THE SAFETY EDGE
THE PURPOSE, NEED, AND PRACTICAL SOLUTION
The Safety Edge

Purpose and Need

• Crash Types and Problem Locations
• Risk Factors in Edge Drop-off Crashes

A Practical Solution

• Construction of the Safety Edge
• Durability
• Benefits and Costs

Conclusion
Approach to Reducing Roadway Departure Crashes

- Low-Cost Solutions
- Highly-Effective Countermeasures
- Systematic Application
Locations at High-Risk for Drop-Offs

- Horizontal Curves
- Near Roadside Mailboxes
- Turnarounds/Unpaved Pull-Outs
- Shaded Areas
- Eroded Areas
- Asphalt Pavement Overlays
Horizontal Curves
Mail Boxes
Turnarounds/Unpaved Pull-Outs
Shaded Areas

Sunlight = Vegetation
Eroded Areas
Asphalt Overlay

2” Asphalt Overlay + Existing 5” Drop-off = Extreme Unsafe Condition
With Safety Edge
Risk Factors

What are the factors associated with pavement edge drop-off crashes?

– Speed
– Driver Experience
– Vehicle/Tires
– Drop-off Height
– Shape Of Pavement Edge
http://fhwa.na3.acrobat.com/safetyedgedrop
Reasonably Safe

Unsafe

Questionable Safety

Marginally Safe

Reasonably Safe

Safe

Optimum Edge Designs

Graphic Source: Zimmer and Ivey, Texas Transportation Institute
The Safety Edge: The Practical Solution
Construction

Similar to Conventional Paving
(No Effect on Production)

- Clip Shoulders
- Construct Overlay
- Pull Shoulders Flush
The Hardware

Trans Tech Shoulder Wedge Maker™

www.transtechsys.com
www.troxlerlabs.com

Advant-Edge™

www.advantedgepaving.com
Rolling Process
Iowa PCCP Safety Edge
Finished Surface
Angle Measurement

Line Depicts
extension of
Pavement Surface

Line depicts a plane parallel to Pavement Surface from the toe of the wedge surface

30° - 35°
Angle Measurement

Mobile, AL Installation

Columbus, MS Installation

Toe of the slope

Break point
Finished Surface

- Breakpoint on wedge
- Existing pavement edge
- Toe of wedge
- New graded shoulder
Finished Surface
Lift thickness does not correlate with edge depth.

The lift of asphalt is 1.5 inches as can be seen at the centerline.

Across the road it shows about a 4 inch depth because the shoulder was lower after clipping the shoulder.
Drop-Off with the Safety Edge
Increased Edge Durability?

Without Safety Edge

With Safety Edge
Comparison of Edges

Paving with the Safety Edge
Paving without the Safety Edge shoe

Maine Safety Edge Installation
Edge Durability

Maine Control Section w/o Safety Edge
Edge Compaction

Condition After 6 Years of Service

Without Safety Edge

With Safety Edge
Durability

http://fhwa.na3.acrobat.com/setruck/
Tracy’s Law

“If you lose the edge, you lose the road.”

Tracy Cumby
TxDOT Project Director

Photos Courtesy of
Dr. William Lawson
Texas Tech University
Texas Maintenance Assessment Program (TxMAP)

TxMAP 2002 Non-Interstate Assessment, District Overall Summary
Benefits of the Safety Edge

• Temporary safety benefit during construction
• Increase production—shoulder work after overlay complete
• Providing “Due Care”
• Aid vehicle re-entry
• **Increased Pavement Edge Durability**
• **Reduced Crashes Over Life of the Pavement**
Other Safety Measures

- Build 2-foot shoulders
- Install rumble strips/stripe
- Periodically rebuild/maintain shoulders
- Use aggregate, or RAP shoulders
Costs of the Safety Edge

- **Hardware**
  - Approximately $3000 per shoe
  - Reusable

- **Material**
  - Minor additional asphalt (depends on shoulder condition)

- **Paving Process**
  - No change in paving speed
  - No additional operation
  - Minimal monitoring

- **Surface Details**
  - No change in smoothness/ride quality
Every Safety Edge Counts

The Safety Edge provides benefits to all stakeholders: owners, contractors and the driving public. The Safety Edge saves lives and improves pavement edge durability. The Safety Edge costs less than 1% of pavement resurfacing budgets.

YOU can help reduce pavement edge drop-off crashes!
Every Day Counts
Innovation Initiative

Contact Information
For training or more information on this Every Day Counts Initiative, please contact your local FHWA Division Office.

To learn more about EDC, visit:
http://www.fhwa.dot.gov/everydaycounts