

# 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:** October through December 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:**  
\$813,870.57

## WORK COMPLETED:

### TAC Meetings

- Completed the minutes for the 2021 fall face-to-face meeting and posted them on the Clear Roads website.
- Coordinated with MnDOT to process a request for bid for the 2022 spring face-to-face meeting in Austin, Tx.
- Participated in a planning meeting for the next National Winter Maintenance Peer Exchange – targeting fall 2022.

### 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.
- Continued work on the Clear Roads Snow and Ice Equipment Online Database.
- Supported efforts of TAC members, including changes in state representation. Total number of members remains at 36.

### Information Services

- Used Constant Contact to distribute 5 Clear Roads news posts.
- Completed research briefs on the following project:
  - Aftermarket Cameras in Winter Maintenance Vehicles
- Continued work on the following research briefs:
  - Expanding Application Rate Guidance for Salt Brine Blends for Direct Liquid Application and Anti-icing
  - Measuring the Efficiencies of Tow Plows and Wing Plows
  - Synthesis of Technical Requirements and Considerations for Automated Snowplow Route Optimization
  - Entry-Level Driver Training (CDL) for Maintenance Equipment Operators
  - AWSSI Enhancements
- Conducted project closeout webinars for the following projects:
  - Synthesis of Technical Requirements and Considerations for Automated Snowplow Route Optimization
  - Expanding Application Rate Guidance for Salt Brine Blends for Direct Liquid Application and Anti-icing
- Completed and posted the 2020-2021 version of the Clear Roads Product Experience Survey.
- Completed and posted the survey for the 2020-2021 Annual Survey of State Winter Maintenance Data.

### Research Support

#### *New projects*

- Coordinated with MnDOT, project PIs, and Clear Roads project subcommittees to finalize work plans and budgets in order to get the FY2021 projects below under contract.
  - 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
    - Reposted the RFP for this project in November, to which Clear Roads received one response.
  - 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
- Sent out call for call for research problem statements to the broader winter maintenance community, including academia. This new effort preceded the 2022 research development process.

*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
  - 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
- Worked with the PI and subcommittee to facilitate review of final deliverables and closeout the following projects:
- Expanding Application Rate Guidance for Salt Brine Blends for Direct Liquid Application and Anti-icing
  - Measuring the Efficiencies of Tow Plows and Wing Plows
  - Synthesis of Technical Requirements and Considerations for an Automated Snowplow Route Optimization RFP Template

*Implementation*

- Developed a brief report that captures the implementation opportunities and impacts for each research project.
- Continued to provide access (241 agencies / entities) to the training modules developed by the Clear Roads project, Snowplow Operator and Supervisor Training.
- Provided access (197 agencies / entities) to the training modules developed by the Clear Roads project, Entry-Level Driver Training (CDL) for Maintenance Equipment Operators.

**SUMMARY OF ACTIVITIES EXPECTED TO BE PERFORMED NEXT QUARTER:**

- Plan and develop materials for the 2022 spring meeting. This meeting will either be virtual in April or in-person in Austin, Texas in May.
- Continue to provide support to MnDOT to get the FY2021 projects under contract.
- Continue work on the Clear Roads Snow and Ice Equipment Online Database.
- Complete work on the following research briefs:
- Expanding Application Rate Guidance for Salt Brine Blends for Direct Liquid Application and Anti-icing
  - Measuring the Efficiencies of Tow Plows and Wing Plows
  - Synthesis of Technical Requirements and Considerations for Automated Snowplow Route Optimization
  - Entry-Level Driver Training (CDL) for Maintenance Equipment Operators
  - AWSSI Enhancements
- 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).
- Draft 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.
- Produce briefs of completed research projects.
- Compile and post on the website the winter maintenance-related technical sessions at the 2022 TRB Annual Meeting.
- 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 current completion date is June 30, 2022.