



RESEARCH PROJECT CAPSULE [15-3SA]

December 2015

TECHNOLOGY TRANSFER PROGRAM

Investigating Safety Impact of Centerline Rumble Strips, Lane Conversion, Roundabout and J-Turn Features on Louisiana Highways

JUST THE FACTS:

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24 months

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Principal Investigator:
Xiaoduan Sun, Ph.D., P.E.
Professor, Civil Engineering
University of Louisiana at Lafayette

Administrative Contact:
Tyson Rupnow, Ph.D., P.E.
Associate Director, Research
225-767-9124

Technical Contact:
Kirk Zeringue, P.E.
Senior Research Engineer,
Special Studies
225-767-9169

Louisiana Transportation
Research Center
4101 Gourrier Ave
Baton Rouge, LA 70808

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POINTS OF INTEREST:

*Problem Addressed / Objective of
Research / Methodology Used
Implementation Potential*

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PROBLEM

Although great strides have been made in reducing the number of Louisiana highway crashes in recent years, the state still ranks worse than the national average in all highway traffic fatality rate measures. To further enhance roadway safety, efforts must be continuously made to find the best and most effective crash countermeasures for the state's roads.

Over the past several years, a few relatively new crash countermeasures have been implemented in Louisiana, such as centerline rumble strips on rural two-lane highways, restriping four-lane undivided roadways to create three-lane or five-lane roadways with center turn lane, restricting median openings on high speed corridors, and roundabouts. Evaluating the effectiveness of these crash countermeasures is crucial for state highway safety improvement programs.

FHWA has published some studies regarding the effectiveness of crash countermeasures, but the information does not accurately reflect Louisiana conditions. Construction and maintenance of crash countermeasures require a significant financial commitment. The cost-effectiveness of these safety features must be investigated and documented, so that DOTD can make informed decisions.

OBJECTIVE

The goal of this study is to evaluate crash countermeasures on Louisiana highways, including centerline rumble strips on rural two-lane highways, restriping four-lane undivided roadways to create three-lane or five-lane roadways with center-turn lane, restricting median openings on high speed corridors, and roundabouts. Specifically, the objectives are to perform exploratory data analysis, conduct before-and-after studies, and perform cost-benefit analyses for all investigated safety features.

METHODOLOGY

Centerline rumble strips are used to warn drivers when vehicles cross the centerline of two-lane, two-way roadways, and help them avoid crashes with opposing traffic.

Roadway restriping to create a center-turn lane allows left-turning vehicles to be removed from a through-travel lane, thereby reducing potential for rear-end crashes.

At roadway intersections with high speed corridors, vehicles turning left to enter the corridor often must cross fast-moving lanes of traffic. Median openings at these intersections can be restricted using J-turns. At these intersections, drivers first turn right, and then make a U-turn at a subsequent median opening designed for that purpose. Although drivers travel slightly further to get where they want to go, J-turns often take less time than waiting for a safe and appropriate gap to cross traffic.

Roundabouts have become a popular intersection control option in Louisiana, first used in Lafayette over a decade ago. In general, studies have shown that roundabouts are safer, more efficient, and less expensive to operate than traditional stop-sign or signal-controlled intersections.

After reviewing information needed for evaluation of the safety effectiveness and benefits/costs for these crash countermeasures, the research team will identify Louisiana sites to be studied and perform crash data analyses.

Analysis of the crash countermeasures will be conducted using data from three-years-before and three-years-after implementation. Anticipated benefits include reduction in crash frequency and severity.

IMPLEMENTATION POTENTIAL

If the studied crash countermeasures prove to be effective in Louisiana, they should be implemented as part of the state's highway safety-improvement efforts.



Rumble-strips on pavement centerline



Four-lane to three-lane conversion with added bike lanes



Restricted median opening on US-90



Roundabout in Louisiana