



Caltrans Division of Research,  
Innovation and System Information

# Research



# Results



Transportation  
Safety and Mobility

## Roadside Safety Research Product Development

Roadside safety devices were researched, developed, and crash tested in compliance with national guidelines under both NCHRP and AASHTO

### WHAT IS THE NEED?

Many state DOTs have sponsored research on roadside safety issues that include crash testing of features in accordance with FHWA adopted standards (NCHRP Report 350 and MASH). Many of the research and functional problems are common to more than one state and so there is efficiency and cost effectiveness in pooling resources to conduct certain crash tests.

### WHAT WAS OUR GOAL?

To establish an ongoing roadside safety research program that meets the research and functional needs of participating states in a cost-effective and timely manner.

### WHAT DID WE DO?

A committee of representatives from participating states formed a technical committee to identify common research needs, select projects for funding and oversee implementation of results. Specific research activities addressed within the program include the design, analysis, testing, and evaluation of crashworthy structures, and the development of guidelines for the use, selection and placement of these structures. Crashworthy structures addressed include bridge rails, guardrails, transitions, median barriers, portable concrete barriers, end treatments, crash cushions, culverts, breakaway support structures (e.g. sign supports, luminaire supports, mailboxes), and work zone traffic control devices.

### MAY 2019

**Project Title:**

TTI Roadside Safety Research Program, TPF-5(114)

**Task Number:** 1057

**Start Date:** January 1, 1990

**Completion Date:** June 29, 2018

**Task Manager:**

John Jewell  
Chief, Crash Testing Operations  
john.jewell@dot.ca.gov



Caltrans provides a safe, sustainable, integrated and efficient transportation system to enhance California's economy and livability.

Research also addresses the influence of highway features such as driveways, slopes, ditches, shoulders, medians, and curbs on single vehicle collisions. The problems identified with these structures and features are addressed through in-service performance evaluation studies, computer simulation, full-scale crash testing, clinical analyses of real-world crash data, and benefit cost analyses. The specific identification, selection and prioritization of research issues is made by the technical committee on an annual basis, unless emerging issues require committee decisions in the interim.

## WHAT WAS THE OUTCOME?

All areas of roadside safety research were enhanced. Bridge rails, guardrails, sign supports, curb/dike guidance, call boxes, and component evaluations comprised most of the research outcome. Additional guidance in the multi-product systems, like curb with guardrail, were also developed.

## WHAT IS THE BENEFIT?

Both the traveling public and Caltrans' field personnel benefit from this research in the form of safer roadways capable of meeting current/updated requirements for crashworthiness.

## LEARN MORE

The final report from the lead state was not completed. This pooled fund project transitioned into a MASH Implementation pooled fund project TPF-5(343).

Project progress can be viewed at <http://www.RoadsidePooledFund.org>

## IMAGES



Crash Testing



Bogie Test Vehicle



Finite Element Analysis Simulation

TTI Providing Grounds Research Facility for crash testing, bogie test vehicle, and finite element analysis simulation.