



Caltrans Division of Research,  
Innovation and System Information

# Research



# Results



Maintenance

APRIL 2022

**Project Title:**

Clear Roads Winter Highway  
Operations, TPF-5(218)

**Task Number:** 2473

**Start Date:** May 18, 2012

**Completion Date:** December 31,  
2016

**Task Manager:**

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## Clear Roads Winter Highway Operations, TPF-5(218)

The Clear Roads pooled fund focused on advancing winter highway operations nationally through practical, practice-ready research related to materials, equipment, and methods.

### WHAT WAS THE NEED?

Effective snow and ice removal operations are essential for keeping Caltrans roadways open and safe for the traveling public. These operations are also resource intensive for the department. Caltrans had a need to investigate new technologies, practices, and tools that can improve the safety and efficiency of snow and ice removal operations. This Clear Roads pooled fund addressed that need by investigating practical, practice-ready research related to materials, equipment, and methods of snow and ice removal.

### WHAT WAS OUR GOAL?

The goal of this research was to be part of this multi-state pooled fund to have access to reports that evaluate snow removal materials, equipment and methods in real-world conditions. These reports identify the most effective techniques and technologies to save agencies money, improve safety and increase efficiency.

### WHAT DID WE DO?

The Clear Roads Pooled Fund project began in 2004 with four members and a focus on real world testing of winter maintenance materials, methods, and equipment. During the many years of funding and overseeing research projects, the pooled fund has grown to include thirty-three-member states funding three to ten research projects annually.



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knowledge that improves  
California's transportation system

This phase of Clear Roads Pooled Fund addressed both operational and management research needs, investigated the most effective tools and practices for clearing snow and ice and for managing program resources, budgets, and performance measures. The pooled fund also expanded support for implementation and technology transfer through the development of user manuals, training modules, peer exchanges, and quick turnaround syntheses of the most effective state practices from around the country. Below is a list of just some of the research projects that were completed under this pooled fund.

- Comparison of Material Distribution Systems
- Establishing Effective Salt and Anti-icing Application Rates
- Environmental Factors Causing Fatigue in Snowplow Operators
- Development of a Totally Automated Spreading System
- Understanding the True Costs of Snow and Ice Control

Caltrans sent a representative from the Division of Maintenance to attend the bi-annual Clear Road task force meetings. During these meetings, the task force reviewed and made decisions on new research projects. All of the task force meetings minutes as well as final reports for each project are posted on the Clear Roads Website [Clear Roads](#).

## WHAT WAS THE OUTCOME?

This pooled fund investigated over 15 different research projects during this phase of the Clear Roads pooled fund project. Over 10 of these research projects were completed. The projects that were not completed were transferred to the Clear Roads Phase II Pooled Fund TPF-5(353).

## WHAT IS THE BENEFIT?

This research benefited Caltrans by having direct access to all the investigations done by the Clear Roads pooled fund. These investigations included

research into new equipment and materials that help with the snow clearing operations. Caltrans was also able to submit research projects proposals that directly benefited the department, as well as benefited from other research projects that were submitted by the other member states.

## LEARN MORE

All final reports are posted to the Clear Roads website

To view the final reports please visit the link below.

[All Research and Synthesis Projects | Clear Roads](#)

## IMAGES

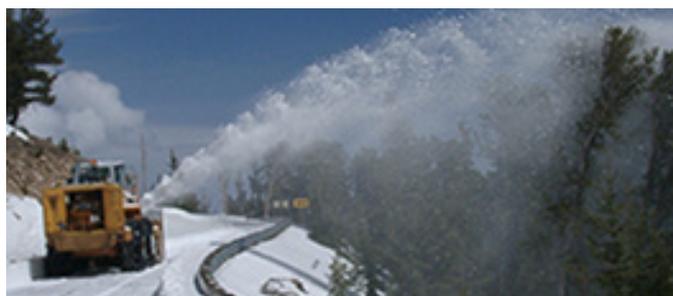


Image 1: Rotary blower removing snow from roadway



Image 2: Brine tank truck spreading salt brine on roadway