

Period Covered: January 1 through March 31, 2009 (Quarterly Report)

KSDOT Progress Report  
for the

## State Planning and Research Program

PROJECT TITLE: Construction of Crack-Free Concrete Bridge Decks		
PROJECT MANAGER: Richard L. McReynolds, P.E.	Project No: TPF-5(051)	Project is: <input type="checkbox"/> PLANNING <input checked="" type="checkbox"/> RESEARCH & DEVELOPMENT
Annual Budget	Multi Year Project Budget \$950,000	
<b><u>PROGRESS:</u></b> <p>Current work for Phase I of Construction of Crack-Free Concrete Bridge Decks includes the evaluation of the bridge decks that were cast in Phase I, the completion of construction of Phase I bridges, and the evaluation of results from laboratory work that was initiated in Phase I.</p>		
<b><u>LABORATORY ACTIVITIES:</u></b> <p>Freeze thaw evaluation of shrinkage reducing admixtures (SRA) series in accordance with ASTM C666, Standard Test Method for Resistance of Concrete to Rapid Freezing and Thawing – Procedure A, have been delayed due to equipment improvements and will be cast next quarter. The results of new specimen tests will be reported in Phase II quarterly reports.</p>		
<b><u>LAB RESULTS:</u></b> <p>The scaling evaluation of the SRA series for Phase I, performed in accordance with the Canadian standard test BNQ 2621-900/2002 Annex B, was completed. This test is used in place of ASTM C672 because it has been shown to provide a more realistic match with field performance. After 56 cycles, the test specimens exhibited increasing mass loss with increasing SRA dosage (average losses of 0.19, 0.40 and 1.11 kg/m<sup>2</sup>, respectively, for 0%, 0.5% and 1% SRA content by weight of cement). All three mixes, however, had losses below the maximum allowable value of 1.5 kg/m<sup>2</sup>.</p>		
<b><u>CONSTRUCTION ACTIVITIES:</u></b> <p>The second and final phase of the new LC-HPC bridge deck in Emporia, KS was placed on March 18. KU actively worked with KDOT personnel prior to and during construction.</p> <p>A qualification slab for another LC-HPC bridge in Linn County was attempted during the week of March 23. Problems with the pump prevented completion of the qualification slab. The construction of the qualification slab and the LC-HPC bridge deck is scheduled for next quarter.</p>		

ACTIVITIES PLANNED FOR NEXT QUARTER

The 20<sup>th</sup> LC-HPC deck will be constructed during Linn County, KS during the next quarter. Crack surveys of LC-HPC and control bridge decks that are at least one year of age will begin as soon as the weather permits.

Project Personnel: David Darwin (Principal Investigator), JoAnn Browning (Co-Principal Investigator)

**STATUS AND COMPLETION DATE**

Percentage of work completed to date for total project is: 99%\*

  X   on schedule        behind schedule, explain:

Expected Completion Date:   March 31, 2010  

\*The project has been extended for an additional two years to allow the planned deck construction to be completed and the crack surveys to be conducted. The percentage of work completed will be held open at 99% for the balance of the project. Phase II of this project is now underway with funding from the KU Transportation Research Institute and the project has been approved for 100% SPR funding. TPF funding officially began on July 1, 2008.