

State Planning and Research Program Quarterly Report

PROJECT TITLE: *Determining the Migration of Chloride-Based Deicers through Different Soil Types*

OBJECTIVES: This project aims to achieve a clear, quantitative picture about the physicochemical properties of various types of soils (texture-based, commonly used in the areas of interest) and migration behavior of selected deicers through these soil types.

PERIOD COVERED: January 1 to March 31, 2024.

PARTICIPATING AGENCIES: Minnesota Department of Transportation, Clear Roads Technical Advisory Committee, Washington State University (Prime), and Roadtech, Inc. (Subcontractor).

PROJECT MANAGER:

Hafiz Munir / Tom Peters

SP&R PROJECT NO:

MnDOT No. 1047792

PROJECT IS:

☐ Planning

☒ Research & Development

LEAD AGENCY: MnDOT

Federal Project No.

TPF-5(353)

PRINCIPAL INVESTIGATOR:

Xianming Shi, Ph.D., P.E., WSU

ANNUAL BUDGET:

\$99,980

PROJECT EXPENDITURES TO DATE:

\$87,049

WORK COMPLETED:

Project Management: The PI submitted the quarterly progress report in Jan. 2024. A six-month no-cost time extension was approved by MnDOT, which extended the project end date to Nov. 30, 2024.

Task 1. Literature Review and Survey (100% complete).

Task 2. Developing the Testing Plan (100% complete).

Task 3: Execution of the Testing Plan (70% complete).

SUMMARY OF ACTIVITIES EXPECTED TO BE PERFORMED NEXT QUARTER:

Work in the coming quarter will consist of project management as well as the completion of Task 3b (Execution of Specific Tests) and the initiation of Task 3c (Compiling Results).

STATUS AND COMPLETION DATE:

The updated project timeline is as follows. We are significantly **behind schedule** in the execution of the laboratory experimental plan, due to underestimated complexity of soil column tests, unexpected delay in reconfiguring the horizontal column tests, and delays in fabricating additional soil columns (to greatly increase the number of soil column tests we could run concurrently, because each test needs 5 replicates). With the addition of new soil columns, we estimate that it would take **another six months** before we can conclude all the laboratory tests, i.e., Task 3 (draft deliverable on Sept. 31, 2024, instead of Feb. 28, 2024). To accelerate the lab testing, we'd like to seek approval by the project panel for us to proceed with Task 4 without waiting for the completion of Task 3, i.e., additional lab testing using the beet juice/salt brine blend.

Task	Current Task Start Date	Current End Date for Task Approval	Revised Task Start Date	Revised Due Date to Submit Draft Deliverables	Revised End Date for Task Approval
1	06/01/2022	03/31/2023	No Change	01/31/2023	No Change
2	12/01/2022	03/31/2023	No Change	01/31/2023	No Change
3	04/01/2023	10/31/2023	04/01/2023	02/28/2024	04/30/2024
4	10/01/2023	01/31/2024	03/01/2024	04/30/2024	06/30/2024
5	09/01/2023	01/31/2024	04/01/2024	05/31/2024	07/31/2024
6	01/01/2024	05/31/2024	05/01/2024	08/31/2024	10/31/2024