Evaluation of Autonomous TMA Trucks for Use in Caltrans’ Operations

A study focuses on testing Automated Truck Mounted Attenuator’s ability to provide the same impact protection for roadway workers as a conventional Truck Mounted Attenuator.

WHAT IS THE NEED?

California Department of Transportation (Caltrans) highway maintenance and repair activities often require a shadow (trailing) truck equipped with a Truck Mounted Attenuator (TMA), which is intended to adsorb the impact of a high or low speed crash from an errant vehicle collision and provide protection for the workers. While TMA increases safety for the workers, each collision still compromises safety and well-being of the TMA truck driver.

It is necessary to completely remove Caltrans' TMA truck drivers from the risks associated with a collision. With the advent of autonomous vehicles, it may be possible to eliminate driver exposure by utilizing driverless TMA trucks. Therefore, the research team will study and determine if existing Automated Truck Mounted Attenuator (ATMA) technology can meet the need; identify and document what is needed to achieve it.

WHAT ARE WE DOING?

Caltrans is working with the Advanced Highway Maintenance Construction Technology (AHMCT) Research Center at University of California, Davis to conduct this research.

First, a research project panel will be developed to guide this study. Second, the research team at AHMCT will procure an ATMA truck which complies with the Caltrans Division of Equipment’s specifications.

During the procurement process, the researchers will search for equipment that has ATMA capability and review current regulations on autonomous vehicles. The research team will develop a test plan for the ATMA system, based on the research project panel's guidance. The system test plan will focus on ATMA’s ability to provide the same impact protection as that of a
standard TMA truck. The ATMA evaluation will attempt to answer the following research questions:

- Where and in what situations can the ATMA truck be safely maneuvered without a driver?
- In what operations can the ATMA truck be safely used?
- If reasonable modifications were made to the ATMA truck, what operations could they be used in?
- Are there any fatal flaws in the technology?
- Are there any special maintenance issues or considerations?
- What are the worker feedbacks on what they like or dislike, maintenance and operational issues, and areas of improvement?
- Do workers accept the machine and want to use it?
- What training or certifications are required for operating an ATMA truck?

WHAT IS OUR GOAL?

The goal of this study is to evaluate ATMA truck’s ability to provide the same impact protection to Caltrans workers as that of a standard TMA truck; and eliminate any risk for the TMA truck driver in case of a collision.

The research team will deliver the ATMA system and a final report that documents the product search for equipment, current autonomous vehicle regulations, and the evaluation of the ATMA truck.

WHAT IS THE BENEFIT?

Caltrans will benefit from this research by being a national leader in adopting autonomous and connected vehicle technology to the TMA trucks, which can potentially reduce or eliminate safety threats to Caltrans employees and the public, and achieve a safer working environment for the roadway workers.

WHAT IS THE PROGRESS TO DATE?

The approval for purchasing an ATMA truck is currently pending; the estimated delivery date for the ATMA Truck is March 2019.

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