Clear Roads Overview

National Winter Maintenance Peer Exchange
September 12-13, 2017
Pittsburgh, PA

www.clearroads.org
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 35 members.
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
New Research Projects

A Comprehensive Guide to Pre-Wet
Investigation of pre-wetting rates, pre-wetting delivery equipment and systems, and pre-wetting materials. The aim will be to help DOTs better achieve the benefits associated with pre-wetting: bounce and scatter reduction, salt activation, and corrosion inhibition.

Winter Preparedness Webpage
This project will seek to standardize messaging, to be presented in a clear and professional manner, that all of our states can use. This particular effort is aimed at developing a Winter Weather Preparedness Web Page (or pages) that will focus on educating the public about being prepared for winter.
New Research Projects (cont’d)

Integrating Advanced Technologies into Winter Operations Decisions

There are many new technologies available to evaluate road conditions and measure response. However, many agencies still rely on older technologies/practices for decision making, or have some new technologies, but don’t incorporate them into decision making. This project will develop a comprehensive guide to provide a blueprint on what the future of winter operations is and how these technologies, and the parameters they collect, should be used for decision-making.

Standard Specification for Carbide Insert Blades

This project involves compiling carbide blade specifications from state DOTs, and related information from blade vendors, to develop a standard specification. The goal will be to improve the buying power connected to a single agreed-upon specification, which procurement coalitions could potentially use for bidding.
New Research Projects (cont’d)

Aftermarket Cameras in Winter Maintenance Vehicles- Quantity and Location

The scope of this project includes recommendations about specific cameras to use, associated technology, installation (mounting location), costs (upfront and lifecycle for maintenance, repair and replacement), and networking (how well the cameras integrate with onboard automatic vehicle location [AVL] technology, the expected data load of the imagery). The primary aim of the added camera imaging is to assist with operational decisions as well as providing state DOTs the best possible information for selecting and employing such cameras.
New Synthesis Projects

Accuracy of Salt Application Equipment
The synthesis report will show the level of confidence the DOTs have in the calibration of their spreading equipment and will seek to discover other more accurate means to measure output. Accurate measurement of salt output will help with inventory control; display how much salt is being applied during a storm; and when coupled with a GPS/AVL system, show where it is being applied.

Use of Solid Materials for Anti-icing/Pre-treatment
Historically pre-treatment or anti-icing has been accomplished with the use of liquid products such as CaCl, MgCl or brine. Recently, as we have transitioned to higher pre-wet rates for solid applications, we have had crews performing anti-icing with solid material. This synthesis will seek to find answers to the following questions: What are the conditions when this may be appropriate? What is the cost/benefit of this approach when compared to traditional liquid applications? Is there an increased environmental impact to this approach?
New Synthesis Projects (cont’d)

Effective Snow and Ice Personnel and Equipment for Storm Activation
This synthesis project will attempt to answer the following questions: Do states activate by percentages as the storm approaches? What percent activation is utilized during times of borderline temps with wet road conditions? Do states utilize storm monitors to relay information to field forces on conditions? Also, at what time are the resources secured after an event?

Website Search Function/Website Re-organization
The intent of this project is to develop a high quality winter web site on preparedness for the general public. It would provide a resource for all DOTs and public works entities to link to in order to put out clear, consistent, and informative messages.
New Synthesis Projects (cont’d)

Annual Survey of State Winter Maintenance Data
This is the continuation (3rd year) of a multi-year project to systematically gather, compile, and analyze a range of data from state DOTs related to their winter operations.
Projects In-Progress

• 12-03 Understanding the Chemical and Mechanical Performance of S&I Control Agents on Porous or Permeable Pavements

• 14-02 Quantifying the Impact that New Capital Projects Will Have on Roadway Snow and Ice Control (RSIC) Operations

• 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

• 15-02 Identification and Recommendations for Correction of Equipment Factors Causing Fatigue in Snowplow Operators
Projects In-Progress (cont’d)

• 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

• 16-05 Weather Event Reconstruction & Analysis Tool

• 16-06 Training Video for the Implementation of Liquid-Only Plow Routes
Recently Completed Projects

- 12-04 Snowplow Operator and Supervisor Training
- 14-04 Plug and Play, Phase 2
- 14-05 Snow Removal Performance Metrics - Phase I: Synthesis
- 14-07 Snowplow Route Optimization
- 15-03 North American Study on Contracting Snow and Ice Response
Partnerships

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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- Meeting Minutes 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?*
For More Information

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