

Period Covered: July 1, 2003 through September 30,2003

KSDOT Progress Report  
for the

## State Planning and Research Program

PROJECT TITLE: Midwest Accelerated Testing Pooled Fund		
PROJECT MANAGER:  Andrew Gisi, P.E., TAC Chair Richard L. McReynolds, P.E., Admin. Contact Dr. Stefan Romanoschi, KSU, PI	Project No: TPF-5(048) RE-0328-01	Project is:  <input type="checkbox"/> PLANNING <input checked="" type="checkbox"/> RESEARCH & DEVELOPMENT
<b>Annual Budget (active projects)</b> FY 2003: \$267,302	<b>Multi Year Project Budget</b>	

Progress: The objective of this research is to compare the performance of an A7-6 clay subgrade soil stabilized with lime, fly ash, cement and EMC2 (a commercial chemical compound commercialized by Soil Stabilization Products Co.) using a full-scale accelerated pavement test at the KSU Civil Infrastructure Systems Laboratory. Four pavement sections were constructed during November and December 2002. All were constructed with a four-inch thick asphalt concrete surface layer. The subgrade soil was stabilized to a depth of six inches with the four different stabilizing agents. The research efforts in the first quarter of 2003 were concentrated on improving the testing capabilities of the ATL machine. A mechanical system able to move the ATL machine in the lateral direction during testing has been added. The system will allow the simulation of the lateral wander of wheel loads observed for in-service pavements. A system of sensors has been installed to better control and monitor the ATL machine and to allow unsupervised operation. This will result in an increasing the testing productivity of up to three times. Electronic load cells have been installed on each wheel to monitor the dynamic load that each wheel applies to the pavements.

The research efforts in the third quarter of 2003 were concentrated on subjecting the constructed pavements to full-scale accelerated testing, using the ATL machine. More than 800,000 passes of the 30,000 lbs dual axle were applied to each pavement section since April 1, 2003. The pavement with the EMC2 stabilized base has failed at approximately 50,000 load repetitions after exhibiting severe rutting and cracking. The asphalt concrete surface layer was removed and replaced with a four inch PCC pavement, to allow the continuation of testing of the lime treated base pavement structure. Each of the three remaining pavements exhibited more than 0.5 of rutting so far, but no fatigue cracking.

#### SUMMARY OF ACTIVITIES EXPECTED TO BE PERFORMED NEXT QUARTER:

Following the recommendations of the Project Monitor, full-scale accelerated testing of the four pavements will continue on the three pavement structures that have not failed until November 7, 2003, with the intent of causing fatigue cracking the three remaining pavement structures. After that, post-mortem investigation will be conducted to determine the failure mode of the pavement layers.

Performance and response data collected during the experiment will be analyzed and the analysis results will be made available to the four state agencies involved in this project for further analysis and interpretation. The findings of this experiment will be summarized in scientific journal publications and presentations delivered at scientific conferences and meetings with specialists and practitioners in the field of highway engineering.

#### STATUS AND COMPLETION DATE

Percentage of work completed to date for total project is: 90

\_\_\_\_\_ on schedule X behind schedule, explain

FY 2003 project testing and reporting got behind schedule because of equipment repairs and modifications that were required on earlier experiments. Also, more the cumulative number of passes of the double axles already applied to the two pair of pavements is more than twice the number of passes estimated initially.

Expected Completion Date: December 31, 2003