State Planning and Research Program
Quarterly Report

PROJECT TITLE: *Grip Sensor Technology and Salt Applications*

OBJECTIVES: The goal of this project is to examine grip, or friction, as a viable data source for informing winter maintenance operations (WMO). The project will synthesize information gathered on the use of grip in WMO and develop a methodology to apply friction values in an algorithm which informs a decision matrix tool to advise winter maintenance operators on appropriate winter maintenance activities and material application rates.

PERIOD COVERED: April 1 – June 30, 2025

PARTICIPATING AGENCIES: Minnesota Department of Transportation, Clear Roads Technical Advisory Committee, and the Western Transportation Institute at Montana State University.

PROJECT MANAGER: Hafiz Munir / Tom Peters **LEAD AGENCY**: MnDOT **PRINCIPAL INVESTIGATOR**: Laura Fay, WTI, MSU	**SP&R PROJECT NO**: MnDOT Contract No. 1047786 Federal Project Number: TPF-5(353)	**PROJECT IS:** _____ Planning __X__ Research & Development

ANNUAL BUDGET: $149,977	**PROJECT EXPENDITURES TO DATE**: $ 137,641 (estimated)

WORK COMPLETED:
- The kickoff meeting was held April 5, 2022. The presentation and notes from the kick-off meeting were submitted April 14, 2022.
- The Task 1 literature review and Task 2 draft survey questionnaire was submitted June 27, 2022. A meeting was held September 2, 2022, to discuss the deliverables and next steps. No comments were received on the Task 1 Literature Review and the task was approved September 19, 2022.
- The Task 2 survey was approved by MSU IRB. The survey was sent out September 21, 2022, and closed October 21, 2022. Task 2 Survey Results were submitted for review November 4, 2022. A meeting was held November 18, 2022, to discuss the deliverable and receive comments. The revised Task 2 Survey Results were submitted November 18, 2022, along the meeting notes and slide deck.
- Task 3 Case Studies – follow-up interviews were conducted from October 2022 through March 2023. The Task 3 Case Studies were submitted for review March 8, 2023. A meeting was held March 21, 2023, to discuss the deliverable and received comments. Meeting notes and slide deck were submitted March 21, 2023. Task 3 approved March 29, 2023.
- Task 4 Grip & Salt Application Rate Algorithm/Decision Matrix was submitted February 18, 2025. Task 4 was presented to CR Panel on April 10, 2025. Task 4 was revised based on feedback and resubmitted May 8, 2025. Task approved.
- Task 5 & 6 Recommendations and Final Report were submitted June 30, 2025.

SUMMARY OF ACTIVITIES EXPECTED TO BE PERFORMED NEXT QUARTER:
- Meet with the project panel to present the Task 5 & 6 deliverables.
- Revise and resubmit Task 5 & Task 6 deliverables for approval.

STATUS AND COMPLETION DATE:
- In the March 21, 2023, meeting, the research team provided an update on Task 4. At this time only limited data had been provided by Iowa DOT and no data had yet been provided by Colorado DOT. Efforts will continue to gather data from the 2022-2023 winter season. A potential no-cost time extension to the project was discussed to allow for data collected during the 2023-2024 winter season to be incorporated into the analysis.
- With Clear Roads TAC approval, a no-cost time extension was submitted to MnDOT and approved July 17, 2023. The new project end date is August 31, 2024.
- We have worked very hard to acquire data from GeoTab and CDOT. Due to a personnel change at CDOT, getting the RWIS data was significantly delayed. We now have established a relationship with the new person at CDOT.
- Due to delays in acquiring 2023-2024 winter data from GeoTab, we have started the process of requesting a no-cost time extension of 6 months for the project.
- A no-cost time extension was initiated July 1, 2024, and was approved/processed September 25, 2024. The new project end date is February 28, 2024.
- A no-cost time extension has been initiated as the Task 4 report has taken longer to develop than anticipated and was submitted January 12, 2025. The no-cost extension was finalized with MSU June 17, 2025.