s existing standards.
DESIGN GUIDELINE

Class II Bike Lanes: Left Turn Treatments

Length of left-turn pocket should match the length of the automobile left-turn pocket so that the cyclist may enter the left-turn lane at the very beginning of the left-turn pocket and be more protected from motorized traffic.

In certain locations, for example where the adjacent through lane is high-speed or where the left-turn lane exceeds 200’ in length, consider a 3’ wide buffer (with or without flexible delineators) for the last 100 feet of the turn lane. The buffer would be located between the through lane and the bike left-turn pocket.

Notes:
2. The above design guideline is a recommendation for complete streets implementation and does not supersede a jurisdiction’s existing standards.

Two-stage left turns may be designed using a two-stage turn queue box. Two-stage turn boxes should be considered at intersections with two or more bikeways and at signalized intersections where cyclists would need to make left turns across two or more lanes.
Class II Bike Lanes: Right Turn Treatments

Notes:
2. The above design guideline is a recommendation for complete streets implementation and does not supersede a jurisdiction’s existing standards.
**Class II Bikeways: Lane Reduction Transition Markings**

Notes:
2. The above design guideline is a recommendation for complete streets implementation and does not supersede a jurisdiction’s existing standards.

Formula:
- \( L \) = Length in feet or \( W*S \)
- \( S \) = Bicycle approach speed in miles per hour
- \( W \) = Offset in feet
- \( M \) = Length of skip strip in feet: \( M = (2L)/3 \) & \( M \geq 55' \)
- \( M/2 \) = Spacing of arrows in feet
DESIGN GUIDELINE
Green Bike Lane

Notes:
1. It is recommended to provide green lanes in an urban land use typology.
3. The above design guideline is a recommendation for complete streets implementation and does not supersede a jurisdiction’s existing standards.

Examples of green bike lanes

Broken green bike lane

Bike Lane Marking spaced 25 to 50’ for minor streets and 50’ to 100’ for major streets

Broken Green Bike Lane allows drivers to merge prior to making a right turn
Class III Bike Routes provide for shared use with motor vehicle traffic. Shared lane stencils or “sharrows” assist cyclists with lane positioning, provide wayfinding, and alert motorists of the presence of bicycles.

**Notes:**
1. It is recommended to provide a shared use bicycle facility such as a Class III Bike Route on local streets with lower traffic volumes and speeds.
3. The above design guideline is a recommendation for complete streets implementation and does not supersede a jurisdiction’s existing standards.
DESIGN GUIDELINE
Class III Enhanced: Bike Boulevard

Bicycle boulevards are local (often residential) streets where bicycle traffic is given right-of-way wherever feasible, primarily by removing unwarranted STOP signs, which improves the travel time for bicyclists.

Notes:
1. It is recommended to provide a shared use bicycle facility such as a Class III Enhanced Bicycle Boulevard on local streets with lower traffic volumes and speeds.
2. The above design guideline is a recommendation for complete streets implementation and does not supersede a jurisdiction’s existing standards.
Class IV Protected Bike Lanes provide exclusive use of bicycles, including separation in the form of physical barriers or grade separation, between the bicycle lane and vehicle lane.

Hatching between two solid white lines for buffers 3’ or more in width (for buffers with only pavement markings)

Hatching: 4” lines every 10’ to 40’ at an angle of 30 to 45 degrees

Tubular markers in buffer space are one option for a physical barrier. Other options include planters, bollards, or a raised curb.

Notes:
1. It is recommended to provide a wider Bicycle Zone to include a buffer between the Bicycle and Vehicle Zones or between the Bicycle and Parking Zones (Class IV Protected Bike Lane).
3. The above design guideline is a recommendation for complete streets implementation and does not supersede a jurisdiction’s existing standards.
**DESIGN GUIDELINE**

**Class IV Protected Bike Lane: On-Street with Parking**

Class IV Protected Bike Lanes provide exclusive use of bicycles, including separation in the form of physical barriers or grade separation, between the bicycle lane and vehicle lane.

- **Tubular markers in buffer space** are one option for a physical barrier. Other options include planters, bollards, or a raised curb.

- **Hatching between two solid white lines** for buffers 3’ or more in width (for buffers with only pavement markings).

  - Hatching: 4” lines every 10’ to 40’ at an angle of 30 to 45 degrees.

- **7’ minimum for areas with high bicyclist volume or at an uphill section** to allow bicyclists enough room for passing other bicyclists.

**Notes:**

1. It is recommended to provide a wider Bicycle Zone to include a buffer between the Bicycle and Vehicle Zones or between the Bicycle and Parking Zones (Class IV Protected Bike Lane).


3. The above design guideline is a recommendation for complete streets implementation and does not supersede a jurisdiction’s existing standards.

4. Refer to Illustrative Section for zone widths.
**DESIGN GUIDELINE**

**Class IV Protected Bike Lane: Raised**

Class IV Protected Bike Lanes provide exclusive use of bicycles, including separation in the form of physical barriers or grade separation, between the bicycle lane and vehicle lane.

**Notes:**
1. The raised cycle track may be at the same level as the sidewalk (typically 6”) or it may be at an intermediate level (3”).
2. If configured at a height flush with the sidewalk, then the cycle track should be separated and distinguished from the Pedestrian Zone through the use of pavement markings; different surface materials, textures or colors; landscaping; and/or furnishings in order to discourage pedestrian incursion into the Bicycle Zone.
3. All drainage should slope to the street. Drainage inlets should be in the adjacent travel or parking lane.
4. Mountable curb may be used if a need is foreseen for cyclists to transition from roadway to cycle track. If used, the mountable curb should have 4:1 slope with no seams or lips that might cause cyclists to fall when traversing the curb. This curb is not considered a ridable surface when determining cycle track width.
6. The above design guideline is a recommendation for complete streets implementation and does not supersede a jurisdiction’s existing standards.
7. Refer to Illustrative Section for zone widths.
Class IV Protected Bike Lanes provide exclusive use of bicycles, including separation in the form of physical barriers or grade separation, between the bicycle lane and vehicle lane.

Notes:
1. It is recommended to provide a wider Bicycle Zone to include a buffer between the Bicycle and Vehicle Zones or between the Bicycle and Parking Zones (Class IV Protected Bike Lane).
3. The above design guideline is a recommendation for complete streets implementation and does not supersede a jurisdiction’s existing standards.
4. Refer to Street Type Illustrative Sections in Chapter 2 for zone widths.
In-lane bus stops minimize bus delays caused from weaving with bikes and from waiting for a gap to pull back into traffic. Bus loading islands also increase comfort and reduce sideswipe collision risks for cyclists by eliminating the need to pass stopped buses.

Notes:
1. It is recommended to provide a wider Bicycle Zone to include a buffer between the Bicycle and Vehicle Zones or between the Bicycle and Parking Zones (Class IV Protected Bike Lane).
3. The above design guideline is a recommendation for complete streets implementation and does not supersede a jurisdiction’s existing standards.
4. Raised pedestrian crossing eliminates need for curb cuts and forces cyclists to slow before crossing where pedestrians have right of way.
Bike boxes provide space for cyclists to queue where there are visible, reducing right-hook collision risks. Bike boxes also can reduce delays to right-turning vehicles by encouraging bikes to wait in a location that does not block turning movements.

Notes:
1. Bike boxes should have colored pavement and be formed by transverse lines to provide space for queuing bicyclists at signalized intersection.
2. Deeper bike boxes minimize encroachment by vehicles.
3. It is recommended to provide bike boxes in an urban land use typology.
5. The above design guideline is a recommendation for complete streets implementation and does not supersede a jurisdiction’s existing standards.
Notes:
1. Per CVC 21450.5, all new and retrofitted traffic signals must detect bicycles on all approaches and movements or be placed on permanent recall or fixed time operation.
2. 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.
3. 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.
5. The above design guideline is a recommendation for complete streets implementation and does not supersede a jurisdiction’s existing standards.
DESIGN GUIDELINE

Bike Racks and Lockers

Notes:
1. The above design guideline is a recommendation for complete streets implementation and does not supersede a jurisdiction's existing standards.

BIKE LOCKERS

BIKE RACK SPACING RECOMMENDATIONS

Examples of bicycle corrals

Wheel Stops or Striping for visibility

INVERTED U-RACK

STREET FURNITURE

2'-0" Min. or aligned with street trees

Throughway Zone 5'-0" Min.

Curb Zone 2'-0" Min.

BIKE CORRAL
PARKING ZONE
DESIGN GUIDELINE
On-Street Parallel Parking

Notes:
1. Accommodate on-street parallel or diagonal parking to allow pedestrians convenient access to the adjacent Pedestrian Zone.
2. Preferred approach, but with limited sidewalk width and drainage constraints. Standard approach is acceptable near corners.
4. The above design guideline is a recommendation for complete streets implementation and does not supersede a jurisdiction’s existing standards.
Notes:
1. Accommodate on-street parallel or diagonal parking to allow pedestrians convenient access to the adjacent Pedestrian Zone.
3. The above design guideline is a recommendation for complete streets implementation and does not supersede a jurisdiction’s existing standards.
4. Refer to Illustrative Section for vehicle lane widths.
Notes:
1. Consider back-in diagonal parking provides a better view of the oncoming traffic and helps avoid conflicts with adjacent bike facility.
3. The above design guideline is a recommendation for complete streets implementation and does not supersede a jurisdiction’s existing standards.
VEHICLE ZONE
### RECOMMENDED TRAVEL LANE WIDTHS (feet) FOR ARTERIAL AND COLLECTOR STREETS  
**Auto, Transit, or Truck Modal Priorities**

<table>
<thead>
<tr>
<th>POSTED SPEED LIMIT</th>
<th>25 mph</th>
<th>30 to 35 mph</th>
<th>&gt; 40 mph</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>With Bike Lanes (Class II or Class IV Separated Bikeways)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Curb Lane [2,3]</td>
<td>10 (auto priority)</td>
<td>10 to 11 (auto priority)</td>
<td>12 [8]</td>
</tr>
<tr>
<td>Other Travel Lanes (if more than one lane per direction)</td>
<td>12 (transit or truck priority)</td>
<td>12 (transit or truck priority)</td>
<td></td>
</tr>
<tr>
<td><strong>Without Bike Lanes (includes Class III Bikeway)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Travel Lanes (if more than one lane per direction)</td>
<td>12 (transit or truck priority)</td>
<td>11 (transit or truck priority)</td>
<td></td>
</tr>
</tbody>
</table>

### RECOMMENDED TRAVEL LANE WIDTHS (feet) FOR ARTERIAL AND COLLECTOR STREETS  
**Bicycle or Pedestrian Modal Priorities**

<table>
<thead>
<tr>
<th>POSTED SPEED LIMIT</th>
<th>25 mph</th>
<th>30 to 35 mph</th>
<th>&gt; 40 mph</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>With Bike Lanes (Class II or Class IV Separated Bikeways)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All Travel Lanes</td>
<td>10</td>
<td>10</td>
<td>N/A [9]</td>
</tr>
<tr>
<td><strong>Without Bike Lanes (includes Class III Bikeway)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Curb Lane</td>
<td>10</td>
<td>10 to 15 [8]</td>
<td>N/A [9]</td>
</tr>
<tr>
<td>Other Travel Lanes (if more than one lane per direction)</td>
<td>10</td>
<td>10 to 11</td>
<td>N/A [9]</td>
</tr>
</tbody>
</table>

Notes:
1. For transit and truck priority streets, the curb lane should be wider to account for larger vehicles, including mirrors.
2. The suggested lane widths apply when the curb lane is a bus-only lane or queue jump.
3. The suggested lane widths do not apply to Bus Rapid Transit (BRT), which may operate in either the inside or outside travel lane. Design parameters for BRT should account for faster bus speeds and greater passenger activity (boardings and alightings).
4. Where the curb lane is a bus-only lane and the posted speed limit is 30 mph or less, the curb lane can be designated a shared bus/bike lane.
5. If there is no Bicycle Zone and posted speed limits are 30 mph or greater, a wide curb lane may accommodate the passing of bicyclists within the lane.
6. On streets with posted speed limits of 40 mph or greater, it is recommended to provide a buffer between the curb lane and bike lane. The 12’ width assumes that there is also a minimum 2’ buffer adjacent to the bike lane or that the bike facility is a Class IV Bikeway. See also table on page 3-19 on Bike Lane widths.
7. Where posted speed limits are 40 mph or greater, a shared auto/bike lane is not recommended. Instead, any on-street bike accommodations should be either a Class II or Class IV Bike Lane.
8. If there is no bicycle zone and posted speed limits are 30 to 35 mph, a wider curb lane may be used to accommodate the passing of bicyclists within the lane.
9. Posted speed limits of 40 mph or greater are not recommended for pedestrian or bicycle priority streets.
10. The lane widths indicated do not include the width of the gutter pan; the width of the curb lane is measured from the seam of the gutter pan and the paved roadway. Gutter pan widths typically vary from 12” to 24”.
11. If on-street parking is permitted, typically 7” to 8” is provided for a parallel parking lane. The width of the parking lane can include the width of the gutter pan (i.e., the parking lane width is measured from the curb face).
Bus Facilities: Dedicated Bus-Only Lanes and Signal Priority

Notes:
2. The above design guideline is a recommendation for complete streets implementation and does not supersede a jurisdiction’s existing standards.
Notes:
1. Consider implementing shared streets with slow vehicle and bicycle traffic.
2. Service Parking areas allow service vehicles and should be indicated with different paving or striping.
4. The above design guideline is a recommendation for complete streets implementation and does not supersede a jurisdiction’s existing standards.
CENTRAL COUNTY COMPLETE STREETS IMPLEMENTATION DESIGN GUIDELINES  •  DESIGN GUIDELINE DETAILS

Median Landscaping

Per Water Efficiency Landscape Ordinance, no irrigation spray shall be used within 2 feet of impermeable surface.

Notes:
1. Trees should not be planted within 25' of an intersection.
2. Trees should be pruned to maintain 14' clearance from the lowest branch, within 50' of an intersection.
3. Spacing of trees may vary from 15' on center to 35' on center, depending on the expected size of the tree at maturity. Small trees (< 20' crown diameter) at 15' on center, medium size tree (20' to 35' crown diameter) at 25' on center, and tall trees (> 35' crown diameter) at 35' on center.
4. Consider incorporating landscaping standards, including green infrastructure/stormwater requirements, for vegetation in the median zone.
6. The above design guideline is a recommendation for complete streets implementation and does not supersede a jurisdiction's existing standards.
Pedestrian Refuge Island

Notes:
2. The above design guideline is a recommendation for complete streets implementation and does not supersede a jurisdiction’s existing standards.
3. Median nose provides protection for pedestrians and forces motorists to take turns at slower speed.
4. Pedestrian refuge island width of 6 feet or greater is recommended to provide enough width for parents pushing strollers and cyclists walking bikes.
Notes:
2. The unstriped portion of a Triple-Four Marked Crosswalk should provide a space that is not a slipping risk when wet. Consider retroreflectivity, slipping or surface roughness, and application/material selection for durability.
3. The above design guideline is a recommendation for complete streets implementation and does not supersede a jurisdiction’s existing standards.
Corner Treatment

ARTERIAL AND COLLECTOR STREETS

<table>
<thead>
<tr>
<th>MODAL PRIORITY</th>
<th>CURB RADIUS (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUTO</td>
<td>X:20 Y:5 Z:10</td>
</tr>
<tr>
<td>BICYCLE</td>
<td>X:12 Y:5 Z:10</td>
</tr>
<tr>
<td>PEDESTRIAN</td>
<td>X:10 Y:10 Z:10</td>
</tr>
<tr>
<td>TRANSIT</td>
<td>X:30 Y:10 Z:10</td>
</tr>
<tr>
<td>TRUCKS</td>
<td>X:30 Y:10 Z:10</td>
</tr>
</tbody>
</table>

LOCAL STREET

<table>
<thead>
<tr>
<th>LAND USE TYPOLOGY</th>
<th>CURB RADIUS (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>URBAN</td>
<td>X:10 Y:5 Z:10</td>
</tr>
<tr>
<td>SUBURBAN</td>
<td>X:5 Y:5 Z:5</td>
</tr>
<tr>
<td>RURAL AND OPEN SPACE</td>
<td>X:12 Y:5 Z:5</td>
</tr>
<tr>
<td>INDUSTRIAL</td>
<td>X:20 Y:5 Z:10</td>
</tr>
</tbody>
</table>

Notes:
1. The above design guideline is a recommendation for complete streets implementation and does not supersede a jurisdiction’s existing standards.
2. Green infrastructure should be located to receive water. Curb radius should consider fire truck turning; radius must either allow trucks to stay off the sidewalk or the portion of the sidewalk where they encroach must be clear of obstructions.
**DESIGN GUIDELINE**

**Protected Intersection**

**Notes:**
2. The above design guideline is a recommendation for complete streets implementation and does not supersede a jurisdiction’s existing standards.
Notes:
1. Truncated domes in the detectable warning surface should be aligned in a square or radial pattern and comply with R304 of ADA guidelines. Surface tile is cast-in-place and has a thickness of 0.25", with standard sizes of 24"x36", 24"x48", 24"x60", 36"x48", and 36"x60". A typical 24"x36" tile has dome spacing of 1.67".
2. Detectable warning surfaces should contrast in color with the adjacent street or walkway surface to help pedestrians with mobility or vision impairments to locate the curb ramp from the other side of the street. The surface color could be either light-on-dark or vice versa, and may provide for full ramp surface except for the flared sides of the ramp.
3. Perpendicular ramps can be provided where sidewalk width is at least 12’ wide and has minimum 4’-2” clear space on top of the ramp to allow adequate space for pedestrians to walk. If distance from the curb to sidewalk is limited, corner-type or diagonal curb ramp may be provided with a minimum of 4’-2” clear space at the end of the ramp located within the marked crosswalk, to ensure safety of pedestrians from vehicular traffic.
5. The above design guideline is a recommendation for complete streets implementation and does not supersede a jurisdiction’s existing standards.
Mid-block Crossing

Bulb-outs at crossing shorten pedestrian crossing distance

Advanced “Shark Teeth” yield line notifies drivers of upcoming crosswalk and to slow down

Yield Sign (RI-5) placed at advanced yield line

20'-0" to 50'-0"

Pedestrian Crossing Sign

Mid-block Crossings for blocks > 600'-0"

Notes:
1. Traffic control devices are mutually exclusive. Do not use traffic control devices with yield or stop signs.
2. On-street parking should be prohibited in area between yield lines and crosswalk.
4. The above design guideline is a recommendation for complete streets implementation and does not supersede a jurisdiction’s existing standards.
### Daylighting Intersections

<table>
<thead>
<tr>
<th>CONDITION</th>
<th>DAYLIGHTING GUIDANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban streets with 20 to 30 mph speed limits</td>
<td>Keep at least 20 feet clear (removal of one parking space) in advance of crosswalks at each intersection approach</td>
</tr>
<tr>
<td>Streets with 35 to 45 mph speed limits</td>
<td>Keep at least 50 feet clear (removal of two parking spaces) in advance of crosswalks at each intersection approach</td>
</tr>
</tbody>
</table>

**Notes:**
1. Daylighting can also be used at driveways and other poor sightline areas.
2. Daylighting can provide space for other uses such as green infrastructure, landscaping, bike parking, curb extensions, parklets, and Painted Safety Zones.
4. The above design guideline is a recommendation for complete streets implementation and does not supersede a jurisdiction’s existing standards.
Painted Safety Zones allow drivers to turn more slowly and yield to pedestrians.

Flexible white posts provide physical barrier for added safety.

Removed on-street parking to increase drivers’ visibility of pedestrians, or “daylight” intersection.

Parking-Prohibited Red Curb
See Detail 3-55

Notes:
1. Painted Safety Zones act as a low-cost measure to provide a buffer between pedestrians waiting at or crossing an intersection. In the future, a Painted Safety Zone has the potential to be built to become a curb extension.
2. It is recommended that Painted Safety Zones be installed at busy and historically unsafe intersections, especially where sight lines are poor.
4. The above design guideline is a recommendation for complete streets implementation and does not supersede a jurisdiction’s existing standards.
Mountable curbs/truck aprons allow truck movements in areas that have limited right-of-way dimensions. They can be applied at intersections, driveways, median noses, and roundabouts.

Ensure median nose dimension protects pedestrians in refuge

Pedestrian Refuge Island

Recessed STOP bar to allow truck turn movements and provides visibility to bicycles and pedestrians

Mountable curbs not recommended in pedestrian areas due to potential conflict during truck turns

Mountable curb can also be used at driveways

Notes:
2. The above design guideline is a recommendation for complete streets implementation and does not supersede a jurisdiction’s existing standards.