

## State Planning and Research Program Quarterly Report

### PROJECT TITLE:

*Expanding Application Rate Guidance for Salt Brine Blends for Direct Liquid Application and Anti-Icing*

### OBJECTIVES:

- The objective of this project is to expand liquid application rates guidance for anti-icing and deicing.
- This project aims at identifying commonly used liquid blends and applications rates (from literature and survey of practice) to test them at five to seven states and develop guidance on blends and application rates.
- Field data will be used to evaluate performance measures and quantify the effectiveness of liquid applications at lower to moderate temperatures for diverse weather and pavement conditions.

**PERIOD COVERED:** July 1 to September 30, 2021

### PARTICIPATING AGENCIES:

- Minnesota Department of Transportation and the Clear Roads Technical Advisory Committee
- 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 Work Order 1

### PROJECT IS:

\_\_\_\_ Planning  
  X   Research & Development

### LEAD AGENCY:

MnDOT

Federal Project Number:  
TPF-5(353)

### PRINCIPAL INVESTIGATOR:

David A. Noyce, UW-Madison

### PROJECT BUDGET:

\$150,000

### PROJECT EXPENDITURES TO DATE:

\$86,819.23

### WORK COMPLETED:

- Task 0: Project Management
  - Project administration, coordination, management, progress reports, and invoicing.
  - Kick off meeting (July 9, 2020).
- Task 1: Literature Review
  - Review of relevant literature on liquid applications, effectiveness, performance measures, and application rates for anti-icing, deicing, and pre-wet.
  - Draft literature review submitted July 31, 2020.
  - Addressed TAC comments and submitted revised literature review for final approval on September 30, 2020.
- Task 2: Survey of Practice
  - Draft of proposed questionnaire and list of contacts was submitted August 31, 2020.
  - Addressed comments and recommendations from TAC.
  - Sent out survey September 28, 2020.
  - Survey closed October 28, 2020.
  - Additional efforts were made to get responses from specific agencies after the survey closed.
  - The final deliverable for the survey of practice was updated to reflect the additional responses that were recorded after the survey closed.
  - Reviewed responses and identified potential locations for data collection.
  - Reach out to 10 agencies willing to participate and coordinated efforts to collect field data.
- Task 3: Field Testing Protocol
  - Based on the information gathered from the literature review and survey of practice, the study design will consist of collecting data at study, test, and control routes.
  - Draft of field-testing protocol was submitted September 30, 2020.
  - After addressing the TAC's comments and feedback, the final deliverable of the field-testing

protocol was submitted November 30, 2020.

- TAC Project Progress and Update Meeting
  - The research team met with the project TAC on November 4, 2020 and provided a summary of the survey responses and update of the progress of the project. With the TAC approval, the research team proceeded to work on phase two of the project.
- Task 4: Field Data Collection
  - The research team scheduled calls and coordinated efforts to collect field data at the corresponding agencies.
  - During the calls, some of the responses of the survey were discussed for clarification and potential routes were explored.
  - Agencies were asked to submit details of the routes where data collection will be conducted for the project records. Also, based on each agency's feedback, online report forms were developed for each agency to submit field data for every storm monitored.
  - Access to online forms were provided on Tuesday December 23, 2020.
  - The research team was on call during the winter to answer questions, facilitated data submission, and provided any assistance to the agencies submitting data for the project.
  - Data submitted was regularly monitored and the research team regularly contacted agencies.
  - Access to online forms will close April 30, 2020.
  - The research team will start reviewing data collected.
  - Raw data was submitted May 31, 2021
- Task 5: Development of Application Rates Guidance
  - Data collected was processed and application rates were developed.
  - Application rates were shared with experts from different jurisdictions: Iowa, Colorado, Oregon, Illinois, and Wisconsin. Experts' feedback was documented and considered to revise application rates.
  - The research team also met with the TAC and received feedback.

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

- Task 5: Development of Application Rates Guidance
  - Revision of application rates below 15°F for shake and bake applications with salt brine.
- Task 6: Final Report and Webinar
  - Preparation of draft report documenting the entire research effort following Clear Roads project committee required format which will be submitted for review on October 31, 2021.

**STATUS AND COMPLETION DATE:**

On schedule and project to be completed by December 31, 2021.