Marked Pedestrian Crosswalks

Effective: March 6, 2008    Revised: October 18, 2017

Purpose
To define the criteria the Utah Department of Transportation (Department) will use when considering the installation of marked pedestrian crosswalks on state highways.

Policy
The currently adopted version of the Manual on Uniform Traffic Control Devices (MUTCD) provides general guidelines regarding the application of crosswalk markings. More specific criteria are necessary to properly define when and where marked pedestrian crosswalks may be installed for consistent application. The basis for the criteria comes from an article in the January 2004 issue of the ITE Journal, “Safety Analysis of Marked Versus Unmarked Crosswalks in 30 Cities” and FHWA publication number HRT-04-100 “Safety Effects of Marked Versus Unmarked Crosswalks at Uncontrolled Locations, Final Report and Recommended Guidelines”, September 2005. Additional pedestrian crosswalk criteria currently in use in other states and municipalities were also reviewed and used to develop the pedestrian crosswalk criteria. A summary of these criteria is shown in Figure 1 and Tables 1, 2, and 3. In addition:

- Midblock crosswalks should not be considered where the distance to the nearest intersection is less than 600 feet.
- A two-way left turn lane is not considered a median pedestrian refuge.
- Marked crosswalks alone should not be used at unsignalized intersections where the speed limit exceeds 40 MPH.
- Crosswalks should not be installed at locations that could present an increased safety risk to pedestrians such as where there is poor sight distance, complex or confusing designs, a substantial volume of heavy trucks, or other dangers without first providing adequate design features and traffic control devices.

It is important to consider other pedestrian facility enhancements such as a raised median, traffic signal, roadway narrowing, enhanced overhead lighting, traffic-calming measures, and curb extensions as needed to improve the safety of the crossing whether or not marked crosswalks are installed. All pedestrian enhancements must comply with Department Standard Drawings and Specifications.
Responsibility: Region Director or Region Traffic Operations Engineer

Actions

1. Receive a written request from a local jurisdiction to install a marked pedestrian crosswalk. The request will include justification to install the crosswalk at the specified location.

Responsibility: Region Traffic Operations Engineer

2. Verify the request and conduct, at a minimum, a field review to determine if the location is a candidate site. Refer to the table to determine if installation of a crosswalk may result in a possible increase in pedestrian crash risk.

3. Submit request for pedestrian traffic count to the Traffic and Safety Studies Engineer if the location is a candidate site.

Responsibility: Traffic and Safety Studies Engineer

4. Perform pedestrian traffic count and determine whether a crosswalk is warranted.

5. Submit results and recommendations to the Region Traffic Operations Engineer.

Responsibility: Region Traffic Operations Engineer

6. Determine if a crosswalk will or will not be installed.

7. Perform a field review to assist with the determination.

8. Complete the following if a crosswalk will be installed:

a. Determine what, if any, additional treatments or enhancements should accompany the crosswalk installation.
b. Respond to the local jurisdiction accordingly, arrange for design and installation of crosswalks, and consider additional treatments or enhancements.
   1) Refer to the following:
      a) Figure 1
      b) Tables 1, 2, and 3
      c) DD and SL series Standard Drawings

c. File the request and supporting information when project is completed.

7. Complete the following if a crosswalk will not be installed:

   a. Respond to the local jurisdiction accordingly and file the request and supporting information.
Figure 1. Pedestrian Crossing Flowchart
August 1, 2017

Identify candidate crossing location

Within 600’ of Marked or Controlled Crossing?
Yes
- Midblock Crossing?
  Yes
  Uncontrolled
  Type of Crossing
  
  - Multi-Use Path (G)

  - ADT ≥ 1,500 vpd?
    No
    No Action Recommended
    Location directly serves a generator (B)?
    Yes
    No
    No
    Meets Pedestrian Volume Criteria? (A)
    Yes
    Yes
    Go to Table 1
    ADT ≥ 1,500 vpd?
    No
    No
    Meets 2x Pedestrian Volume Criteria?
    Yes
    Yes
    Consider Additional Treatments (See Table 3)
    Adequate Sight Distance? (C)
    Yes
    Yes
    Existing Crosswalk to Remain
    Existing Crosswalk?
    Yes
    Install Marked Crosswalk
    Safety or Capacity Concerns? (D)?
    Yes
    Existing Crosswalk?
    No
    Install Marked Crosswalk
    Demand Exists (F)?
    Yes
    No
    No Crosswalk Recommended
    No
    Adequate Sight Distance? (C)
    Yes
    No
    No
    Direct Peds to nearest marked or protected crossing
    Can obstruction be removed?
    No
    Yes
    Go to Table 1

No

Yes

No

Yes

Yes

No

No

Yes

No

Yes

No

No

Yes

No

Yes

No

Yes

No

Yes

No

Yes

No

Yes

No

Yes

No

Yes

No

Yes

No

Yes

No

Yes

No

Yes

No

Yes

No

Yes

No

Yes

No

Yes

No

Yes

No
<table>
<thead>
<tr>
<th>ROADWAY TYPE</th>
<th>ADT &lt; 9,000</th>
<th></th>
<th></th>
<th>ADT 9,000 TO 12,000</th>
<th></th>
<th></th>
<th>ADT 12,000 TO 15,000</th>
<th></th>
<th></th>
<th>ADT &gt; 15,000</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>≤ 30 MPH</td>
<td>35 MPH</td>
<td>≥ 40 MPH</td>
<td>≤ 30 MPH</td>
<td>35 MPH</td>
<td>≥ 40 MPH</td>
<td>≤ 30 MPH</td>
<td>35 MPH</td>
<td>≥ 40 MPH</td>
<td>≤ 30 MPH</td>
<td>35 MPH</td>
<td>≥ 40 MPH</td>
</tr>
<tr>
<td>TWO LANES</td>
<td>C</td>
<td>C</td>
<td>P</td>
<td>C</td>
<td>C</td>
<td>P</td>
<td>C</td>
<td>C</td>
<td>N</td>
<td>C</td>
<td>P</td>
<td>N</td>
</tr>
<tr>
<td>THREE LANES</td>
<td>C</td>
<td>C</td>
<td>P</td>
<td>C</td>
<td>P</td>
<td>P</td>
<td>P</td>
<td>P</td>
<td>N</td>
<td>P</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>FOUR OR MORE LANES WITH RAISED MEDIAN</td>
<td>C</td>
<td>C</td>
<td>P</td>
<td>C</td>
<td>P</td>
<td>N</td>
<td>P</td>
<td>P</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>FOUR OR MORE LANES WITHOUT RAISED MEDIAN</td>
<td>C</td>
<td>P</td>
<td>N</td>
<td>P</td>
<td>P</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
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</tbody>
</table>

*New marked crosswalks alone should not be installed across uncontrolled roadways where the speed limit exceeds 40 mph.

**C = Candidate site for marked crosswalk**
Marked crosswalk alone may be sufficient. Marked crosswalks must be installed carefully and selectively. Before installing new marked crosswalks, an engineering study is needed to determine whether the location is suitable for a marked crosswalk. For an engineering study, a site review may be sufficient at some locations, while a more in depth study may be needed at other sites. Additional enhancements may be considered based upon engineering judgement and additional considerations. See Table 2 for types of additional enhancements at uncontrolled locations.

**P = Probable candidate site for marked crosswalk**
Marked crosswalk alone may be insufficient. Possible increase in pedestrian crash risk may occur if crosswalks are added without other pedestrian facility enhancements. Low level pedestrian enhancements are recommended at these locations. Multiple low level treatments may be considered if engineering judgement determines they are appropriate. High level improvements may also be considered if (a) the site meets the criteria for the selected high level treatment and (b) engineering judgement determines they are appropriate. These sites should be closely monitored and enhanced with other pedestrian crossing improvements if necessary. See Table 2 for types of additional enhancements at uncontrolled locations. Additional enhancements may be considered based upon engineering judgement and additional considerations.

**N = Marked crosswalk alone is insufficient, since pedestrian crash risk may be increased by providing marked crosswalks alone**
Marked crosswalk alone is insufficient. High level treatments required if warranted (3). See Utah MUTCD for criteria for high level treatments. If study location does not meet criteria of any high level treatments, multiple low level treatments would be required as a minimum (2). Judgment may indicate that a crossing should not be installed due to increased safety risks. These sites should be closely monitored and enhanced with other pedestrian crossing improvements if necessary. Additional enhancements may be considered based upon engineering judgement and additional considerations. See Table 2 for types of additional enhancements at uncontrolled locations.
## TABLE 2. TYPES OF PEDESTRIAN ENHANCEMENTS AT UNCONTROLLED LOCATIONS

<table>
<thead>
<tr>
<th>LOW LEVEL PEDESTRIAN ENHANCEMENTS</th>
<th>HIGH LEVEL PEDESTRIAN ENHANCEMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced Pedestrian warning signing</td>
<td>Pedestrian Hybrid Beacon (HAWK)</td>
</tr>
<tr>
<td>High Visibility Crosswalk</td>
<td>Pedestrian Activated Signal</td>
</tr>
<tr>
<td>Median Refuge Island</td>
<td>Overhead School Pedestrian Assembly</td>
</tr>
<tr>
<td>Bulb-Outs</td>
<td></td>
</tr>
<tr>
<td>Pedestrian Activated Flashing Beacons (Overhead or Shoulder Mounted)</td>
<td></td>
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<tr>
<td>Pedestrian Activated Rectangular Rapid flashing Beacons (RRFBs)</td>
<td></td>
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<tr>
<td>Reduced Corner Radii</td>
<td></td>
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<tr>
<td>Split Pedestrian Crossover (SPXO)</td>
<td></td>
</tr>
<tr>
<td>Installation of Yield or Stop Lines with “Yield Here To (Stop Here For) Pedestrians” Signs</td>
<td></td>
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<tr>
<td>Special Pavement Markings such as “Pedestrian Look Left” or “Watch for Turning Vehicles”</td>
<td></td>
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<tr>
<td>Install Overhead Lighting</td>
<td></td>
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<tr>
<td>Install Directional Pedestrian Ramp</td>
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</tbody>
</table>

NOTE: The list of enhancements in the table above is not intended to be all-inclusive, other types of enhancements may also be considered. The decision to use a particular enhancement at a given location should be made on the basis of either an engineering study or the application of engineering judgment. Thus, while these guidelines should be considered in the design and application of traffic control devices, they should not be considered a substitute for engineering judgment. Engineering judgment should be exercised in the selection and application of traffic control devices. Additional considerations to gaps (ability of pedestrians to cross roadway; including forced gaps), crossing width, pedestrian demand, crash history, and other factors outlined in the Pedestrian Crossing Guidelines flowchart should be considered in the selection of the appropriate enhancement.
Table 3. Types of Pedestrian Enhancements at Controlled Locations

<table>
<thead>
<tr>
<th>Low Level Pedestrian Enhancements</th>
<th>High Level Pedestrian Enhancements (Additional criteria for each treatment must be met)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced Pedestrian Warning Signing</td>
<td>Overhead School Pedestrian Assembly</td>
</tr>
<tr>
<td>High Visibility Crosswalk</td>
<td></td>
</tr>
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<td>Median Refuge Islands</td>
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<tr>
<td>Install Directional Pedestrian Ramp</td>
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<tr>
<td>Pedestrian “Scramble” Phase at Signalized Intersections</td>
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<tr>
<td>Prohibiting Right-Turn on Red at Signalized intersections</td>
<td></td>
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<tr>
<td>Equipping Signals with Early Release or Pedestrian Lead Time</td>
<td></td>
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<tr>
<td>Installing Countdown Signal Heads</td>
<td></td>
</tr>
<tr>
<td>Increased Pedestrian Crossing Time (Automated in Controller or Manually via Switch Key) during Peak Periods</td>
<td></td>
</tr>
</tbody>
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