TRANSPORTATION POOLED FUND PROGRAM
QUARTERLY PROGRESS REPORT

Lead Agency (FHWA or State DOT): Minnesota Department of Transportation

INSTRUCTIONS:
Project Managers and/or research project investigators should complete a quarterly progress report for each calendar quarter during which the projects are active. Please provide a project schedule status of the research activities tied to each task that is defined in the proposal; a percentage completion of each task; a concise discussion (2 or 3 sentences) of the current status, including accomplishments and problems encountered, if any. List all tasks, even if no work was done during this period.

Transportation Pooled Fund Program Project # *(i.e, SPR-2(XXX), SPR-3(XXX) or TPF-5(XXX)* TPF-5(165)		**Transportation Pooled Fund Program - Report Period:** ☐ Quarter 1 (January 1 – March 31) ☐ Quarter 2 (April 1 – June 30) ☑ Quarter 3 (July 1 – September 30) ☐ Quarter 4 (October 1 – December 31)
Project Title: Development of Design Guide for Thin and Ultrathin Concrete Overlays of Existing Asphalt Pavements		
Name of Project Manager(s): Tom Burnham	**Phone Number:** 651-366-5452	**E-Mail** tom.burnham@state.mn.us
Lead Agency Project ID: TPF-5(165)	**Other Project ID (i.e., contract #):**	**Project Start Date:** September 2008
Original Project End Date: January 31, 2012	**Current Project End Date:** May 31, 2012	**Number of Extensions:** 1

Project schedule status:

☐ On schedule ☑ On revised schedule ☐ Ahead of schedule ☐ Behind schedule

Overall Project Statistics:

Total Project Budget	Total Cost to Date for Project	Percentage of Work Completed to Date
$415,200	$97,770	55%

Quarterly Project Statistics:

Total Project Expenses and Percentage This Quarter	Total Amount of Funds Expended This Quarter	Total Percentage of Time Used to Date
$137,770 (33% of budget)	$0	75%

Project Description:

This project was created to address the timely need for a rational mechanistic-empirical based design guide for thin and ultrathin concrete overlays of existing asphalt pavements.

The objectives of the projects are:

1. Identify, collect, compile and review available performance data and information on thin and ultrathin concrete overlays of existing asphalt pavements.
2. Evaluate and modify existing structural response models and design methods, or create new ones (if necessary).
3. Implement the effect of climate into the new design method for thin and ultrathin concrete overlays of existing asphalt pavements.
4. Characterize the influences of interlayer bonding and structural fibers on the design and performance of this type of overlay.
5. Develop a user-friendly and comprehensive design procedure and users guide, applicable for designs throughout the U.S.
6. Provide guidelines for project selection (feasibility).
7. Provide guidelines for future rehabilitation of this type of overlay.

Progress this Quarter (includes meetings, work plan status, contract status, significant progress, etc.):

TASK 4: Based on recent findings, additional updates will need to be made to the Task 4 report before publication by Mn/DOT.

AMENDED TASKS 3 AND 5: The sixth participating state has committed to a December submittal of extra funds requested for additional work on Tasks 3 and 5.

TASK 3: A laboratory testing platform to evaluate the time dependent contribution of interlayer bonding and structural fibers in concrete overlays has been constructed at the University of Pittsburgh.

Anticipated work next quarter:

TASK 3: Tests will begin on laboratory testing platform.

TASK 5: Work will also continue on guidelines for project selection and pre-overlay evaluations.

Significant Results:

Based on surveys of the field performance of projects throughout the U.S., the dominant types of distress were identified for thin and ultrathin concrete overlays of existing asphalt pavements. Also, the influence of traffic, overlay thickness, panel size, and dowels on overlay performance were analyzed and published in a TRB research paper.

Suitable structural response models have been selected for the new design procedure. Climate regions have been identified that result in different overlay performance.

It was recently deduced that the type of cracking in whitetopping panels is more related to panel size than panel thickness. The higher number of joints with smaller panel sizes provides more paths for water to reach the concrete-asphalt interface, accelerating the debonding of the layers. This results in higher stresses in the thin slabs. Examination of the field performance of older whitetoppings typically show corner cracking for whitetoppings with 4' x 4' panels, and longitudinal mid-panel cracking in 6' x 6' panels. This discovery required a switch in the type of fatigue model to be used in the new procedure. As a result, some previous task reports may need to be revised.

Circumstance affecting project or budget. (Please describe any challenges encountered or anticipated that might affect the completion of the project within the time, scope and fiscal constraints set forth in the agreement, along with recommended solutions to those problems).

Setting up the laboratory equipment for the amended Task 3 may have some affect on the schedule in the future. The P.I. states that the project is expected to be completed as scheduled in May 2012.

Potential Implementation:

There is great and immediate demand for the product from this project. If the design procedure and guidelines are accepted as viable and accurate by the design community, the implementation will occur very quickly.