

State Planning and Research Program Quarterly Report

PROJECT TITLE: *Evaluation of Indoor Automated Stockpile Measurement Systems*

OBJECTIVES: The goal of this project is to conduct a data-driven evaluation of currently available automated or semi-automated indoor salt stockpile measuring systems in order to improve agencies' day-to-day management of their salt stockpile inventories.

PERIOD COVERED: Q4 2021 (October 1 through December 31, 2021)

PARTICIPATING AGENCIES: Minnesota Department of Transportation and the Clear Roads Technical Advisory Committee

PROJECT MANAGER:
Hafiz Munir / Tom Peters

SP&R PROJECT NO:
MnDOT Contract No.
1030951

PROJECT IS:

LEAD AGENCY: MnDOT

Planning
 Research & Development

PRINCIPAL INVESTIGATOR:
Brian Hirt, CTC & Associates

Federal Project Number:
TPF-5(353)

ANNUAL BUDGET: \$84,727.00
(18-month project budget)

PROJECT EXPENDITURES TO DATE: \$19,149.99

WORK COMPLETED:

- **Task 1: Project Management.** Coordinated communication among Technical Advisory Panel members. Planned next steps for the project.
- **Task 4: Select Systems and States for Evaluation.** Coordinated with project TAP, participant states and vendors to finalize selections for systems and states to participate in the evaluation. *Task 4 is complete.*
- **Task 5: Methodology for System Evaluation.** Drafted the evaluation methodology document and data collection form, working closely with participating TAP members and vendors. Received comments from TAP and made initial revisions to working draft methodology document.
- **Task 6: Data Collection.** Coordinated with participating states to collect data on automated and semi-automated indoor salt stockpile measuring systems in identified storage facilities:
 - Met periodically with individual state teams (TAP members, test site staff, and vendors) to review progress and status at each site, address any challenges related to data collection, and step through the process for data collection.
 - Facilitated communications between Delaware DOT and Pix4D for processing of Skydio drone software
 - Set up web-based measurement recording spreadsheet for use with test and control runs at Delaware DOT.

SUMMARY OF ACTIVITIES EXPECTED TO BE PERFORMED NEXT QUARTER:

- **Task 1: Project Management.** Convene the project TAP in early winter to review progress.
- **Task 5: Methodology for System Evaluation.** Finalize methodology document.
- **Task 6: Data Collection.** Continue data collection process through the winter:
 - Continue periodic meeting with state teams to review progress and address potential issues.
 - Set up web-based measurement recording spreadsheet for use with test and control runs at Texas DOT and Washington State DOT.
 - Set up processes for collecting salt delivery information at each site.
- **Task 7: Data Analysis of System Performance.** Conduct initial steps to analyze data; revise data collection (Task 6) as needed based on initial analysis.
- **Task 8: Final Report and Brief.** Begin drafting project report.

STATUS AND COMPLETION DATE:

This project is on track for completion by November 30, 2022.