

## 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:** October 1, 2013 – December 31, 2013

**PARTICIPATING AGENCIES:**

Western Transportation Institute, Montana State University – Bozeman

**PROJECT MANAGER:**

Tom Peters and Ashley Duran

**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:**

\$47,502.10

**WORK COMPLETED:**

**Task 0 – Project Management**

- Check-in teleconference on October 25 to discuss trafficking options for lab testing

**Task 1 – Literature Search - COMPLETE**

**Task 2 –List and Categorize Pavement and Overlay Types**

- Compiled gradation and air void details from state specifications for open-graded overlays and ultra-thin friction courses
- Identified pertinent properties of pavement categories

**Task 3 – Interviews**

- Interviewed DOT personnel (winter maintenance and/or pavement areas) from the following states:, Kansas, Massachusetts, Virginia, New Jersey, Rhode Island.
- Wrote task report summarizing results of the interviews that were conducted

**Task 4 – Lab Testing**

- Continued designing device to “traffic” samples

**Task 5 – Analyze Chemical and Mechanical Interactions** – no progress during this period

**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** – no progress during this period

**SUMMARY OF ACTIVITIES EXPECTED TO BE PERFORMED NEXT QUARTER:**

**Task 0 – Project Management**

- Teleconference to discuss categorized pavements and interview task reports in January
- Teleconference to discuss lab testing plan and pavement samples around late February or March

**Task 1 – Literature Search – *completed***

**Task 2 – List and Categorize Pavement and Overlay Types**

- Finalize Task 2 Deliverable

**Task 3 – Interviews**

- Finalize Task 3 Deliverable
- Try again to conduct international interviews, using TRB Annual Meeting contacts and LinkedIn

**Task 4 – Lab Testing**

- Prepare lab testing plan based on proposal, literature search, pavement categories, and interviews
- Coordinate with University of Massachusetts Dartmouth to have pavement samples produced
- Finalize drawings for and build trafficking device
- Preliminary CT scans of pavements with potential tracers to track movement of deicers (e.g., iodine or barium contrast media are used in medical CT scans and may be applicable)

**Task 5 – Analyze Chemical and Mechanical Interactions – no progress anticipated during this period**

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

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

**Task 8 – Reporting**

- Write Progress Report 5
- Submit Task 2 Deliverable: Categorized List of Porous/Permeable Pavements
- Submit Task 3 Deliverable: Synthesis of Interview Results

**STATUS:**

The project is currently about 4 months behind schedule. A no-cost time extension is anticipated, depending on how Task 4 – Lab Testing develops.