Mountain Pass Road Opening (MPRO) Implementation and Training

Build eight new MPRO units to help maintenance crews on three different highways to open the mountain passes that are closed for winter.

WHAT IS THE NEED?

Due to limited usage and difficulties maintaining mountain pass roadways, California Department of Transportation (Caltrans) allows several to close over each winter season. In the spring, Caltrans' Maintenance crew must re-open these passes for the traveling public.

In heavy snowfall winters, closed mountain pass highways can build up 30 to 40 feet of snow over a season, making it extremely difficult and hazardous to locate and clear the road.

The Advanced Highway Maintenance and Construction Technology Research Center (AHMCT) at University of California, Davis previously developed, tested, and successfully demonstrated a field-ready and deployable GPS-based Mountain Pass Road Opening driver assistance system in a Caltrans funded research task. This system has been tested over several seasons on both State Route (SR) 108 (Sonora Pass) and SR 120 (Tioga Pass).

WHAT ARE WE DOING?

Caltrans is working with the AHMCT to conduct this task. They will redesign the MPRO system to include current commercial off-the-shelf technology, modifications to enhance system portability, and any needed software revisions for compatibility with an appropriate up-to-date operating system.

Once the system redesign is complete, AHMCT will produce two of the updated systems for each of the four sites identified by Caltrans. These sites are:
District 9, SR 108, Sonora Pass eastern slope; District 9, SR 120, Tioga Pass; and District 10, SR 4, Alpine (two sites each with its own crew).

The effort will produce eight systems in total. Additionally, AHMCT will provide training to Caltrans selected staff for ongoing usage, support, and maintenance of the systems.

The deliverables for this research are eight MPRO systems based on the new design, staff training, and research documentation including quarterly reports and a final report.

WHAT IS OUR GOAL?

The goal of this work is to modernize the MPRO system, redesign it for enhanced portability, update the software for compatibility with a new operating system, and provide training to Caltrans staff to support their future operator training and system installation.

WHAT IS THE BENEFIT?

Caltrans will have a modernized MPRO design that is easily removed and portable. This system will provide a safer environment for the maintenance crews responsible for opening these mountain passes.

Another benefit is a reduction in costs to repair equipment that has been damaged by hitting guardrail or other roadway features hidden by snow.

This research also ensures that Caltrans is using the latest technology to help with snow clearing operations.

WHAT IS THE PROGRESS TO DATE?

As of June 2019, the software for the operating system is still being developed and some of the new hardware has been purchased. Detailed base maps have been created from Mobile Terrestrial Laser Scans.

For additional information please contact Task Manager.