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

Research Notes

Midwest Roadside Safety Pooled Fund Program TPF-5(533) (FY25-FY29)

Various highway roadside appurtenances were crash tested to ensure they meet criteria established nationally. Under the pooled fund program, MWRSF performs research and DOT support as well as full scale crash testing.

Research Support

November 2025

Project Title: Midwest Roadside Safety Pooled Fund Program TPF-5(533) (FY25-FY29)

Task Number: 4515

Start Date: July 1, 2024

Completion Date: TBD

Task Manager:

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WHAT IS THE NEED?

Road owners and operators, such as State Department of Transportations (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 the Federal Highway Administration (FHWA) 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 improve roadside safety systems.

WHAT ARE WE DOING?

As one of more than 20 state Department of Transportation, Caltrans is participating in the Midwest Roadside Safety Facility (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 sharing expertise and receiving nonproprietary roadside

Caltrans

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

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 by reducing injuries and deaths from run-off-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 Midwest Roadside Safety Facility Research Hub for completed research:

https://pooledfund.org/Details/Study/767

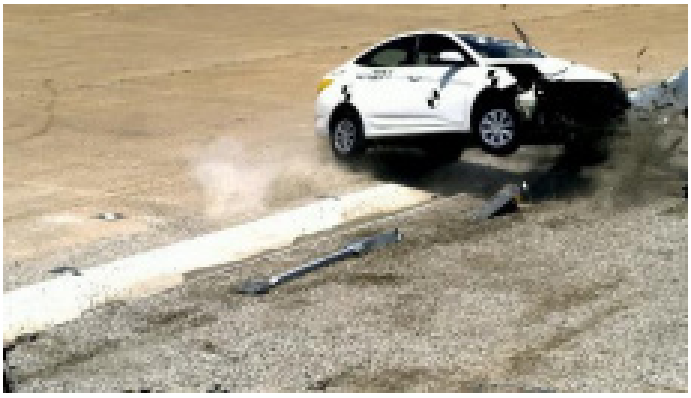
https://mwrsf.unl.edu/researchhub.php

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 (AASHTO) 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. Except, Test 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: Traffic Face of End Terminal with 4-inch Curb Prior to Test

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



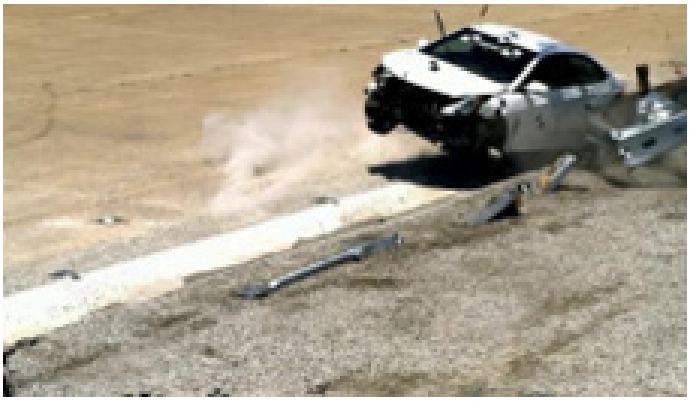


Image 3: Crash Test CET-1 (Test 3-30) During Impact

Image 4: Crash Test CET-2 (Test 3-32) Pre-Test

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