

Systemic Application of Rumble Stripes

SCOTE Meeting



Eileen Rackers, P.E.
State Traffic and Highway Safety Engineer

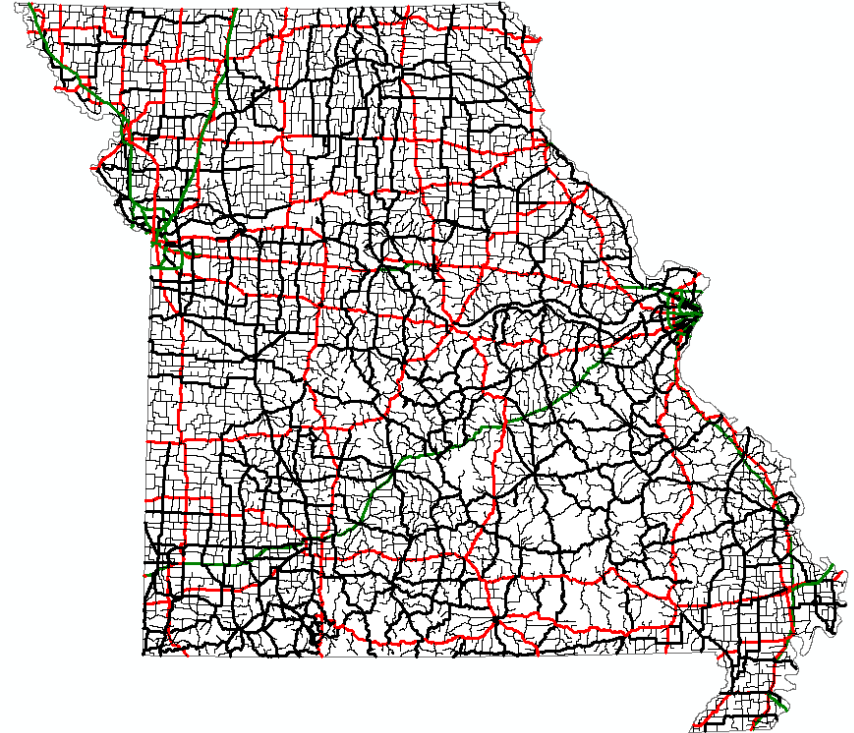
Missouri Roadways

- ▶ State highway system

- 33,000 + miles
 - 5,500 Major
 - 28,000 Minor

- ▶ Local Roads

- 100,000 + miles

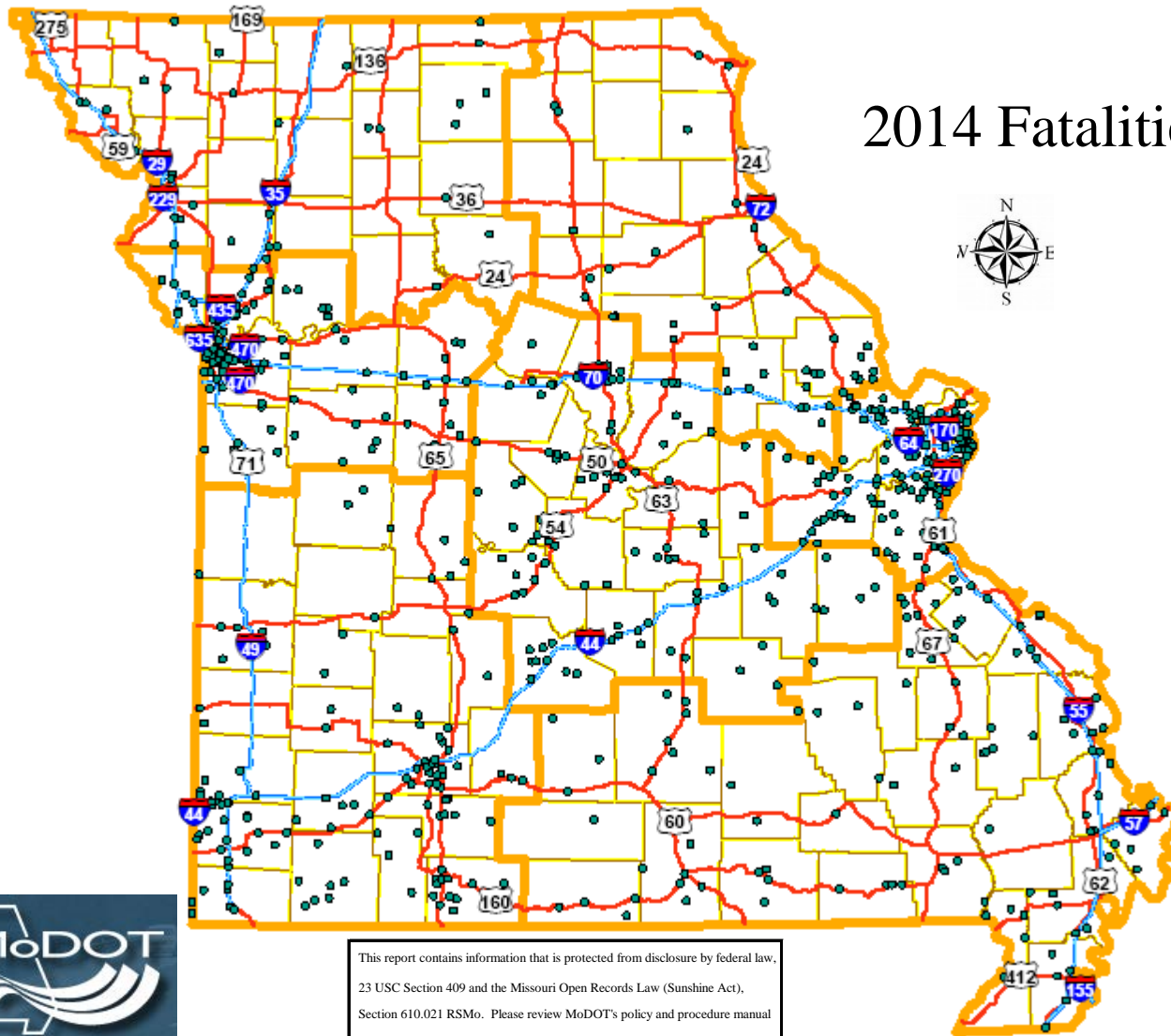


- ▶ 70 billion vehicle miles traveled (VMT)

2014 Fatalities



This report contains information that is protected from disclosure by federal law, 23 USC Section 409 and the Missouri Open Records Law (Sunshine Act), Section 610.021 RSMo. Please review MoDOT's policy and procedure manual on the Sunshine Act before releasing any of the information contained herein.



Contributing Circumstances

2012

No Seat Belt

Run Off Road

Aggressive

Curves

Impaired

Inattention

2013

No Seat Belt

Run Off Road

Aggressive

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2014

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LANE DEPARTURE CRASHES



System-Wide Improvements

- ▶ Smooth Roads Initiative (SRI)
- ▶ Better Roads, Brighter Future



Agency Policy

- ▶ Integrated system-wide solutions into policy
 - Fluorescent yellow sign sheeting
 - Wider stripes
 - Delineation
 - Rumble stripes

The screenshot shows the 'Main Page' of the Engineering Policy Guide (EPG) website. The browser address bar shows the URL http://epg.modot.org/index.php?title=Main_Page. The page features a navigation box on the left with a list of topics including General, LPA Policy, Geometrics, Bases, Flexible Pavement, Rigid Pavement, Incidental Construction, Structures and Hydraulics, Roadside Development, Traffic Control, Materials, Maintenance Materials, Safe and Sound, Minor Routes, and Shouldering Project Guidelines. The main content area is titled 'Engineering Policy Guide' and includes a row of five images: a worker in a high-visibility vest, a construction vehicle, people reviewing documents, a road with a checkered barrier, and workers on a construction site. Below the images, there is a section for 'HELPFUL EPG VIDEOS' with links to 'Logging into the EPG', 'Finding Info in the EPG', and 'Article History & How to Receive EMail When Articles are Revised'. A text box below the videos states: 'Want help on how to update your EPG guidance? It is available at [EPG Approval Process](#)'. At the bottom, there is a banner for 'The Electronic MoDOT Spec Book for Mobile Devices' and a section for 'RECENT POLICY CHANGES IN THE EPG'.

Engineering Policy Guide

Main Page

navigation box

- Main Page
- 100 General
- 136 LPA Policy
- 200 Geometrics
- 300 Bases
- 400 Flexible Pavement
- 500 Rigid Pavement
- 600 Incidental Construction
- 700 Structures and Hydraulics
- 800 Roadside Development
- 900 Traffic Control
- 1000 Materials
- 1100 Maintenance Materials
- Safe and Sound
- Minor Routes
- Shouldering Project Guidelines

Engineering Policy Guide

HELPFUL EPG VIDEOS:

- [Logging into the EPG](#)
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Want help on how to update your EPG guidance? It is available at [EPG Approval Process](#)

The Electronic MoDOT Spec Book for Mobile Devices is now available. You may also sign up for E-Update notices. To receive notices regarding Engineering Policy Revisions, select "Engineering Policy" then mark the appropriate subjects of interest.

WELCOME

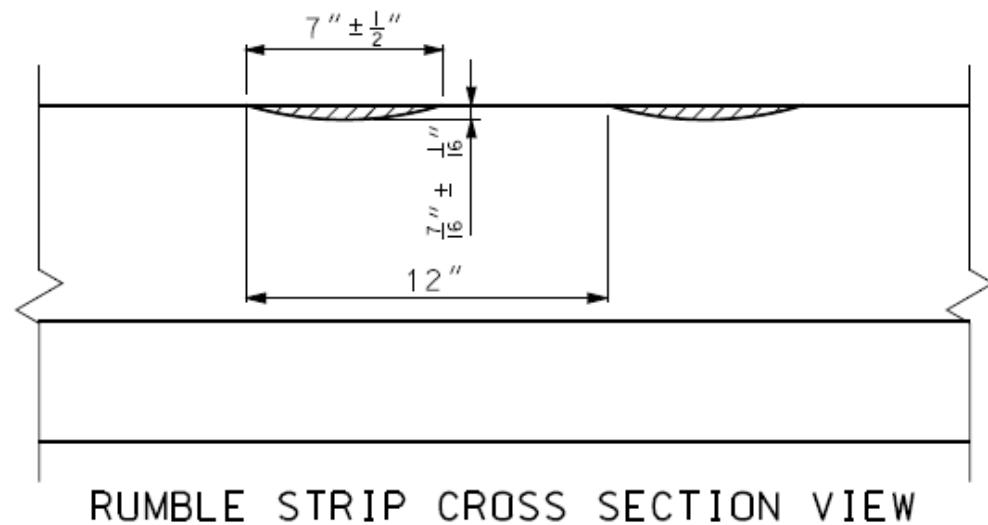
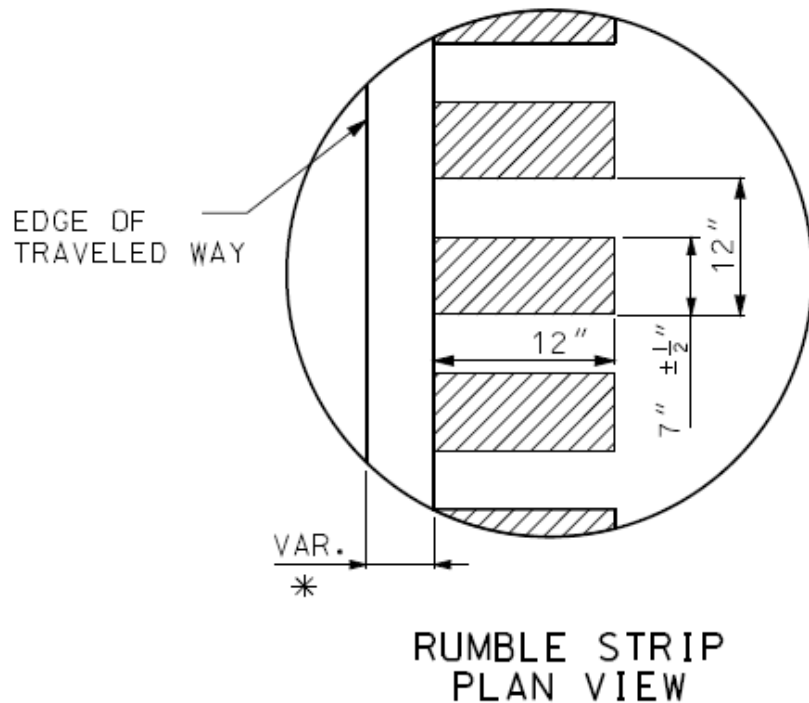
RECENT POLICY CHANGES IN THE EPG

Rumble Stripe Policy

- ▶ Edgeline Rumble Stripes
 - Installed on all major roads with:
 - 4' or greater paved shoulder
 - Speed limit of 50 mph or more
 - May be omitted via design exception in urban areas
 - Requires collaboration with Central Office
 - Highway Safety Manual (HSM) analysis required
 - May be installed on minor roads with a paved shoulder (with HSM analysis)
 - Continuous pattern
 - Standard Plan
 - Mini rumbles



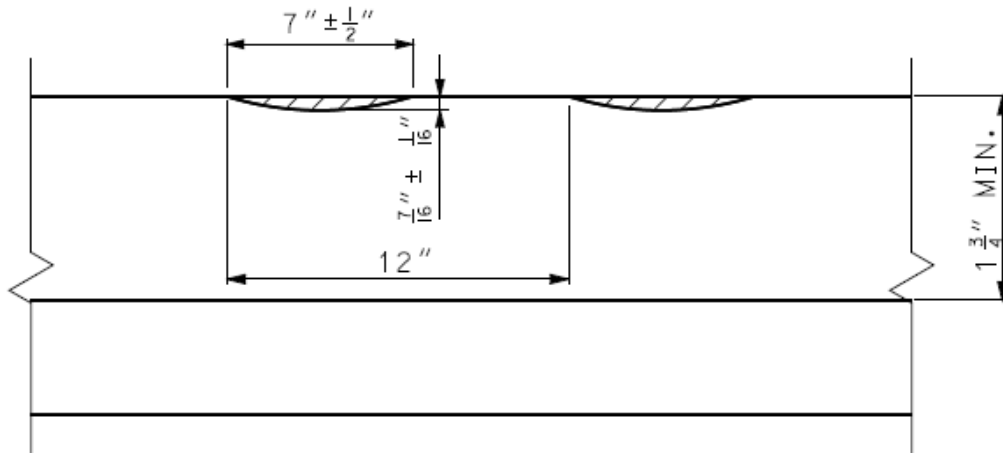
Edgeline Rumble Stripes



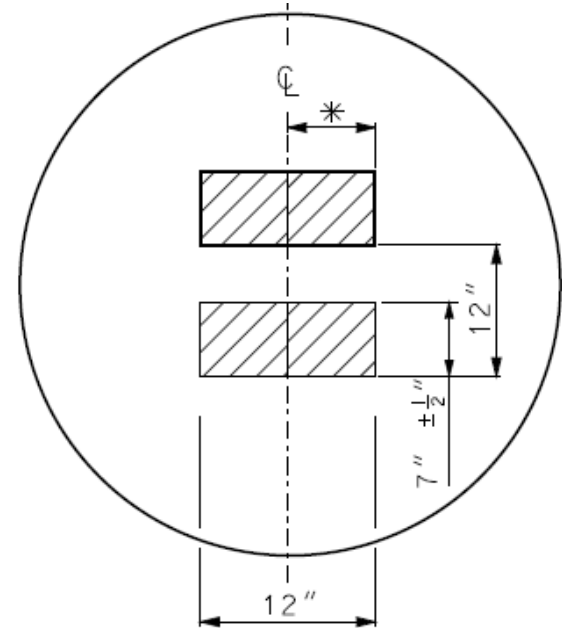
Rumble Stripe Policy

- ▶ Centerline Rumble Stripes
 - Installed on all 2-lane major roads
 - Speed limit of 50 mph or more
 - New pavement projects
 - Omitted on roads with widths less than 20'
 - May be installed on minor roads with crash history
 - Highway Safety Manual analysis required
 - Alternating pattern (24 inch separation)

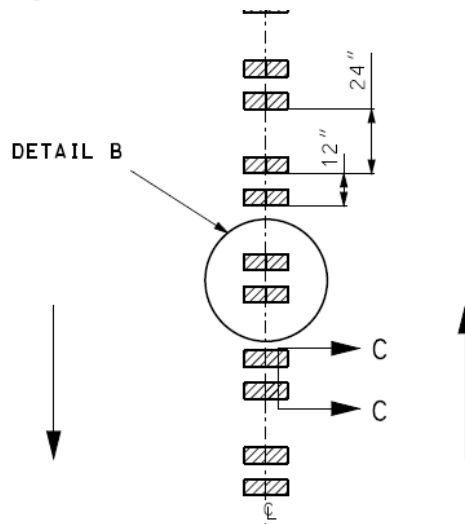
Centerline Rumble Stripes



SECTION C-C



DETAIL B



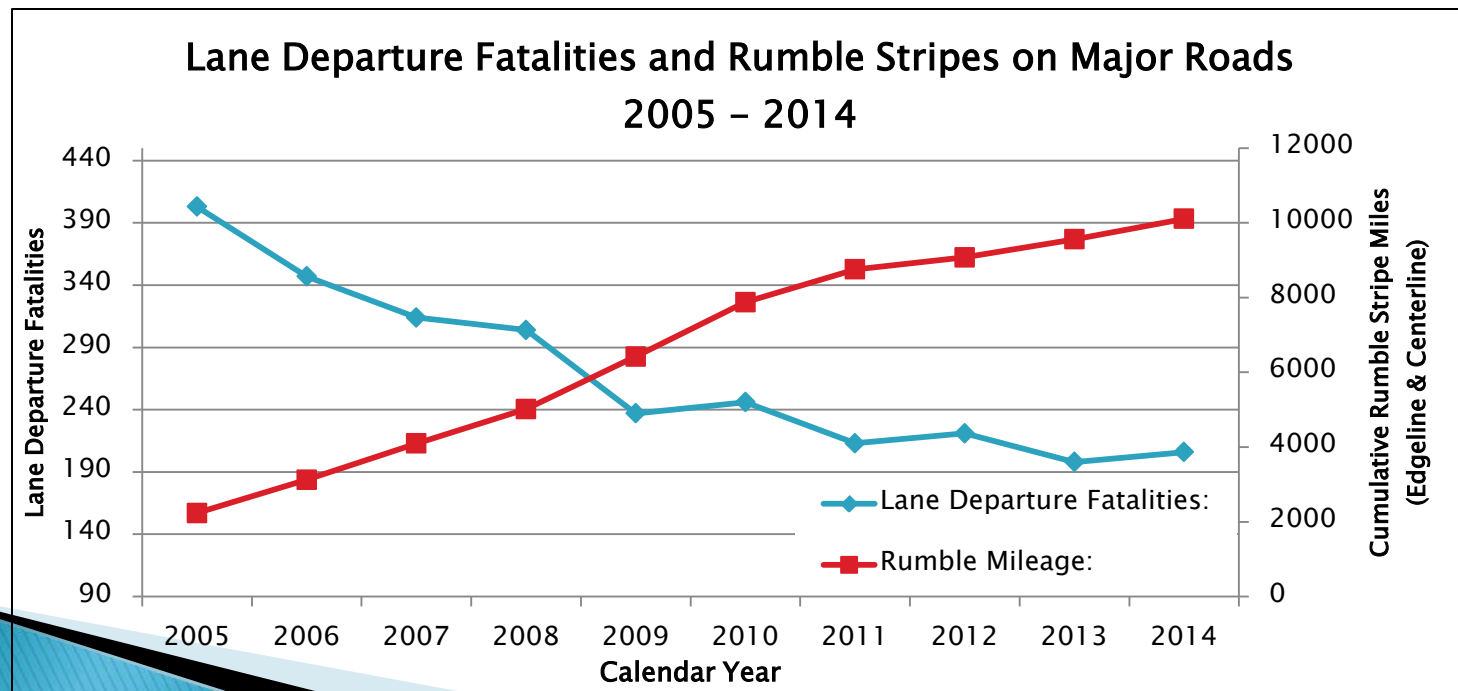


Progress To Date (Dec. 2014)

- ▶ Over 11,724 linear miles of edgeline rumbles
 - 8,830 on major roads (2,894 on minor roads)
- ▶ Over 1,946 linear miles of centerline rumbles
 - 1,275 on major roads (671 on minor roads)
- ▶ Several hundred miles in combination
- ▶ Several hundred miles of edgeline rumbles and guard cable in combination
- ▶ Now installing edgeline rumble stripes on minor routes with AADT at 1,800 or greater
 - Generally on 2-ft paved shoulders

Lessons Learned

- ▶ Rumble stripes work
 - Lane departure fatalities down 49% on major roads since 2005
 - Rumbles plus signing, striping, & delineation changes



Lessons Learned

- ▶ Rumbles hold up as well as the shoulder
 - Bad shoulder = bad rumble
 - Shoulder depth of at least 3 ¾" (top lift of 1 ¾")
- ▶ Don't get the rumbles too deep
 - 7/16" (max of ½" for edgeline and centerline)
- ▶ Install using systemic application
 - Greater gains (not chasing dots)


Public Response

- ▶ Few complaints at this point (I-70 example)
- ▶ Public is very accepting (even requested)



Participate in Research & Outreach

FHWA Home / Safety / Roadway Departure / Rumble Strips and Stripes

 eSubscribe



Rumble Strips and Rumble Stripes

Welcome to the Federal Highway Administration's (FHWA) Rumble Strips and Rumble Stripes website. This site contains information about longitudinal center line, edge line, and shoulder rumble strips and stripes.

General Information



Safety



Design and Construction



Accommodating All Users



Mitigating Noise



Pavement and Maintenance



Policies, Guidance, and Research



Frequently Asked Questions



Technical Advisories

Click here to see FHWA Guidance on: [Center line rumble strips](#) and [Shoulder and Edge Line Rumble Strips](#)

Technical Assistance

Click here for [Peer-to-Peer Technical Assistance](#)

FHWA Rumble Strip/Stripes

[Return to top](#)

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Questions

Eileen Rackers, P.E.

State Traffic and Highway Safety Engineer

Eileen.Rackers@modot.mo.gov