

Maintenance

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Project Title: Optimizing Safety and Savings for Maintenance Repair of Guardrails

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Optimizing Safety and Savings for Maintenance Repair of Guardrails

Evaluating safer and more efficient methods for repairing guardrails by testing heavy equipment attachment systems against manual repair methods.

WHAT IS THE NEED?

The repair of guardrails due to vehicle impacts is a constant responsibility of maintenance crews throughout Caltrans. Guardrails are one of several countermeasures used to protect the public and infrastructure when the clear recovery zone for errant vehicles is not sufficient. Due to the guardrails location and proximity to the traveling public, the repair of guardrail systems after a crash presents increased risk to the maintenance workers who must repair the guardrails to protect the public.

WHAT ARE WE DOING?

The research team will work closely with Caltrans maintenance crews, supervisors, and equipment manufacturers throughout the project. Crews will receive training on the operation of heavy equipment attachments and will participate in a one-year field trial to evaluate their performance under real-world conditions. Supervisors and lead workers will provide feedback through surveys, interviews, and roundtable discussions, ensuring operational needs and worker safety concerns are addressed. Manufacturers will assist with setup, training, and technical support to ensure the attachments function as intended. To support these trials, additional resources such as skid steers, which are not typically available for extended periods, will be leased for the field trial duration. The research will conclude with a detailed cost-benefit analysis that considers worker exposure time, efficiency gains, equipment costs, and safety outcomes. These findings will be summarized in a final report, providing Caltrans with actionable guidance on the safest and most cost-effective guardrail repair practices.



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WHAT IS OUR GOAL?

The goal of this research is to improve workers' safety and guardrail repair efficiency by evaluating the use of heavy equipment attachments for guardrail repair compared to existing manual and truck-based methods.

WHAT IS THE BENEFIT?

This research will provide Caltrans with best practices to improve worker safety and optimize maintenance resources by reducing worker exposure time and increase the efficiency of guardrail repair to better protect the public.

WHAT IS THE PROGRESS TO DATE?

This research is in its early stages. The kickoff meeting is being scheduled, and procurement of a commercially available skid-steer attachment for evaluation has begun.