DRISI
Caltrans Division of Research, Innovation and System Information

Research Notes

Transportation Safety & Mobility

NOVEMBER 2022

Project Title:
Texas Transportation Institute (TTI) Roadside Safety Research Pooled Fund Project

Task Number: 3067

Start Date: July 1, 2016

Completion Date: Pending

Task Manager:
Bob Meline
Sr. Transportation Engineer
bob.meline@dot.ca.gov

Roadside Safety Research for MASH Implementation: TTI Pooled Fund Project TPF-5(343)

The objective of the Roadside Safety Pooled Fund Program is to provide a cooperative approach to conducting research on roadside safety hardware. Emphasis will be placed on assisting State Department of Transportations (DOTs) with their implementation of Manual for Assessing Safety Hardware (MASH) and addressing other roadside safety needs of common interest.

WHAT IS THE NEED?

The implementation of the American Association for State Highway and Transportation Official (AASHTO) MASH by State DOTs necessitates the examination and evaluation of roadside safety hardware currently being used by the State DOTs. It is already known that some currently used roadside safety hardware will not meet MASH requirements. The federal compliance dates for MASH roadside safety hardware have already passed and research is needed to meet California's safety goals.

WHAT ARE WE DOING?

This project creates a consortium of states that will cooperatively fund and oversee MASH implementation and roadside safety research needs identified and prioritized by its representatives. The pooled fund research program will identify, analyze, and develop solutions for roadside safety problems with the goal of reducing the tremendous loss of life that occurs on our highways each year as a result of roadway departure crashes. Specific research activities addressed within the program will include the design, analysis, testing, and evaluation of roadside safety hardware, and the development of guidelines for the use, selection, and placement of these features.

Caltrans

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

Research problem statements will be developed by participating member state representatives. The members will rank and select specific projects to be funded each fiscal year. Additionally, member states may independently develop and fund research projects through the Roadside Safety Pooled Fund Program through a reimbursable agreement with Washington DOT.

WHAT IS OUR GOAL?

The goal of this research is to provide roadside safety solutions to member states and improve the safety of roadway departure crashes. Reaching this goal will improve the safety of California road and bridges.

WHAT IS THE BENEFIT?

Each year state transportation agencies are faced with unresolved issues regarding roadside safety features. Research conducted under this program will enable California to leverage funds to address these important safety issues. The pooled fund program will be particularly valuable with regard to addressing needs associated with the implementation of MASH. The continuity provided by the multi-year format will permit research problems to be solved in much less time than would normally be required if each issue was individually contracted. Safety research needs of an individual participating state may be addressed through additional funds to the program. The benefits are reduced cost and expedited contracting.

The result of this work will be a reduction in fatalities and serious injuries associated with run-off-road crashes in California and other participating states. Further, the California will save money through the development and implementation of more cost-effective roadside safety hardware and more efficient procedures and guidelines for their use.

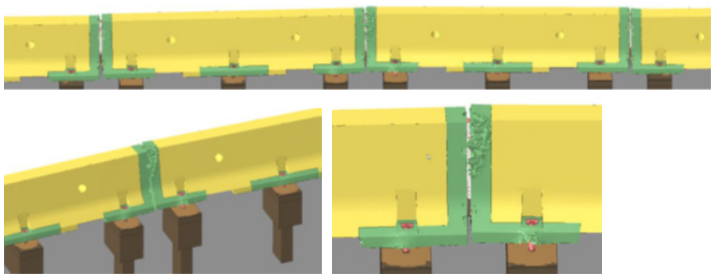
WHAT IS THE PROGRESS TO DATE?

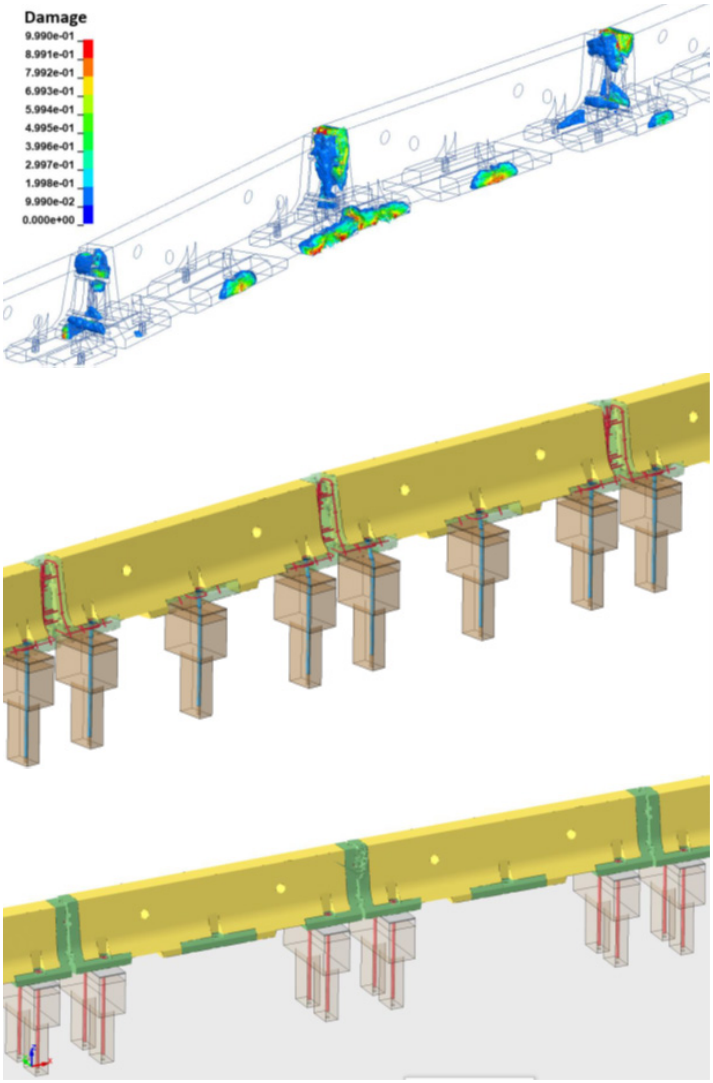
See the following links for pooled fund quarterly reports and the Roadside Safety Research for MASH Implementation TPF-5(343) website for on-going projects and completed research:

https://www.pooledfund.org/Details/Study/592
https://www.roadsidepooledfund.org/
https://www.roadsidepooledfund.org/mash-implementation/search/

In addition to the pooled fund projects, Caltrans initiated a project with TTI to research a new temporary portable F-Shape Pin and Loop Concrete Barrer with vertical anchors. For this project draft barrier details have been developed by TTI and a Caltrans portable barrier working group. Finite element impact simulations have been completed with the barrier anchored to 4" of asphalt concrete with 48" and 36" stakes. The simulation results indicated limited deflection of the barrier and generally favorable vehicle behavior during and after impact. A simulation was also completed with the barrier constrained to the pavement at the outer traffic side anchor locations. The loads at the constrained locations are being evaluated to determine an acceptable anchorage system for bridge decks. The barrier segments and hardware are planned to be fabricated by a vendor in the next month and full scale crash testing is scheduled for the beginning of the 2023 calendar year.

IMAGE





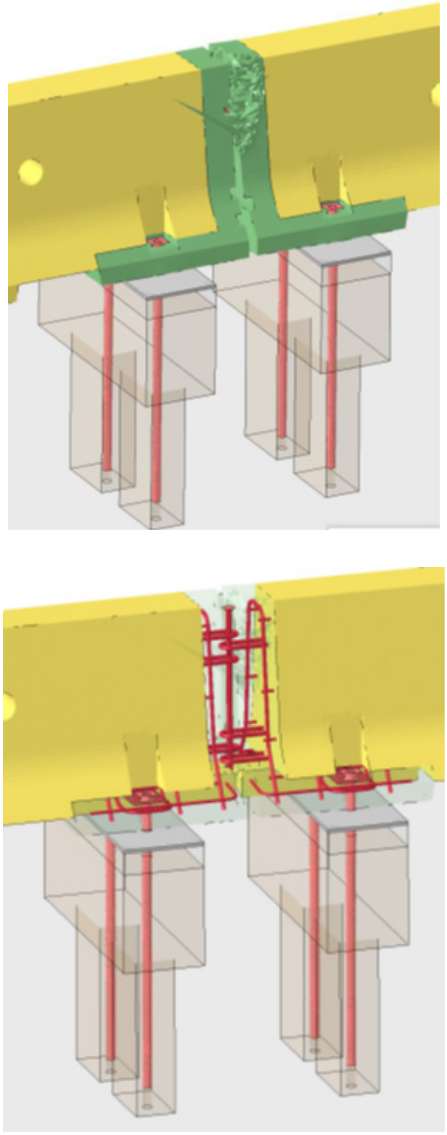


Image 1: Pooled Fund Example Project: Portable Temporary F Shape Concrete Barrier with vertical anchorage Finite Element Model and Simulation Results