

## State-of-the-Art Work Zone Technologies and Practices by Level of Deployment

Name of Technology	Technology or Practice	Level of Deployment
Greater use of overhead signs	Practice	Currently Deployed
Use of a national computerized planning system for road work and lane closures	Practice	Currently Deployed
Set performance goals in work zones and coordinate with members of the project team to ensure that goals are met	Practice	Currently Deployed
Distribution of free calendars on scheduled roadway projects and roadmaps of alternate routes	Practice	Currently Deployed
Posting of sign saying how many people were ticketed for speeding in the work zone the past week	Practice	Currently Deployed
Use of cameras to detect speeders and automatically issue tickets and fines	Practice	Currently Deployed
Using the estimated duration of a delay (rather than length of backup) on variable message signs	Practice	Currently Deployed
Using yellow pavement markings in work zones only	Practice	Currently Deployed
Placement of roadside signs on the left	Practice	Currently Deployed
Privately Designed, Built, Financed, and Operated Highway	Practice	Currently Deployed
Narrowing Lanes and Building/Rebuilding Shoulders to Support Traffic During Lane Closures to Maintain Lane Number in Work Zones	Practice	Currently Deployed
Setting specific limits or goals regarding traffic operations in work zones	Practice	Currently Deployed
Traffic Control Logbook	Practice	Currently Deployed
Point of merge when closing a lane	Practice	Currently Deployed
Guidelines for the use of portable traffic signals in rural maintenance operations	Practice	Currently Deployed
Public Awareness Campaign	Practice	Currently Deployed
MAZEEP/COZEEP - Construction/Maintenance Zone Enhanced Enforcement Program	Practice	Currently Deployed
Extensive use of symbols and pictograms on warning signs	Practice	Currently Deployed
Traffic Management in Work Zones	Practice	Currently Deployed
Requiring the installation of lighting in work zones and leaving the lighting on at night even when no work is occurring	Practice	Currently Deployed
Policies for Use of Changeable Message Signs in Highway Work Zones	Practice	Currently Deployed
The Use of Rapid Deployment in the Removal of Lead-Based Paint	Practice	Currently Deployed
Modified lane closure setup	Practice	Currently Deployed
220 MHz Radios for Wireless Communication	Practice	Demonstration
Non-contact sensors and computer aided design for automated pavement operations	Practice	Demonstration
Safety Models for Rural Freeway Work Zones	Practice	Demonstration
Use of vertical panels to direct traffic	Practice	Demonstration
Conducting user satisfaction surveys at driver rest areas	Practice	Deployed in another area: not currently being applied to work zones
Methodology to Improve Pavement-Investment Decisions	Practice	Prototype

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Advanced Warning Signs for Work Zone Flagging Operations	Practice	Research
Effective Scheduling of Road and Bridge Closure, Phase 2	Practice	Research
Research for AASHTO Standing Committee on Highways. Task 94. Mitigation of Nighttime Construction Noise, Vibration, and Other Nuisances	Practice	Research
Development of Guidelines for Nighttime Road Work to Improve Safety and Operations	Practice	Research
Human Factors Study of Traffic Control in Work Zones	Practice	Research
Optical Speed Bars	Practice	Research
Motorist Perception of Work Zone Safety	Practice	Research
A Field Determination of Traffic Angularity: Construction and Maintenance Signs	Practice	Research
Use of total road closures for roadway projects	Practice	Research
Special flashing warning light for construction, maintenance, and service vehicles	Practice	Research
Use of Lane Striping and Delineators to Control Vehicle Speeds in Work Zones	Practice	Research
Portable rumble strip	Technology	Currently Deployed
Debris Removal Vehicle	Technology	Currently Deployed
Work ZoNET System	Technology	Currently Deployed
Ultrasonic Intrusion Alarm	Technology	Currently Deployed
Portable Crash Cushion	Technology	Currently Deployed
Infrared intrusion alarm	Technology	Currently Deployed
Opposing traffic lane divider	Technology	Currently Deployed
Direction indicator barricade	Technology	Currently Deployed
Portable all-terrain sign stand	Technology	Currently Deployed
The BRICK Modular Message Sign System by ADDCO	Technology	Currently Deployed
CHIPS - Computerized Highway Information Processing System	Technology	Currently Deployed
Queue Length Detector	Technology	Currently Deployed
Body Beacon Safety Vests	Technology	Currently Deployed
Flashing stop/slow paddle	Technology	Currently Deployed
ADAPTIR (registered trademark)	Technology	Currently Deployed
Use of portable metal barriers in place of traffic cones	Technology	Currently Deployed
Portable queue detectors in conjunction with variable message signs in advance of work zones	Technology	Currently Deployed
In-vehicle devices that receive and display messages about local travel conditions	Technology	Currently Deployed
Use of portable rumble strips in lanes closed to traffic	Technology	Currently Deployed
Non-Glare Lights - Airstar Balloon Lights	Technology	Currently Deployed
Deployment of a Water Filled Barrier in Freeway Work Zones	Technology	Currently Deployed
Warning Lights on Vehicles	Technology	Currently Deployed
Speed trailers in temporary work zones	Technology	Currently Deployed
Queue Length Detector	Technology	Currently Deployed
Automatic Power's Flashing Beacon System	Technology	Currently Deployed
Truck Driving Simulator	Technology	Currently Deployed
SPEEDBLOCKER	Technology	Currently Deployed

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Quick Change Moveable Barrier (registered trademark)	Technology	Currently Deployed
Teleoperated and Automated Maintenance Equipment Robotics (TAMER)	Technology	Currently Deployed
ADDCO SmartZone (registered trademark)	Technology	Currently Deployed
Remotely driven shadow vehicles	Technology	Currently Deployed
Temporary Removable Pavement Marking Tape - 3M	Technology	Currently Deployed
Orange Removable Rumble Strips for Highway Work Zones	Technology	Demonstration
Advanced Cone Machine	Technology	Demonstration
LIAISON	Technology	Demonstration
Roadwriter System for automated pavement marking	Technology	Demonstration
Magnetic Lateral Warning and Guidance Tape	Technology	Demonstration
Travel Time Prediction System (TIPS)	Technology	Demonstration
Fluorescent/Reflective Sheeting	Technology	Demonstration
Fiber-Reinforced Polymer Honeycomb Short-Span Bridge for Rapid Installation	Technology	Demonstration
Digital Pocketnet Service	Technology	Deployed in another area: not currently being applied to work zones
Design and Development of GIS Tools to Improve Pedestrian and Bicycle Safety	Technology	Deployed in another area: not currently being applied to work zones
Research on rural ITS wireless communication systems and technologies	Technology	Deployed in another area: not currently being applied to work zones
Autonomous Shadow Vehicle (ASV)	Technology	Prototype
Complete Portable Traffic Monitoring System (CPTMS)	Technology	Prototype
Use of Serpentine Robots to perform bridge inspections	Technology	Prototype
ItsWorkZone	Technology	Prototype
Safety-Guide Lights	Technology	Prototype
IRIS: Infrared Ranging via Image Subtraction	Technology	Prototype
SonoBlaster (tm) brand Audible Alarm	Technology	Prototype
Design of a Paver with Automated and Robotic-Based Techniques	Technology	Research
Artificial Intelligence Program	Technology	Research
A robotic system for stenciling of general roadway markings	Technology	Research
Operator Controlled Crack Sealing Machine (OCCSM)	Technology	Research
Image Processing	Technology	Research
Automated Magnetic Reference Marker Installation Machine	Technology	Research
Portable stop line for traffic control	Technology	Research