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:** September 11, 2013	**Number of Extensions:** 2

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
$504,977	$318,000	95%

Quarterly Project Statistics:

Total Project Expenses and Percentage This Quarter	Total Amount of Funds Expended This Quarter	Total Percentage of Time Used to Date
0%	0%	95%

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 1B: Work began after contract approval.

Task 2B: Work began after contract approval.

Task 3B: Work began after contract approval.

Task 5: Continued work on this task.

Continued laboratory testing and revision of structural models used in the design procedure.

Contract language revised to allow wider distribution and uses of design procedure.

Anticipated work next quarter:

Work on all tasks will be complete. The final version of the design procedure will be released, and a training module will be presented at the final TAP meeting.

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.

The primary mode of failure in thin whitetopping has more recently been identified as longitudinal cracking in the outer wheelpath. This finding necessitates revision of the fatigue models used in the first release of the new design spreadsheet.

The impact of layer bonding on whitetopping performance is being characterized, as well as the contribution of fiber reinforced concrete mixes on joint load transfer.

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).

The final contract amendment has been approved for Phase B work. The project will be completed prior to the September 11, 2013 contract end date.

Potential Implementation:

There is great and immediate demand for the product from this project.

The first release of the design spreadsheet is a major advancement over other available design procedures. Some states may adopt the first version, despite the fact that some of the fatigue models used are not fully compatible with observed distress modes. Other states, agencies, and organizations may choose to wait until the fatigue models are revised.

Once the design procedure and guidelines are accepted as viable and reliable by the design community, the implementation will occur very quickly. The training module will greatly help the implementation of the final design procedure.