

## The Domestic Scan

The scan team identified four main topics to target:

- » Assessing the safety and congestion/operational performance of work zones.
- » Collecting the data for these measures.
- » Using the data to make improvements in work zone performance and management.
- » Identifying processes, methods and/or tools used to assess impacts during various stages of project development (planning, design, construction).



## Scan Methodology

A desk scan, performed in the fall of 2009, identified agencies that had implemented or were implementing practices in each of the main topic areas. The scan team identified a total of 15 agencies and followed up with each to gather additional information for the scan.

A combination of on-site interviews, reverse scans (where the agency travels to meet with the scan team at a location), and webinars/videoconferences were employed to gather the desired data from agencies. The scanning effort was completed over two weeks in March 2010.

## For Further Information

The scan final report, "BEST PRACTICES IN WORK ZONE ASSESSMENT, DATA COLLECTION AND PERFORMANCE EVALUATION Scan 08-04," is available online at [www.trb.org](http://www.trb.org) (search under NCHRP 20-68A, U.S. Domestic Scan Program).



## The Scan Team

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Pub. No. FHWA-HOP-11-021

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STATE HIGHWAY AND  
TRANSPORTATION OFFICIALS  
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# Domestic Scan of Work Zone Assessment, Data Collection and Performance Measurement Practices

NCHRP 20-68A  
US Domestic  
Scan Program  
Scan 08-04

March 2011



U.S. Department  
of Transportation  
Federal Highway  
Administration

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STATE HIGHWAY AND  
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## Background

Transportation agencies across the nation regularly implement strategies to alleviate congestion and improve safety in work zones. To help agencies improve on these efforts over time, the Work Zone Safety and Mobility Rule requires agencies to use safety and operational data to manage impacts and assess performance on individual projects and overall. Agencies need to collect and analyze safety and operational data to have the necessary information to better understand the performance of work zones and evaluate the effectiveness of work zone management strategies. Metrics such as queues, delay, and crashes can help agencies improve their policies and processes to better address work zone impacts - and thereby reduce work zone congestion and improve safety. Agencies could benefit from information on how their peers develop measures, collect data, and evaluate work zone performance.

A 2010 Domestic Scan of best practices in work zone assessment, data collection, and performance measurement documented practices that are being employed to ensure safety and minimize congestion in work zones. The purpose of this brochure is to share information on practices found during the scan and provide the key findings, challenges, and recommendations from the scan.



## Performance Measures

### Work Zone Safety Performance Measures Currently in Use

- » Number of crashes
- » Percentage of crashes in various categories
- » Crash rates
- » Crash costs
- » Service patrol dispatch frequency
- » Fire department dispatch frequency
- » Speeds
- » Speeding citation frequency
- » Inspection scores
- » Worker fatalities and injuries
- » Work zone intrusion frequency

### Work Zone Mobility and Operational Performance Measures Currently in Use

- » Delay per vehicle
- » Queue length
- » Duration of queue
- » Volume/capacity ratio
- » Level-of-service
- » Volume (throughput)
- » Percentage of time at free-flow speed
- » Percentage of work zones meeting expectations for traffic flow
- » User complaints

## Data Sources

### Sources of Work Zone Safety Data

- » Police crash reports
- » DOT supplemental crash data collection
- » Inspection reports
- » Service patrol/fire department calls
- » TMC incident reports
- » Customer complaints

### Sources of Work Zone Mobility/Operational Data

- » Visual inspection of acceptable travel conditions manually or via cameras
- » Manual sampling of travel times, speeds, queue lengths
- » Electronic monitoring of speeds, volumes, lane occupancies
- » Electronic monitoring of elapsed travel times via Bluetooth or other technology
- » User complaints and surveys

Some agencies require work zone monitoring in Transportation Management Plans. The tendency is to use performance measures mainly on large-scale projects. Some agencies use technology to capture work zone performance information, such as through traffic management centers, temporary ITS, or third party data suppliers while others use customer surveys and qualitative observations to assess work zone performance.



## Key Findings

- » Safety measures tend to be developed and examined mostly at the program level
- » Mobility measures tend to be developed and examined mostly at the project level
- » Agencies tend to select either safety or mobility measures to focus on, but not both
- » Electronic data entry processes, along with electronic databases and technologies for collecting data, help promote use of performance measures and analyses
- » Agencies benefit more from early consideration of work zone impacts in the project development process
- » Permitted lane closure tools are commonly used to estimate impacts from capacity restrictions



## Agency Challenges

Some challenges that agencies face include:

- » Obtaining upper management buy-in on using performance measures
- » Determining appropriate levels of performance monitoring for projects
- » Obtaining field personnel buy-in for the level of effort needed

## DOTs Scanned:

- » California DOT
- » Florida DOT
- » Illinois Tollway Authority
- » Indiana DOT
- » Maryland DOT
- » Michigan DOT
- » Missouri DOT
- » New Hampshire DOT
- » New Jersey DOT
- » New York State DOT
- » Ohio DOT
- » Oregon DOT
- » Pennsylvania DOT
- » Washington State DOT
- » Wisconsin DOT

