



Caltrans Division of Research,
Innovation and System Information

Research



Results



Transportation
Safety and
Mobility

SEPTEMBER 2015

Project Title:

Crash Attenuator Usage Along
Travelways

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2014

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Crash Attenuator Data Collection and Life-Cycle Tool Development

The research objective is to develop a tool to evaluate the life cycle costs of crash attenuators.

WHAT WAS THE NEED?

An understanding of the life cycle costs for crash attenuators will help Caltrans determine cost effective attenuator options over a period of time, reducing overall costs for these systems. This study was a continuation of the Crash Attenuator Usage Along Travel Ways project. In the first half of the project, a methodology was developed to appraise crash cushion maintenance costs, including traffic control for access, labor and repair parts cost and estimates on impacts per year based on the installed location. A toolbox was devised to populate life cycle costs using existing data from Caltrans maintenance databases and district records. It was evident during the data collection that there was a lack of data on crash attenuators.

The second half of this project was to devise a strategy to collect available data from existing crash attenuators to develop a database for the crash attenuator toolbox.

WHAT WAS THE GOAL?

The goal of this task was to devise a strategy to collect data from existing Caltrans databases of crash attenuators to develop a database specifically for the crash attenuator toolbox. A part of the strategy was to develop a system to monitor a select set of in-service crash attenuators due to the lack of data from existing Caltrans maintenance databases.



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WHAT DID WE DO?

In order to collect information about impacts and damage, a camera system capable of recording crash attenuator activity was configured. After meeting with a few Caltrans Districts and evaluating site locations, three crash attenuators were selected to be monitored. When there was activity on the crash attenuator, an accelerometer installed on the attenuator would triggered the video camera to record. The data was automatically uploaded via a cellular modem, recorded and later analyzed.

WHAT WAS THE OUTCOME?

Video data collected from crash attenuators supplemented existing impact and repair data from the Caltrans IMMS database. The video data helped to support the CAL-COST tool in improved life-cycle estimates for crash attenuators. The CAL-COST decision support tool can help engineers in evaluating different crash attenuator products.

WHAT IS THE BENEFIT?

This study will aid engineers in selecting the most appropriate crash attenuator. In addition, the research will give engineers a better understanding of actual in-service cost of crash attenuators including traffic control, maintenance and replacement parts cost.

IMAGES

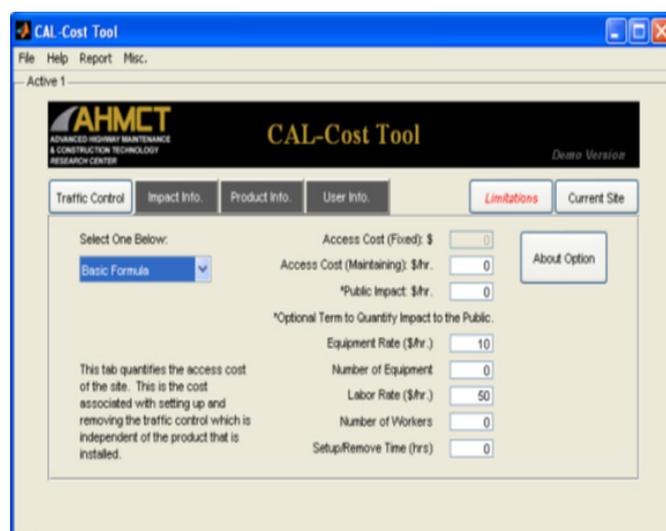


Image 1: CAL-COST Toolbox

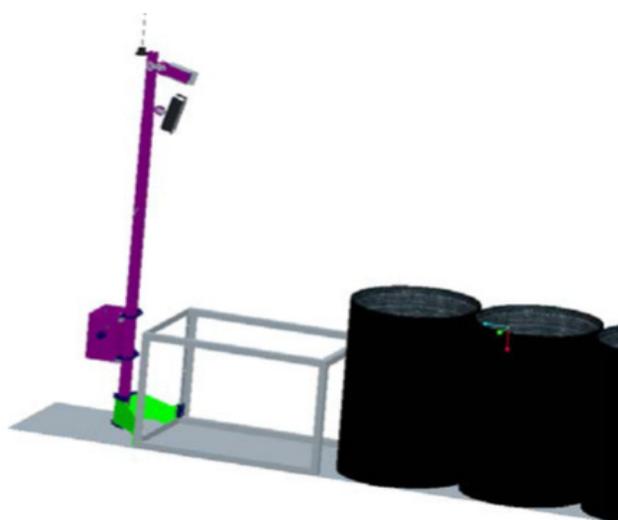


Image 2: Crash Attenuator Monitoring System



Image 3 : View of Crash Attenuator Camera
Monitoring System