TRANSPORTATION POOLED FUND PROGRAM
QUARTERLY PROGRESS REPORT

Lead Agency (FHWA or State DOT): ______**Kansas DOT**____________________________

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 # **TPF-5(079)**	**Transportation Pooled Fund Program - Report Period:** X☐Quarter 1 (January 1 – March 31) ☐Quarter 2 (April 1 – June 30) ☐Quarter 3 (July 1 – September 30) ☐Quarter 4 (October 4 – December 31)
Project Title: **Implementation Of The 2002 AASHTO Design Guide For Pavement Structures**	
Project Manager: **Susan Barker, P.E.** **Phone:** **(785) 291-3847** **E-mail: SusanB@ksdot.org**	
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Lead Agency Project ID: RE-0361-01	**Other Project ID (i.e., contract #):**	**Project Start Date:** 10/1/2003
Original Project End Date: 12/31/2005	**Current Project End Date:** 12/31/2012	**Number of Extensions: 5**

Project schedule status:

☐ On schedule ☐ On revised schedule ☐ Ahead of schedule X☐ Behind schedule

Overall Project Statistics:

Total Project Budget	Total Cost to Date for Project	Total Percentage of Work Completed
$1,009,963.00	$821,094.61	86%

Quarterly Project Statistics:

Total Project Expenses This Quarter	Total Amount of Funds Expended This Quarter	Percentage of Work Completed This Quarter
$92,405.19	$92,405.19	3%

Project Description:

The objective of this research is to develop the calibration procedure for the NCHRP design guide (M-E PDG) models for both flexible and rigid pavement structures for this region and to assist the state highway agencies (KS and NY) in the implementation of the new Guide for pavement design and surface selection practices.

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

A new and extensive laboratory testing program for determining the dynamic modulus of HMA and resilient modulus of subgrade soils on materials from several regions in New York State is under way; this includes binder and granular material testing.

Anticipated work next quarter:

The extensive laboratory testing program for determining the resilient modulus of subgrade soils and subbase/base materials typical for several regions in New York State will continue; materials are yet to be received.
A comparison between the current pavement design methodology used by NYSDOT for flexible pavements and the M-E P
will be conducted.
The AASHTO-ME software will be purchased and runs on typical designs for each region will be performed.

Significant Results:

The research efforts to date were concentrated on the development of the library of material characterization data for typical pavement materials and the identification of pavement test sections for which performance data may be available. The survey of literature has been conducted to identify existing material characterization data and pavement performance data collected already by the highway agencies and reported in internal documents.

The testing program for measuring the dynamic resilient modulus of typical asphalt concrete mixes and the binder shear modulus and phase angle is under way. Testing has been performed on more than 15 HMA mixes. For all mixes tested, the measured dynamic moduli were compared with the moduli predicted by the Witczak equation and by the Hirsch model. The comparison revealed that, for all mixes, the measured moduli were 50 to 100 percents higher than the moduli predicted by the Witczak Equation. The Hirsh model severely under-predicted the dynamic modulus.

Two databases of needed input data for the 1-37A model were created in Access format for flexible and rigid pavement structures, to ease the assembly of pavement construction and performance data for both rigid and flexible pavements. The data collected will allow runs of the 1-37A software to calibrate the model to local conditions when sufficient performance data will be available. The TrafLoad software has been used for axle load spectra extraction for the weight and classification stations that continuously recorded data for at least twelve continuous months, seven consecutive days in each month. The traffic data collected in 2004, 2005, 2006, 2007, 2008, 2009 and 2010 has been processed for all stations that had sufficient data.

A new Pavement Performance Program was initiated. Five pavement sections, constructed in 2005, have been included in the program. More sections will be added in the years to come. The work conducted in the last quarter focused on the of the dynamic complex modulus of the HMA mixes and the resilient modulus of unbound materials used in the construction of the experimental test sections on I-495 in Long Island and the analysis of the 2009 traffic data. Laboratory testing (dynamic modulus, Hamburg wheel loading, Tensile Strength Ratio (TSR)) was also performed for a WMA –HMA (warm mix vs. hot mix asphalt) comparison study.

A major new task has been added to the research plan. The objective is to develop a pavement design procedure for flexible pavement structures based on the MEPDG that the local environment, materials, construction practices, soils and maintenance needs and to assist the NYSDOT pavement design personnel in the implementation of the Procedure in to the pavement design practice. The calibration of MEPDG for the NE region of the United States was done using the data recorded on seventeen LTPP GPS-1 and GPS-2 sections. The current work is concentrated on performing runs with the calibrated MEPDG model for pavement design scenarios specific to each of the eleven NYSDOT regions.

Circumstance affecting project or budget. (Please describe any challenges encountered or anticipated that might the completion of the project within the time, scope and fiscal constraints set forth in the agreement, along with recommended solutions to those problems).

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