



Clear Roads Overview

AASHTO Committee on Maintenance

July 23, 2018

Charlotte, North Carolina

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Director of Highway Maintenance

Colorado Department of Transportation



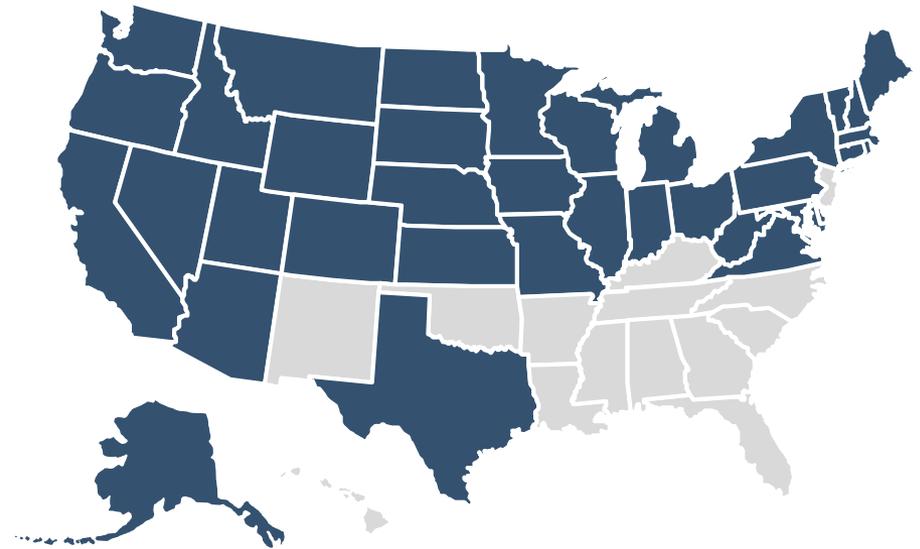
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Overview

Clear Roads Winter Highway Operations Pooled Fund, TPF-5(353), is a national research consortium that tests, develops, and advances materials, equipment, and methods for winter highway maintenance.

Currently 36 members.

AK	AZ	CA	CO	CT	DE
IA	ID	IL	IN	KS	MA
MD	ME	MI	MN	MO	MT
NE	ND	NH	NV	NY	OH
OR	PA	RI	SD	TX	UT
VA	VT	WA	WI	WV	WY



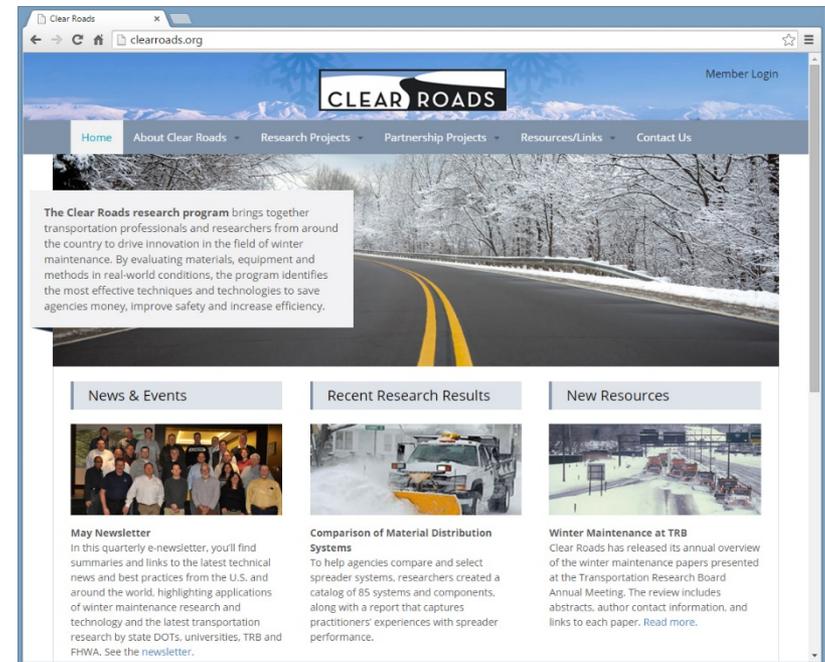


Core Activities

- Evaluate winter maintenance materials, equipment and methods.
- Develop specifications and recommendations.
- Study and promote innovative techniques and technologies.
- Support technology transfer by developing practical field guides and training curricula to promote the results of research projects.

Our Website, www.clearroads.org

- Go-to source for all program and project information
- Details on completed and in-progress research
 - All reports, guides, tools
 - Research briefs
 - Recorded closeout videos with investigator Q-and-A
- Clear Roads newsletter
- Meeting minutes





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New Research Projects

Mechanic/Operator Training for Upkeep of Winter Maintenance Equipment

Will improve the competencies of winter maintenance mechanics and operators related to maintenance and repair of snow fighting equipment's mechanical systems and the simple troubleshooting and repair of electronic systems.

Improved Metrics and Scoring Criteria for Winter Maintenance Materials

The intent of this project is to develop/confirm an accepted test procedure for measuring ice melting capacity as well as a standardized scoring criteria for each category of winter maintenance material currently on the PNS QPL to provide states with the means to evaluate/compare winter maintenance materials. This project will also ascertain the availability of alternative sources for sucrose additive and determine the feasibility of processing raw, unrefined sugar in aqueous sucrose solutions utilizing common brine-making equipment.



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New Research Projects (cont'd)

Defensive Driving for Snowplow Operators

Ascertain the root cause of different types of accidents and determine if there are any defensive driving skills, strategies, or changes in operations to prevent accidents and decrease risk to our plow drivers and traveling public alike.

High Performance Blade Evaluation

This project seeks to understand the amount of life we are achieving with high-performance blades on the various road surface types. This information can then be used to perform a cost/benefit to assist states in making more informed decisions in blade procurement.



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New Research Projects (cont'd)

Evaluation of SSI and WSI Variables

Locate all agencies (national and international) utilizing Storm Severity Index and/or Winter Severity Index, identify their variables used to measure SSI/WSI, statistically analyze each variable for consistency and variability, and recommend the most reliable variables for developing SSI and WSI.

Review and Summary of Pre-wet Methods and Procedures

Pre-wetting is widely used in the snow and ice industry to reduce bounce and scatter, activate salt, and inhibit corrosion. This project will help agencies identify appropriate methods, rates, and materials to meet the above purposes. Ultimately, we would like to develop a comprehensive guide to pre-wet, however this first step is to complete a thorough review of existing practice and research both nationally and internationally and identify needed research on this topic that would lead to development of a comprehensive guide to pre-wet.



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New Research Projects (cont'd)

Specifications for Snowplow Route Optimization

The goal of this project is to develop a business case for states that have not yet developed a snowplow route optimization program and are not sure where to begin. The outcome of this project will be the development of a standard bid package and the specifications that comprise the bid.

Alternative Methods for Deicing

This project seeks to better understand the role alternative methods for deicing, and to a lesser extent - materials, can play in achieving level of service standards.



Continuing Efforts of Clear Roads

Subject-based Web Pages (Year 2)

This project continues the work to provide its content in a subject-based format. Our website will allow one to quickly obtain information about specific snow and ice topics through past research, specifications, product experience, state DOT experience/lessons learned, informational videos, and the like.

Annual Survey of State Winter Maintenance Data (Year 4)

In 2017 Clear Roads completed the third year of a multi-year project to systematically gather, compile, and analyze a range of data from state DOTs related to their winter operations. As this effort continues, all state DOTs will be invited to participate in a survey to collect information about their winter resources, materials, and costs from the previous winter season. This data is provided in the format of an interactive map states can use to compare data and conduct analysis for their own agencies.



A New Ongoing Project for Clear Roads

Pacific Northwest Snowfighters Qualified Products List

The PNS QPL will be restructuring to become a direct initiative of Clear Roads. As part of this restructuring, the following will occur:

- The formation of a formal CR Technical Advisory Committee for the PNS to include representation from eastern and middle of U.S.
- An update/overhaul of the PNS website.
- Updated specification sheets.
- Process update(s) (how to get products on the QPL, how to remove products from the QPL)
- Establish process for continuous vendor communication.
- Support for a chemist to attend the spring CR meeting.
- Maintenance of the QPL including sample testing.



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Projects In-Progress

- 12-03 Understanding the Chemical and Mechanical Performance of S&I Control Agents on Porous or Permeable Pavements
- 14-03 Developing a Training Video and Manual for Best Practices and Techniques in Clearing Different Interchange Configurations and Other Geometric Layouts
- 15-01 Synthesis of Material Application Methodologies for Winter Operations
- 16-01 Utilization of AVL/GPS Technology: Case Studies
- 16-03 Standards and Guidance for Using Sensor Technology to Assess Winter Road Conditions
- 16-04 Emergency Operations Methodology for Extreme Winter Storm Events



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Projects In-Progress (cont'd)

- 16-05 Weather Event Reconstruction & Analysis Tool
- 16-06 Training Video for the Implementation of Liquid-Only Plow Routes
- 17-01 Integrating Advanced Technologies into Winter Operations Decisions
- 17-02 Standard Specifications for Plow Blades with Carbide Inserts
- 17-03 Aftermarket Cameras in Winter Maintenance Vehicles



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Recently Completed Projects

- 14-02 Quantifying the Impact that New Capital Projects Will Have on Roadway Snow and Ice Control (RSIC) Operations
<http://clearroads.org/project/14-02/>
- 15-02 Identification and Recommendations for Correction of Equipment Factors Causing Fatigue in Snowplow Operators
<http://clearroads.org/project/15-02/>



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Plug and Play Initiative

- Partnered with industry to develop a protocol that would support a “plug and play” approach to integrating electronic devices and sensors on plow trucks.
- Clear Roads research developed an initial specification, working with public and private partners for buy-in.
- A phase 2 follow-up was recently completed to define data and transmission standards.
- Clear Roads is currently in the process of contracting a project to develop of validation software in ongoing partnership with stakeholders.



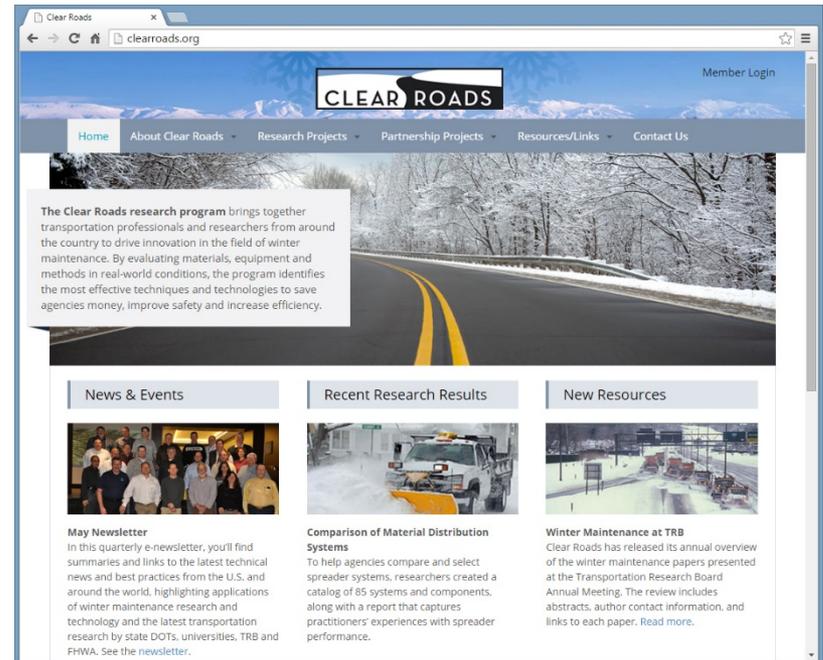
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Snowplow Operator and Supervisor Training

- 22 training modules covering all aspects of winter maintenance.
- Each module contains a comprehensive PPT, an instructor guide, and student evaluations.
- Modules are customizable and can be used as stand-alone training or incorporated into existing training programs.
- To learn more or to request access to the training modules, please visit:
<http://clearroads.org/request-for-training-modules-form/>
 - Or contact Greg Waidley, Clear Roads Administrator, at (608) 490-0552 or greg.waidley@ctcandassociates.com

Our Website, www.clearroads.org

- [Meeting Minutes](http://clearroads.org/meetings/) <http://clearroads.org/meetings/>
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Get Involved

- Join the Clear Roads pooled fund (if you haven't already).
- Work with your agency's Clear Roads representative.
 - Get guidance on using research products.
 - Learn about research-in-progress.
 - Suggest new research ideas.
- Contact Clear Roads. *How can we help you put our results to work?*



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For More Information

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