

State of California

Department of Transportation

Office of Traffic Safety Program

Pedestrian Safety Branch

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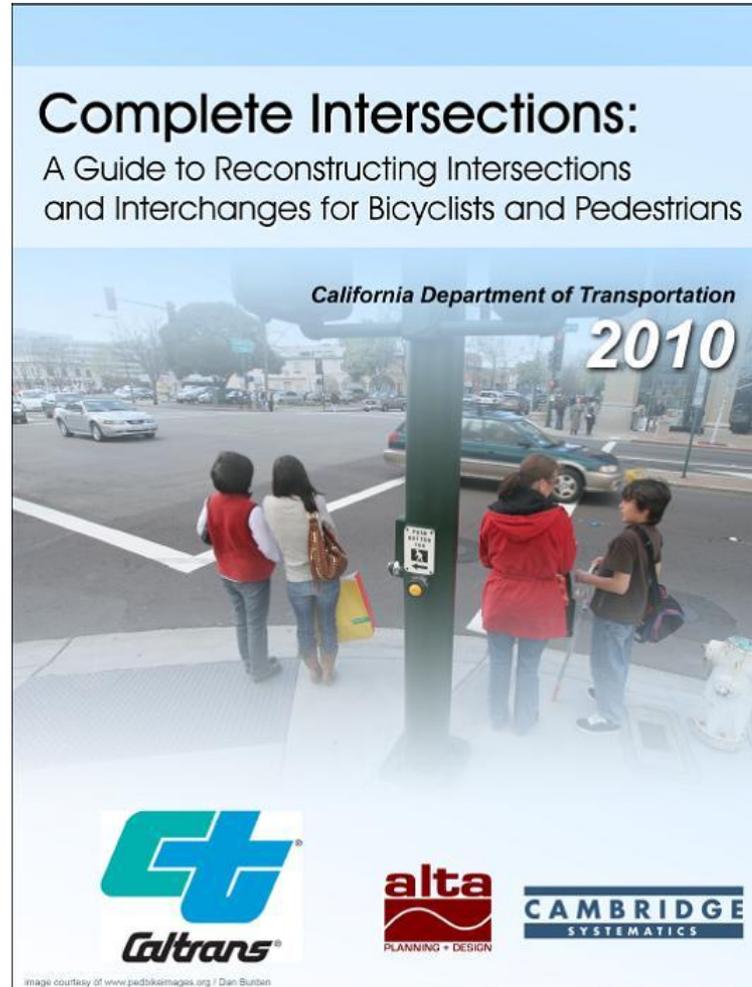
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The Complete Intersections Guide





Disclaimer

This reference guide (Guide) does not constitute a standard, specification, or regulation. It is not intended to replace the existing California Department of Transportation (Caltrans) mandatory or advisory standards, nor the exercise of engineering judgment by licensed professionals. The Guide is compiled of information and concepts from various agencies and organizations faced with similar transportation issues. Caltrans acknowledges the existence of other practices and provides this Guide for those responsible for making professional engineering or other design decisions.

Background

- Major points of conflict for road users
- Frequent site of injuries and fatalities
- 20% of pedestrian fatalities
- 25% of bicyclist fatalities
- Safety and Mobility
- Common Issues and Best Practices

Policy Context

- The California Strategic Highway Safety Plan
- The Complete Streets Act – AB 1358
- Caltrans Deputy Directive 64-R1

Organization

- Section 1: Introduction
- Section 2: All Intersections Overview – Guiding Principles
- Section 3: Four-Leg Intersections
- Section 4: Three-Leg Intersections
- Section 5: Multi-leg, Offset and Skewed Intersections
- Section 6: Special Cases
- Section 7: Intersections with Transit
- Section 8: Roundabouts
- Section 9: Interchanges
- Section 10: Treatments on the Horizon
- Section 11: Background Information covering pedestrian and bicyclists' collision data, crash types, and other topics.

How Should This Guide Be Used?

- Review 12 Guiding Principles
- Select Intersection Type(s)
- Review Common Issues and Treatments
- Apply to Situation

Quiz

1. What Caltrans document directs staff to integrate pedestrian, bicycle, transit, and motorized travel?
2. What percentage of pedestrian fatalities occur at intersections in California?
3. How many chapters are in the Complete Intersections Guide?
4. The target audience for this Guide are Caltrans _____ and _____.
5. How should this Guide be used (First, Then, Next)?

12 Guiding Principles

All Intersections Overview

“Observe”

Does the crosswalk placement meet the needs of this pedestrian?



“They Will Be There”

Was this road designed with pedestrians in mind?



“Maintain And Improve”

Keeping facilities well maintained and improving them during maintenance or road construction provides a benefit to pedestrians and bicyclists.



“Tee It Up”

The high-speed ramp has been replaced with a 90-degree intersection.



“One Decision At A Time”

Median Refuges allow pedestrians to consider one direction of traffic at a time.



“Slow It Down”

Road diets can improve pedestrian and bicycle access with reducing motor vehicle crashes.



“Shorten Crossings”

Curb Extensions shorten crossings and make pedestrians more visible to motorists.



“Improve Visibility”

Good design makes motorists more aware that bicyclists and pedestrians are expected, thus increasing visibility.



“Clarify The Right-Of-Way”

Bike lanes striped to the left of a right-turn only lane reduce the risk of a weaving-related collision.



“Keep It Direct”

Restricting crossing movements increases the distance a pedestrian must travel to cross a road.



“Light At Night”

Lighting increases safety and security for pedestrians and bicyclists.



“Access For All”

Pedestrian facilities must be reconstructed to meet or exceed ADA requirements.



12 Guiding Principles

- “Observe”
- “They Will Be There”
- “Maintain and Improve”
- “Tee It Up”
- “One Decision At A Time”
- “Slow It Down”
- “Shorten Crossings”
- “Improve Visibility”
- “Clarify The Right-of-Way”
- “Keep It Direct”
- “Light At Night”
- “Access For All”

Name that Guiding Principle ...

1. Stripe bike lanes to the left of right-turn only lanes.
2. Place sidewalks and crosswalks where people are already walking and crossing.
3. When repaving, pave out to the edge of pavement to maintain the shoulder surface.
4. Provide ample lighting at crosswalks.
5. Design or reconstruct intersections and interchanges to meet at a 90-degree angle.
6. Construct accessible pedestrian countdown signals at signalized intersections.

Intersection Types

Four-Leg

Three-Leg and Offset

Skewed and Multi-Leg

Midblock and Shared Use Path

Bus Stops and Railroad

Roundabouts

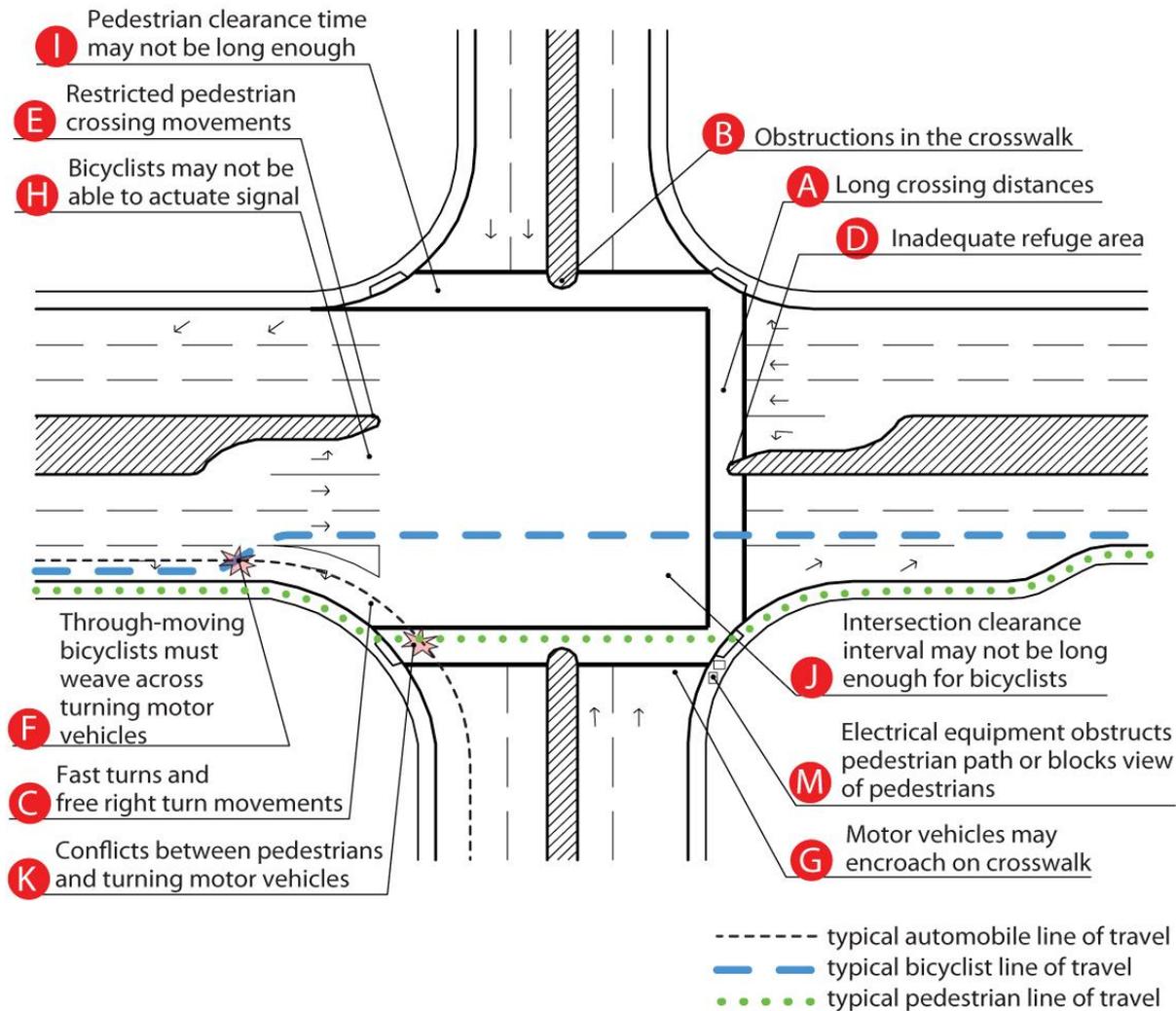
Free-Flow Ramps

Signalized Four-Leg Intersection

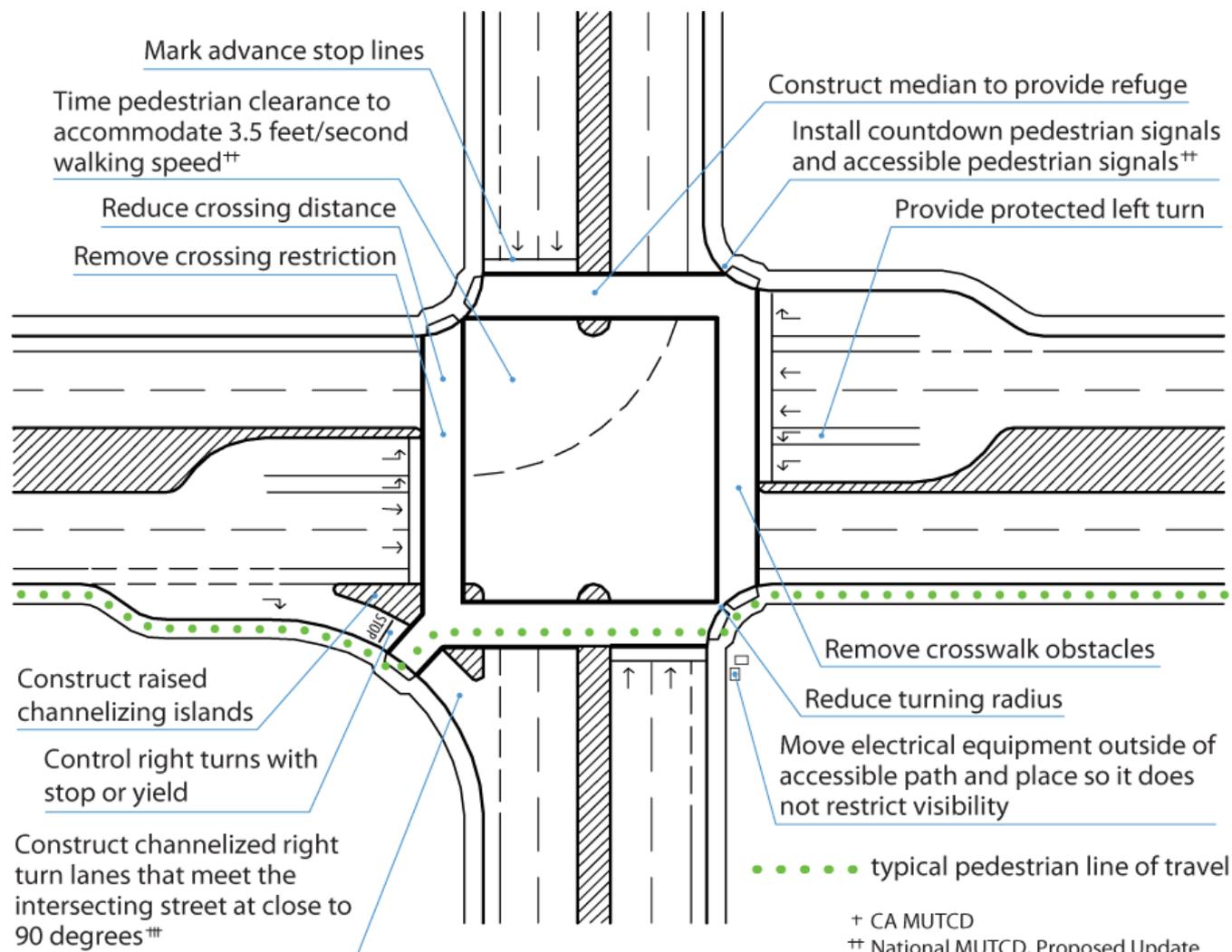
A right-turn only lane may allow high turning speeds and may reduce the likelihood that motorists will yield to pedestrians crossing the turn lane.



Common Issues at Signalized Four-Leg Intersections



Treatments for Pedestrians at Signalized Four-Leg Intersections

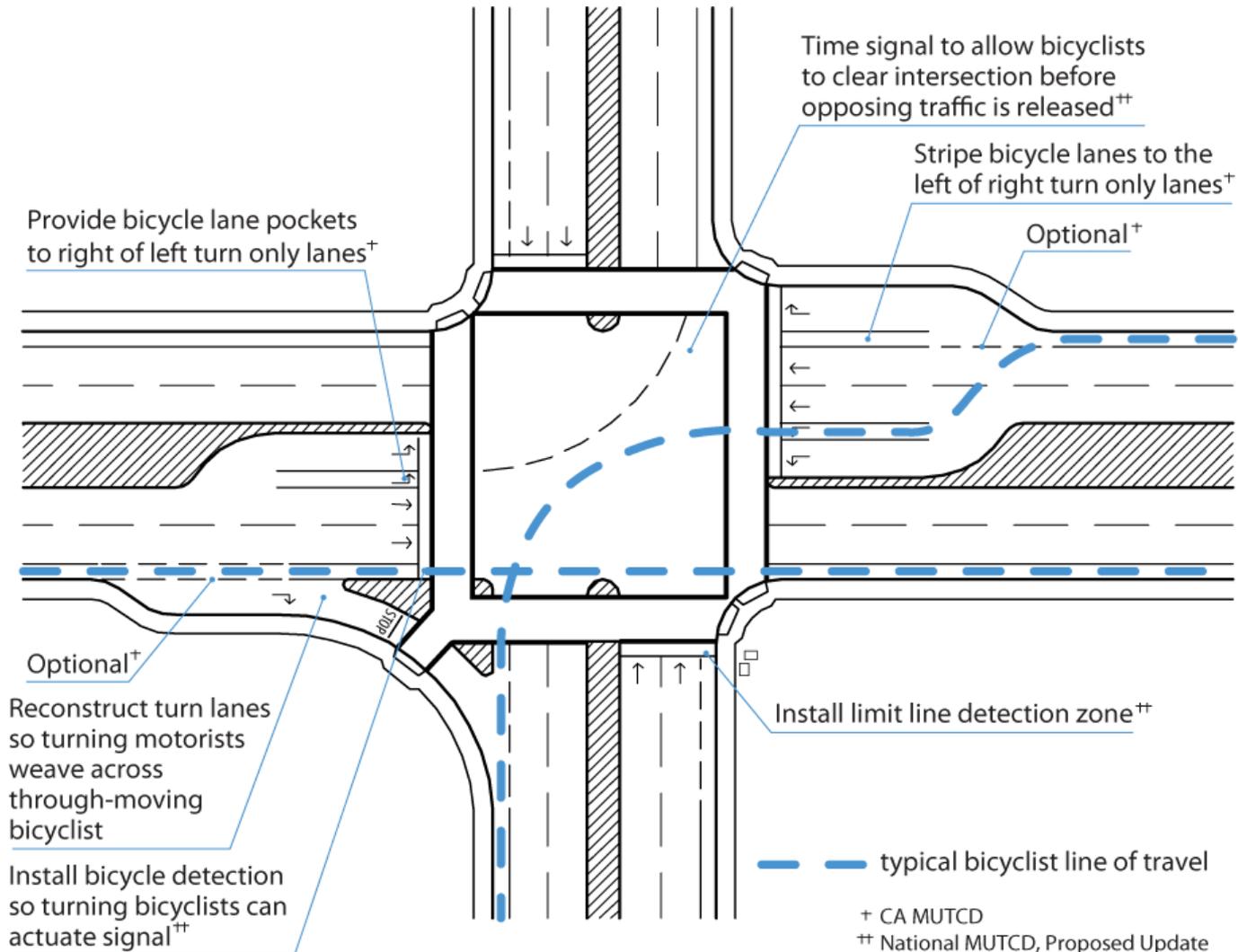


+ CA MUTCD

⁺⁺ National MUTCD, Proposed Update

^{###} AASHTO Pedestrian Guide

Treatments for Bicyclists at Signalized Four-Leg Intersections



Problem Statement #1

1. Signalized Four-Leg intersection near elderly care facility and river access.
2. Multi-lane approaches with high ADTs.
3. Three bicycle and two pedestrian injuries within the last year.

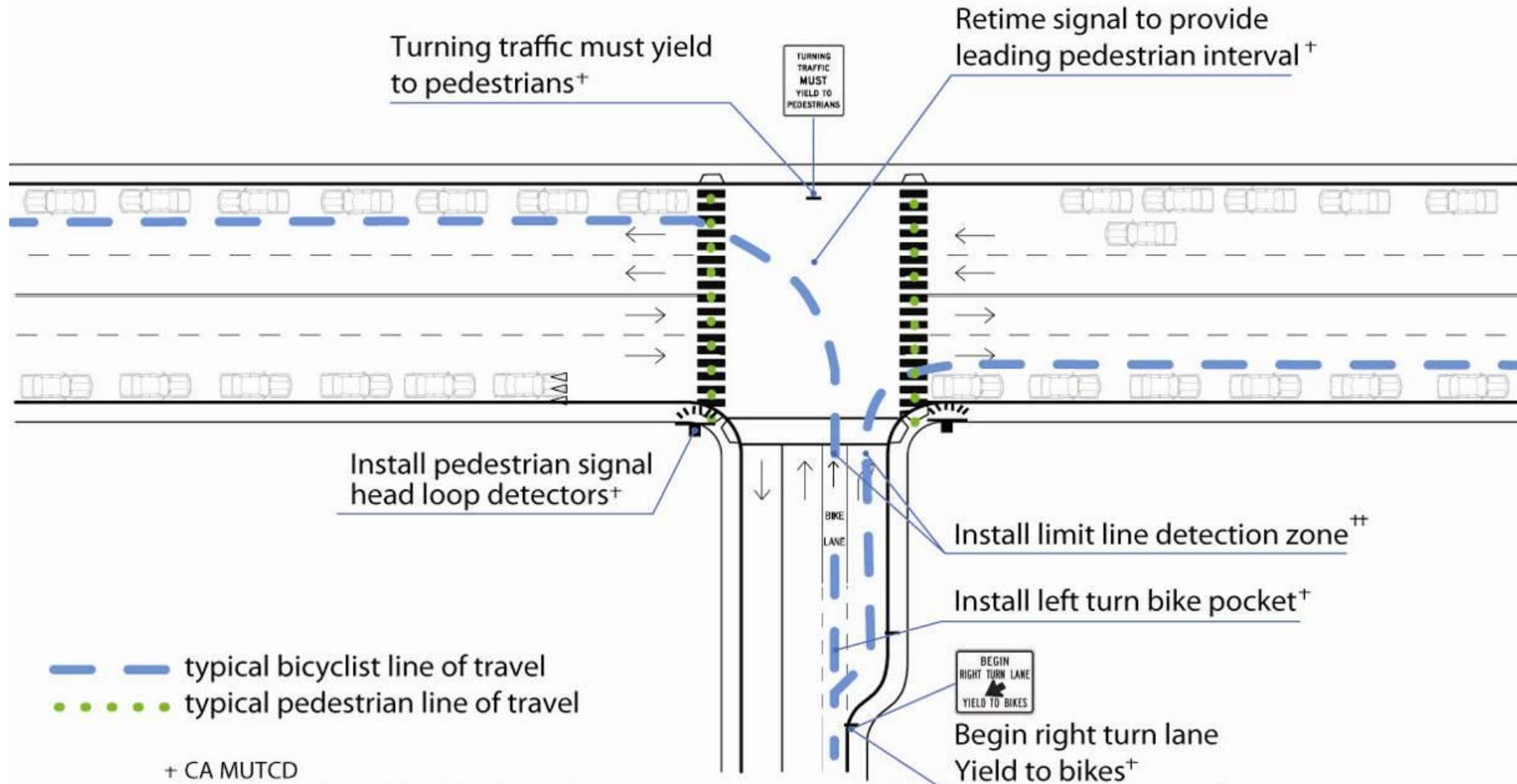


Three-Leg (T) Intersections

Crosswalks at uncontrolled locations on high volume arterials should be paired with enhancements such as a raised median or pedestrian-actuated beacon.



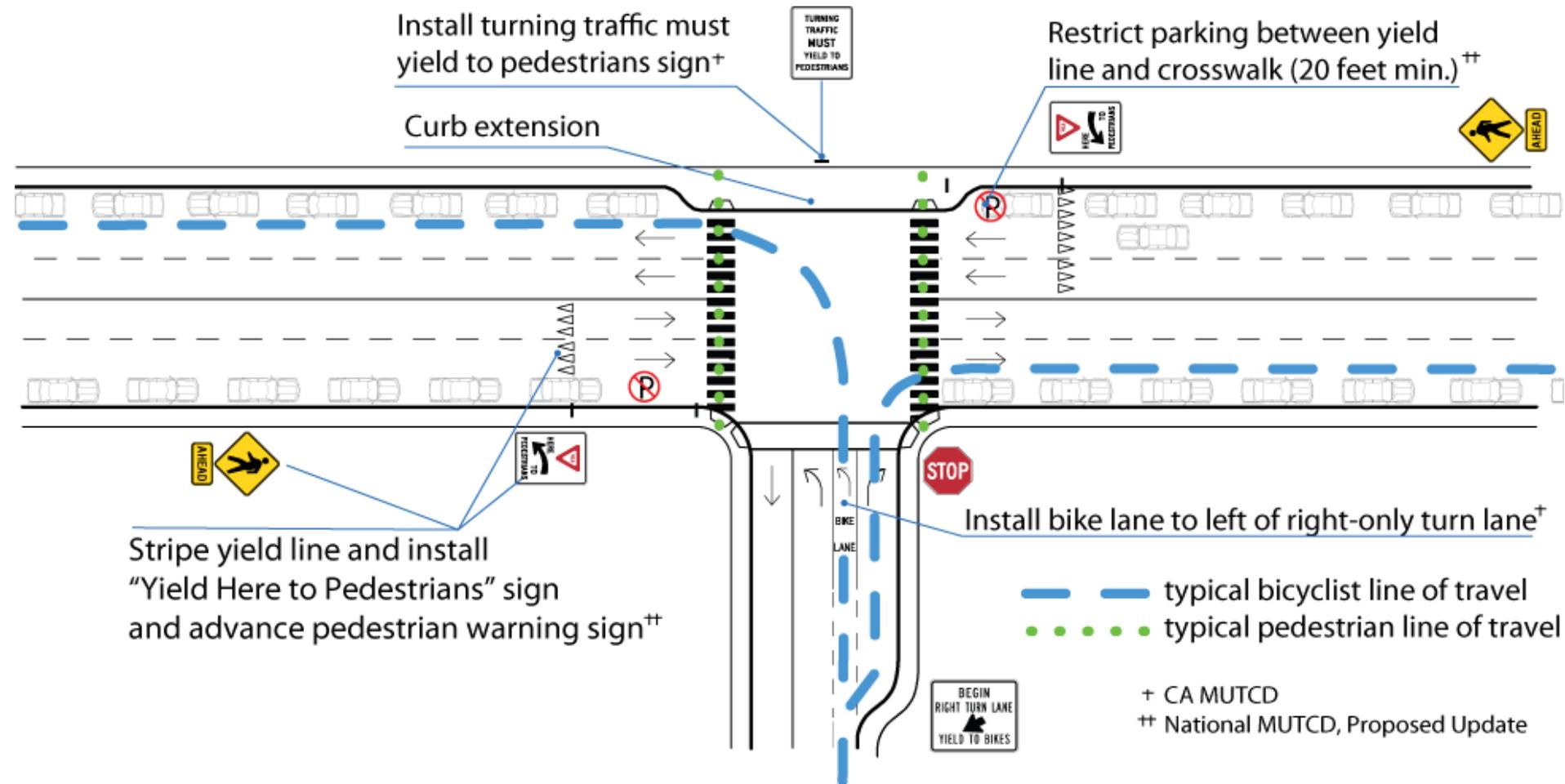
Treatments at Signalized T-Intersections



+ CA MUTCD

++ Traffic Operations Policy Directive 09-06

Treatments at T-Intersections Where Mainline is Uncontrolled



Problem Statement #2

1. Signalized Three-Leg intersection on rural mainstreet.
2. Collisions occurring between the 8 pm and 12 am.
3. Two pedestrian fatalities within the last year.

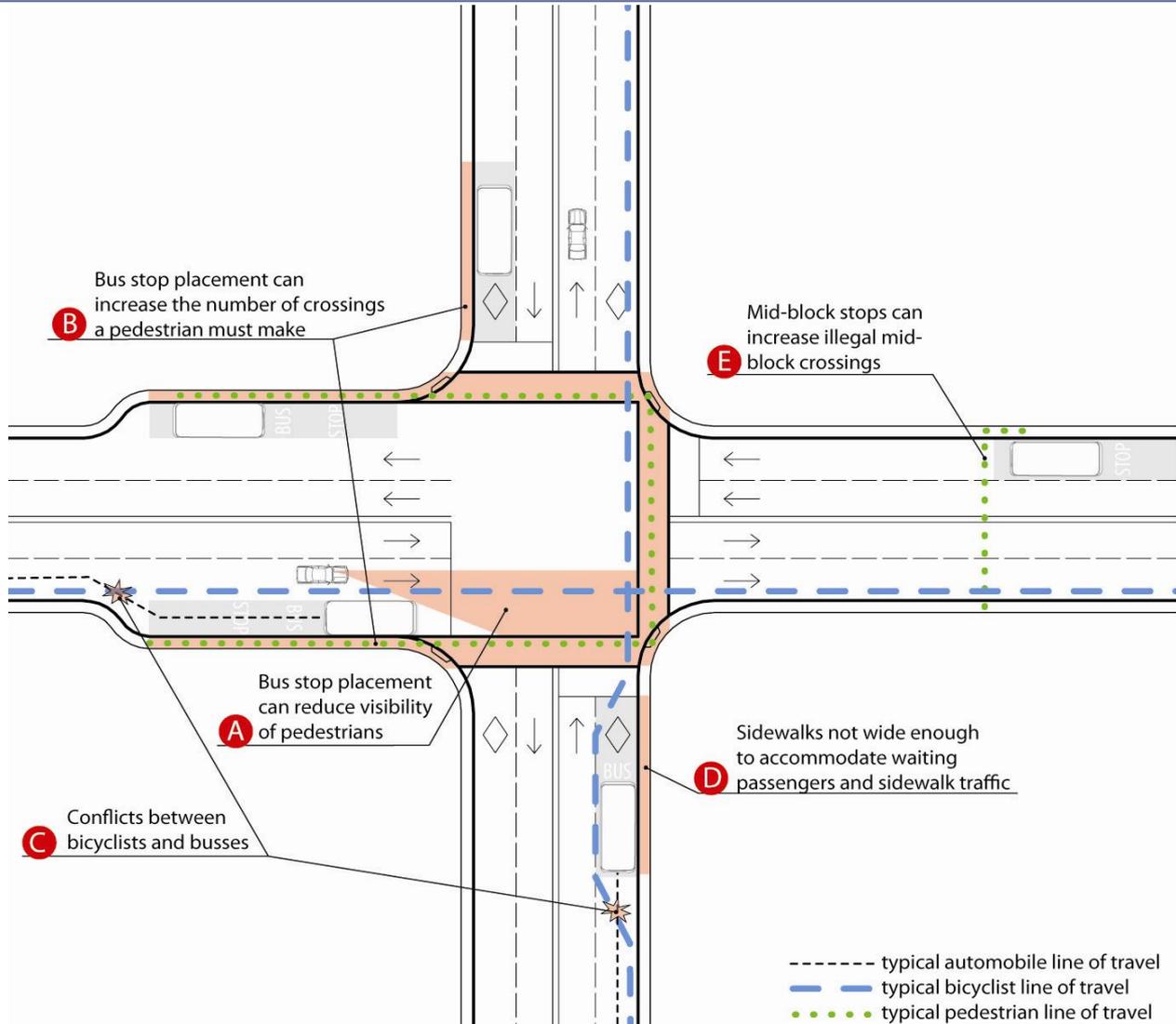


Bus Stops at Intersections

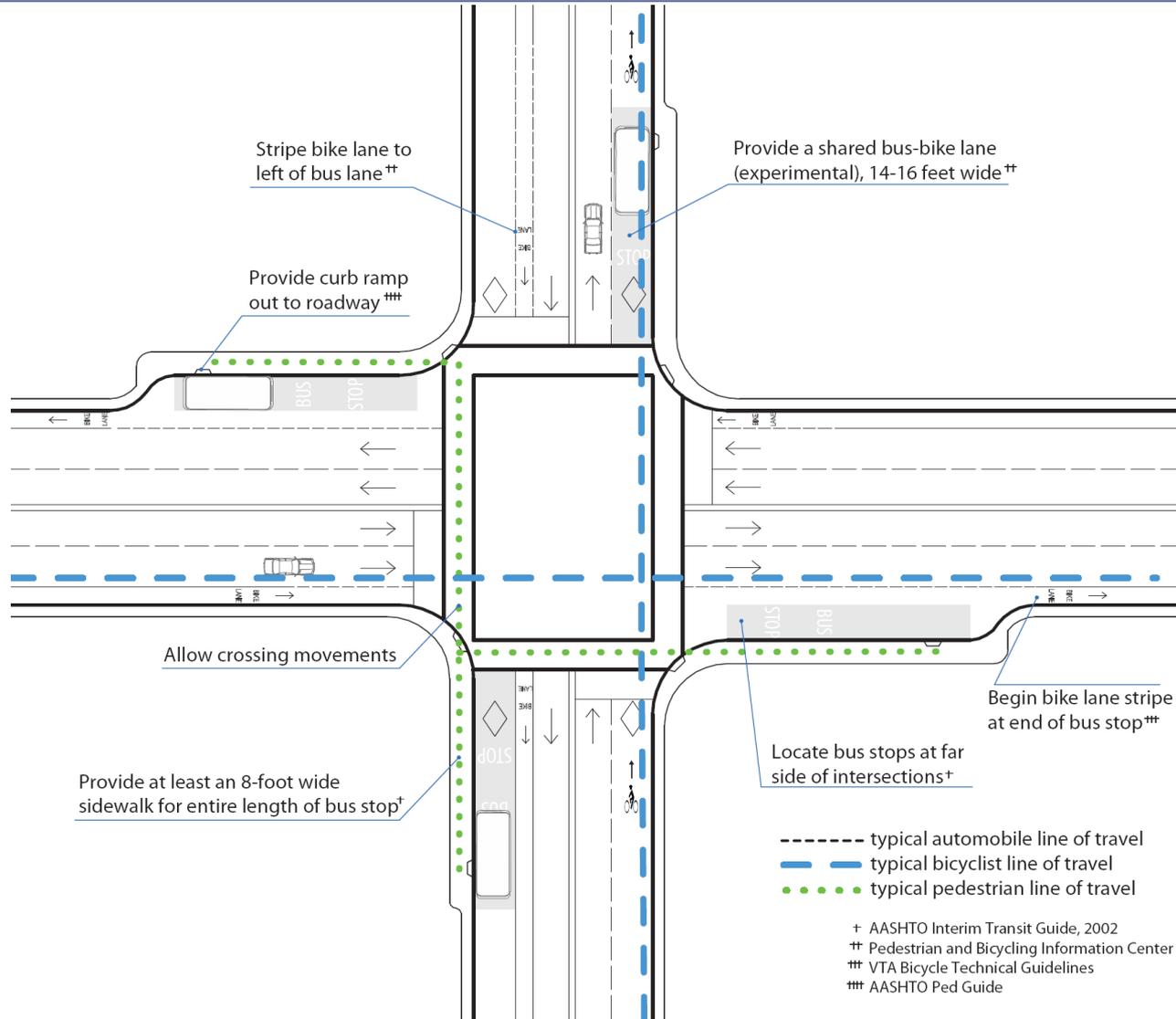
A wide landing pad and bus shelter can provide additional comfort to pedestrians and transit users.



Common Issues at Bus Stops



Treatments at Bus Stops



Recap

- Review 12 Guiding Principles
- Select Intersection Type(s)
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- Apply to Situation

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