



Research Problem Statement

ODOT Research Section
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I. TITLE

17-030 Impact of Law Enforcement Pre-patrolling Freeway Work Zones

II. PROBLEM

Freeway pavement preservation projects typically require construction workers to conduct their work in close proximity to ongoing traffic and often reduce traffic flow to a single lane while work is undertaken in an adjacent lane. For work zones that extend over a long distance, lane closures are commonly implemented using temporary channelizers such as tubular markers and drums to delineate the travel lane from the work area. In some places the workers may work within a few feet of passing traffic that is travelling at high speeds. This situation creates considerable safety risk for both the workers and passing motorists. Past research reveals that vehicle speed is one of the most significant factors in roadway crashes, and the severity of a crash intensifies as the speed of traffic increases (Mahoney et al. 2007). However, safely controlling and reducing vehicle speeds and speed variation through work zones to reduce the risk can be difficult on high-speed roadways.

ODOT has recently taken steps to determine how to further reduce speeds and speed variation in work zones on high-speed roadways. SPR 751 in FY2013, and SPR 769 in FY2014, involved investigating the impacts of using a variety of different traffic control measures in work zones. In addition, subsequent studies have focused on the impacts of adding advisory speed signs periodically in work zones, and truck-mounted radar speed displays in mobile operations. The use of law enforcement (Oregon State Police) was assessed as part of the SPR studies. In the studies, the impact of law enforcement on vehicle speeds was tested for two conditions: OSP patrolling within the work zone and OSP parked at the end of the lane closure taper. The results revealed a positive impact on speeds for both conditions; vehicle speeds were lower with OSP present.

ODOT has expressed continued interest in exploring how to best use law enforcement in work zones. At an Executive Strategy Session meeting of the Oregon Work Zone Task Force in June 2015, there was a suggestion to try using OSP to “pre-patrol” a work zone. That is, during a one or two week period before the work commences, OSP officers could patrol the roadway regularly where the work zone will be set up. The intent is to “condition” the motorists who drive regularly through that section of roadway to slow down because they know OSP is likely present. Then when the work zone is set up, the drivers will be driving slower because they assume OSP is still present.

Alternatively, a variation of the above idea is to have OSP patrolling a section of roadway some distance upstream of the work zone while the work is taking place (i.e., pre-patrolling related to distance rather than time). The intent is to cause the motorists to drive slower before they get to the work zone. This is different than having OSP patrolling within the work zone. Having OSP patrolling in the work zone can be a distraction, especially if they pull someone over in the work zone, right where we don’t want the drivers to be distracted. Patrolling upstream of the work zone prevents this distraction from occurring in the work zone and could also help slow down the vehicles in the work zone.

III. PROPOSED RESEARCH, DEVELOPMENT, OR TECHNICAL TRANSFER ACTIVITY

The goal of the proposed research is to continue to look for ways to improve safety in work zones, specifically through the evaluation of law enforcement pre-patrolling work zones. The research involves conducting field testing of the impacts of law enforcement pre-patrolling preservation projects on high-speed roadways. It is hypothesized that the presence of law enforcement pre-patrolling a work zone, either in time or distance, will result in lower speeds and lower speed variation between adjacent vehicles in work zones. The tasks to be undertaken are as follows:

1. Conduct a literature review to identify recommended practices for the use of law enforcement to affect vehicle speeds in work zones.
2. Select case study projects on which to conduct the testing. The projects will be similar in size, scope, and site conditions to those case study projects included in the prior ODOT studies.
3. Coordinate with OSP to have one or more officers patrolling the site: (a) before the work zone is implemented, and (b) upstream of the work zone while the work is being undertaken. Measure the traffic volume, speed, and speed variability throughout the projects with the OSP present. Also, make similar measurements without OSP pre-patrolling for use as control data.
4. Analyze the speed data collected to determine the impacts of pre-patrolling on the project.
5. Prepare a research report that describes the case studies, presents the findings of the research, and provides recommendations to ODOT for implementation in practice.

IV. POTENTIAL BENEFITS

The proposed research is expected to enhance the findings collected from the previous work zone safety studies, and provide ODOT with additional information and options for effectively and efficiently creating safe work zones. In addition, if implemented, the outcome is expected to lead to fewer work zone crashes while maintaining mobility through the work zone.

V. IMPLEMENTATION

The results will be used by the Traffic-Roadway Section, and implemented through the State Traffic-Roadway Engineer. The results will also be used by the Statewide Construction Office for these types of projects and implemented through communication and education of the Construction Project Managers statewide. Lastly, the results will be used by the Transportation Safety Division through the request of police agencies participating in these types of projects, and by the Region Transportation Safety Coordinators in each Region through contact with the police agencies providing enforcement efforts.

VI. LIST OF REFERENCES *(optional)*

Mahoney, K.M., Porter, R.J., Taylor, D.R., Kulakowski, B.T., and Ullman, G.L. (2007). “Design of Construction Work Zones on High-Speed Highways.” National Cooperative Highway Research Program (NCHRP) Report 581, Transportation Research Board, Washington, DC.

SPR 751 Final report:

http://www.oregon.gov/ODOT/TD/TP_RES/docs/Reports/2013/SPR751_SpeedReductions.pdf

SPR 769 Final report:

http://www.oregon.gov/ODOT/TD/TP_RES/docs/Reports/2014/SPR769_HighSpeed_Final.pdf

VII. CONTACT INFORMATION

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