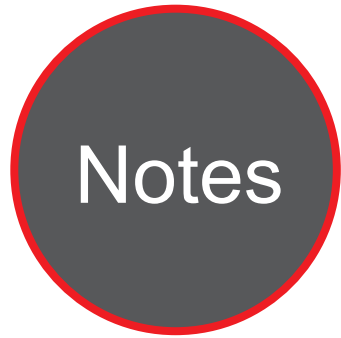




Caltrans Division of Research,  
Innovation and System Information

# Research



# Notes



Maintenance

SEPTEMBER 2021

Project Title:  
Clear Roads Phase II TPF-5(353)

Task Number: 3157

Start Date: January 12, 2017

Completion Date: December 31,  
2021

Task Manager:  
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## Clear Roads Phase II TPF-5(353)

Advancing winter highway operations nationally through practical, practice-ready research related to materials, equipment, and methods.

### WHAT IS THE NEED?

Effective snow and ice removal operations are essential for keeping California Department of Transportation (Caltrans) roadways open and safe for the traveling public. These operations are also resource intensive for the department. Caltrans has 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 will address that need by investigating practical, practice-ready research related to materials, equipment, and methods of snow and ice removal. Improving the efficiency and safety of snow and ice removal operations also helps Caltrans maintain fiscal responsibility.

### WHAT ARE WE DOING?

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 its twelve years of funding and overseeing research projects, the pooled fund has grown to include 33-member states, funding three to ten research projects annually. The group's latest projects and partnership initiatives have included a strong emphasis on implementing research results and sharing successful practices among agencies.

The Clear Roads pooled fund provides the critical funding and structure needed to evaluate these new tools and practices in both lab and field settings, to develop industry standards and performance measures, to conduct cost-benefit analyses, and to develop and evaluate new designs and practices that further improve winter highway safety and minimize environmental impacts.



DRISI provides solutions and knowledge that improves California's transportation system

This project responds to research and technology transfer needs not currently met by other pooled fund projects. Existing partners make every effort to coordinate with other agencies to avoid duplication of efforts and to encourage implementation of results.

This new phase of Clear Roads pooled fund will address both operational and management research needs, investigating the most effective tools and practices for clearing snow and ice; and for managing program resources, budgets, and performance measures. It will also include an even stronger emphasis on promoting the use of the research results in the field.

The project will provide 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. This new phase will also include expanded collaboration with other research organizations focused on winter maintenance (such as the Aurora pooled fund) to further leverage the research funding investment.

## WHAT IS OUR GOAL?

The goal is to implement practical, practice-ready research related to materials, equipment, and methods that have been deployed by other agencies across the country.

## WHAT IS THE BENEFIT?

This research will help benefit Caltrans by having direct access to all the investigations done by the Clear Roads project. These investigations include research into new equipment and materials that help with the snow clearing operations. Caltrans is also able to submit research projects that would directly benefit the department, as well as benefit from other research projects that are submitted by the other member states.

## WHAT IS THE PROGRESS TO DATE?

As of December 2020, below are some of the current Clear Roads projects being investigated:

- Developing a Test Bed Software to Qualify Plug and Play Technology
- Syntheses of Material Application Methodologies for Winter Operations
- Standards and Guidance for Using Mobile Sensor Technology to Assess Winter Road Conditions
- Weather Event Reconstruction and Analysis Tool
- Standard Specifications for Plow Blades with Carbide Inserts
- Aftermarket Cameras in Winter Maintenance Vehicles

Seven new projects were started as a result of the Spring 2021 Clear Roads Virtual Meeting:

1. Grip Sensor Technology and Salt Applications.
2. Best Practices for Protecting DOT Equipment from the Corrosive Effects of Chemical Deicers.
3. The Efficacy and Environmental Impact of Non-Chloride Deicers.
4. Training Module Development for CR 18-03 Evaluation of SSI/WSI Variables.
5. Evaluation of Electric Vehicle Technologies for Winter Operations.
6. Calculated Plow Cycle Times from AVL Data.
7. Determining the Migration of Chloride-based Deicers through Different Soil Types Adjacent to Chloride-treated Roadways.

For additional information, please contact the Task Manager.

## IMAGES



Image 1: Rotary blower removing snow from roadway



Image 2: Brine tank truck spreading salt brine on roadway

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