Introduction

A consistent approach and methods for treating uncontrolled crosswalks in Minnesota will improve pedestrian safety throughout the state. This quick reference guide helps local agencies select appropriate crosswalk treatments based on roadway type, vehicle volumes and posted speed limits.

The following twelve countermeasures are identified, along with their benefits and design, cost, and location considerations:

- Advance Stop Here for Pedestrians sign and stop line
- Crosswalk lighting
- Crosswalk pavement marking
- Crosswalk warning signs
- Curb extension
- In-street pedestrian crossing sign
- Parking restrictions on crosswalk approach
- Pedestrian hybrid beacon
- Pedestrian refuge island
- Raised crosswalks
- Rectangular Rapid-Flash ing Beacon
- 4- to 3- lane conversion

Examples are provided for various roadway segments based on the following criteria:

- Number of lanes in each direction
  - Two lanes
  - Three lanes with raised median
  - Three lanes without raised median
  - Four or more lanes with raised median
  - Four or more lanes without raised median
- Average annual daily traffic (AADT)
  - Less than 9,000
  - 9,000 to 15,000
  - Greater than 15,000
- Speed
  - Less than or equal to 30 mph
  - 35 mph
  - Greater than or equal to 40 mph

Each example lists the countermeasures that should always be considered, those that should also be considered and those that should be used only in conjunction with other countermeasures. Note: Treatments in the “always consider” and “also consider” categories are not mandated or required. Agencies should also review safety issues, surrounding land development, pedestrian travel patterns, countermeasure effectiveness and costs when considering appropriate countermeasures for the crossing.

This guide was developed based on guidance from the Federal Highway Administration (FHWA) and the Pedestrian Crosswalk Policy Development Guidelines (Report 2020RIC01), a Local Road Research Board study that aims to improve pedestrian safety at uncontrolled crosswalks. The report is available along with this quick reference guide at lrrrb.org
Advance Stop Here for Pedestrians Sign and Stop Line

Benefits:
- 25% reduction in pedestrian crashes
- Reduces risk of multiple threat crash
- Reduces vehicle encroachment into crosswalk

Best Locations:
- 3 or more lanes
- Speeds greater than 35 mph
- Inadequate visibility of pedestrians

Planning Level Cost (2019):
- $1,500 per location

Design Considerations:
- See also MnMUTCD Section 2B.11 and 3B.16
- Accessibility: ADA-compliant ramps

Source: www.pedbikesafe.com / Toole Design Group
Source: FHWA
Parking Restrictions on Crosswalk Approach

Benefit:
- Improves sightlines of pedestrians and motorists

Best Location:
- Inadequate visibility of pedestrians

Planning Level Cost (2019):
- Less than $1,000 per location

Source: FHWA

Design Considerations:
- Parking resolution may be needed from local agency
- State law prohibits parking within 20 feet of a crosswalk
- Agencies are encouraged to develop a policy on curb color use if coloring is desired

Source: www.pedbikesafe.com / Peter Lagerwey
Crosswalk Lighting

Benefit:

- 59% reduction in pedestrian injury crashes

Best Location:
- Nighttime visibility of pedestrians is a concern

Planning Level Cost (2019):
- $10,000 to 42,000 per crosswalk

Design Considerations:
- Place lights before the crossing to avoid creating a silhouette
- Use uniform lighting levels within crosswalk area

Source: www.pedbikeimages.com / Brandon Whyte

Source: FHWA
Crosswalk Pavement Marking

**Benefit:**
- Indicates preferred pedestrian crossing location

**Best Locations:**
- Convenient for pedestrian access
- Low-volume roadways
- Low-speed roadways

**Planning Level Cost (2019):**
- $600 to $5,700, Average $2,500

**Design Considerations:**
- High-visibility crosswalks preferred over parallel line crosswalks
- Accessibility: ADA-compliant ramps
- Pavement marking materials

Source: FHWA
Crosswalk Warning Signs

**Benefit:**
- Provides helpful information to motorists and pedestrians who are unfamiliar with the area

**Best Location:**
- Pedestrian crossing not expected by motorists

**Planning Level Cost (2019):**
- Less than $1,000 per crossing

**Design Considerations:**
- Design must comply with MnMUTCD
- Signs must provide adequate retroreflectivity
- Crosswalk warning signs must fit with the location of other signs

Source: FHWA
Curb Extension

Benefits:
- Reduces pedestrian crossing distance
- Increases visibility of pedestrians to motorists
- Slows vehicle speeds at turns, increasing safety for all modes
- Can be used with unmarked crosswalk

Best Locations:
- Inadequate visibility of pedestrians
- Vehicle speeds causing problems
- On-street parking or shoulders exist

Planning Level Cost (2019):
- Range $2,000 - $20,000, Average $13,000

Design Considerations:
- Must not block bicycle lanes
- Must facilitate drainage
- Must not extend into travel lanes
- Must meet turning movement needs of larger vehicles
- Accessibility: ADA-compliant ramps
In-Street Pedestrian Crossing Sign

Benefits:
- Reminds road users of right of way laws
- May reduce vehicle speeds, especially if used in a gating fashion

Best Locations:
- 3 lanes or fewer
- Speeds less than 30 mph
- Drivers not yielding to pedestrians in the crosswalk
- Vehicle speeds causing problems

Planning Level Cost (2019):
- Less than $1,000 per location

Design Considerations:
- Must maintain and promptly replace damaged signs
- Become less effective over time as drivers become used to signs
- See also MnMUTCD Section 2B.12
- Must comply with AASHTO breakaway requirements if placed within roadway
- Accessibility: Signs must not be placed in middle of crosswalk

Source: FHWA
Pedestrian Hybrid Beacon (PHB)

**Benefits:**

- 55% reduction in pedestrian crashes
- Improves motorist yielding for pedestrians by 90%

**Best Locations:**

- AADT greater than 9,000
- 3 or more lanes
- Speeds greater than 40 mph
- Traffic signal warrants not being met
- Midblock crossings (most common); also successful at intersections
- Drivers not yielding to pedestrians in the crosswalk
- Inadequate visibility of pedestrians
- Traffic volumes not providing adequate safe gaps for pedestrians to enter the crosswalk

**Design Considerations:**

- Proximity of closest signalized intersection
- Cost compared to a signal
- Power source or solar power required
- Impact on traffic during operation
- Accessibility: ADA compliant ramps, push buttons and audible component

**Planning Level Cost (2019):**

- Range $21,000 - $128,000, Average $57,700

Source: FHWA
Pedestrian Refuge Island

**Benefits:**
- 32% reduction in pedestrian crashes
- Reduces pedestrian delay
- Reduces/eliminates multiple threat risk
- Reduces crossing distance
- May influence driver behavior by visually narrowing roadway
- Can be used with unmarked crosswalk

**Best Locations:**
- Multiple-lane roadways
- High-volume roadways
- High-speed roadways
- Inadequate visibility of pedestrians
- Vehicle speeds causing problems

**Design Considerations:**
- Island width: minimum of 4 feet
- Preferred island width: 8 feet
- Must facilitate drainage
- Accessibility: ADA-compliant ramps

**Planning Level Cost (2019):**
- $2,140 - $41,170, Average $13,520

Source: FHWA
Raised Crosswalk

Benefit:

- 45% reduction in pedestrian crashes

Best Locations:
- Local and collector streets
- 2- or 3- lane roadways
- Speeds of 30 mph or less
- AADT less than 9,000
- Regional trail crossing
- Drivers not yielding to pedestrians in the crosswalk
- Vehicle speeds causing problems
- Inadequate visibility of pedestrians

Design Considerations:
- Avoid truck routes, bus transit routes, emergency routes and arterial streets
- Ensure appropriate width (typically 10 feet to allow front and rear wheels of a passenger vehicle to be on the table at the same time)
- Consider snowplowing needs
- Must facilitate drainage
- Accessibility: ADA-compliant ramps

Planning Level Cost (2019):
- $7,110 - $30,880 (Average $8,170)

Source: FHWA
Rectangular Rapid-Flashing Beacon (RRFB)

**Benefit:**
- 47% reduction in pedestrian crashes
  - Motorist yielding rates as high as 98%

**Best Locations:**
- Multilane roadways
- Two-lane, one-way streets
- Posted speeds less than 40 mph
- Drivers not yielding to pedestrians in the crosswalk
- Inadequate visibility of pedestrians

**Design Considerations:**
- Power source or solar power required
- FHWA interim approval for use; Minnesota has submitted a request for statewide approval
- Accessibility: ADA-compliant ramps, push buttons and audible components

**Planning Level Cost (2019):**
- $4,500 to $52,000, Average $22,250

Source: FHWA
**4-to-3 Lane Conversion**

**Benefits:**
- **47%* reduction in all crash types**
  *FHWA sites a range of 19 to 47%
- Provides opportunity for shoulder and/or bike lane
- Reduces crossing distance
- Reduces risk of multiple threat crash

**Best Locations:**
- Roads that have 4 or more lanes without a raised median
- AADT less than 20,000 (most successful; but can also be successful where AADT is greater than 20,000)
- Inadequate visibility of pedestrians

**Design Considerations:**
- Current and future vehicle operations
- Roadside stops (mail, trash, transit, etc.)
- Corridorwide considerations

**Planning Level Cost (2019):**
- $25,000 - $40,000/mile

Source: FHWA
<table>
<thead>
<tr>
<th></th>
<th>≤30 mph</th>
<th>35 mph</th>
<th>≥40 mph</th>
</tr>
</thead>
</table>
| **Always Consider** (Candidate Treatment) | • Parking restrictions on crosswalk approach  
• Crosswalk lighting  
• Crosswalk pavement marking  
• Crosswalk warning signs | • Parking restrictions on crosswalk approach  
• Crosswalk lighting  
• Crosswalk pavement marking  
• Crosswalk warning signs | • Parking restrictions on crosswalk approach  
• Crosswalk lighting  
• Rectangular Rapid-Flashing Beacon  
• Pedestrian hybrid beacon |
| **Also Consider** (Candidate Treatment)    | • Raised crosswalk  
• Pedestrian refuge island  
• In-street pedestrian crossing sign  
• Curb extension | • Curb extension  
• Pedestrian refuge island  
• Rectangular Rapid-Flashing Beacon  
• Pedestrian hybrid beacon | • Curb extension  
• Pedestrian refuge island |
| **Use Only in Conjunction With Other Countermeasures** |  |  | • Crosswalk pavement marking  
• Crosswalk warning signs |
## 2 Lanes
**AADT: 9,000-15,000**
**(1 lane in each direction)**

<table>
<thead>
<tr>
<th>Treatment</th>
<th>≤30 mph</th>
<th>35 mph</th>
<th>≥40 mph</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Always Consider</strong> (Candidate Treatment)</td>
<td>- Parking restrictions on crosswalk approach&lt;br&gt;- Crosswalk lighting&lt;br&gt;- Crosswalk pavement marking&lt;br&gt;- Crosswalk warning signs</td>
<td>- Parking restrictions on crosswalk approach&lt;br&gt;- Crosswalk lighting&lt;br&gt;- Crosswalk pavement marking&lt;br&gt;- Crosswalk warning signs</td>
<td>- Parking restrictions on crosswalk approach&lt;br&gt;- Crosswalk lighting&lt;br&gt;- Rectangular Rapid-Flashing Beacon&lt;br&gt;- Pedestrian hybrid beacon</td>
</tr>
<tr>
<td><strong>Also Consider</strong> (Candidate Treatment)</td>
<td>- In-street pedestrian crossing sign&lt;br&gt;- Curb extension&lt;br&gt;- Pedestrian refuge island</td>
<td>- Curb extension&lt;br&gt;- Pedestrian refuge island&lt;br&gt;- Rectangular Rapid-Flashing Beacon&lt;br&gt;- Pedestrian hybrid beacon</td>
<td>- Curb extension&lt;br&gt;- Pedestrian refuge island</td>
</tr>
<tr>
<td><strong>Use Only in Conjunction With Other Countermeasures</strong></td>
<td></td>
<td></td>
<td>- Crosswalk pavement marking&lt;br&gt;- Crosswalk warning signs</td>
</tr>
</tbody>
</table>
### 2 Lanes
AADT: > 15,000
(1 lane in each direction)

<table>
<thead>
<tr>
<th></th>
<th>≤30 mph</th>
<th>35 mph</th>
<th>≥40 mph</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Always Consider</strong></td>
<td><strong>(Candidate Treatment)</strong></td>
<td><strong>(Candidate Treatment)</strong></td>
<td><strong>(Candidate Treatment)</strong></td>
</tr>
<tr>
<td>(Candidate Treatment)</td>
<td>Parking restrictions on crosswalk approach, Crosswalk lighting, Crosswalk pavement marking, Crosswalk warning signs</td>
<td>Parking restrictions on crosswalk approach, Crosswalk lighting</td>
<td>Parking restrictions on crosswalk approach, Crosswalk lighting, Pedestrian hybrid beacon</td>
</tr>
<tr>
<td><strong>Also Consider</strong></td>
<td><strong>(Candidate Treatment)</strong></td>
<td><strong>(Candidate Treatment)</strong></td>
<td><strong>(Candidate Treatment)</strong></td>
</tr>
<tr>
<td>(Candidate Treatment)</td>
<td>In-street pedestrian crossing sign, Curb extension, Pedestrian refuge island, Rectangular Rapid-Flashing Beacon, Pedestrian hybrid beacon</td>
<td>Curb extension, Pedestrian refuge island, Rectangular Rapid-Flashing Beacon, Pedestrian hybrid beacon</td>
<td>Curb extension, Pedestrian refuge island</td>
</tr>
<tr>
<td><strong>Use Only in</strong></td>
<td><strong>Conjunction With Other Countermeasures</strong></td>
<td><strong>Conjunction With Other Countermeasures</strong></td>
<td><strong>Conjunction With Other Countermeasures</strong></td>
</tr>
<tr>
<td><strong>Conjunction With Other Countermeasures</strong></td>
<td>Crosswalk pavement marking, Crosswalk warning signs</td>
<td>Crosswalk pavement marking, Crosswalk warning signs</td>
<td>Crosswalk pavement marking, Crosswalk warning signs</td>
</tr>
</tbody>
</table>
### 3 Lanes With Raised Median

**AADT: < 9,000**

(1 lane in each direction)

<table>
<thead>
<tr>
<th>Treatment Type</th>
<th>&lt;30 mph</th>
<th>35 mph</th>
<th>≥40 mph</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Always Consider</strong> (Candidate Treatment)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Parking restrictions on crosswalk approach</td>
<td>• Parking restrictions on crosswalk approach</td>
<td>• Parking restrictions on crosswalk approach</td>
<td></td>
</tr>
<tr>
<td>• Crosswalk lighting</td>
<td>• Crosswalk lighting</td>
<td>• Crosswalk lighting</td>
<td></td>
</tr>
<tr>
<td>• Crosswalk pavement marking</td>
<td>• Crosswalk pavement marking</td>
<td>• Crosswalk pavement marking</td>
<td></td>
</tr>
<tr>
<td>• Crosswalk warning signs</td>
<td>• Crosswalk warning signs</td>
<td>• Crosswalk warning signs</td>
<td></td>
</tr>
<tr>
<td>• Advance Stop Here for Pedestrians sign and stop line</td>
<td>• Advance Stop Here for Pedestrians sign and stop line</td>
<td>• Advance Stop Here for Pedestrians sign and stop line</td>
<td></td>
</tr>
<tr>
<td>• Parking restrictions on crosswalk approach</td>
<td>• Parking restrictions on crosswalk approach</td>
<td>• Parking restrictions on crosswalk approach</td>
<td></td>
</tr>
<tr>
<td>• Crosswalk lighting</td>
<td>• Crosswalk lighting</td>
<td>• Crosswalk lighting</td>
<td></td>
</tr>
<tr>
<td>• Advance Stop Here for Pedestrians sign and stop line</td>
<td>• Advance Stop Here for Pedestrians sign and stop line</td>
<td>• Advance Stop Here for Pedestrians sign and stop line</td>
<td></td>
</tr>
<tr>
<td>• Rectangular Rapid-Flashing Beacon</td>
<td>• Rectangular Rapid-Flashing Beacon</td>
<td>• Rectangular Rapid-Flashing Beacon</td>
<td></td>
</tr>
<tr>
<td>• Pedestrian hybrid beacon</td>
<td>• Pedestrian hybrid beacon</td>
<td>• Pedestrian hybrid beacon</td>
<td></td>
</tr>
<tr>
<td><strong>Also Consider</strong> (Candidate Treatment)</td>
<td>• Raised crosswalk</td>
<td>• Curb extension</td>
<td>• Curb extension</td>
</tr>
<tr>
<td>• Advance Stop Here for Pedestrians sign and stop line</td>
<td>• Rectangular Rapid-Flashing Beacon</td>
<td>• Rectangular Rapid-Flashing Beacon</td>
<td></td>
</tr>
<tr>
<td>• In-street pedestrian crossing sign</td>
<td>• Pedestrian hybrid beacon</td>
<td>• Pedestrian hybrid beacon</td>
<td></td>
</tr>
<tr>
<td>• Curb extension</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Use Only in Conjunction With Other Countermeasures</strong></td>
<td></td>
<td>• Crosswalk pavement marking</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Crosswalk warning signs</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Crosswalk pavement marking</td>
<td></td>
</tr>
</tbody>
</table>
### 3 Lanes With Raised Median

**AADT: 9,000-15,000**  
(1 lane in each direction)

<table>
<thead>
<tr>
<th></th>
<th>≤30 mph</th>
<th>35 mph</th>
<th>≥40 mph</th>
</tr>
</thead>
<tbody>
<tr>
<td>Always Consider</td>
<td>· Parking restrictions on crosswalk approach</td>
<td>· Parking restrictions on crosswalk approach</td>
<td>· Parking restrictions on crosswalk approach</td>
</tr>
<tr>
<td>(Candidate Treatment)</td>
<td>· Crosswalk lighting</td>
<td>· Crosswalk lighting</td>
<td>· Crosswalk lighting</td>
</tr>
<tr>
<td></td>
<td></td>
<td>· Advance Stop Here for Pedestrians sign and stop line</td>
<td>· Advance Stop Here for Pedestrians sign and stop line</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>· Rectangular Rapid-Flashin Beacon</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>· Pedestrian hybrid beacon</td>
</tr>
<tr>
<td>Also Consider</td>
<td>· Advance Stop Here for Pedestrians sign and stop line</td>
<td>· Curb extension</td>
<td>· Curb extension</td>
</tr>
<tr>
<td>(Candidate Treatment)</td>
<td>· In-street pedestrian crossing sign</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>· Curb extension</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>· Rectangular Rapid-Flashin Beacon</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>· Pedestrian hybrid beacon</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use Only in</td>
<td>· Crosswalk pavement marking</td>
<td>· Crosswalk pavement marking</td>
<td>· Crosswalk pavement marking</td>
</tr>
<tr>
<td>Conjunction</td>
<td>· Crosswalk warning signs</td>
<td>· Crosswalk warning signs</td>
<td>· Crosswalk warning signs</td>
</tr>
<tr>
<td>With Other Countermeasures</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use Only in Conjunction With Other Countermeasures</td>
<td>≤30 mph</td>
<td>35 mph</td>
<td>≥40 mph</td>
</tr>
<tr>
<td>--------------------------------------------------</td>
<td>---------</td>
<td>--------</td>
<td>---------</td>
</tr>
<tr>
<td>Crosswalk pavement marking</td>
<td>Crosswalk pavement marking</td>
<td>Crosswalk pavement marking</td>
<td></td>
</tr>
<tr>
<td>Crosswalk warning signs</td>
<td>Crosswalk warning signs</td>
<td>Crosswalk warning signs</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Also Consider (Candidate Treatment)</th>
<th>≤30 mph</th>
<th>35 mph</th>
<th>≥40 mph</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advance Stop Here for Pedestrians sign and stop line</td>
<td></td>
<td>Curb extension</td>
<td>Curb extension</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Always Consider (Candidate Treatment)</th>
<th>≤30 mph</th>
<th>35 mph</th>
<th>≥40 mph</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parking restrictions on crosswalk approach</td>
<td>Parking restrictions on crosswalk approach</td>
<td>Parking restrictions on crosswalk approach</td>
<td></td>
</tr>
<tr>
<td>Crosswalk lighting</td>
<td>Crosswalk lighting</td>
<td>Crosswalk lighting</td>
<td></td>
</tr>
</tbody>
</table>

3 Lanes With Raised Median
AADT: >15,000
(1 lane in each direction)
**3 Lanes Without Raised Median**
**AADT: < 9,000**
(1 lane in each direction with a two-way left-turn lane)

<table>
<thead>
<tr>
<th></th>
<th>&lt;30 mph</th>
<th>35 mph</th>
<th>≥40 mph</th>
</tr>
</thead>
</table>
| **Always Consider (Candidate Treatment)** | • Parking restrictions on crosswalk approach  
• Crosswalk lighting  
• Crosswalk pavement marking  
• Crosswalk warning signs | • Parking restrictions on crosswalk approach  
• Crosswalk lighting  
• Crosswalk pavement marking  
• Crosswalk warning signs  
• Advance Stop Here for Pedestrians sign and stop line | • Parking restrictions on crosswalk approach  
• Crosswalk lighting  
• Advance Stop Here for Pedestrians sign and stop line  
• Pedestrian hybrid beacon |
| **Also Consider (Candidate Treatment)** | • Raised crosswalk  
• Advance Stop Here for Pedestrians sign and stop line  
• In-street pedestrian crossing sign  
• Curb extension  
• Pedestrian refuge island  
• Rectangular Rapid-Flashing Beacon  
• Pedestrian hybrid beacon | • Curb extension  
• Pedestrian refuge island  
• Rectangular Rapid-Flashing Beacon  
• Pedestrian hybrid beacon | • Curb extension  
• Pedestrian refuge island |
| **Use Only in Conjunction With Other Countermeasures** | | | • Crosswalk pavement marking  
• Crosswalk warning signs |
### 3 Lanes Without Raised Median

AADT: 9,000-15,000
(1 lane in each direction with a two-way left-turn lane)

<table>
<thead>
<tr>
<th></th>
<th>≤30 mph</th>
<th>35 mph</th>
<th>≥40 mph</th>
</tr>
</thead>
</table>
| **Always Consider** (Candidate Treatment) | • Parking restrictions on crosswalk approach  
• Crosswalk lighting | • Parking restrictions on crosswalk approach  
• Crosswalk lighting  
• Advance Stop Here for Pedestrians sign and stop line  
• Rectangular Rapid-Flashing Beacon  
• Pedestrian hybrid beacon | • Parking restrictions on crosswalk approach  
• Crosswalk lighting  
• Advance Stop Here for Pedestrians sign and stop line  
• Pedestrian hybrid beacon |
| **Also Consider** (Candidate Treatment) | • Advance Stop Here for Pedestrians sign and stop line  
• In-street pedestrian crossing sign  
• Curb extension  
• Pedestrian refuge island  
• Rectangular Rapid-Flashing Beacon  
• Pedestrian hybrid beacon | • Curb extension  
• Pedestrian refuge island | • Curb extension  
• Pedestrian refuge island |
| **Use Only in Conjunction With Other Countermeasures** | • Crosswalk pavement marking  
• Crosswalk warning signs | • Crosswalk pavement marking  
• Crosswalk warning signs | • Crosswalk pavement marking  
• Crosswalk warning signs |
# 3 Lanes Without Raised Median

**AADT: >15,000**

(1 lane in each direction with a two-way left-turn lane)

<table>
<thead>
<tr>
<th></th>
<th>≤30 mph</th>
<th>35 mph</th>
<th>≥40 mph</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Always Consider</strong></td>
<td>• Parking restrictions on crosswalk approach</td>
<td>• Parking restrictions on crosswalk approach</td>
<td>• Parking restrictions on crosswalk approach</td>
</tr>
<tr>
<td>(Candidate Treatment)</td>
<td>• Crosswalk lighting</td>
<td>• Crosswalk lightings</td>
<td>• Crosswalk lighting</td>
</tr>
<tr>
<td></td>
<td>• Advance Stop Here for Pedestrians sign and stop line</td>
<td>• Advance Stop Here for Pedestrians sign and stop line</td>
<td>• Advance Stop Here for Pedestrians sign and stop line</td>
</tr>
<tr>
<td></td>
<td>• Pedestrian hybrid beacon</td>
<td>• Pedestrian hybrid beacon</td>
<td>• Pedestrian hybrid beacon</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Also Consider</strong></td>
<td>• In-street pedestrian crossing sign</td>
<td>• Curb extension</td>
<td>• Curb extension</td>
</tr>
<tr>
<td>(Candidate Treatment)</td>
<td>• Curb extension</td>
<td>• Pedestrian refuge island</td>
<td>• Pedestrian refuge island</td>
</tr>
<tr>
<td></td>
<td>• Pedestrian refuge island</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Rectangular Rapid-Flashing Beacon</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Pedestrian hybrid beacon</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Use Only in</strong></td>
<td>• Crosswalk pavement marking</td>
<td>• Crosswalk pavement marking</td>
<td>• Crosswalk pavement marking</td>
</tr>
<tr>
<td><strong>Conjunction</strong></td>
<td>• Crosswalk warning signs</td>
<td>• Crosswalk warning signs</td>
<td>• Crosswalk warning signs</td>
</tr>
<tr>
<td><strong>With Other</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Countermeasures</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### 4+ Lanes With Raised Median

**AADT: <9,000**

(2 or more lanes in each direction)

<table>
<thead>
<tr>
<th>Always Consider (Candidate Treatment)</th>
<th>≤30 mph</th>
<th>35 mph</th>
<th>≥40 mph</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Parking restrictions on crosswalk approach</td>
<td>Parking restrictions on crosswalk approach</td>
<td>Parking restrictions on crosswalk approach</td>
</tr>
<tr>
<td></td>
<td>Crosswalk lighting</td>
<td>Crosswalk lighting</td>
<td>Crosswalk lighting</td>
</tr>
<tr>
<td></td>
<td>Crosswalk pavement marking</td>
<td>Crosswalk pavement marking</td>
<td>Crosswalk pavement marking</td>
</tr>
<tr>
<td></td>
<td>Crosswalk warning signs</td>
<td>Crosswalk warning signs</td>
<td>Crosswalk warning signs</td>
</tr>
<tr>
<td></td>
<td>Advance Stop Here for Pedestrians sign and stop line</td>
<td>Advance Stop Here for Pedestrians sign and stop line</td>
<td>Advance Stop Here for Pedestrians sign and stop line</td>
</tr>
<tr>
<td>Also Consider (Candidate Treatment)</td>
<td>Curb extension</td>
<td>Curb extension</td>
<td>Curb extension</td>
</tr>
<tr>
<td></td>
<td>Rectangular Rapid-Flashing Beacon</td>
<td>Rectangular Rapid-Flashing Beacon</td>
<td>Rectangular Rapid-Flashing Beacon</td>
</tr>
<tr>
<td></td>
<td>4-to-3 Lane Conversion</td>
<td>4-to-3 Lane Conversion</td>
<td>4-to-3 Lane Conversion</td>
</tr>
<tr>
<td></td>
<td>Pedestrian hybrid beacon</td>
<td>Pedestrian hybrid beacon</td>
<td>Pedestrian hybrid beacon</td>
</tr>
</tbody>
</table>

**Use Only in Conjunction With Other Countermeasures**

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Crosswalk pavement marking</td>
<td>Crosswalk warning signs</td>
<td></td>
</tr>
<tr>
<td>4+ Lanes With Raised Median</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----------------------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AADT: 9,000-15,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(2 or more lanes in each direction)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Speed</th>
<th>Always Consider (Candidate Treatment)</th>
<th>Also Consider (Candidate Treatment)</th>
<th>Use Only in Conjunction With Other Countermeasures</th>
</tr>
</thead>
</table>
| ≤30 mph | • Parking restrictions on crosswalk approach  
• Crosswalk lighting  
• Advance Stop Here for Pedestrians sign and stop line | • Curb extension  
• Rectangular Rapid-Flashing Beacon  
• 4-to-3 Lane Conversion  
• Pedestrian hybrid beacon | • Crosswalk pavement marking  
• Crosswalk warning signs |
| 35 mph | • Parking restrictions on crosswalk approach  
• Crosswalk lighting  
• Advance Stop Here for Pedestrians sign and stop line  
• Rectangular Rapid-Flashing Beacon  
• Pedestrian hybrid beacon | • Curb extension  
• 4-to-3 Lane Conversion | • Crosswalk pavement marking  
• Crosswalk warning signs |
| ≥40 mph | • Parking restrictions on crosswalk approach  
• Crosswalk lighting  
• Advance Stop Here for Pedestrians sign and stop line  
• Rectangular Rapid-Flashing Beacon  
• Pedestrian hybrid beacon | • Curb extension  
• 4-to-3 Lane Conversion | • Crosswalk pavement marking  
• Crosswalk warning signs |
# 4+ Lanes With Raised Median

**AADT: >15,000**

(2 or more lanes in each direction)

---

<table>
<thead>
<tr>
<th><strong>Always Consider</strong> (Candidate Treatment)</th>
<th>≤30 mph</th>
<th>35 mph</th>
<th>≥40 mph</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Parking restrictions on crosswalk approach</td>
<td>• Parking restrictions on crosswalk approach</td>
<td>• Parking restrictions on crosswalk approach</td>
<td>• Parking restrictions on crosswalk approach</td>
</tr>
<tr>
<td>• Crosswalk lighting</td>
<td>• Crosswalk lighting</td>
<td>• Crosswalk lighting</td>
<td>• Crosswalk lighting</td>
</tr>
<tr>
<td>• Advance Stop Here for Pedestrians sign and stop line</td>
<td>• Advance Stop Here for Pedestrians sign and stop line</td>
<td>• Advance Stop Here for Pedestrians sign and stop line</td>
<td>• Advance Stop Here for Pedestrians sign and stop line</td>
</tr>
<tr>
<td>• Rectangular Rapid-Flashing Beacon</td>
<td>• Rectangular Rapid-Flashing Beacon</td>
<td>• Rectangular Rapid-Flashing Beacon</td>
<td>• Rectangular Rapid-Flashing Beacon</td>
</tr>
<tr>
<td>• Pedestrian hybrid beacon</td>
<td>• Pedestrian hybrid beacon</td>
<td>• Pedestrian hybrid beacon</td>
<td>• Pedestrian hybrid beacon</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Also Consider</strong> (Candidate Treatment)</th>
<th>≤30 mph</th>
<th>35 mph</th>
<th>≥40 mph</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Curb extension</td>
<td>• Curb extension</td>
<td>• Curb extension</td>
<td>• Curb extension</td>
</tr>
<tr>
<td>• 4-to-3 Lane Conversion</td>
<td>• 4-to-3 Lane Conversion</td>
<td>• 4-to-3 Lane Conversion</td>
<td>• 4-to-3 Lane Conversion</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Use Only in Conjunction With Other Countermeasures</strong></th>
<th>≤30 mph</th>
<th>35 mph</th>
<th>≥40 mph</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Crosswalk pavement marking</td>
<td>• Crosswalk pavement marking</td>
<td>• Crosswalk pavement marking</td>
<td>• Crosswalk pavement marking</td>
</tr>
<tr>
<td>• Crosswalk warning signs</td>
<td>• Crosswalk warning signs</td>
<td>• Crosswalk warning signs</td>
<td>• Crosswalk warning signs</td>
</tr>
</tbody>
</table>
## 4+ Lanes Without Raised Median

**AADT: <9,000**

*(2 or more lanes in each direction)*

### Always Consider (Candidate Treatment)

<table>
<thead>
<tr>
<th>Speed</th>
<th>Measure 1</th>
<th>Measure 2</th>
<th>Measure 3</th>
<th>Measure 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;30 mph</td>
<td>Parking restrictions on crosswalk approach&lt;br&gt;Crosswalk lighting&lt;br&gt;Crosswalk pavement marking&lt;br&gt;Crosswalk warning signs&lt;br&gt;Advance Stop Here for Pedestrians sign and stop line</td>
<td>Parking restrictions on crosswalk approach&lt;br&gt;Crosswalk lighting&lt;br&gt;Advance Stop Here for Pedestrians sign and stop line&lt;br&gt;Pedestrian refuge island</td>
<td>Parking restrictions on crosswalk approach&lt;br&gt;Crosswalk lighting&lt;br&gt;Advance Stop Here for Pedestrians sign and stop line&lt;br&gt;Pedestrian refuge island</td>
<td>Parking restrictions on crosswalk approach&lt;br&gt;Crosswalk lighting&lt;br&gt;Advance Stop Here for Pedestrians sign and stop line&lt;br&gt;Pedestrian refuge island&lt;br&gt;Pedestrian hybrid beacon</td>
</tr>
<tr>
<td>35 mph</td>
<td>Curb extension&lt;br&gt;Pedestrian refuge island&lt;br&gt;Rectangular Rapid-Flash Beacon&lt;br&gt;4-to-3 Lane Conversion&lt;br&gt;Pedestrian hybrid beacon</td>
<td>Curb extension&lt;br&gt;Rectangular Rapid-Flash Beacon&lt;br&gt;4-to-3 Lane Conversion&lt;br&gt;Pedestrian hybrid beacon</td>
<td>Curb extension&lt;br&gt;Rectangular Rapid-Flash Beacon&lt;br&gt;4-to-3 Lane Conversion&lt;br&gt;Pedestrian hybrid beacon</td>
<td></td>
</tr>
<tr>
<td>≥40 mph</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Also Consider (Candidate Treatment)

<table>
<thead>
<tr>
<th>Speed</th>
<th>Measure 1</th>
<th>Measure 2</th>
<th>Measure 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;30 mph</td>
<td>Curb extension&lt;br&gt;Pedestrian refuge island&lt;br&gt;Rectangular Rapid-Flash Beacon&lt;br&gt;4-to-3 Lane Conversion&lt;br&gt;Pedestrian hybrid beacon</td>
<td>Curb extension&lt;br&gt;Rectangular Rapid-Flash Beacon&lt;br&gt;4-to-3 Lane Conversion&lt;br&gt;Pedestrian hybrid beacon</td>
<td>Curb extension&lt;br&gt;Rectangular Rapid-Flash Beacon&lt;br&gt;4-to-3 Lane Conversion&lt;br&gt;Pedestrian hybrid beacon</td>
</tr>
<tr>
<td>35 mph</td>
<td>Curb extension&lt;br&gt;Rectangular Rapid-Flash Beacon&lt;br&gt;4-to-3 Lane Conversion&lt;br&gt;Pedestrian hybrid beacon</td>
<td>Curb extension&lt;br&gt;Rectangular Rapid-Flash Beacon&lt;br&gt;4-to-3 Lane Conversion&lt;br&gt;Pedestrian hybrid beacon</td>
<td></td>
</tr>
<tr>
<td>≥40 mph</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Use Only in Conjunction With Other Countermeasures

<table>
<thead>
<tr>
<th>Speed</th>
<th>Measure 1</th>
<th>Measure 2</th>
<th>Measure 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;30 mph</td>
<td>Crosswalk pavement marking&lt;br&gt;Crosswalk warning signs</td>
<td>Crosswalk pavement marking&lt;br&gt;Crosswalk warning signs</td>
<td>Crosswalk pavement marking&lt;br&gt;Crosswalk warning signs</td>
</tr>
<tr>
<td>35 mph</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥40 mph</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>≤30 mph</td>
<td>35 mph</td>
<td>≥40 mph</td>
</tr>
<tr>
<td>---------------------</td>
<td>--------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Always Consider</td>
<td>• Parking restrictions on crosswalk approach&lt;br&gt;• Crosswalk lighting&lt;br&gt;• Advance Stop Here for Pedestrians sign and stop line&lt;br&gt;• Pedestrian refuge island</td>
<td>• Parking restrictions on crosswalk approach&lt;br&gt;• Crosswalk lighting&lt;br&gt;• Advance Stop Here for Pedestrians sign and stop line&lt;br&gt;• Rectangular Rapid-Flashing Beacon&lt;br&gt;• Pedestrian refuge island&lt;br&gt;• Pedestrian hybrid beacon</td>
<td>• Parking restrictions on crosswalk approach&lt;br&gt;• Crosswalk lighting&lt;br&gt;• Advance Stop Here for Pedestrians sign and stop line&lt;br&gt;• Pedestrian refuge island&lt;br&gt;• Pedestrian hybrid beacon</td>
</tr>
<tr>
<td>Also Consider</td>
<td>• Curb extension&lt;br&gt;• Rectangular Rapid-Flashing Beacon&lt;br&gt;• 4-to-3 Lane Conversion&lt;br&gt;• Pedestrian hybrid beacon</td>
<td>• Curb extension&lt;br&gt;• 4-to-3 Lane Conversion</td>
<td>• Curb extension&lt;br&gt;• 4-to-3 Lane Conversion</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use Only in</td>
<td>• Crosswalk pavement marking&lt;br&gt;• Crosswalk warning signs</td>
<td>• Crosswalk pavement marking&lt;br&gt;• Crosswalk warning signs</td>
<td>• Crosswalk pavement marking&lt;br&gt;• Crosswalk warning signs</td>
</tr>
<tr>
<td>Conjunction With</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Countermeasures</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## 4+ Lanes Without Raised Median

**AADT: >15,000**
(2 or more lanes in each direction)

<table>
<thead>
<tr>
<th></th>
<th>≤30 mph</th>
<th>35 mph</th>
<th>&gt;40 mph</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Always Consider</strong>&lt;br&gt;(Candidate Treatment)</td>
<td>- Parking restrictions on crosswalk approach</td>
<td>- Parking restrictions on crosswalk approach</td>
<td>- Parking restrictions on crosswalk approach</td>
</tr>
<tr>
<td></td>
<td>- Crosswalk lighting</td>
<td>- Crosswalk lighting</td>
<td>- Crosswalk lighting</td>
</tr>
<tr>
<td></td>
<td>- Advance Stop Here for Pedestrians sign</td>
<td>- Advance Stop Here for Pedestrians sign</td>
<td>- Advance Stop Here for Pedestrians sign</td>
</tr>
<tr>
<td></td>
<td>and stop line</td>
<td>and stop line</td>
<td>and stop line</td>
</tr>
<tr>
<td></td>
<td>- Pedestrian refuge island</td>
<td>- Pedestrian refuge island</td>
<td>- Pedestrian refuge island</td>
</tr>
<tr>
<td></td>
<td>- Rectangular Rapid-Flashing Beacon</td>
<td>- Rectangular Rapid-Flashing Beacon</td>
<td>- Rectangular Rapid-Flashing Beacon</td>
</tr>
<tr>
<td></td>
<td>- Pedestrian hybrid beacon</td>
<td>- Pedestrian hybrid beacon</td>
<td>- Pedestrian hybrid beacon</td>
</tr>
<tr>
<td><strong>Also Consider</strong>&lt;br&gt;(Candidate Treatment)</td>
<td>- Curb extension</td>
<td>- Curb extension</td>
<td>- Curb extension</td>
</tr>
<tr>
<td></td>
<td>- 4-to-3 Lane Conversion</td>
<td>- 4-to-3 Lane Conversion</td>
<td>- 4-to-3 Lane Conversion</td>
</tr>
<tr>
<td><strong>Use Only in</strong>&lt;br&gt;<strong>Conjunction With Other</strong>&lt;br&gt;<strong>Countermeasures</strong></td>
<td>- Crosswalk pavement marking</td>
<td>- Crosswalk pavement marking</td>
<td>- Crosswalk pavement marking</td>
</tr>
<tr>
<td></td>
<td>- Crosswalk warning signs</td>
<td>- Crosswalk warning signs</td>
<td>- Crosswalk warning signs</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>