

DRISI

CALTRANS DIVISION OF RESEARCH,
INNOVATION AND SYSTEM INFORMATION

Research Notes

Transportation
Safety and
Mobility

NOVEMBER 2023

Project Title:
Midwest Roadside Safety Facility
Pooled Fund TPF-5(430)

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)

Various highway roadside appurtenances were crash tested to ensure they meet criteria established nationally. Under the pooled fund program, Midwest Roadside Safety Facility (MWRSF) performed research and Department of Transportation (DOT) supported full scale crash testing.

WHAT IS THE NEED?

Road owner and operators, such as State DOTs, including California Department of Transportation (Caltrans), are required to meet federal crash testing safety guidelines. In order to have non-proprietary designs available for use, they need to be developed, tested, analyzed and submitted to Federal Highway Administration (FHWA) for evaluation. This work requires specific expertise and for the testing lab to be accredited by the International Organization for Standardization (ISO) 17025. 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 Department of Transportation, 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 also participates in the pooled fund project prioritization process, project meetings, as well as the annual and mid-year pooled fund meetings. Lastly, we 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 roadside safety hardware designs for use on its highways while realizing savings in terms of shared costs.



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

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 the pooled fund quarterly reports and the Midwest Roadside Safety Facility Research Hub for completed research:

<https://pooledfund.org/Details/Study/653> and
<https://mwrsf.unl.edu/researchhub.php>

MwRSF recently conducted a crash test to evaluate crashworthiness of a 62-in tall single-slope concrete median barrier to Test Level 6 (TL-6) criteria of the Association of State Highway and Transportation Official (AASHTO) Manual for Assessing Safety Hardware, Second Edition (MASH 2016). The barrier was designed to withstand a 300-kip lateral load. During the crash test, the barrier was impacted by an 80,000-lb tractor trailer traveling at 51.1 mph at an angle of 15.5°. The vehicle was successfully redirected where it rolled 90° onto its side and continued sliding for 6.5 seconds. Due to the liquid contents sloshing around the oval tanker it then rolled another 180°, during which crush occurred to the cab. The researchers recommend further discussion to determine crash test expectations for this type of impact. Two photos of the test article and four photos from the full-scale crash test are shown below.

The final reports can be found here:
[https://mwrsf.unl.edu/researchhub/files/Report483/TRP-03-463-23%20\(End%20of%20Year%204%20Report\).pdf](https://mwrsf.unl.edu/researchhub/files/Report483/TRP-03-463-23%20(End%20of%20Year%204%20Report).pdf).

IMAGES



Image 1: Median Concrete Barrier Test Article





Image 2: Test No. MTL6-1 MASH TL-6 Crash Test

The contents of this document reflect the views of the authors, who are responsible for the facts and accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the California Department of Transportation, the State of California, or the Federal Highway Administration. This document does not constitute a standard, specification, or regulation. No part of this publication should be construed as an endorsement for a commercial product, manufacturer, contractor, or consultant. Any trade names or photos of commercial products appearing in this document are for clarity only.