

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	Project No: SPR-3(047) RE-0165-01	Project is: <input type="checkbox"/> PLANNING <input checked="" type="checkbox"/> RESEARCH & DEVELOPMENT
Annual Budget (active projects) FY 2000: \$317,441 FY 2001: \$240,239 FY 2002: \$269,992	Multi Year Project Budget	

Progress: A TAC meeting was held each year to provide updated information to the members and discuss the experiment options for the next fiscal year. An Accelerated Testing Pooled Fund Combined State Visit was held in Maryville, MO on November 29, 2001. Several staff persons from each state, the FHWA attended to learn about the capabilities of the KSU facility and to brainstorm potential future projects. Bridge engineers from each state were invited with the intent to potentially expand the pooled fund to include testing of structural elements. All projects prior to FY 2000 have been completed and final reports published and distributed. This pooled fund project will be completed when the final report for the FY 2002 experiment is published. A new transportation pooled fund project was established for the FY 2003 experiment. Additional information about each active project follows.

FY 2000 Project: The experiment has been completed and final report is being edited for publication. The objective of the experiment was to compare the performance of fiber reinforced and plain PCC concrete overlay when used as a thin non-dowelled overlay on top of a rubblized, distressed concrete pavement. The experiment consisted of constructing two pavements and subjecting them to full-scale accelerated pavement test. The pavements were constructed in the environmental pit so that heat-cool temperature cycles were imposed. The two pavements were subjected to 500,000 full-truck axle passes. Stresses and strains at several locations in the two pavements, as well as the expansion/contraction of the slabs were periodically recorded during the test. The stress-strains data, as well as the location, severity and extent of the cracking in the overlay clearly indicate that there is no benefit of including the plastic fibers in the concrete overlay. The full-scale accelerated test revealed that the thin non-dowelled overlays are effective when used on top of distressed, rubblized concrete pavements.

FY 2001 Project: The experiment has been completed and the final report is being reviewed by the Technical Advisory Panel. The objectives of this research were to determine the effect of unbound drainable base types on the performance of PCCP and the efficiency of fiber-reinforced polymer dowels, compared to epoxy coated steel dowels, when retrofitted to re-establish the load transfer in damaged non-doweled joints. The experiment consisted of constructing two pavements, one with permeable base and another with semi-permeable base, and subjecting them to full-scale accelerated pavement test. Water was periodically spread at the surface of the pavement to simulate the effect of rainfall, induce the accumulation of water in the base and to allow the comparison of the drainage capability and the performance of the two unbound bases. The measured stresses and strains as well as the distresses observed on the two pavements clearly indicated a better performance for the permeable granular base. The semi-permeable base pavement exhibited severe cracking and pumping of fines from the base and subgrade. The joints and cracks in the semi-permeable base pavement were retrofitted with 1.5 inch RFP dowels and one inch steel dowels to re-establish the shear transfer. After an additional 25,000 passes were applied to the repaired pavement it was observed that the conventional steel dowels give a better performance than the RFP dowels.

FY 2002 Project: The experiment has been completed and final measurements are being taken prior to removal for the FY 2003 experiment. The bituminous base constructed using recycled asphalt pavement (RAP) stabilized with foamed asphalt performed much better than expected by the design.

SUMMARY OF ACTIVITIES EXPECTED TO BE PERFORMED NEXT QUARTER:

FY 2000 Project: Publish final report.

FY 2001 Project: Publish final report.

FY 2002 Project: Begin analysis of data and writing final report.

STATUS AND COMPLETION DATE

Percentage of work completed to date for total project is: 95

 on schedule x behind schedule, explain: FY 2000 & 2001 project reporting got behind schedule to workload of Project Monitor over the past year or so and then a backlog in editing reports for publications due to a major library renovation. The FY 2002 project is on schedule. The earlier projects will also be completed by the time the FY 2002 project and overall project is completed.

Expected Completion Date: April 1, 2003