

## JUST THE FACTS

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24 months

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State

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225-578-4697**Design of Lane Merges at Rural Freeway  
Construction Work Zones****PROBLEM**

Today's pressing need for rehabilitation and reconstruction of our roadways, coupled with ever-growing traffic congestion, has led to complex challenges in maintaining safety and mobility at work zones nationwide. In 2004, the Federal Highway Administration (FHWA) published updates to the work zone regulations, which require all state and local governments receiving federal-aid highway funding to better address safety and mobility issues of work zones today and in the future. According to recently published statistics, our national

highway system has more than 3,000 highway construction zones on any given day and a typical motorist encounters one active work zone every 100 miles. Due to the increased need for roadway preservation, the intensity of rehabilitation and reconstruction activities is expected to increase. Statistics on work zone safety also indicates that crash-related fatalities in work zones had increased by nearly 50% between 1997 and 2003. According to a recent poll, public perception of work zones also shows that 32% of the public are

**SPECIAL POINTS OF  
INTEREST:**

- Problem Addressed
- Objectives of Research
- Methodology Used
- Implementation Potential



Construction Work Zone

dissatisfied with mobility and safety issues at work zones. Such statistics clearly shows that there are mobility and safety problems with work zones that must be addressed.

This research project aims at investigating various merge configurations that could lead to significant mobility and safety improvements at work zones.

### **OBJECTIVES**

The goal of this project is to evaluate unconventional lane-drop merge configurations in the vicinity of construction work zones on rural freeways to comparatively assess the conditions of the various designs that impact delay, flow, and safety through an approach to a work zone. Prior discussions have suggested that some recently developed lane-drop configurations have the potential to improve both the safety and efficiency characteristics of freeway traffic streams while also minimizing driver frustration and annoyance. Specifically, it has been hypothesized (and suggested in prior research) that configurations such as the joint merge operate more effectively by more evenly

balancing volume in the two lanes for as long as possible as well as maintain consistent speeds through the zone resulting in a less turbulent, safer overall operation particularly in moderate to high volume conditions. To accomplish this goal the researchers propose the following objective in the research, including: (1) Identify and document both the state-of-the-art and state-of-the-practice with respect to the geometric design and traffic control at the entrance to construction work zones on rural freeways; (2) Generate alternate geometric and traffic control designs for the entrance to construction work zones on rural freeways; (3) Evaluate the traffic flow and safety performance of the design configurations generated in the second objective; (4) Document results and (5) Provide recommended practice to the DOTD along with an expectation of their anticipated benefits.

### **METHODOLOGY**

The research approach and procedure will consist of Literature and State-of-the-Practice Review; Analyze the

Work Zone Crash Data; Develop Alternative Merge Designs; Identification of Field Test Sites; Data Collection and Analysis focusing on a detailed performance assessment of each of the merge area configurations and the preparation of an Interim and Final Report.

### **IMPLEMENTATION POTENTIAL**

The applied research in this study is directed towards improving safety and mobility of our national highway system work zones. The study will investigate both operational and safety problems at work zones and examine possible geometric design solutions and will conduct tests to determine the effectiveness of each geometric configuration and its possible improvements to both operation and safety. The results of this research are likely to affect the state-of-the-practice of work zones at both state and national levels.