



Project Summary

Texas Department of Transportation

0-5561: Improving Regulatory Speed Limit Management in Texas Work Zones

Background

The Texas Department of Transportation's (TxDOT) procedures for determining whether or not a reduced regulatory speed limit in a work zone is warranted take into consideration the type of work activity and a number of other site-specific factors. However, which factors are actually perceived as more hazardous by motorists and thus result in slower speeds is still not well understood. Undoubtedly, an improved understanding of the relationship between factors used to justify reduced work zone speed limits and motorist perceptions of the need to reduce speed could improve the speed limit selection process.

When a reduced speed limit is not necessary for the safe operation of traffic during certain construction operations or those days and hours the contractor is not working, the regulatory construction speed limit signs should be made inoperative by removing or covering the signs. However for short term work zone speed limits, the daily installation/removal or uncover/cover process of signs is frequently not accomplished. New speed limit sign technologies may simplify the short term work zone speed limit implementation process and lead to a greater use of short term work zone speed limits in general.

What the Researchers Did

Researchers conducted telephone interviews and reviewed requests for reduced speed limits in work zones to determine the most common work zone conditions, factors, and combinations thereof currently used as reasons to reduce the speed limit in Texas work zones. Motorist surveys and field studies were then conducted to determine motorist perceptions and reaction to the most common situations used to justify reduced work zone speed limits.

Researchers also identified and critiqued alternative technologies for better managing short term work zone speed limits. The following devices were evaluated: flexible reflective roll-up static work zone speed limit signs, electronic speed limit signs (ESL), trailer-mounted static work zone speed limit signs with flashing beacons, and full-matrix portable changeable message signs (PCMS). Researchers conducted field studies and motorist surveys to determine how motorists respond to the devices and to assess motorist understanding of the devices.

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What They Found

A maximum speed reduction of 5 mph is more applicable for shoulder activities and lane encroachment conditions. Speed limit reductions on roadways with existing speed limits less than 65 mph should be discouraged under certain conditions. Where the need for lower speed limits, below actual travel speeds, exists due to a work zone hazard that is not adequately perceived by motorists, enforcement should be targeted in order to encourage motorist compliance and to raise motorist awareness of the surroundings.

Current Texas law is fairly restrictive in terms of establishing reduced speed limits in work zones. Most of the difficulties lie in the need to establish a single speed limit on a roadway segment which requires approval from the Texas Transportation Commission. Current law allows TxDOT to deactivate a work zone speed limit when not needed (by removing or covering the sign that designates the lower speed limit), but it does not provide TxDOT with the flexibility to easily accommodate changes in the work zone speed limit based on the existing work conditions (e.g., 5 mph for a lane encroachment condition and 10 mph when a lane is closed).

In this project, the ESL signs and flexible reflective roll-up static work zone speed limit signs were effective and understood by motorists. In addition, these devices simplified the short term work zone speed limit implementation process. Motorists also understood work zone speed limit signs shown on full-matrix PCMS. However, they did not understand trailer-mounted static work zone speed limit signs with flashing beacons.

What This Means

The technical report for this project (0-5561-1) includes recommended changes to the current procedure for determining regulatory speed limits in Texas work zones. In addition, researchers recommend the use of ESL signs and flexible reflective roll-up static work zone speed limit signs. Prior to implementation, TxDOT should develop standards for these devices and ensure that they are compliant with current criteria for crashworthy work zone traffic control devices.

For More Information:

0-5561-1 Studies to Improve the Management of Regulatory Speed Limits in Texas Work Zones

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