

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: April through June 2021

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:
\$1,037,155.52

PROJECT EXPENDITURES TO DATE:
\$685,890.40

WORK COMPLETED:

TAC Meetings

- Attended and supported the 2021 spring virtual meeting on April 13-15. Prepared agenda, budget, meeting materials, and minutes and provided them to the TAC.
- Facilitated discussions with Sheraton Hotel, their A/V contractor, and MnDOT to extend the contract between MnDOT and the Sheraton Hotel for the fall meeting in September.

Administration and Marketing

- Updated the Clear Roads website with current project status, project deliverables, webinars, administrative documents, and modifications to the home page.
- 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 2021.
- Continued work on an improved online deicer product submission form for vendors on the Qualified Products List webpage.
- Worked on an Equipment Online Database for the Clear Roads website.
- Supported efforts of TAC members, including changes in state representation. Total number of members remains at 36.

Information Services

- Used Constant Contact to distribute 10 Clear Roads news posts.
- Continued work on:
 - Clear Roads Snow and Ice Equipment Online Database
- Updated the Clear Roads Generic Presentation to include 2021 projects along with other updates and re-posted it on the members only portion of the site for use by membership, including presentation at the AASHTO's SICOP Annual Meeting and the Road Weather Management Stakeholder Meeting.
- Completed research briefs on the following projects:
 - Integrating Advanced Technologies into Winter Operations Decisions
 - Evaluation of SSI and WSI Variables
 - Integrating Advanced Technologies into Winter Operations Decisions
 - Standard Specifications for Plow Blades with Carbide Inserts
- Began work on the following research briefs:
 - Aftermarket Cameras in Winter Maintenance Vehicles
 - Review and Summary of Pre-wet Methods and Procedures
- Conducted project closeout webinars for the following projects:
 - Review and Summary of Pre-wet Methods and Procedures
 - Aftermarket Cameras in Winter Maintenance Vehicles

- Continued work on drafting an article on the defensive driving / safe driving modules for the October 2021 issue of the APWA Reporter.
- Completed literature searches for the 2021 research projects to assist with project scoping efforts.
- Continued collecting products for use in the Clear Roads Product Experience Survey.
- Conducted project scoping on the Annual Survey of State Winter Maintenance Data to incorporate winter severity through the Accumulated Winter Season Severity Index.

Research Support

New projects

- Facilitated meetings of the project subcommittees for the following seven new FY2021 projects selected during the spring meeting and drafted scopes for subcommittees and TAC to review prior to submitting to MnDOT to be posted as RFPs.
 - Grip Sensor Technology and Salt Applications
 - Update to CR 13-04 Best Practices for Protecting DOT Equipment from the Corrosive Effects of Chemical Deicers
 - The Efficacy and Environmental Impact of Non-Chloride Deicers
 - Training Module Development for CR 18-03 Evaluation of SSI/WSI Variables
 - Evaluation of Electric Vehicle Technologies for Winter Operations
 - Calculated Plow Cycle Times from AVL Data
 - Determining the Migration of Chloride-based Deicers through Different Soil Types Adjacent to Chloride-treated Roadways
- Coordinated with MnDOT, project PIs, and Clear Roads subcommittees to kick off the following FFY2020 projects:
 - Evaluation of Indoor Automated Stockpile Measurement Systems
 - Expanded Use of AVL/GPS Technology
 - Using GIS to Highlight Highway Segments Sensitive to Deicing Materials

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
 - Expanding Application Rate Guidance for Salt Brine Blends for Direct Liquid Application and Anti-icing
 - Recruitment and Retention of Highway Maintenance Workers
 - Measuring the Efficiencies of Tow Plows and Wing Plows
 - Synthesis of Technical Requirements and Considerations for an Automated Snowplow Route Optimization RFP Template
 - Entry-Level Driver Training for Maintenance Equipment Operators
 - Understanding the NaCl Phase Diagram
 - Evaluation of Indoor Automated Stockpile Measurement Systems
 - Expanded Use of AVL/GPS Technology
 - Using GIS to Highlight Highway Segments Sensitive to Deicing Materials
 - Salt Shed Design Template
 - AWSSI Enhancements, Phase 2
- Worked with the PI and subcommittee to facilitate review of final deliverables and closeout the following projects:
 - Aftermarket Cameras in Winter Maintenance Vehicles
 - Review and Summary of Pre-wet Methods and Procedures

Implementation

- Developed a brief report that captures the implementation opportunities and impacts for each research project.
- Continued to provide access (222 agencies / entities) to the training modules developed by the Clear Roads project, Snowplow Operator and Supervisor Training.
- Coordinated with the TAC Chair to prepare a presentation for AASHTO's SICOP Annual Meeting and the Road Weather Management Stakeholder Meeting.

SUMMARY OF ACTIVITIES EXPECTED TO BE PERFORMED NEXT QUARTER:

- Finalize materials for, and attend / support, the fall in-person meeting in Madison, WI.
- Provide support to MnDOT in responding to questions related to 2021 RFPs.
- Coordinate the review of responses to the 2021 RFPs.
- Continue work on the Clear Roads Snow and Ice Equipment Online Database.
- Develop and administer survey for the 2020-2021 Product Experience Survey.
- Send draft dissemination plans for 2020 research projects to subcommittees for their review.
- Continue to update the Clear Roads website with both project and administrative information.
- Assist with the coordinating and tracking funding transfers to the pooled fund TPF-5(353).
- Research, write, and publish winter maintenance news posts.
- Use Constant Contact to distribute the winter maintenance news posts, completed research results, and other information.
- Produce briefs of completed research projects.
- Continue to coordinate with investigators and the Clear Roads subcommittees on projects in progress.

➤ Continue to coordinate the completion of post project closeout forms and research use surveys.

STATUS AND COMPLETION DATE:

The contract tasks are progressing as planned. The contract was amended this quarter, so the current contract completion date is now June 30, 2022.