

State of Wisconsin/Department of Transportation
RESEARCH PROGRESS REPORT FOR THE QUARTER ENDING: March 31, 2009

Program: TPF-5(092)	FHWA Pooled Fund Research Program
Project Title: Development of a Toolkit for Cost-Benefit Analysis of Specific Winter Maintenance Practices, Equipment and Operations	Project ID: 0092-09-08
Administrative Contact: Colleen Bos	Sponsor: Clear Roads Pooled Fund
WisDOT Technical Contact: Kim Linsenmayer	Approved Starting Date: 12/17/2008
Project Investigator (agency & contact): Xianming Shi, PhD, PE Western Transportation Institute (WTI) Montana State University PO Box 174250 Bozeman, MT 59717-4250 phone 406.994.6486	Approved Ending Date: 08/31/2010

Percent complete (budget and hours): 12%

- **Hours and budget expended to date:** 326 hours, \$17,725
- **Hours and budget expended for current quarter:** 326 hours, \$17,725
- **Hours and budget balance:** 1442 hours, \$131,775

Brief project description:

This ClearRoads research project, entitled “Development of a Toolkit for Cost-Benefit Analysis of Specific Winter Maintenance Practices, Equipment and Operations”, seeks to develop a toolkit to facilitate streamlined cost-benefit analysis for winter maintenance practitioners to justify the use of new tools, procedures and practices. The project consists of several aspects. The first consists of a comprehensive literature review of tools, procedures and practices to determine what information presently exists regarding their costs, benefits and effectiveness. The second aspect will determine what specific tools, procedures and practices that will be included in the toolkit. It will consist of two surveys of agency personnel; the first will establish the “top ten” tools, procedures and practices of interest to agencies to include in the toolkit, while the second survey will seek to obtain agency-specific information related to these items. Based on the results of these preliminary activities, the cost-benefit tool will be developed and presented to the ClearRoads project panel and membership for review and comment. Following necessary revisions and approval, the final tool will be delivered to ClearRoads for distribution to member agencies.

Progress this quarter (include specific tasks completed):

Task 0. Project Management (20% completed)

This task involved periodic communications within the research team (e.g. weekly meetings) as well as between the research team and the sponsor. In early December 2008, the project kickoff meeting was conducted via teleconference. The TAC and the research team agreed upon that the overall project goal is to come up with a cost-benefit analysis tools needed to justify winter maintenance costs to people who are not familiar with snow and ice maintenance issues. Some modifications to tasks 2 and 3 were discussed to ensure the success of this project.

Task 1. Comprehensive Literature Review (40% completed)

Work during this quarter included the literature review of costs, benefits and effectiveness associated with various winter maintenance tools, procedures, and practices. The remaining work will be finished during the first two months of the upcoming quarter. The items for which the literature review has been completed include:

- Automated Vehicle Location (AVL);
- Vehicle sensors (freezing point, ice detection, salinity, etc.);
- Friction sensors;
- Pavement sensors;
- Maintenance Decision Support Systems (MDSS)
- Road Weather Information Systems (RWIS); and

- Lighting packages

Task 2. Survey of Best Practices (25% completed)

In addition to the literature review, a draft of the first practitioner survey was developed and distributed to the Clear Roads project panel for review and comment. Then it was distributed to practitioners (SICOP Snow/ICE list serve) to determine what tools, procedures and practices they presently employ, as well as which of these they would like to see included in the cost-benefit tool under development. The survey also queries respondents on additional items, such as what form they would like the proposed toolkit to take on (spreadsheet, stand-alone software, etc.).

Task 3. Tool and Methodology Development (4% completed)

A subcontract was awarded to Current Transportation Solutions, Inc. for getting this task started.

Tasks planned for next quarter:

Several tasks are planned for the upcoming quarter. First, literature review activities will be completed, with a draft interim report providing a synopsis of findings and recommended toolkit elements and an interim conference call to present the findings and next steps. This may be delayed from April to May to allow the incorporation of survey responses into the report. Secondly, the analysis of survey responses will be performed for the first survey. Following this preliminary survey, a second survey focusing on the “top ten” items of interest as indicated by practitioners will be developed and distributed, with the intended purpose of obtaining agency-specific information (vendors and equipment employed, approximate costs, etc.) based on experience related to these tools, procedures and practices. This information will be used as one of the inputs for the cost-benefit tool to be developed. Finally, contingent upon the timely completion of the two surveys by practitioners, preliminary development work on the cost-benefit tool may also commence during the upcoming quarter.

Identify any outstanding issues and barriers

No known issues or barriers at this time.

Please attach Gantt chart.

		Calendar Year / Month																		
		2008	2009																	
Tasks	Milestones	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	
Task 0. Project Management																				
Project kickoff	Dec-08	■																		
Quarterly progress reports	End of each quarter			■			■			■			■			■			■	
Task 1. Comprehensive Literature Review																				
Interim Report: Synopsis of Findings and Recommended Toolkit Elements						■														
Interim Conference Call Meeting/Presentation	Apr-09				■															
Task 2. Survey of Best Practices																				
Initial Survey - develop and distribute						■														
Survey Analysis - Identify priority items						■														
Follow-up Survey - Obtain specifics on priority items						■														
Summary of Results	May-09						■													
Task 3. Tool and Methodology Development																				
Task 4. Pilot Training Session																				
Task 5. Training for TAC	May-10																			■
Task 6. Recommendations for Implementation																				
Draft final report	Apr-10																			■
Final report	May-10																			■