

State Planning and Research Program Quarterly Report

PROJECT TITLE: Understanding the Chemical and Mechanical Performance of Snow and Ice Control Agents on Porous or Permeable Pavements

OBJECTIVES: The objectives of this research are to identify the primary chemical and mechanical interactions that occur when deicers are applied to textured or porous pavements before, during and after a winter storm to determine optimal winter maintenance strategies and application rates for treating these types of pavements

PERIOD COVERED: January 1, 2015 – March 31, 2015

PARTICIPATING AGENCIES:

Western Transportation Institute, Montana State University – Bozeman

PROJECT MANAGER:

Tom Peters and Deborah Sinclair

SP&R PROJECT NO:

TPF-5(218)
MnDOT Contract No.99006

PROJECT IS:

Planning
 Research & Development

LEAD AGENCY:

Minnesota Department of Transportation

PRINCIPAL INVESTIGATOR:

Michelle Akin

PROJECT BUDGET:

\$185,000

PROJECT EXPENDITURES TO DATE:

\$148,677.74

WORK COMPLETED:

Task 0 – Project Management

- Teleconferences on January 6 and February 3: discussed preliminary laboratory test results

Task 1 – Literature Search - COMPLETE

Task 2 – List and Categorize Pavement and Overlay Types - COMPLETE

Task 3 – Interviews - COMPLETE

Task 4 – Lab Testing - COMPLETE

Task 5 – Analyze Chemical and Mechanical Interactions

- Performed statistical comparisons of friction and snow–pavement bond strength for different pavements and treatment strategies
- Coordinated with Massachusetts DOT to receive cores of OGFC-surfaced roads

Task 6 – Synthesize Best Maintenance Practices – no progress during this period

Task 7 – Recommend a Plan of Study – no progress during this period

Task 8 – Reporting

- Submitted Quarterly Report #8

SUMMARY OF ACTIVITIES EXPECTED TO BE PERFORMED NEXT QUARTER:**Task 0 – Project Management**

- Teleconference in May to discuss 1) analysis of lab testing, and 2) suggestions for additional tests

Task 1 – Literature Search – *completed***Task 2 – List and Categorize Pavement and Overlay Types - *completed*****Task 3 – Interviews - *completed*****Task 4 – Lab Testing - *completed*****Task 5 – Analyze Chemical and Mechanical Interactions**

- Use cores obtained by MassDOT to create slabs for lab testing
- Finalize data analysis from Task 4 lab testing
- Possibly run a few more experiments to 1) correlate friction to visual appearance of samples after simulated plowing/snow removal, and 2) determine if salt is “lost” in the voids of porous/permeable pavements

Task 6 – Synthesize Best Maintenance Practices

- Use information from literature search, interviews and lab testing to develop guidelines for best practices

Task 7 – Recommend a Plan of Study – no progress anticipated during this period**Task 8 – Reporting**

- Write Quarterly Report 10
- Write *White Paper on Chemical and Mechanical Interactions*

STATUS:

The project is currently behind schedule, primarily to allow additional pavement samples to be added to the laboratory testing:

Task	Start Date	Completion Date	Status
0 – Project Management	2/1/2013	9/30/2015	On-Going
1 – Literature Search	2/1/2013	5/31/2013	Completed
2 – List & Categorize Pavement & Overlay Types	6/1/2013	6/30/2013	Completed
3 – Interviews	6/1/2013	1/31/2014	Completed
4 – Lab Testing	3/1/2014	12/31/2015	Completed
5 – Analyze Chemical & Mechanical Interactions	12/2/2014	2/28/2015	On-Going
6 – Synthesize Best Management Practices	3/1/2015	4/30/2015	Not Started
7 – Recommend a Plan of Study	5/1/2015	5/31/2015	Not Started
8 – Reporting	5/1/2013	9/30/2015	On-Going

A no-cost time extension is currently under request with the following schedule:

Task	Start Date	Completion Date	Status
0 – Project Management	2/1/2013	9/30/2015	On-Going
1 – Literature Search	2/1/2013	5/31/2013	Completed
2 – List & Categorize Pavement & Overlay Types	6/1/2013	6/30/2013	Completed
3 – Interviews	6/1/2013	1/31/2014	Completed
4 – Lab Testing	3/1/2014	12/31/2015	Completed
5 – Analyze Chemical & Mechanical Interactions	1/1/2015	7/31/2015	On-Going
6 – Synthesize Best Management Practices	8/1/2015	10/30/2015	Not Started
7 – Recommend a Plan of Study	11/1/2015	12/31/2015	Not Started
8 – Reporting	5/1/2013	3/31/2016	On-Going