

Low Cost Non-Intersection Safety Improvements

Research Has Shown...

Post mounted delineators and chevrons can reduce run-off road crashes by up to 58% and 31%, respectively.

(Source: *Low Cost Local Road Safety Solutions* by American Traffic Safety Services Association and National Association of County Engineers)

Background

In 2006, there were 430 fatalities in vehicular crashes in Massachusetts with over half of these fatalities occurring at non-intersection locations. As a result, targeting safety at these non-intersection locations has been the focus of safety-related projects at all levels; however, it is often at the local level where the most significant impacts are realized. This fact sheet provides insight regarding low cost safety fixes for non-intersection crash locations. Recognizing that resources are often limited, an emphasis is provided on the identification of strategies that will yield effective results which are easily implemented from both a time and cost perspective.

Low Cost Safety Countermeasure Development

When attempting to improve safety at non-intersection locations consider some general strategies such as the following:

- Identify crash countermeasures that are likely to influence crashes based upon the dominant crash type.
- Select alternatives, assess the economic costs, and implement the appropriate countermeasure(s).
- Evaluate countermeasures to ensure no adverse consequences occur during and after implementation.

Countermeasure Considerations

Technically feasible – Is the countermeasure feasible for the particular location? Does it comply with existing guidelines and/or standards?

Advantageous Cost/Benefit – Does the benefit of the countermeasure outweigh the costs? Are there more cost-effective strategies to consider?

Affordable and Practical – Is the countermeasure practical considering the identified problem? Can it be funded?

Acceptable – Will the public accept the countermeasure politically and within the community? Will there be educational needs for the public?

Legal – Is the countermeasure legal to use? For example, speed limits are regularly revised without proper authorization, and STOP signs are used without meeting the appropriate MUTCD warrants.

Compatible with other roadway features – Does the countermeasure disrupt other safety features, which may result in unintended consequences?



MASSACHUSETTS
EXECUTIVE OFFICE
OF TRANSPORTATION



U.S. Department of Transportation
Federal Highway
Administration

University of Massachusetts
Transportation Center

For more information
contact:
MassHighway
Traffic Engineering
(617) 973-8484

Last Revised:
January 2008

Low Cost Non-Intersection Safety Improvements

Although large-scale treatments can be used, there are also many effective low cost countermeasures that can be implemented. This fact sheet targets some of the common safety challenges at non-intersection locations, and places an emphasis on identifying low-cost improvements that could likely be implemented in a short timeframe (i.e., less than a year). Although several definitions exist for low cost improvements, such as the FHWA definition of less than \$50,000, the information below is based upon treatments under \$15,000.

Identified Safety Challenge	Potential Countermeasures
Horizontal curve issues	<ul style="list-style-type: none"> • Provide advance warning signage. • Add chevrons along the curve. • Add embedded pavement markings and enhanced curve delineation. • Add roadside reflectors to delineate curves. • Increase/add pavement markings to provide 6-inch centerlines and/or edgelines.
Sight distance issues	<ul style="list-style-type: none"> • Trim or clear trees or bushes obstructing various access points or existing signage. • Add warning signs advising of potential hazards.
Run-off-road crashes at known location	<ul style="list-style-type: none"> • Enhance delineation through improved pavement markers or roadside reflectors. • Provide adequate clear zone to minimize crash consequences. • Add guard rail to limit roadway departures.
Edge drop-off	<ul style="list-style-type: none"> • Add and maintain fill to prevent drop-off at roadside which limits vehicle ability to re-enter the roadway upon departure. • Identify drop-off cause (e.g., drainage) and improve.
Drainage-related issues	<ul style="list-style-type: none"> • Ensure adequate drainage . • Clear/clean catch basins with regularity.
Weather-related crashes	<ul style="list-style-type: none"> • Alter or increase winter weather treatment program. • Utilize warning signs to identify possible hazardous locations for motorists. • Employ changeable message signs to alert motorists of winter weather conditions.
Pedestrian crossings	<ul style="list-style-type: none"> • Adequately mark with advance signage and yield lines any non-intersection pedestrian crosswalks.



MASSACHUSETTS
EXECUTIVE OFFICE
OF TRANSPORTATION



For more information
contact:
MassHighway
Traffic Engineering
(617) 973-8484

Last Revised:
January 2008

Low Cost Non-Intersection Safety Improvements

Identified Safety Challenge	Potential Countermeasures
Maintenance issues	<ul style="list-style-type: none"> • Clear brush which may inhibit roadway operations or obstruct existing roadway signage. • Sweep roadways and shoulders regularly. • Fill roadway cracks and potholes. • Replace worn pavement markings and faded signs.
Tree or utility pole crashes	<ul style="list-style-type: none"> • Relocate or remove existing trees or poles in problematic locations. • Add reflectors to trees or poles. • Add guard rail shielding existing trees or poles.
Speed-related crashes	<ul style="list-style-type: none"> • Ensure roadways are properly posted in accordance with existing speed regulations (check with MassHighway for existing regulations). • Consider traffic calming measures to reduce speeds. • Consider experimental optical speed measures. • Restripe to provide narrower lanes. • Ensure regular enforcement of appropriate speed limits.
Parking	<ul style="list-style-type: none"> • Restrict parking at selected locations including constrained cross-section, near intersections, and on the approaches to pedestrian crosswalks.
Passing issues	<ul style="list-style-type: none"> • Restrict and enforce passing when adequate passing sight distance is not provided.

Resources

NCHRP 500 Series – Implementation of AASHTO Strategic Highway Safety Plan

This series of guidebooks provides recommendations and countermeasures aimed at targeting specific safety problems along roadways, and is found at <http://safety.transportation.org/guides.aspx>

Massachusetts Traffic Safety Toolbox Series

This series of fact sheets provides information on safety improvements that can be implemented at the local level. Information on problem areas, possible countermeasures, and implementation considerations is included in each fact sheet which can be found at www.mass.gov/mhd/safetytoolbox/

Massachusetts Traffic Safety Toolbox Series



MASSACHUSETTS
EXECUTIVE OFFICE
OF TRANSPORTATION



U.S. Department of Transportation
Federal Highway
Administration

University of Massachusetts
Transportation Center

For more information
contact:
MassHighway
Traffic Engineering
(617) 973-8484

Last Revised:
January 2008