



U.S. Department
of Transportation
Federal Highway
Administration



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





Eroded Areas





Asphalt Overlay



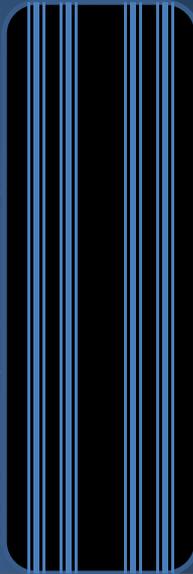
2" Asphalt Overlay

+ Existing 5" Drop-off

= Extreme Unsafe Condition



With Safety Edge





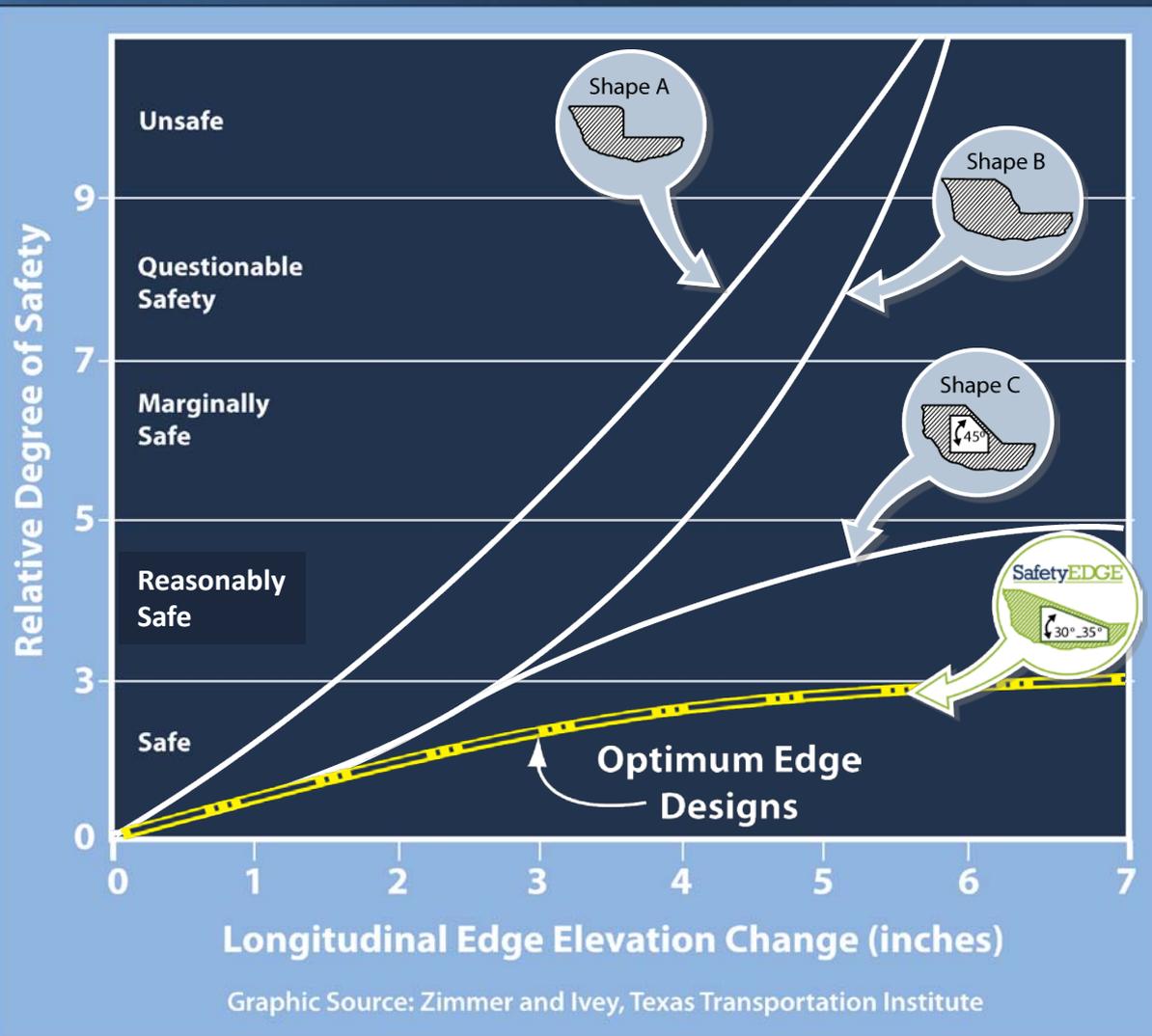
Risk Factors

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>





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





<http://fhwa.na3.acrobat.com/sewoshoe/>



<http://fhwa.na3.acrobat.com/seshoe/>



Iowa PCCP Safety Edge



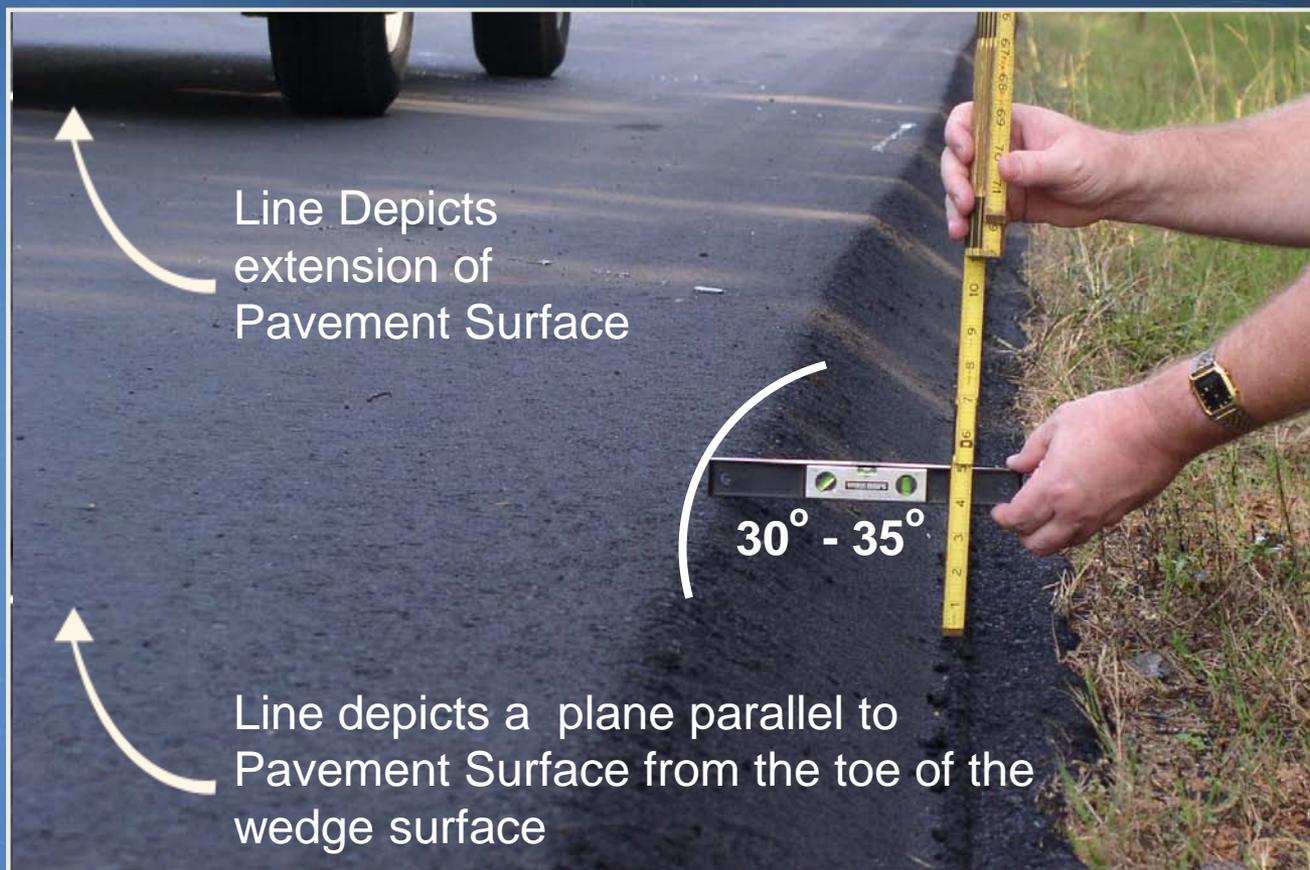


Finished Surface





Angle Measurement

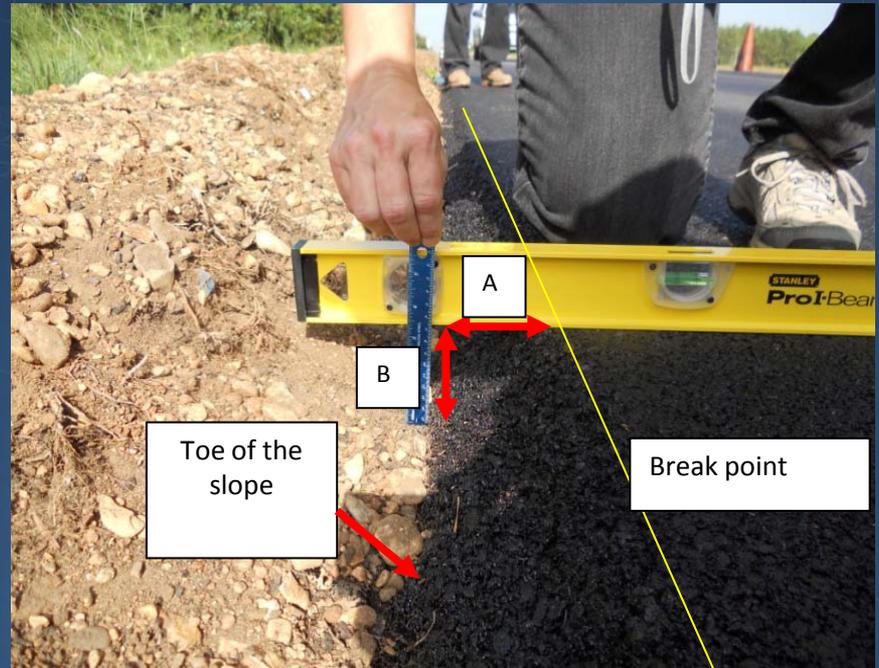




Angle Measurement



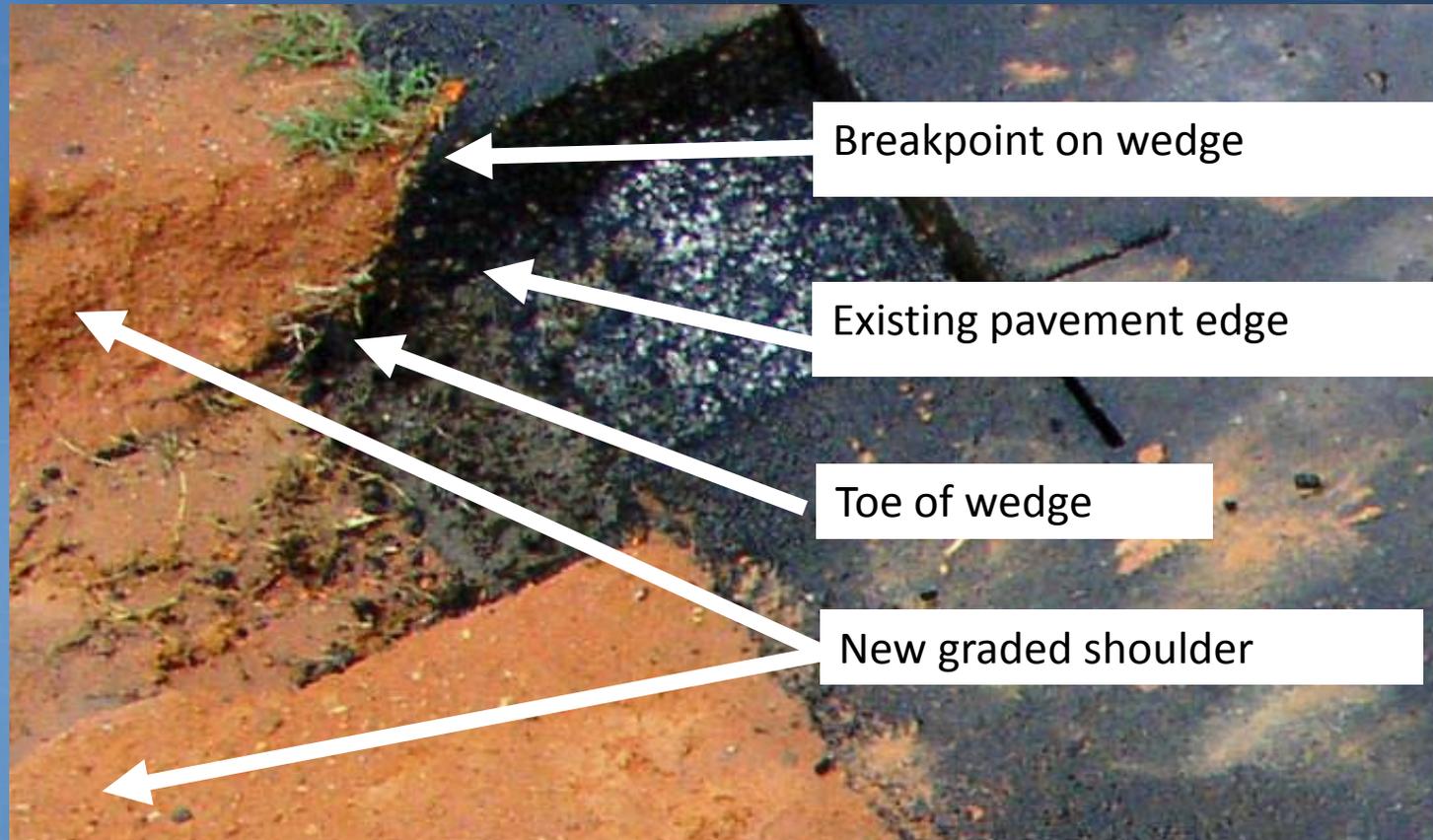
Mobile, AL Installation



Columbus, MS Installation



Finished Surface





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



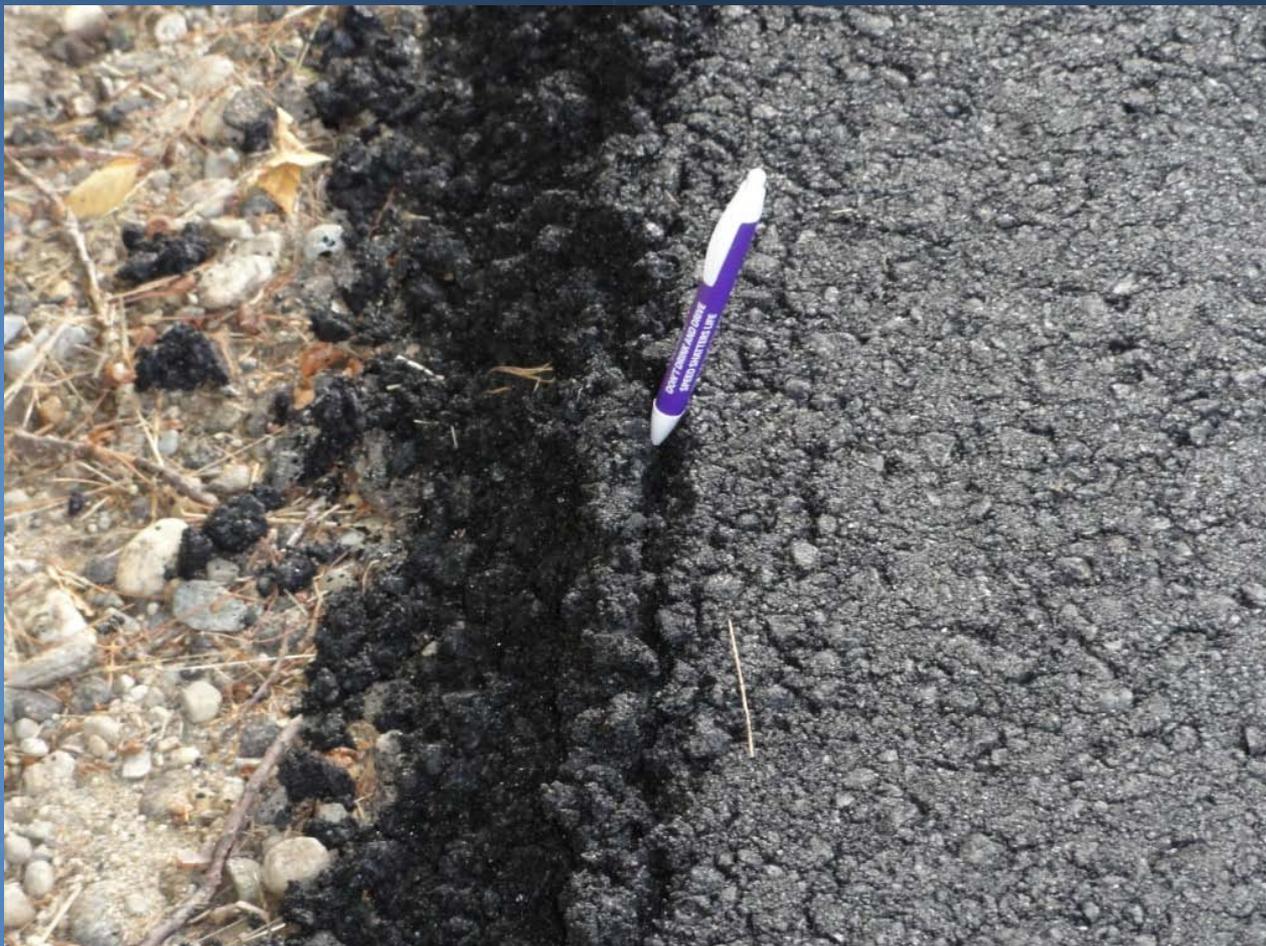
Paving with
the Safety
Edge

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



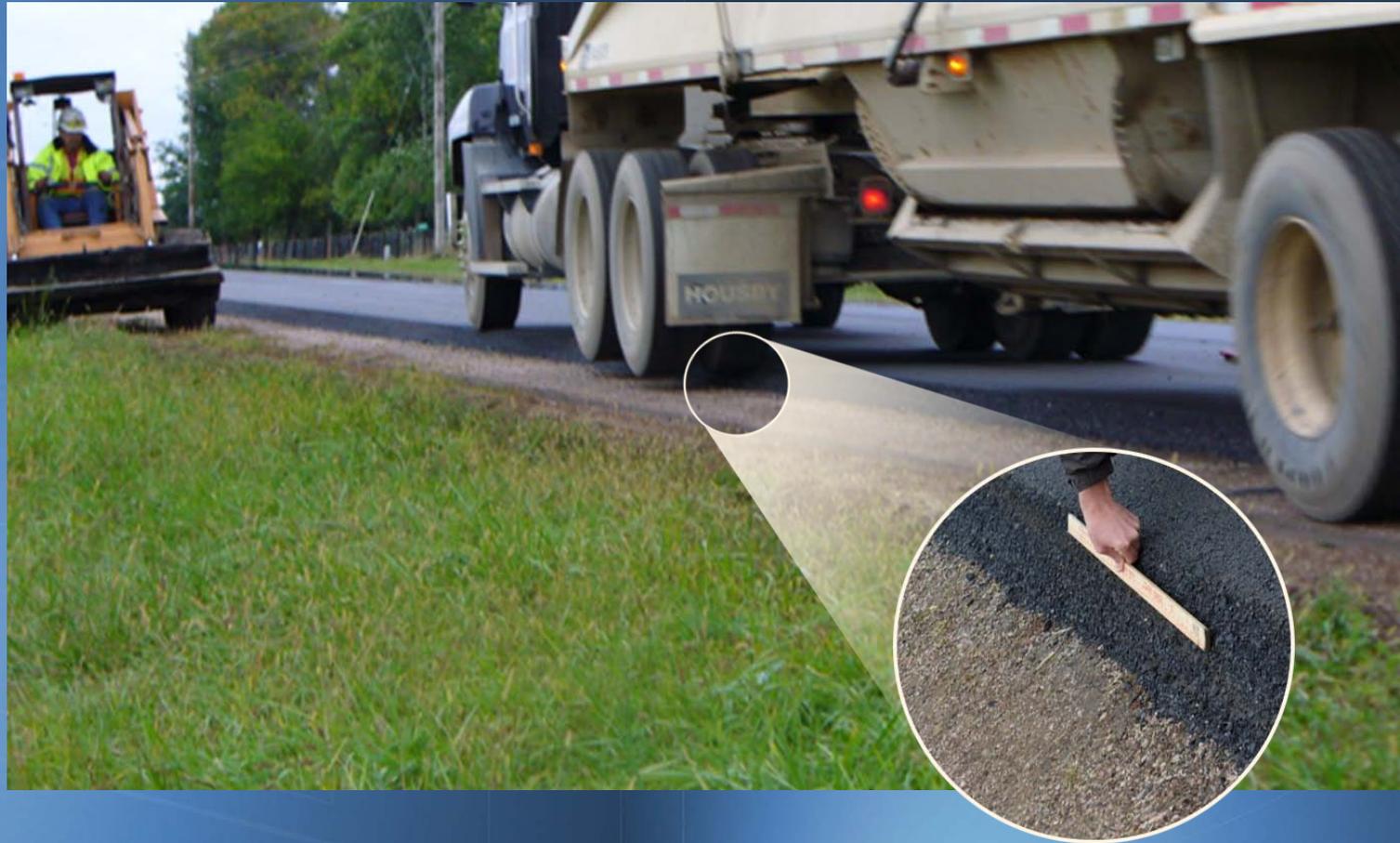
Without Safety Edge



With Safety Edge



Durability



<http://fhwa.na3.acrobat.com/setruck/>



Tracy's Law

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

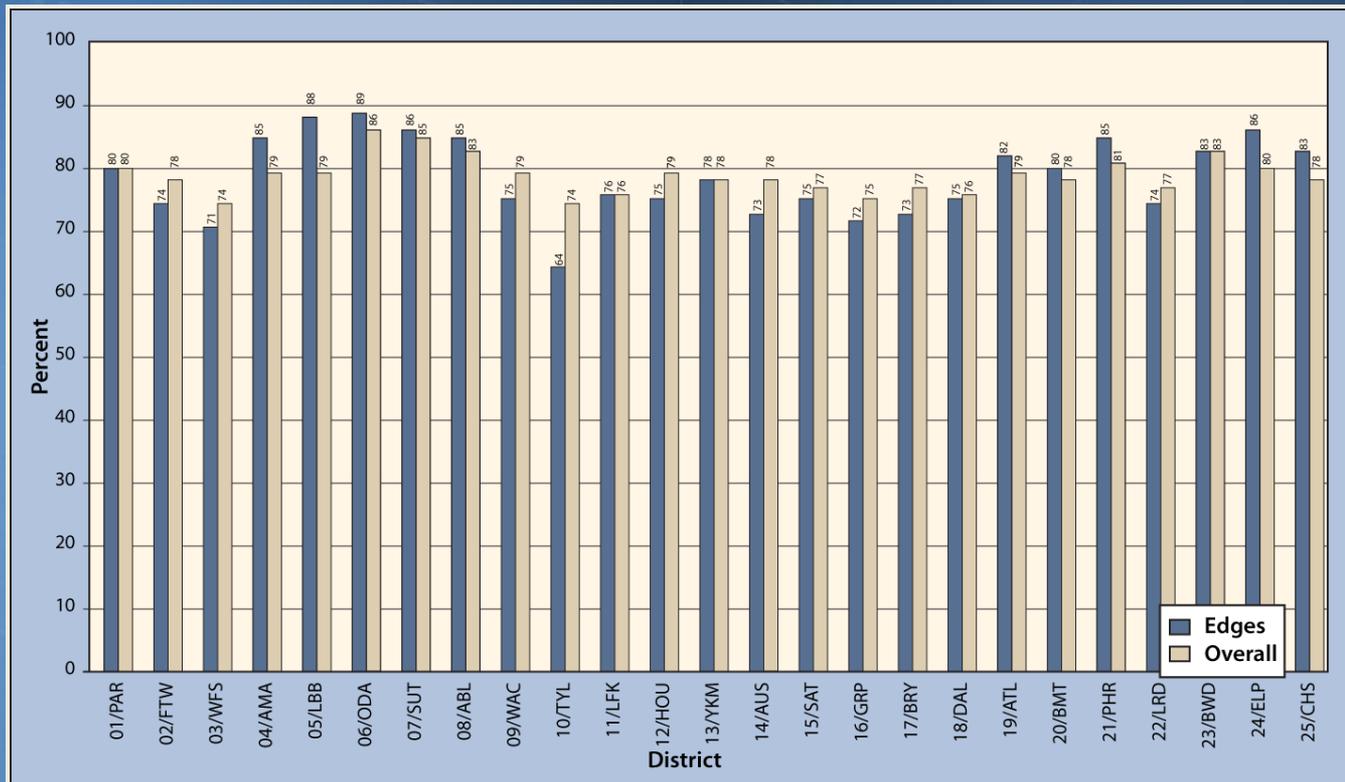


Tracy Cumby
TxDOT Project Director

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>