Impact of Non-Freeway Rumble Strips

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Introduction

• Michigan Department of Transportation
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Problem Statement

• Reduce lane-departure crashes
• Rumble Strip Installation
  – 5,400 mi of non-freeway
  – Centerlines
  – Shoulders
• Evaluate rumble strip installations and provide future implementation guidance
Research Performed

• Video of driver behavior
  – Encroachment
    • Centerline
    • Shoulder
  – Passing maneuvers
    • Bicyclists
    • Vehicles

• Surveyed bicyclists about rumble strips
Research Performed

• Crash data analysis
• Video logs of pavement centerlines
  – Evaluate pavement cracking
  – Before and after rumble strip installations
• Roadside noise
Results

• Safety
  – Improved Driver Performance

• Pavement Performance
  – Do not contribute to short-term transverse cracking in asphalt pavements.

• Noise
  – Deeper rumbles produce higher noise levels
  – Noise typically did not exceed the roadside noise level produced by tractor-trailer
Recommendations

• Depth of 0.5 inch at the center and 0.375 inch at the outer edges reduces noise.
• Installation on 6 foot or wider shoulders increases bicyclist perceived safety
Implementation Status and Strategy

– Installing rumble strips
  • Follow specification
– Communicate results
  • Research Spotlight
  • Three TRB papers
– Phase II project
  • Quantify the benefit
  • Develop guidelines
    – Cities
    – Counties

“We expect Phase 2 of this project to give transportation agencies in Michigan and other states the data they need to implement their own initiatives.”

Jill Morena, PE
Project Manager
Value

- Save lives and reduce crashes annually
  - 300 crashes
  - 60 incapacitating injuries
  - 15 lives
- Improving the quality of life
- Investment
  - Research $262,829
  - Construction 3 yrs @ $2.7M /yr
  - Total $8.3 Million