



U.S. Department of Transportation  
Federal Highway Administration



# Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations



Table 1 provides initial countermeasure options for various roadway conditions. Each matrix cell indicates possibilities that may be appropriate for designated pedestrian crossings. Not all of the countermeasures listed in the matrix cell should necessarily be installed at a crossing.

For multi-lane roadway crossings with vehicle AADTs exceeding 10,000, a marked crosswalk alone is typically insufficient (Zegeer, 2005). Under such conditions, more substantial crossing improvements (such as the refuge island, PHB, and RRFB) are also needed to prevent an increase in pedestrian crash potential.

**Table 1. Application of pedestrian crash countermeasures by roadway feature.**

Roadway Configuration	Posted Speed Limit and AADT									
	Vehicle AADT <9,000			Vehicle AADT 9,000–15,000			Vehicle AADT >15,000			
	≤30 mph	35 mph	≥40 mph	≤30 mph	35 mph	≥40 mph	≤30 mph	35 mph	≥40 mph	
<b>2 lanes</b> (1 lane in each direction)	1 2 4 5 6	1 5 6	1 5 6	1 4 5 6	1 5 6	1 5 6	1 4 5 6	1 5 6	1 5 6	
<b>3 lanes with raised median</b> (1 lane in each direction)	1 2 3 4 5	1 3 5	1 3 5	1 3 4 5	1 3 5	1 3 5	1 3 4 5	1 3 5	1 3 5	
<b>3 lanes w/o raised median</b> (1 lane in each direction with a two-way left-turn lane)	1 2 3 4 5 6	1 3 5 6	1 3 5 6	1 3 4 5 6	1 3 5 6	1 3 5 6	1 3 4 5 6	1 3 5 6	1 3 5 6	
<b>4+ lanes with raised median</b> (2 or more lanes in each direction)	1 3 5 7 8 9	1 3 5 7 8 9	1 3 5 7 8 9	1 3 5 7 8 9	1 3 5 7 8 9	1 3 5 7 8 9	1 3 5 7 8 9	1 3 5 7 8 9	1 3 5 7 8 9	
<b>4+ lanes w/o raised median</b> (2 or more lanes in each direction)	1 3 5 6 7 8 9	1 3 5 6 7 8 9	1 3 5 6 7 8 9	1 3 5 6 7 8 9	1 3 5 6 7 8 9	1 3 5 6 7 8 9	1 3 5 6 7 8 9	1 3 5 6 7 8 9	1 3 5 6 7 8 9	

Given the set of conditions in a cell,

- # Signifies that the countermeasure is a candidate treatment at a marked uncontrolled crossing location.
- Signifies that the countermeasure should always be considered, but not mandated or required, based upon engineering judgment at a marked uncontrolled crossing location.
- Signifies that crosswalk visibility enhancements should always occur in conjunction with other identified countermeasures.\*

The absence of a number signifies that the countermeasure is generally not an appropriate treatment, but exceptions may be considered following engineering judgment.

1 High-visibility crosswalk markings, parking restrictions on crosswalk approach, adequate nighttime lighting levels, and crossing warning signs  
 2 Raised crosswalk  
 3 Advance Yield Here To (Stop Here For) Pedestrians sign and yield (stop) line  
 4 In-Street Pedestrian Crossing sign  
 5 Curb extension  
 6 Pedestrian refuge island  
 7 Rectangular Rapid-Flashing Beacon (RRFB)\*\*  
 8 Road Diet  
 9 Pedestrian Hybrid Beacon (PHB)\*\*

\*Refer to Chapter 4, 'Using Table 1 and Table 2 to Select Countermeasures,' for more information about using multiple countermeasures.

\*\*It should be noted that the PHB and RRFB are not both installed at the same crossing location.

This table was developed using information from: Zegeer, C.V., J.R. Stewart, H.H. Huang, P.A. Lagerwey, J. Feagans, and B.J. Campbell. (2005). Safety effects of marked versus unmarked crosswalks at uncontrolled locations: Final report and recommended guidelines. FHWA, No. FHWA-HRT-04-100. Washington, D.C.: FHWA. Manual on Uniform Traffic Control Devices, 2009 Edition. (revised 2012). Chapter 4F, Pedestrian Hybrid Beacons. FHWA, Washington, D.C.; FHWA. Crash Modification Factors (CMF) Clearinghouse. <http://www.cmfclearinghouse.org/>; FHWA. Pedestrian Safety Guide and Countermeasure Selection System (PEDSAFE). <http://www.pedbikesafe.org/PEDSAFE/>; Zegeer, C., R. Srinivasan, B. Lan, D. Carter, S. Smith, C. Sundstrom, N.J. Thirsk, J. Zegeer, C. Lyon, E. Ferguson, and R. Van Houten. (2017). NCHRP Report 841: Development of Crash Modification Factors for Uncontrolled Pedestrian Crossing Treatments. Transportation Research Board, Washington, D.C.; Thomas, Thirsk, and Zegeer. (2016). NCHRP Synthesis 498: Application of Pedestrian Crossing Treatments for Streets and Highways. Transportation Research Board, Washington, D.C.; and personal interviews with selected pedestrian safety practitioners.