



U.S. Department
of Transportation
**Federal Highway
Administration**

Memorandum

Subject: ACTION: Consideration and Implementation of Proven
Safety Countermeasures

Date: July 10, 2008


From: Jeffrey A. Lindley
Associate Administrator for Safety

In Reply Refer To: HSSI

To: Division Administrators
Federal Lands Highway Division Engineers

Improving safety is a top priority of the US Department of Transportation, and FHWA remains strongly committed to reducing highway fatalities and serious injuries on our Nation's highways. We know that a comprehensive mix of strategies is required—including stronger policies to support system-wide and sustainable improvements. We believe our area of greatest potential influence is how Federal funds are used and targeted to implement improvements that will have a positive impact on safety.

In our stewardship and oversight role for federally funded highway programs, we have the opportunity to strongly encourage Federal, State, local agencies, and tribal governments to include safety in their investment decision-making process. While there is still much work to do on determining the precise effectiveness of some safety countermeasures, we are highly confident that certain processes, infrastructure design techniques, and highway features are effective and should be encouraged whenever Federal funds are used. Safety should be considered at every stage of the project development process. Every investment decision should consider the impact on safety and every federally funded project should include appropriate safety enhancement features.

This guidance memorandum highlights when and where we believe certain processes, design techniques, or safety countermeasures should be used. This document also includes countermeasure descriptions and background on the proven effectiveness and benefits; a statement on when the countermeasure or process should be applied; links to reference documents; and current FHWA technical contacts for each topic. This guidance was developed based on effectiveness data for various crash types compiled from a variety of sources. It reflects the types of circumstances and situations that we are confident will yield high pay-offs and be cost beneficial for all projects.

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We need your leadership to encourage our partners to apply this guidance as they make investment decisions and develop projects. I am requesting that all Federal-aid and Federal Lands Division Offices review this guidance and meet with officials in their State and with tribal governments, as well as Federal partners, to determine how and when they can consider these measures to improve safety when federally funded investments are pursued. In discussing this guidance with your safety partners, it will be particularly important to address the need for comprehensive high quality safety data as a foundational element for facilitating project and program decisions. Data systems should be continually improved to help foster better decision-making.

The Office of Safety believes that widespread implementation of these safety countermeasures can serve to accelerate the achievement of local, State and national safety goals. We are currently considering whether to advance one or more elements of this guidance through a formal rulemaking process. As your office works with your State, tribal governments, and Federal partners in implementing your State's Strategic Highway Safety Plan and providing stewardship and oversight of federally funded investments, we would appreciate feedback on your experiences in using this guidance. We also invite your input on other potential safety guidance needs.

List of guidance documents included herein:

1. Road Safety Audits
2. Rumble Strips and Rumble Stripes
3. Median Barriers
4. Safety Edge
5. Roundabouts
6. Left and Right Turn Lanes at Stop-Controlled Intersections
7. Yellow Change Intervals
8. Medians and Pedestrian Refuge Areas in Urban and Suburban Areas
9. Walkways

Attachment

cc: Associate Administrators
Directors of Field Services
Resource Center Manager

4. Safety Edge (Rev. 6/05/08)

Description:

The Safety Edge is a specific asphalt paving technique where the interface between the roadway and graded shoulder is paved at an optimal angle to minimize vertical drop-off and provide a safer roadway edge. A Safety Edge shape can be readily attained by fitting resurfacing equipment with a device that extrudes and compacts the shape of the pavement edge as the paver passes. This mitigates shoulder pavement edge drop-offs immediately during the construction process and over the life of the pavement. This technique is not an extra procedure but merely a slight change in the paving equipment that has a minimal impact on the project cost. In addition, the Safety Edge improves the compaction of the pavement near the edge. Shoulders should still be pulled up flush with the pavement.

Background:

New and resurfaced pavements improve ride quality but can be a detriment to safety if the edges are left near vertical. Drivers trying to regain control after inadvertently dropping a tire over the edge frequently have difficulty with a steep vertical edge and may lose control of the vehicle, possibly resulting in severe crashes. Making the adjacent non-paved surface flush with the paved surface alleviates this problem, but a vertical edge may appear due to erosion or wheel encroachment, especially along curves. Installing the Safety Edge during a paving project provides a surface that can be more safely traversed.

Recent studies have shown that crashes involving pavement edge drop-offs greater than 2.5 inches are more severe and twice as likely to be fatal than other roadway departure crashes. An effective countermeasure is to implement a pavement wedge as referenced in the AASHTO Roadside Design Guide, Chapter 9. Research in the early 1980's found a 45 degree pavement wedge effective in mitigating the severity of crashes involving pavement edge drop-offs. During the Georgia DOT Demonstration project, evaluation of wedge paving techniques found it beneficial to flatten the wedge to a 30 to 35 degree angle that resulted in a pavement edge referred to as the Safety Edge. Subsequent research has shown this design to be 50% more effective than the original 45 degree wedge.

Guidance Statement/Application:

Each State should implement policies and procedures to incorporate the Safety Edge where pavement and non-pavement surfaces interface on all Federal-aid new paving and resurfacing projects with surface differentials of 2.5 inches or more. The differentials should be measured from the pavement surface to the adjacent non-pavement surface, accounting for grading along the pavement edge during construction and including existing drop-offs.

In addition, Divisions should work with Federal, State and local agencies and tribal governments to determine how the Safety Edge can be installed on all routes with pavement edge drop-offs (i.e., surface differentials of 2.5 inches or greater) during resurfacing over time, based on highest priority by traffic volume, lack of paved shoulders, and historical presence of edge rutting or pavement edge drop-offs.

Reference Documents and Guidelines:

AAA Foundation for Traffic Safety, *Safety Impacts of Pavement Edge Drop-offs*

http://www.aaafoundation.org/pdf/pedo_report.pdf

The Safety Edge: Pavement Edge Treatment, FHWA-SA-05-003:

http://safety.fhwa.dot.gov/roadway_dept/docs/sa05003.htm

FHWA Contacts:

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