

State Planning and Research Program Quarterly Report

PROJECT TITLE: Clear Roads Administration, Research Support and Information Services

OBJECTIVES: Clear Roads is a pooled fund research project aimed at rigorous testing of winter maintenance materials, equipment, and methods for use by highway maintenance crews. The Clear Roads Technical Advisory Committee (TAC) contracted with CTC & Associates LLC to perform the administrative functions associated with maintaining the pooled fund project as well as information services that support technology transfer. This report summarizes activities conducted under this contract over the last three months.

PERIOD COVERED: July through September 2022

PARTICIPATING AGENCIES: Minnesota Department of Transportation

PROJECT MANAGER: Tom Peters

SP&R PROJECT NO:
1030951

PROJECT IS:

LEAD AGENCY: MnDOT

Planning
 Research &
Development

PRINCIPAL INVESTIGATOR:
CTC & Associates LLC

PROJECT BUDGET:
\$1,238,595.97

PROJECT EXPENDITURES TO DATE:
\$1,007,764.23

WORK COMPLETED:

TAC Meetings

- Prepared materials for the 2022 fall in-person meeting. Coordinated with MnDOT, Indiana DOT, Indiana Government Center, hotel, and caterer to prepare for the meeting.
- Attended and supported the 2022 fall in-person meeting on September 20-22. Prepared agenda, budget, meeting materials, and minutes and provided them to the TAC.
- Provided details to MnDOT to post an RFB for the 2023 spring in-person meeting in Austin, TX.

Administration and Marketing

- Updated the Clear Roads website with current project status, project deliverables, webinars, administrative documents, and modifications to the home page.
- Created new "Tools" webpage for all online tools developed from Clear Roads research projects.
- Published a new webpage detailing Clear Roads involvement in AASHTO's Winter Maintenance Product Proficiency Sample Program.
- Maintained and updated commitments, transfers, and overall budget information for the pooled fund in coordination with MnDOT. Communicated with TAC members and their appropriate pooled fund personnel to facilitate transfers for fiscal year 2022.
- Supported efforts of TAC members, including changes in state representation. Total number of members has increased to 38 with the inclusion of Oklahoma DOT and the Kentucky Transportation Cabinet.

Information Services

- Used Constant Contact to distribute 7 Clear Roads news posts.
- Collected and displayed the first set of responses to the Clear Roads Snow and Ice Equipment Online Database.
- Completed research briefs on the following projects:
 - Understanding the NaCl Phase Diagram
- Continued work on the following research brief:
 - AWSSI Enhancements
- Continued work on the project, Evaluation of Indoor Automated Stockpile Measurement Systems.
- Completed two articles for the APWA Reporter.
 - The first is for the August issue and will cover the project, Entry-Level Driver Training (CDL) for Maintenance Equipment Operators that was published in August.
 - The second is for the Winter issue (October) and will address recently completed Clear Roads projects that advance winter maintenance decision-making / efficiency. Those projects include:
 - Measuring the Efficiencies of Tow Plows and Wing Plows
 - Synthesis of Technical Requirements and Considerations for Automated Snowplow Route Optimization
 - Training Module Development for Evaluation of Storm Severity Index and Winter Severity Index Variables
- Requested products for inclusion in the Clear Roads Product Experience Survey.

- Commenced collection of data for the 2021-2022 Annual Survey of State Winter Maintenance Data.
- Continued work on an improved online deicer product submission form for vendors on the Qualified Products List webpage. Waiting for states to complete Beta testing of the online software.
- Commenced work on a synthesis project entitled, Corrosion and Connectors Don't Mix.

Research Support

New projects

- Received proposals for the following three new FY2022 projects. Posted them on the member's only page of the website.
 - Comprehensive Guide to Pre-Wetting Application Rates and Methods
 - Evaluation of Direct Liquid Application of Salt Brine Versus Granular Salt as Measured Through Various Performance and Safety Metrics
 - Use of Dashboards for Winter Operations
- Did not receive any proposals for the following project. Began inquiries to identify investigators to send re-posted RFP to.
 - Best Management Practices for Liquid Chloride Storage and Pumping Systems
- Coordinated with MnDOT to post an RFP for the following FY2022 project selected during the 2022 spring meeting.
 - Effects of Additives in Lowering the Freezing Point of Deicing Salts

Research in progress

- Continued coordination with the PIs and subcommittees to schedule check-in teleconferences and facilitate the review of deliverables for:
 - High Performance Blade Evaluation
 - Standard Test Procedures for Ice Melting Capacity of Deicers
 - Evaluation of Indoor Automated Stockpile Measurement Systems (conducting this CTC & Associates project)
 - Expanded Use of AVL/GPS Technology
 - Using GIS to Highlight Highway Segments Sensitive to Deicing Materials
 - Salt Shed Design Template
 - Grip Sensor Technology and Salt Applications
 - Update to CR 13-04: Best Practices for Protecting DOT Equipment from the Corrosion Effect of Chemical Deicers
 - Efficacy, Cost, and Impacts of Non-Chloride Deicers
 - Training Module Development for Evaluation of Storm Severity Index and Winter Severity Index Variables
 - Evaluation of Electric Vehicle Technologies and Alternative Fuels for Winter Operations
 - Calculating Plow Cycle Times from AVL Data
 - Determining the Migration of Chloride-based Deicers through Different Soil Types

Implementation

- Developed a brief report that captures the implementation opportunities and impacts for each research project.
- Continued to provide access (285 agencies / entities) to the training modules developed by the Clear Roads project, Snowplow Operator and Supervisor Training.
- Provided access (815 agencies / entities) to the training modules developed by the Clear Roads project, Entry-Level Driver Training (CDL) for Maintenance Equipment Operators.
- Coordinated the completion of project closeout forms for recently completed projects.
- Continued to facilitate implementation discussions (at the program and project level) during regular project and face-to-face meetings as appropriate.

SUMMARY OF ACTIVITIES EXPECTED TO BE PERFORMED NEXT QUARTER:

- Coordinate the process of finalizing the 2022 research proposals (work plans) once the PIs are awarded.
- Provide support to MnDOT in responding to questions related to the 2022 RFPs.
- Send out call for research problem statements from academia in advance of the FY2023 research development process.
- Complete collection of equipment and administer the survey for the 2021-2022 Product Experience Survey.
- Complete the synthesis project, Corrosion and Connectors Don't Mix.
- Commence work on the following research briefs:
 - Evaluation of Indoor Automated Stockpile Measurement Systems (CTC & Associates project)
 - Expanded Use of AVL/GPS Technology
- Complete work on the following research brief:
 - AWSSI Enhancements
- Conducted project interim / closeout webinars for the following projects:
 - Standard Test Procedures for Ice Melting Capacity of Deicers
 - Evaluation of Indoor Automated Stockpile Measurement Systems
- Re-post the RFP for the project, Best Management Practices for Liquid Chloride Storage and Pumping Systems.
- Coordinate with the subcommittee to develop a scope of work for a project to investigate pH waivers for the QPL.
- Continue to send draft dissemination plans to subcommittees for their review and comment.
- Continue to update the Clear Roads website with both project and administrative information.
- Assist with coordinating and tracking funding transfers to TPF-5(479).
- Complete and submit the final report for TPF-5(218).
- Research, write, and publish winter maintenance news posts.
- Use Constant Contact to distribute the winter maintenance news posts, completed research results, and other information.

- Continue to coordinate with investigators and the Clear Roads subcommittees on projects in progress.
- Continue to coordinate the completion of post project closeout forms.
- Commence the Clear Roads Research Implementation Survey.

STATUS AND COMPLETION DATE:

The contract tasks are progressing as planned. The current completion date is June 30, 2023.