ROADWAY SAFETY INSTITUTE

Advancing roadway safety with user-centered solutions

UTC Project Information	
Project Title	Directional Rumble Strips for Reducing Wrong-Way-Driving Freeway Entries
University	Southern Illinois University
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Funding Source(s) and Amounts Provided (by each agency or organization)	Roadway Safety Institute (USDOT): $195,000 Southern Illinois University Edwardsville: $195,000
Total Project Cost	$390,000
Agency ID or Contract Number	UTC Grant Number: DTRT13-G-UTC35 CTS# 2015039
Start and End Dates	8/1/2014 – 2/28/2018
Brief Description of Research Project	*Final report abstract:* This report presents the evaluation results of five types of directional rumble strips (DRS) based on extensive field tests conducted at the National Center for Asphalt Technology (NCAT) in Auburn, Alabama. The ultimate goal of this study is to develop a low-cost safety countermeasure by capturing a driver's attention through elevated invehicle sound and vibration for wrong-way (WW) driving while providing normal sound and vibration levels for right-way (RW) driving. Tests of sound and vibration generated by different DRS were performed with full-size passenger vehicles for six categories of speed: 10, 15, 20, 25, 35, and 45 mph. For each type of DRS concept design, three initial tests were performed with vehicles traveling on normal pavement (ambient condition), followed by three to five tests on the DRS in both WW and RW directions. The study identified three final design patterns (C, D Configuration 3, and E.1) that can generate elevated sound and vibration for WW drivers. The field test results also showed that speed had a significant impact on sound and vibration. Considering that travelling speed will be different on DRS by WW and RW drivers, additional speed studies were conducted to estimate the WW and RW driving speeds at the proposed DRS implementation spots on off-ramps. Based on the results, recommendations were developed to implement the final three DRS designs on off-ramps that can achieve the maximum safety benefits by alerting WW drivers through in-vehicle elevated sound and vibration.

Describe Implementation of Research Outcomes (or why not implemented) Place Any Photos Here	Albert Luo reports that the departments of transportation in Alabama and Illinois have developed implementation plans for directional rumble strips on off-ramps based on this research.
Impacts/Benefits of Implementation (actual, not anticipated)	*No data available.*
Web Links • Reports • Project website	http://www.roadwaysafety.umn.edu/research/search/projectdetail.html?id=2015039 http://www.roadwaysafety.umn.edu/publications/researchreports/reportdetail.html?id=2654