

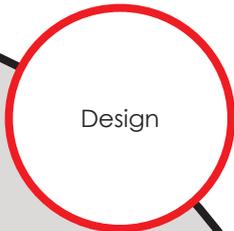


Caltrans Division of Research,  
Innovation and System Information

# Research



# Results



Design

## Performance Measures for Roadside Features

Performed research on roadside features that Caltrans design/ put in the clear recovery zone that have reoccurring hits and repairs.

MARCH 2019

**Project Title:**  
Performance Measures for  
Roadside Features

**Task Number:** 2761

**Completion Date:** September 30,  
2018

**Task Manager:**  
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### WHAT WAS THE NEED?

Although research is available on the performance of standard roadway features such as barriers, light standards and signs etc. there is lack of data and scientific methods that can be used in assessing the maintainability of roadside features and the impact of frequency of their maintenance on worker safety. Furthermore, there was a need to capture the knowledge base of local maintenance experts from Caltrans districts to help understand the maintainability requirements for roadside features so that better methods or policies can be developed for their selection and design. Understanding how, where and when worker involved incidents and injuries occur or roadside features requiring recurring and time consuming maintenance can help provide a basis for proper design of roadside features, or where to put barriers and signs to improve worker safety.

### WHAT WAS OUR GOAL?

The goal of this research project was to identify roadside features that Caltrans routinely design and put in the clear recovery zone and have recurring maintenance needs or those whose maintenance expose workers on foot to high-risk environments. The purpose was to help Caltrans identify the need for policy change or updating the design or maintenance manuals related to roadside features, to help improve worker safety.



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## WHAT DID WE DO?

In this project the research team conducted a literature review, identified data sources related to roadside features, and attended meetings with maintenance personnel from Caltrans districts (who perform maintenance work in their districts) to capture their ideas on problem areas associated with maintenance of roadside features and how to improve the design, maintenance and implementation of roadside features.

## WHAT WAS THE OUTCOME?

This project developed a list of roadside features that Caltrans routinely design and put in the clear recovery zone and have recurring maintenance needs or those whose maintenance exposes workers on foot to high-risk environments. This project has made recommendations on the need for; policy changes, updates to highway design and maintenance manuals, additional training, or further research that can include life cycle analysis methods considering maintenance resources and worker's exposure to traffic.

## WHAT IS THE BENEFIT?

This research project is expected to help implement cost effective roadside features and improve worker safety by providing support for potential policy changes to emphasize maintainability with the goal of increased worker safety, providing recommendations for updates to highway design and maintenance manuals, and identifying the need for training related to specific roadside features.

## LEARN MORE

<https://dot.ca.gov/-/media/dot-media/programs/research-innovation-system-information/documents/final-reports/ca19-2761-finalreport-all.pdf>

## IMAGES

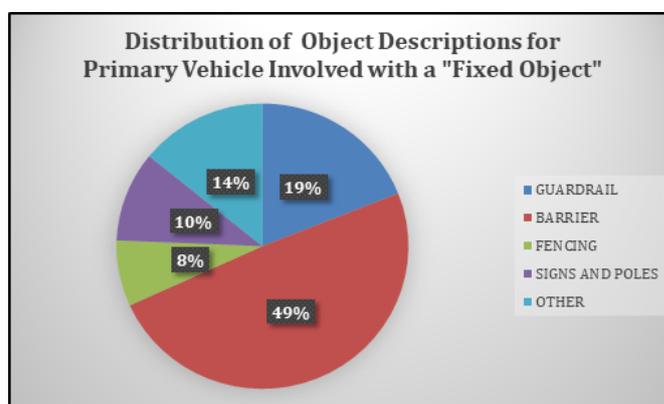


Image 1: Distribution of Roadside Features Hit when the Primary Vehicle is involved with a "Fixed Object."

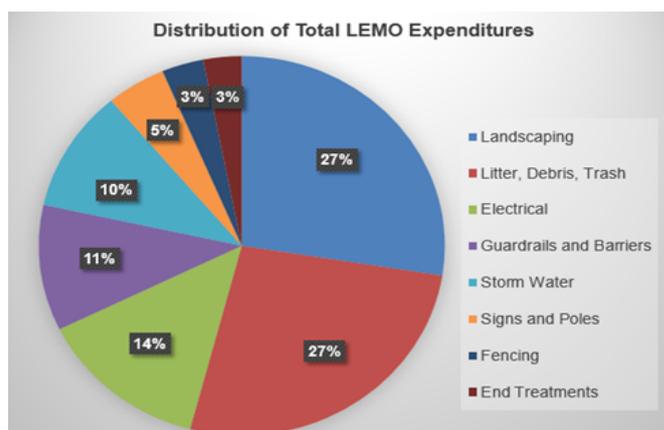


Image 2: Labor, Equipment, Materials, and Others (LEMO) cost distribution for various roadside features.