

SIGNALIZED INTERSECTION SAFETY STRATEGIES



Improve Operation of Pedestrian and Bicycle Facilities at Signalized Intersections

WHERE TO USE

Signalized intersections with high frequencies of pedestrian and/or bicycle crashes. Also on routes serving schools or other generators of pedestrian and bicycle traffic.



Photos by: Texas Transportation Institute, FHWA

DETAILS

Nearly one-third of all pedestrian-related crashes occur at or within 50 feet of an intersection. At traffic signals, the biggest crash problem for pedestrians comes from drivers making a permissive left turn across the crosswalk with the walk signal. Thirty percent involve a turning vehicle and another 22% involve a pedestrian either running across the intersection or darting in front of a vehicle whose view was blocked just prior to impact. Another 16% of these intersection-related crashes occur because of driver violation (e.g., failure to yield the right-of-way).

Traffic control improvements that can be made to an intersection to increase pedestrian safety include the following:

- pedestrian signs, signals (including countdown signals), and markings;
- crossing guards for school children;
- lights in crosswalks in school zones;
- pedestrian-only phase or pedestrian-lead phase during signal operation;
- prohibition of right turn on red (RTOR);
- public information or signs that educate pedestrians regarding use of push buttons; and
- technology to show a push button is working

Providing pedestrian push buttons may facilitate safe pedestrian roadway crossings at signalized intersections (versus mid-block crossings), where pedestrian conflicts with motor vehicles can be managed through use of pedestrian crossing signals and/or exclusive pedestrian-only phases



during signal operation. Ensure that pedestrian push buttons are easily accessible and are ADA compliant. Strongly consider the use of assessable push buttons that provide visual, tactile and audible cues. For existing push buttons, interim improvements, such as signing and removal of roadside furniture, can make them more accessible. Consult the *AASHTO Guide for the Development of Bicycle Facilities* for information on bicycle safety. Traffic control improvements that can be made to an intersection to increase safety for bicyclists include “Bicyclist Dismount” signs at intersections and stop and “Bicyclist Dismount” signs at intersections with bike trails.

KEY TO SUCCESS

The key to success for this strategy is to get the appropriate agencies to look at pedestrian and bicycle facilities from a more systematic point of view. That is, rather than making improvements where problems occur, anticipate the needs of pedestrians and bicyclists during the design of other intersection improvements. Incorporate appropriate improvements in the design before problems occur. Involve groups representing pedestrians and bicyclists in the early stages of a program’s development.

ISSUES

Proper maintenance of improved pedestrian and bicycle facilities is also necessary. For example, some issues—a missing or broken section of sidewalk or a construction zone that forces pedestrians to walk in a traffic lane—are often overlooked.

TIME FRAME ●○○○

Pedestrian improvements can be completed quickly if no additional right-of-way is needed.

COSTS ●○○○

Costs for most of the described improvements should be low. Updated signal equipment may be required to employ some of the advanced signal techniques.

EFFECTIVENESS

TRIED/PROVEN: One study showed a 25% decrease in pedestrian-related crashes with the installation of pedestrian countdown signal heads. Another study indicated a 20% decrease in all types of crashes when pedestrian signals were installed. Yet another study determined that implementing a leading pedestrian interval may decrease pedestrian-related crashes by 5%.

COMPATIBILITY

Strategies to reduce pedestrian and bicycle crashes are compatible with most other strategies for improving safety at signalized intersections.

SUPPLEMENTAL INFORMATION

The *AASHTO Guide for the Development of Bicycle Facilities* should be consulted for information on bicycle safety. *NCHRP Report 500: Volume 10* comprehensively addresses pedestrian safety.

For more details on this and other countermeasures: <http://safety.transportation.org>

For more information contact:

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