

State Planning and Research Program Quarterly Report

PROJECT TITLE: *Evaluation of Direct Liquid Application of Salt Brine vs Granular Salt as Measured through Various Performance and Safety Metrics*

OBJECTIVES: To collect and synthesize available information about the differences between the Direct Liquid Application (DLA) of salt brine (mixed with any one of up to three different additives applied as recommended depending on the situation) and the application of granular salt as reflected in various performance and safety metrics.

PERIOD COVERED: July 1 to September 30, 2024

PARTICIPATING AGENCIES: Minnesota Department of Transportation, Clear Roads Technical Advisory Committee, and the Board of Regents of the University of Wisconsin System on behalf of the University of Wisconsin – Madison.

PROJECT MANAGER:

Hafiz Munir / Tom Peters

SP&R PROJECT NO:

MnDOT Contract No.
1036345

PROJECT IS:

☐ Planning
☒ Research & Development

LEAD AGENCY: MnDOT

PRINCIPAL INVESTIGATOR:

David A. Noyce, UW-Madison

Federal Project Number:
TPF-5(479)

PROJECT BUDGET:

\$125,000

PROJECT EXPENDITURES TO DATE:

\$ 108,607.90

WORK COMPLETED:

Part 1

- **Task 0: Project Management**

- Project administration, coordination, management, progress reports, and invoicing.
- Kick off meeting on July 13, 2023.

- **Task 1: Literature Review**

- Review of relevant literature on performance measures in winter maintenance and the observed effects of winter weather on traveling speed, recovery time, delay, volume, capacity, friction, and crashes.
- Draft literature review submitted on July 31, 2023.
- Addressed TAC comments and submitted revised literature review for final approval on September 29, 2023.

- **Task 2: Agency Survey**

- For this task, information gathered from the literature review was considered to prepare the questions for the survey.
- Draft survey questions were submitted on August 30, 2023.
- The research team met with the Clear Roads project committee on September 9, 2023, to go over the proposed survey questions.
- The research team addressed feedback provided and prepared the online version of the survey which was submitted to the Clear Roads project committee on September 27, 2023 for final review.

- The research team met with the Clear Roads project committee on December 14, 2023, and presented the results of the survey of practice. After deliberation, the project committee approved to move forward with Part 2 of the project.
- On December 15, 2023, the research team submitted the draft of Task 3: Field Testing Protocol

Part 2

• Task 3: Field Testing Protocol

- The research team reached out to agencies that indicated their willingness to collect data for the study.
- Jefferson County WI shared available data from past storms and has committed to conduct a control study this upcoming winter season.
- Iowa has shared historical storm data and applications. The research team is waiting for historical AVL data. Iowa has committed to help facilitate a couple of controlled studies and is coordinating with potential winter maintenance shops that will be willing to conduct the study in Iowa.

Amendment request

An amendment request was approved to extend the project until December 31, 2025. The extension will contribute to coordinate field data collection during the 2024-2025 winter season. Due to limited time and agency engagement, data was not collected for the 2023-2024 winter season.

SUMMARY OF ACTIVITIES EXPECTED TO BE PERFORMED NEXT QUARTER:

Part 2

• Task 3: Field Testing Protocol

- The research team will continue efforts to work with agencies to collect field data in control studies.
- Field data collection will be coordinated with agencies to select and collect data on study and control routes.
- Report forms and processes for agencies to share data will be developed and distributed.
- Field data collection should be initiated if winter storms and treatments are observed at study locations.

STATUS AND COMPLETION DATE:

An amendment request was approved, and the project is anticipated to be completed by December 31, 2025.