



Design

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Project Title:
Cost-benefit analysis for concrete vs metal guardrails and wood vs metal posts for signs and guardrails

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Cost-Benefit Analysis for Concrete vs Metal Guardrails and Wood vs Metal Posts for Signs and Guardrails

Conducting cost benefit analysis to develop guidelines for choosing between different guardrail types, and posts for guardrails and signs.

WHAT IS THE NEED?

This is a follow up project, to work on California Department of Transportation (Caltrans) Districts' recommendations to improve the safety of their field maintenance workers. This project plans to improve the safety and efficiency in Caltrans design and maintenance related activities by developing a decision-making process when choosing between different roadside features and their replacements.

WHAT ARE WE DOING?

This project plans to perform cost-benefit analysis studies to develop methodology for choosing between concrete vs metal beam guardrail barriers, based on requirements at each location, considering long term maintenance savings, and improvements in worker safety, due to less time spent on repairing guardrails in high traffic exposure environment.

This project also plans to develop guidelines to objectively support the decision for replacement of wooden posts with metal posts (for signs and guardrails), based on the maintenance costs, fire hazards, weed control, crash performance, and improvements in worker safety etc.



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WHAT IS OUR GOAL?

The goal of this project is to perform research to help provide methods for life cycle cost estimation that can be used in decision-making process when choosing between different roadside features and their replacements. The cost benefit analysis will consider long-term maintenance savings as well as improvement in worker safety due to less maintenance time in high traffic exposure environment.

WHAT IS THE BENEFIT?

The benefits of this project include improved safety for maintenance workers by identifying roadway areas where maintenance workers have a high-risk in maintaining roadside features, and providing help in decision making process when choosing between different roadside features and their replacements, including; choosing between concrete versus metal guardrails, replacing wooden vs metal guardrail posts, and evaluating the use of steel vs wooden posts for signs.

WHAT IS THE PROGRESS TO DATE?

The kick-off meeting for this project was held on December 3, 2021.

A project panel was formed. On March 8, 2022 a project panel meeting was held.

A survey on the state of practice of other State Departments of Transportation (DOTs) was conducted. The research team conducted a literature review on the selection criteria between wooden versus metal posts for signs and guardrails, and guardrail versus concrete barriers. On June 14, 2022 a project panel meeting was held. The research team shared details of 16 responses for survey on the state of practice of other State DOTs. The research team interviewed Caltrans Safety Device Coordinators, and Deputy District Directors of Maintenance/Maintenance Managers, to understand the current state of practice related to

concrete barriers as replacement to guardrail systems, wood versus metal guardrail posts, and wood versus metal signposts.

On September 21, 2022, a project panel meeting was held. The research team developed summary of interviews conducted with Caltrans Safety Device Coordinators, and Deputy District Directors of Maintenance/ Maintenance Managers.

On January 10, 2023 a project panel meeting was held. The contractor has evaluated various methods to calculate the risk factors associated with the exposure of workers to high-speed traffic during the maintenance of guardrails and concrete barriers.