

RESEARCH PROGRESS REPORT FOR THE QUARTER ENDING: 3rd

Wisconsin Department of Transportation
DT1241 2009

Research, Development and Technology Transfer	
Program: (Choose One) <input type="checkbox"/> Policy Research <input checked="" type="checkbox"/> Pooled Fund TPF # 5(092) Clear Roads <input type="checkbox"/> Wisconsin Highway Research Program <input type="checkbox"/> Other	
Project Title: Development of Standardized Test Procedures for Evaluating Deicing Compounds	
Administrative Contact/Phone #: Colleen Bos/ (608) 577-4805	WisDOT Project ID(s): 0092-08-32
WisDOT Technical Contact/Phone #: Michael Sproul/ (608) 266-8680	Other Project ID: Clear Roads 07-02
Project Investigator/Phone # (agency & contact): Xianming Shi, PhD, PE, Western Transportation Institute (WTI) Montana State University (406) 994-6486	Approved Starting Date: 11/1/2007
WisDOT Comments:	Original End Date: 4/1/2009
	Current End Date: 11/30/2009
Sponsor: Wisconsin Department of Transportation	Number of Extensions: 2

Schedule Status:

- ☐ On schedule ☐ Ahead of schedule
☒ On revised schedule ☐ Behind schedule (Please explain below)

Total Project Budget	Expenditures Current Quarter	Total Expenditures	% Funds Expended	% Work Completed
\$100,000.00	\$4,112.00	\$100,000.00	100%	99%

Project Description:

Every year manufacturers introduce new deicing chemicals, additives or mixtures for use in snow and ice operations. Users do not currently have a comprehensive methodology for evaluating the performance of these new products prior to purchasing. The goal of this project is to establish laboratory tests that can be applied to all deicing chemicals, additives and mixtures to measure performance. Manufacturers would then be required to have the tests run at independent laboratories before they can be marketed or used by Clear Roads states. A standard set of performance tests for deicing chemicals, additives and mixtures that will help agencies anticipate how products may work in their specific environment is expected.

Progress This Quarter: (Includes project committee meetings, work plan status, contract status, significant progress, etc.)

During this quarter the research team primarily focused their efforts on Tasks 3, 4 and 5, as described below.

Task 0: Project Management (98% complete)

This task involved periodic communications within the research team as well as between the research team and the sponsor. The last quarterly progress report was submitted to Clear Roads in June 2009. On September 21 the final presentation was given via teleconference and webinar to the Clear Roads TAC.

Task 1: Comprehensive Literature Search (100% complete)

This task was complete prior to this quarter

Task 2: Needs Identification and Recommendations (100% complete)

This task was complete prior to this quarter

Task 3: Develop Testing Protocols, Procedures and Ranges (100% complete)

As a result of findings from Tasks 1 & 2, four test methods were proposed for development, modification, and evaluation. Based on tests performed with three common deicers in solid and liquid form, the following three tests were selected for further evaluation in Task 4:

- differential scanning calorimetry (DSC) thermogram testing for liquid deicers,
- Modified SHRP Ice Melting Test for solid and liquid deicers, and
- Modified SHRP Ice Penetration Test for solid deicers.

During this quarter only minor modifications were proposed for the tests, such as acceptable bounds for the control specimen in the Modified SHRP Ice Melting Test and improved data analysis for the Modified SHRP Ice Penetration Test.

Task 4: Conduct Baseline Tests (100% complete)

This task involves testing the following deicers:

- 23% NaCl
- 32% CaCl₂
- 30% MgCl₂
- AGBP (A liquid agriculture by-product based deicer, presented anonymously)
- Solid NaCl
- Solid CaCl₂
- Solid MgCl₂
- The following blends of 23% NaCl, 32% CaCl₂, and AGBP:
 - Blend A: 95% NaCl + 5% CaCl₂
 - Blend B: 90% NaCl + 10% CaCl₂
 - Blend C: 85% NaCl + 15% CaCl₂
 - Blend D: 80% NaCl + 20% CaCl₂
 - Blend E: 90% NaCl + 5% CaCl₂ + 5% AGBP
 - Blend F: 85% NaCl + 5% CaCl₂ + 10% AGBP
 - Blend G: 80% NaCl + 5% CaCl₂ + 15% AGBP

During this quarter, the Modified SHRP Ice Melting and Modified SHRP Ice Penetration Tests were performed with the blended products at 15°F (tested at only 30°F in previous quarter).

Task 5: Final Report (95% complete)

The first draft of the final report was submitted to the Clear Roads Technical Advisory Subcommittee on June 15. Based on comments received from the TAS, additional testing was performed and a revised draft was submitted on August 24. A few concerns about the revised draft were addressed just prior to the final presentation and the third draft was submitted on September 14. We are currently revising the draft final report based on comments and discussions that occurred in conjunction with the final presentation on September 21.

Anticipated Work Next Quarter:

During the next quarter, the research team will revise the draft final report to the satisfaction of both the TAS and TAC.

Circumstances Affecting Progress and/or Budget:

None.

Gantt Chart:

Revised Schedule

[illegible]