JOINT TRANSPORTATION RESEARCH PROGRAM

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Alternatives to Raised Pavement Markers (RPMs)

Introduction

Empirical evidence shows that raised pavement markers (RPMs) are an ongoing maintenance challenge. Furthermore, a dislodged RPM opens an ingress point for water to reach the sub pavement, potentially reducing the design life of the pavement. To address this issue, Indiana conducted an evaluation of painted centerline rumble stripes (CLRSs) as an alternative to RPMs on rural, non-interstate roadways.

Five pilot test sites consisting of 41.2 miles of roadway were constructed to evaluate CLRS performance in multiple regions of Indiana under various pavement conditions.

Findings

CLRS can reduce target crashes by 45% and ELRS can reduce target crashes by 35%, in large part by effectively alerting drivers and providing them an opportunity to correct their course before crossing the centerline or leaving the roadway. The corrugation can be particularly effective during periods of decreased visibility and/or adverse weather conditions (see Figures 1 and 2). If both CLRS and ELRS are being considered on sections with wide shoulders, consideration should be given to using edgeline corrugations in lieu of edge-line rumble stripes.

This technical report summarizes the project background and development of CLRS specifications, provides detailed photos of a fall 2013 deployment, and summarizes the post-construction close-out meeting held on December 4, 2013.

Figure 1. Example wheel tracks of vehicle that corrected after drifting onto the centerline rumble strip (US 231 north of Crawfordsville after a light snow, 2012).

Figure 2. US 231 north of Crawfordsville in 2012.

Implementation

CLRSs were subsequently incorporated into INDOT's 2013 goals and approximately 238 project miles were programmed for construction. Appendix A and Appendix B of the report contain the supporting documents developed in collaboration with INDOT for the September 2013 letting of projects with rumble stripes. Appendix C of the report contains photos of project construction and a link to a YouTube video documenting the construction process.

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