



Project Summary

Texas Department of Transportation

0-5771: Developing a Work Zone Safety and Mobility Performance Monitoring Plan for Texas

Background

Recent rulemaking by the Federal Highway Administration (FHWA) requires states to collect and analyze both traffic safety and mobility data in work zones to support the initiation and enhancement of agency-level processes and procedures addressing work zone impacts. Specifically, states are to develop and implement systematic procedures that assess work zone impacts in project development, and to manage safety and mobility during project implementation. The challenge facing the Texas Department of Transportation (TxDOT) and other state departments of transportation is how to best measure and track safety and mobility impacts for work zones in a way that will support policy and procedural benchmarking and evaluation in a manner consistent with FHWA requirements. The objectives of this project were as follows:

- determine how available sources of information such as daily project inspector diaries, electronic traffic surveillance systems, statewide crash records, etc. can be best used to monitor work zone performance,
- determine what other data sources would be needed to monitor work zone safety and mobility,
- identify the most appropriate performance measures to use in monitoring work zone safety and mobility, and
- develop easy-to-implement procedures on how to compute those performance measures.

What the Researchers Did

Based on a review of other state practices and an assessment of the potential uses of work zone performance measures at the district and division level, TTI researchers identified key work zone safety and mobility performance measures that TxDOT should target as part of a work zone monitoring program within a district, region, or across the state. Analysis methodologies and computational procedures were then developed that would yield the recommended performance measures. For mobility-based measures, the methodologies differ depending on the type of data that is available or can be obtained regarding the operating conditions in the field. With regard to work zone safety monitoring, researchers developed procedures that aid a district or project engineer in determining which projects are most suitable for safety monitoring via a periodic review of crash statistics occurring before and during the project.

Research Performed by:

Texas Transportation Institute (TTI),
The Texas A&M University System

Research Supervisor:

Gerald L. Ullman, TTI

Researchers:

Ganesh J. Karkee, TTI

Richard J. Porter, TTI

Project Completed: 8-31-08

What They Found

With regards to work zone traffic mobility monitoring, researchers developed procedures to estimate key performance measures based on traffic surveillance data from a regional transportation management center (if such data exist at and upstream of the work zone), and from estimates of queue lengths documented by field personnel at the work zone as part of daily project diary documentation. Although the queue length estimate procedures are very simple, they yield performance measure estimates that are reasonably close to those achievable with electronic traffic surveillance data. These data also appear to be reasonably close to measures obtained by the research team via an instrumented vehicle.

With regard to work zone traffic safety monitoring, researchers developed graphs that indicate combinations of work zone length (or work zone segment length), average daily traffic, normal crash rate, and work zone phase or project direction that will most likely allow for reasonable inferences to be made regarding the relative level of safety being maintained within the project. Researchers also developed graphs to aid field or district personnel in quickly determining whether accident frequencies being experienced during a project are within, or above, tolerance limits for that type of project on that facility. These procedures were found to work reasonably well for the purpose of monitoring crash experiences during a work zone project and identifying when those experiences fall outside the range of expected safety thresholds.

What This Means

The methodology was developed into a simple-to-follow implementation guide for districts to adopt as they see fit. It is envisioned that the procedures may ultimately be incorporated into the *TxDOT Work Zone Impacts Handbook* currently under development.

For More Information:

Research Engineer - Wade Odell, TxDOT, 512-465-7403

Project Director - Jose Gaytan, TxDOT, 361-808-2223

Research Supervisor - Gerald L. Ullman, TTI, 979-845-9908

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Research and Technology
Implementation Office
P.O. Box 5080
Austin, Texas 78763-5080
512-465-7403

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