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: July 1 – October 31, 2024

PARTICIPATING AGENCIES: Minnesota Department of Transportation, Clear Roads Pooled Fund Study, Washington State University, and Roadtech, Inc.

PROJECT MANAGER: Hafiz Munir / Tom Peters **LEAD AGENCY**: MnDOT **PRINCIPAL INVESTIGATOR**: Xianming Shi, Ph.D., P.E., WSU	**SP&R PROJECT NO**: MnDOT No. 1047792 Federal Project No. TPF-5(353)	PROJECT IS: ____ Planning _X_ Research & Development
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. We will submit another 6-month no-cost time extension in October 2024.

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

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

Task 3: Execution of the Testing Plan (80% complete). We submitted a summary of experimental testing results thus far, in April 2024. Please see the status info below.

Task 4. Execution of the Testing Plan- additional lab testing using the beet juice/salt brine blend (20% 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 current project timeline is as follows. We are still significantly **behind schedule** in the execution of the laboratory experimental plan, due to underestimated complexity of soil column tests, unexpected delay in fabricating and reconfiguring the horizontal column tests. With the addition of new soil columns we recently received, we have generated more test result incorporating Task 3 and Task 4 (additional lab testing using the beet juice/salt brine blend). We are actively reviewing these results to ensure their replicability. We estimate that it would take **another five months** before we can conclude all the laboratory tests, i.e., Task 3 and Task 4 (draft deliverable on -March 31, 2025, instead of Feb. 28, 2024).

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