

Maintenance

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**Project Title:**  
Work Zone Intrusion Alarms  
Project

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**Task Manager:**  
Arvern P. Lofton, P.E.  
Transportation Engineer, Electrical  
arvern.lofton@dot.ca.gov

## Evaluation of Work Zone Intrusion Alarms

Evaluating Work Zone Intrusion Alarm (WZIA) system effectiveness at enhancing highway worker and work zone safety.

### WHAT WAS THE NEED?

The California Department of Transportation (Caltrans) sets up highway lane closures to create work zones for workers to perform highway maintenance activities. Even with proper equipment and standard layouts, unauthorized vehicles still enter these work zones, compromising the safety and well-being of workers and traveling motorists.

Maintaining worker safety in work zones is of paramount concern to Caltrans and other highway agencies throughout the United States. Even though Caltrans maintains high worker safety standards through its operations and equipment standards, the need persists to improve highway work zone safety to minimize risks associated with vehicles inappropriately entering work zones.

### WHAT WAS OUR GOAL?

The research goals included evaluating the effectiveness of selected WZIA systems and assessing their readiness for deployment in California work zones. In addition, the research goals included providing recommendations to Caltrans on the effectiveness and practicality of implementing such systems, providing guidance on the systems' implementation, and recommending updates to Caltrans standard traffic control plans.



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## WHAT DID WE DO?

The researchers and project panel members selected four WZIA systems for evaluation, with one subsequently dropped due to unavailability of the device. The research team developed a detailed evaluation framework to assess the performance of each system and understand their capabilities, issues, and limitations. The research team pilot tested the three WZIA devices resulting in some known issues identified in literature and other new issues and unexpected results. Next, the researchers performed supplemental testing to better assess the systems' capabilities and strengthen the derived conclusions.

## WHAT WAS THE OUTCOME?

The outcome showed that the Worker Alert System (WAS) performed well with certain observed limitations and variances from the manufacturer's specifications. The SonoBlaster system encountered several issues and limitations, most of which were not resolvable. The researchers resolved the Intellicone system's intermittent issues observed during the pilot testing after extensive tests and consultations with the manufacturer. All subsequent Intellicone trials were successful. These results supported the development of Supplemental plans to Caltrans traffic control plans, detailing the deployment location, range distances, and setup of the WAS and Intellicone systems.

## WHAT IS THE BENEFIT?

This research furthered the goal of implementing work zone alarms such as the WAS and Intellicone systems in California work zones. Implementation of such equipment would provide safety benefits for work zone workers and reduce work zone injuries and fatalities.

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To view the complete report:

<https://dot.ca.gov/-/media/dot-media/programs/research-innovation-system-information/documents/final-reports/ca19-3038-finalreport-ally.pdf>