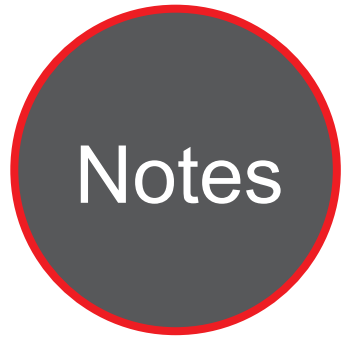




Caltrans Division of Research,
Innovation and System Information

Research



Notes



Maintenance

MARCH 2021

Project Title:
Work Zone Intrusion Alarms

Task Number: 3875

Start Date: May 17, 2021

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2023

Task Manager:
Hamid Ikram
Transportation Engineer
hamid.ikram@dot.ca.gov

Pilot Testing of Work Zone Intrusion Alarms

Pilot testing Work Zone Intrusion Alarm (WZIA) systems in active work zones to determine effectiveness in enhancing highway worker safety.

WHAT IS THE NEED?

Maintaining worker safety in work zones (WZs) remains of paramount concern to the California Department of Transportation (Caltrans), as well as other highway agencies throughout the United States. Some ways to ensure highway workers' safety in WZs include using safe work practices and additional safety measures such as Portable Changeable Message Signs and automated flagging assistance.

Caltrans sponsored a prior research study that identified, evaluated, and tested commercial WZIA systems in a closed and controlled environment. The goal was to confirm the function and value these systems can bring to WZs and identify which, if any, systems should be considered for active WZ pilot testing and potential full implementation into Caltrans business operations.

Caltrans employees set up highway lane closures to create WZs for workers to conduct highway maintenance activities. Even with proper equipment and standard layouts, unauthorized vehicles still enter these WZs, compromising the safety and well-being of workers and traveling motorists. Minimizing significant risks to workers associated with vehicles entering WZs prioritizes the need for the research.



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WHAT ARE WE DOING?

This research includes WZIA training, pilot testing, and examining WZIA systems in active work zone conditions. A WZIA system is an impact-activated device that warns highway workers of errant vehicles entering WZs to give them advance warning to take evasive action.

Upon the establishment and direction of a Project Technical Advisory Panel (Panel), the research team will first develop training plans and material specific to each selected WZIA system and conduct training sessions with Caltrans maintenance staff identified by the Panel. These initial training sessions will enable Caltrans maintenance staff to practice using WZIA devices in a controlled environment to generate familiarity with the systems and provide feedback to ensure safe, effective deployment and operation in active WZs.

Next, the researchers and the Panel will collaborate and identify active WZ locations suitable for WZIA system pilot testing. Based on the details of the locations and types of active WZs, the research team plans to develop active WZ testing and data collection protocols/plans along with procuring the necessary WZIA systems.

Caltrans maintenance staff will pilot test the WZIA systems at the identified active WZ locations, and the researchers will collect video, worker crew survey data and usage data in active WZs. In addition, the research team will document the pilot testing results, including the usefulness, effectiveness, benefits, and shortcomings of the WZIA systems in a final report. The final report will also include a guide of best practices for each WZIA system.

WHAT IS OUR GOAL?

The research goal is to test and determine the effectiveness of WZIs in active WZs. A confirmed appropriate level of WZIA effectiveness may support Caltrans' utilization of WZIA equipment to augment current Caltrans Standard Plans, thereby improving Caltrans worker safety.

WHAT IS THE BENEFIT?

WZIA equipment implementation would support Caltrans in improving business practices towards the enhancement of worker safety. Although Caltrans is the immediate beneficiary of the proposed research, any organization could adopt the developments from the proposed research into their WZ practices.

WHAT IS THE PROGRESS TO DATE?

Currently, this task is in the service contract request stage. The Caltrans research contract manager collaborated with Caltrans team members and university researchers to fine tune the scope of work and research proposal. With a finalized research proposal in January 2021 the contract request package was submitted to Caltrans Division of Procurement and Contracts for further processing.