

**Advanced
Research****NOVEMBER 2024****Project Title:**

Work Zone Research

Task Number: 3933**Start Date:** October 3, 2023**Completion Date:** April 1, 2025**Task Manager:**

Melissa L. Clark
Transportation Engineer (Electrical)
melissa.clark@dot.ca.gov

Improving the Safety and Efficiency of Work Zones in California

Development and Demonstration of a Tool to Improve Safety and Efficiency at Work Zones and Incident Scenes on California Roadways.

WHAT IS THE NEED?

Senate Bill 1 (SB1) provides approximately \$5 billion/year for essential transportation improvements including highway maintenance and repair. This increase in highway funding will result in Caltrans or contractors increasing the number and frequency of work zones and lane closures on California's roads, subjecting additional highway workers to traffic risk. Further, increased work zones will have significant impacts on traveler mobility.

To help mitigate these negative consequences, this research aims to improve the knowledge and notification of work zones and lane closures through advanced communications and enhanced data collection and sharing. The researchers will leverage existing FHWA and UC Berkeley projects and tools to accomplish these benefits.

WHAT ARE WE DOING?

The research will develop and demonstrate a Smart Work Zone application that will improve how data about work zones (location, geometry, personnel locations, schedules, lane configuration) is collected and disseminated in California. It will leverage and integrate key technologies, knowledge, and systems at UC Berkeley (UCB), the Federal Highway Administration (FHWA), and the Crash Avoidance Metrics Partners (CAMP). If widely deployed, the application will improve the safety and efficiency of work zones on California roadways by gathering more detailed and more current information on road and lane status affected by work zone activities and providing that data in a real-time manner for distribution in Caltrans QuickMap, Caltrans Connected Fleet, and third-party information providers. This also prepares California for the dissemination of critical and detailed



DRISI provides solutions and knowledge that improves California's transportation system.

work zone safety information and configuration to connected and automated vehicles.

WHAT IS OUR GOAL?

The main deliverable from this project will be a server application developed by California Partners for Advanced Transportation Technology (PATH) that collects work zone/lane closure data and roadside safety messages (RSMs) in a standardized format and disseminates the data to FHWA's Work Zone Data Exchange (WZDx) (<https://www.transportation.gov/av/data/wzdx>) and traveler information service providers (ISPs)

WHAT IS THE BENEFIT?

The research will yield significant safety and efficiency improvements for Caltrans Maintenance and Construction activities and the traveling public, particularly in and around work zones, and has the potential to improve AV situational awareness as well. Since this is a demonstration, there will be insufficient data to measure the impact on safety. However, PATH will contact states that have implemented similar WZDx efforts to provide some measure of expected safety improvements. This is critical as Caltrans works to address its critical SB 1 mandate.

The application will improve the safety and efficiency of work zones on California roadways by gathering more detailed and more current information on road and lane status affected by work zone activities and providing that data in a real-time manner for distribution in Caltrans QuickMap, Caltrans Connected Fleet, and third-party information providers. This also prepares California for the dissemination of critical and detailed work zone safety information and configuration to connected and automated vehicles.

WHAT IS THE PROGRESS TO DATE?

The researchers from PATH have worked on the

work zone (WZ) server updating the data and the Application Programming Interface (API). That task is now completed and deployed. They continue to work on the Roadside Safety Message (RSM) messaging and are currently testing it. In addition, they are developing the WZ data website which is part of the mapping tool in the image 1. The main purpose of the web application is to be able to edit the WZ geometry. Currently, the researchers can just display the existing WZs.

Due to the delay in contract execution the project is behind schedule, and therefore requested a no-cost time extension. The contract will be extended until April 1, 2025.

IMAGES

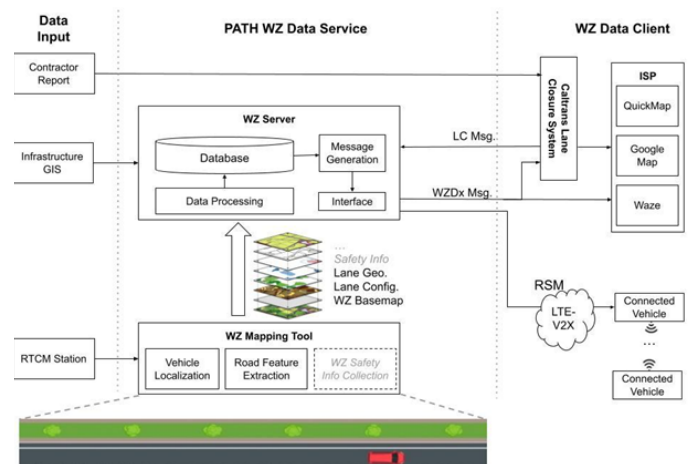


Image 1: Framework of PATH Enhanced Smart Work Zone Application



Image 2: Framework of Work Zone Server