

State Planning and Research Program Quarterly Report

PROJECT TITLE: Synthesis of Material Application Methodologies for Winter Operations

OBJECTIVES: The goal of this research is to “create a synthesis of best management practices for application rates, material application methodologies and material usage, including chloride brines applied directly or as additives to abrasives and rock salts”.

PERIOD COVERED:

July 2016– September 2016

PARTICIPATING AGENCIES:

Washington State University – Prime
Monte Vista Associates LLC - Consultant

PROJECT MANAGER: Tom Peters

SP&R PROJECT NO:
MnDOT No. 1001326

PROJECT IS:

LEAD AGENCY: Mn/DOT

Federal No. TPF-5(218)

Planning
 Research & Development

PRINCIPAL INVESTIGATOR:

Xianming Shi, Ph.D., P.E.

ANNUAL BUDGET:

\$117,658

PROJECT EXPENDITURES TO DATE:

\$22,286

WORK COMPLETED:

Project Management

This includes the submission of quarterly progress report by the project PI to the Clear Roads program on July 11, 2016 and some communications between the PI and the Clear Roads coordinator, as well as between the PI and the consultant. In early September, the PI submitted (through WSU) a request of 3-month no-cost time extension for Task 1 in the Clear Roads Project. This request is needed to ensure the quality of the Task 1 deliverable (Literature Review). No other tasks are being adjusted with this amendment. This request, if approved, would not change the current project end date in the contract, i.e., November 31, 2017.

Task 1. Literature review (80% completed)

The WSU team has conducted the comprehensive search of past and current research, both nationally and internationally, on this subject. This has resulted in the preparation of a literature review (80% done by September 30, 2016), highlighting current practices, innovative practices, and trends related to materials used, their application rates, and the application methodologies and equipment under various road weather scenarios (temperature ranges, storm conditions, and other climate and operating conditions).

Task 2. Interview Plan (100% completed)

The WSU team developed a plan for gathering detailed information about material application approaches via phone or in-person interviews. The list of agencies to contact were drafted as well. Both were submitted to the project panel for review.

Task 3. Interviews (40% completed)

AASHTO SCOM July 18-19, Las Vegas: Interviewed T. Greenfield (IADOT); K. Alenius (WYDOT); and M. Coffey (AKDOT). Also spoke with M. Robinson, Chair of TRB Maintenance and Operations Management Committee and VP with DBI; sent him copy of questions. Had others that had tentatively volunteered to be interviewed but the crowded schedule interfered with being able to talk with them. Others on the AASHTO list indicated they will be available for later phone interviews.

APWA PWX, Aug 28-29, Minneapolis: Interviewed M. DeVries (formerly with McHenry County, IL); B. Hodne and K. Hensley (West Des Moines); J. Klostermann (Dubuque, IA); M. Valenti (Boston metro area). M. Kennedy (Minneapolis) had to cancel due to his schedule at PWX and said he and colleagues including M. Morrien would respond in writing and then follow-up by phone. P. Kennedy (Denver); L. Schneider (Ft. Collins) on schedule.

Interviews have gone well; running at least an hour as interviewees have expansive responses. Added questions re: size of jurisdiction (Sq. Miles); population; number of center lane miles; total lane miles (some break down by type); typical number of seasonal snow events and total accumulation; coldest seasonal temp; start-end of season; number of trucks by type in fleet; number/type of other equipment such as tow-trailers, slide-in tanks; graders, loaders, etc. used in snow and ice control; how often application equipment calibrated, etc. This provides good background info and helps to clarify scripted questions.

Found that it was very helpful to send the questions in advance so that interviewees have time to prepare. All were very forthcoming and seemed, as I did, to enjoy talking about winter maintenance operations. Often certain responses lead to follow-up questions that amplify earlier ones. Some of the responses are interesting in that several agencies do not use sand at all while Alaska uses sand exclusively. Salt brine with CaCl₂ or MgCl₂ seems to be the most common product used for anti-icing. Pre-wetting is also very common. Will send requests for interviews at TRB in January to those on the original lists who have not been interviewed yet. Those that will not be available will place on the phone interview list.

Have had several ask to just fill out the questionnaire; told them that Clear Roads prefer us to conduct the interviews, not surveys.

The consultant (D. Bergner) will refine the questions and prepare a list of those to be interviewed by telephone for the PI and the CR project team to review.

Task 4. Guidebook (5% completed)

The work just started on this task. The goal is to synthesize, analyze, and organize the data into a brief, instructive, and professionally created handbook, similar to the Snowfighters' Handbook available at <http://www.saltinstitute.org/road/snowfighting/>.

Task 5. Final report (0% completed)

SUMMARY OF ACTIVITIES EXPECTED TO BE PERFORMED NEXT QUARTER:

Work in the coming quarter will consist of project management as well as the completion of Task 1 and most of Task 2 and continued work on Task 3.

STATUS AND COMPLETION DATE:

On budget but slightly behind the originally proposed schedule on Task 1 and Task 4. The no-cost time extension is detailed as follows.

Task	Current Task Start Date	Current End Date for Task Approval	Revised Task Start Date	Revised Due Date to Submit Draft Deliverables	Revised End Date for Task Approval
1	05/25/2016	09/15/2016	05/25/2016	10/15/2016	12/15/2016
2	05/25/2016	07/30/2016	05/25/2016	Not Applicable	07/30/2016
3	07/15/2016	03/15/2017	07/15/2016	01/15/2017	03/15/2017
4	12/15/2016	06/15/2017	12/015/2016	04/15/2017	06/15/2017
5	04/01/2017	08/31/2017	04/01/2017	06/30/2017	08/31/2017
6	07/01/2017	09/30/2017	07/01/2017	07/30/2017	09/30/2017