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	$504,977	100%

Quarterly Project Statistics:

Total Project Expenses and Percentage This Quarter	Total Amount of Funds Expended This Quarter	Total Percentage of Time Used to Date
37%	37%	100%

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.
8. Provide training documentation and video.

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

Tasks 1B, 2B, 3B, 4B, 5, 7, and 8 were completed this quarter.

A final Technical Advisory Panel meeting was held on August 16th, 2013.

This project is considered complete as of September 11, 2013.

Anticipated work next quarter:

None. This project was completed as of September 11, 2013.

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.

The primary modes of failure in bonded concrete overlays of asphalt (BCOA), also known as whitetopping, were identified as being related to panel size, rather than panel thickness. Therefore, 3 distinct fatigue models were developed for use in the new BCOA-ME design procedure. Climate regions were identified that result in different overlay performance, due to daily and seasonal changes in asphalt modulus.

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

A rational mechanistic-empirical design procedure for bonded concrete overlays of asphalt pavements, titled: BCOA-ME, has been created. It is applicable to all locations with materials and climates similar to the continental U.S.

Updated project suitability and repair guidelines for BCOA projects were created.

Supporting documentation and a training video was created to aid in the implementation of the new design procedure.

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 project was completed on September 11, 2013, and the contract was ended.

Potential Implementation:

Now that the new procedure and guidelines have been completed, major efforts toward implementation have begun.

Workshops are already being scheduled to provide early guidance on proper use of the design procedure. In addition, the video training module that was created should provide help to those unable to attend workshops in person.