

TEXAS FREIGHT NETWORK TECHNOLOGY AND OPERATIONS PLAN



Strategy

SMART WORK ZONE INFORMATION SYSTEM

Strategy Topic Area	Traffic Management
Owner	TxDOT Divisions
Key Stakeholders	TxDOT Districts, Traffic Management Centers (TMCs), Local Communities, Work Zone Contractors
End-Users	Work Zone Contractors, All Motorists Including Truckers

Motivation

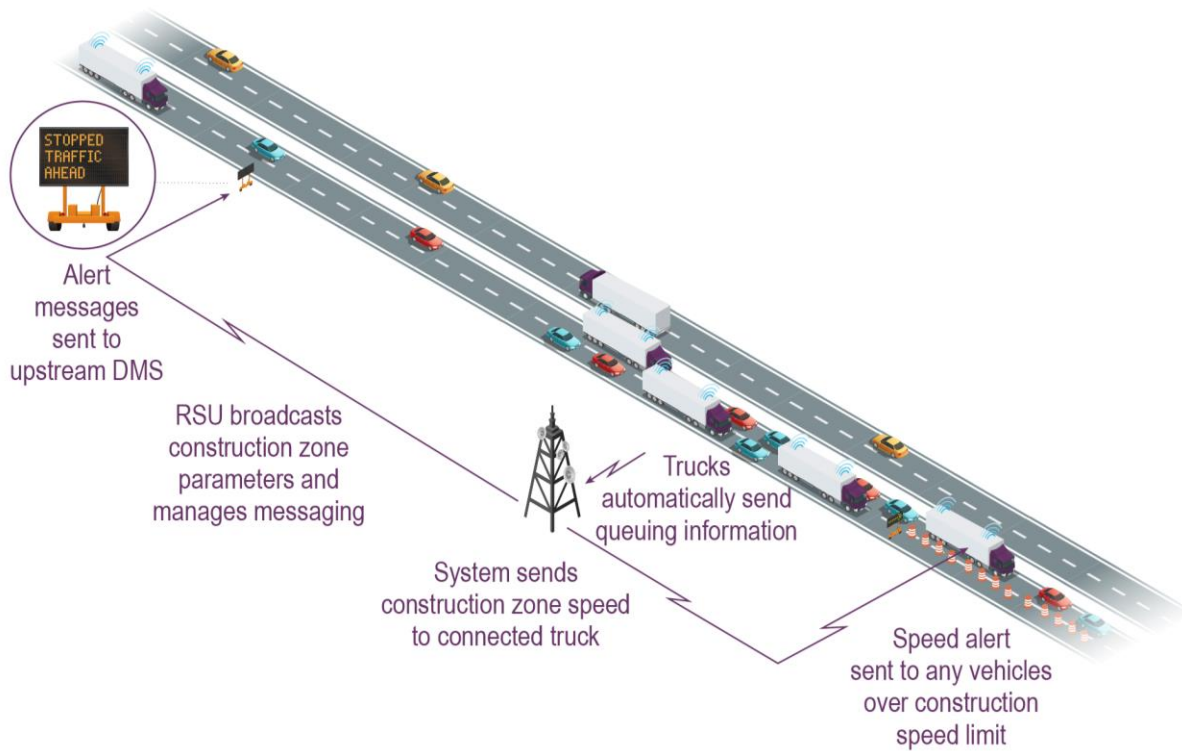
Construction zones are challenging environments for all motorists, but especially challenging for trucks due to inconsistent design, changes in roadway characteristics, and operational restrictions. Technology to improve awareness in this environment would help freight operators utilize alternate routes, recognize speed restrictions, and navigate more safely through a complex work zone.

Strategy Description

Smart work zones apply and leverage technology (e.g., queue detection and warning systems, speed monitoring systems) to help manage traffic in a work zone environment. This strategy establishes and implements smart work zone technologies to improve operations and safety.

Contribution to 2018 Texas Freight Mobility Plan Goals

- ✓ Mobility and Reliability
- ✓ Safety



Strategy Scope

- Determine the need for a Smart Work Zone system at work zone areas throughout Texas (by utilizing TxDOT Go/No-Go Decision Tool).
- Identify key applications for Intelligent Transportation System (ITS) and Connected Vehicle (CV) technology that are site-specific. Common applications include: queue detection and warning systems, speed monitoring systems, real-time travel time systems, incident detection systems and overheight detection systems.
- Implement Smart Work Zones in accordance with best practices and guidelines such as Federal Highway Administration’s Work Zone Intelligent Transportation Systems Implementation Guide, Texas Manual on Uniform Traffic Control Devices, and TxDOT Design Guidelines for Deployment of Work Zone Intelligent Transportation System.
- Implement smart and connected work zone strategies across different types of truck routes, including urban and rural links.
- Establish standards to integrate Smart Work Zones into the Advanced Traffic Management System (ATMS) platform for projects that have medium- or longer-term construction durations. This would need to be evaluated on a project-by-project basis to determine value added.

Examples of User Needs Addressed*

- Need for more advanced notice of real-time traffic conditions (delays, incidents, construction, weather conditions) to improve routing decisions.
- Need for high-resolution delay and traffic information to help with freight operations and planning.
- Need for statewide smart work zone information.

Potential Benefits*

Safety	Mobility	Vehicle Operating Costs	Benefit/Cost Range
<ul style="list-style-type: none"> • Up to 45% reduction in work zone crashes • Up to 50% reduction in number of vehicles speeding in work zones 	<ul style="list-style-type: none"> • Up to 20% reduction in travel time through work zones • Up to 50% reduction in delay in work zones 	<ul style="list-style-type: none"> • 5% to 16% reduction in fuel consumption 	<ul style="list-style-type: none"> • 2:1 to 14:1

Cost Estimates*

Sample Capital Cost

- Typical Smart Work Zone: 1% - 6% of capital construction cost (*for qualifying projects*)

Timescale for Implementation

Near-Term (0-2 years)	Medium-Term (2-5 years)	Long-Term (5-7 years)
✓ Plan & Deliver	✓ Plan & Deliver	✓ Plan & Deliver

Freight Modes Covered: Highways

* The full list of user needs and supporting sources for benefits and costs can be found in the FNTOP Strategies and Conceptual Framework Report.

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