Period Covered: January 1, 2004 through June 30, 2004

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: ____ PLANNING __X__ RESEARCH & DEVELOPMENT
Annual Budget (active projects) FY 2003: $267,302 FY 2004: 269,973	**Multi Year Project Budget**	

Progress:

FY 2003: 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 half of 2004 were concentrated on subjecting the constructed pavements to full-scale accelerated testing, using the ATL machine. Since April 1, 2003, more than 800,000 passes of the 30,000 lbs dual axle were applied to the pavement with lime treated embankment soil while more than 1,200,000 passes of the 30,000 lbs dual axle and 800,000 passes of the 24,000 lbs single axle were applied to the pavements with cement and fly-ash treated embankment soil. The pavement wit 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, the pavements with cement and fly-ash treated soil exhibited cracking in the asphalt surface layer. The cement stabilized showed very similar performance to that of the lime treated embankment. After 2 million passes, the pavement with fly-ash stabilized soil showed more cracking than the pavements with cement and lime treated soils. Post mortem investigation was conducted to observe the failure mode and the condition of the foundation layers.

FY 2004: The objectives of this research are: a) to construct and evaluate thin PCC overlays on existing PCC and HMA pavements; b) to determine the parameters that effect the performance of these sections; c) to develop design input parameters and to modify/ enhance the existing design procedure (s) for thin PCC overlays. The objectives will be accomplished by conducting a full-scale accelerated pavement test at the Civil Infrastructure Systems Laboratory on: two pavements with thin PCC overlays on existing PCC and two pavements with thin PCC overlays on distressed HMA layers.

The two thin white-topping pavements were constructed. The asphalt concrete layers were first placed and, compacted. Longitudinal and transverse saw cuts were performed in the HMA layers to simulate severely cracked layers. Milling was then performed on the asphalt concrete layers and the PCC overlay was placed. Accelerated loaded has started; more that 1.3 million passes of the 26,000 lbs single axle were applied to date but no visible distresses have been observed.

BENEFITS

The results of this research will lead to improved practices related to the design and construction of thin bonded concrete overlays on distressed PCCP and HMA pavements. This will finally lead to the optimized use and design of bonded concrete overlay technology and extended life of flexible and rigid pavements rehabilitated with this method.

SUMMARY OF ACTIVITIES EXPECTED TO BE PERFORMED NEXT QUARTER:

FY 2003: The first draft of the final report is in preparation and should be submitted for review by August 2004.

FY 2004: The PCC overlay on distressed PCC pavements will be constructed. Accelerated pavement testing will be started on these pavements only after the accelerated testing and the postmortem evaluation will be concluded on the thin whitetopping pavements.

STATUS AND COMPLETION DATE

Percentage of work completed to date for total project is: 95% (FY2003) and 30%(FY2004)

_____ 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, the cumulative number of passes of the double axle applied to the two pair of pavements was more than three time the number of passes estimated initially.

FY 2003 project testing and reporting got behind schedule because of equipment modifications and the delay of FY2003 project

Expected Completion Date: September 30, 2004 (FY2003) and June 30, 2005 (FY2004)