DRISI
CALTRANS DIVISION OF RESEARCH, INNOVATION AND SYSTEM INFORMATION
TRANSFORMING IDEAS INTO SOLUTIONS

Research Notes

TSM

May 2025

Project Title: Midwest Roadside Safety Facility Pooled Fund TPF-5(430) [Solicitation: 1489]

Task Number: 3726

Start Date: July 1, 2019

Completion Date: TBD

Task Manager:

David Whitesel
Transportation Engineer
David.whitesel@dot.ca.gov

Midwest Roadside Safety Facility Pooled Fund TPF-5(430) [Solicitation: 1489]

Various highway roadside appurtenances were crash tested to ensure they meet criteria established nationally. Under the pooled fund program, Midwest Roadside Safety Facility (MwRSF) performs research and Department of Transporation (DOT) support as well as full scale crash testing.

WHAT IS THE NEED?

Road owner, operators, such as State DOTs, including the California Department of Transportation (Caltrans), are required to meet federal crash testing safety guidelines. In order to have nonproprietary designs available for use, they need to be developed, tested, analyzed and submitted to Federal Highway Administration for evaluation. This work requires specific expertise and for the testing lab to be ISO 17025 Accredited. In addition, Caltrans has a large tort liability for vehicle accidents in our right of way. Caltrans can improve safety for the traveling public as well as reduce legal judgment costs by partnering with other DOTs on research to continually improving roadside safety systems.

WHAT ARE WE DOING?

As one of more than 20 state DOT, Caltrans is participating in the MwRSF Roadside Safety Pooled fund project to improve safety for California and the nation. Caltrans participates through a fund transfer to the pooled fund lead state, Nebraska State DOT. Caltrans participates in the pooled fund project prioritization process, project meetings, as well as the annual and mid-year pooled fund meetings. We also work with our internal Caltrans customers to review and help implement MwRSF developed and tested hardware.

WHAT IS OUR GOAL?

Caltrans' goal in participating in this pooled fund project is to benefit by sharing expertise and receiving nonproprietary

Caltrans

DRISI provides solutions and knowledge that improves California's transportation system.

roadside safety hardware designs for use on its highways while realizing savings in terms of shared costs.

WHAT IS THE BENEFIT?

Caltrans benefits by sharing expertise and receiving roadside safety details and designs for use on our highways. The result is a statewide improvement in safety, reducing injuries and deaths for run of road accidents. There is also a reduction in Caltrans tort liability for accidents, ultimately resulting in significant savings for the state of California.

WHAT IS THE PROGRESS TO DATE?

See the following links for pooled fund quarterly reports and the MwRSF Research Hub for completed research: https://pooledfund.org/Details/Study/653 and https://mwrsf.unl.edu/researchhub.php

MwRSF recently conducted two crash tests to evaluate crashworthiness of an end terminal adjacent to a 4-inch curb to Test Level 3 (TL-3) criteria of the Association of State Highway and Transportation Official Manual for Assessing Safety Hardware, Second Edition (MASH 2016). Both crash tests successfully met the TL-3 safety performance criteria of MASH 2016. A photo of the test article prior to testing and three photos of each crash test, one showing impact conditions and two during the test, are shown below. In both crash tests, a 2420 lb sedan impacted the test article at 62 mph Test, but CET-1 had a 0° impact angle while CET-2 had a 5° impact angle. The final report can be found here: https://mwrsf.unl.edu/researchhub/files/Report503/TRP-03-469-24.pdf.

IMAGES

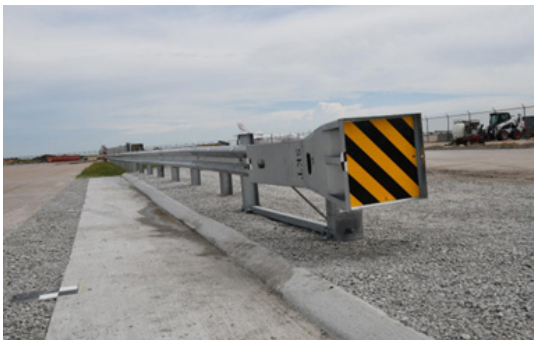

Image 1: End Terminal with 4-inch Curb Prior to Test

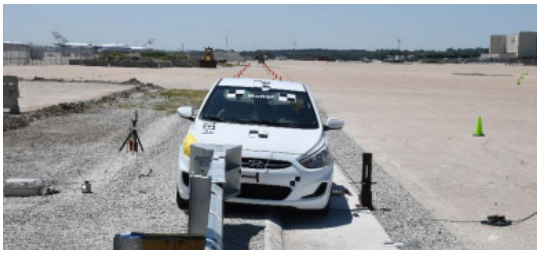

Image 2: Crash Test CET-1 (Test 3-30) Pre-Test

Image 3 and 4: Crash Test CET-1 (Test 3-30) During Impact

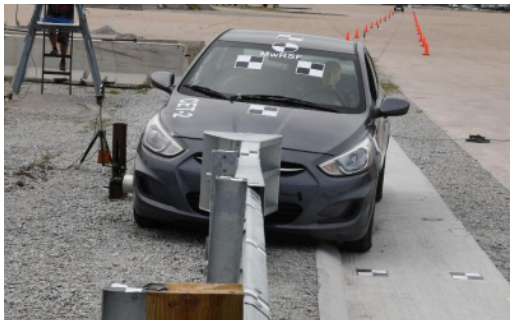

Image 5: Crash Test CET-2 (Test 3-32) Pre-Test

Image 6 and 7: Crash Test CET-2 (Test 3-32) During Impact