

Maintenance

May 2026

Project Title: Field Trials of the
Intelligent Truck-Mounted
Attenuator – Phase 3

Task Number: 4469

Start Date: June 30, 2025

Completion Date: June 29, 2028

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Field Trials of the Intelligent Truck-Mounted Attenuator – Phase 3

To evaluate a new portable Intelligent Truck-Mounted Attenuator (ITMA) system and to evaluate the ITMA system in diverse traffic conditions.

WHAT IS THE NEED?

Caltrans is actively working to remove the operator of the Truck-Mounted Attenuator (TMA) from the vehicle, which is expected to reduce operator injuries due to public vehicle impacts with the TMA vehicles. There is currently an off-the shelf technology, an Intelligent TMA (ITMA), that achieves this objective. The ITMA was successfully evaluated on closed test sites in the first phase of research. In the second phase of research (Task 4159), the vehicle is actively being evaluated on public roads with and without a safety operator in the follower vehicle while in an area with low annual average daily traffic (AADT). To proceed towards deployment of the ITMA for regular Caltrans maintenance operations, further deployment and evaluation of advanced technologies is necessary. In addition, the ITMA system from phase 2, located in Caltrans District 11, requires a dedicated vehicle that adds an extra operator to the moving closure and an extra vehicle that consumes resources such as fuel and maintenance costs. This includes evaluating a new ITMA system with visual-navigation capabilities, analyzing its ability to switch between leader vehicles and assessing its performance under a variety of AADT conditions.

WHAT ARE WE DOING?

This research project plans to evaluate a new portable ITMA system that can be utilized on various leader vehicles, instead of utilizing a dedicated truck. Caltrans will acquire the portable ITMA leader kit and the contractor from Advanced Highway Maintenance and Construction Technology research center, UC Davis, will support its use and evaluation. The contractor will develop a test plan for the new ITMA system, update training materials, provide training to Caltrans maintenance personnel in District 6, and perform evaluation



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of the performance and suitability of the system for Caltrans maintenance operations. Additionally, this project will continue to assess and evaluate the existing ITMA technology in District 11, providing technical support during field trials.

WHAT IS OUR GOAL?

The goal of this research project is to evaluate a new portable ITMA system, test multi-lead vehicle operations and further assess the ITMA in Caltrans districts with diverse traffic conditions. This research project will develop training, standard operating procedures, and other resources for ITMA to be deployed across Caltrans.

WHAT IS THE BENEFIT?

This research project will result in expanding the ITMA system to additional Caltrans districts which will facilitate the future adoption and implementation of this safety technology across Caltrans. This will help remove the TMA operator from this vehicle and can lead to significant reductions in operator injuries due to public vehicle impacts with the TMA vehicles.

WHAT IS THE PROGRESS TO DATE?

The contract was executed on December 22, 2025, and the project kick-off meeting took place on January 16, 2026. Since then, the team has held follow-up meetings to guide procurement activities and has developed the specifications needed for acquiring the new ITMA system. The contractor also visited District 11 to support operator refresher training and completed design updates to the wireless controller for the arrow board and attenuator. The contract is currently being amended to add necessary scope and funding for procuring ITMA services in District 11 and enhancing the system with remote-control capabilities.

IMAGES



Image 1: ITMA system



Image 2: ITMA system on closed test track