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.

<table>
<tr>
<td>Transportation Pooled Fund Program Project #
TPF-5(311)</td>
<td>Transportation Pooled Fund Program - Report Period:

☐Quarter 1 (January 1 – March 31)

☐X Quarter 2 (April 1 – June 30)

☐Quarter 3 (July 1 – September 30)

☐Quarter 4 (October 4 – December 31)</td>
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<tr>
<td colspan="2">Project Title: Implementation of the AASHTO Mechanistic-Empirical Design Guide (AASHTO Pavement ME) for Pavement Rehabilitation</td>
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<tr>
<td colspan="2">Project Manager: David Behzadpour, P.E.   Phone: (785) 291-3847   E-mail:David.Behzadpour@ks.gov</td>
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<td colspan="2">Project Investigator: Mustaque Hossain   Phone: (785) 532-1576   E-mail:mustak@ksu.edu</td>
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<td>Lead Agency Project ID:KS</td>
<td>Other Project ID (i.e., contract #):

RE-0678-01; C 2061</td>
<td>Project Start Date:

12/01/14</td>
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<td>Original Project End Date:
Multi-year project</td>
<td>Current Project End Date:
12/31/2022</td>
<td>Number of Extensions:
4 (1 cost extension)</td>
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Project schedule status:

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

Overall Project Statistics:

Total Project Budget	Total Cost to Date for Project	Total Percentage of Work Completed
$1,555,000	**$1,158,653.32**	91%

Quarterly Project Statistics:

Total Project Expenses This Quarter	Total Amount of Funds Expended This Quarter	Percentage of Work Completed This Quarter
$2,956.34	**$2,956.34**	1%

Project Description:
The Kansas Department of Transportation (KDOT) and the New York State Department of Transportation (NYSDOT) have been using Chapter 5 of the 1993 AASHTO Design Guide for rehabilitation design. AASHTO has adopted the pavement rehabilitation design procedures developed under the NCHRP 1-37A project for flexible and rigid pavement structures. These new procedures are based on mechanistic-empirical principles and they replace the earlier empirical procedures from the 1993 AASHTO Design Guide. The new procedures are incorporated in the AASHTOWare Pavement ME Design software.
The main objective of this research project is to conduct the local calibration of the AASHTOWare Pavement ME design procedure for pavement rehabilitation in Kansas and New York state. The results of the research will enable KDOT and NYSDOT to expedite the use of this new tool for the design of rehabilitated pavements. The results will also provide KDOT and NYSDOT with the necessary input values to design rehabilitated pavements using the mechanistic-empirical methods.

Progress this Quarter (includes meetings, work plan status, contract status, significant progress, etc.):
KSU has analyzed KDOT traffic data and completed all MAF's and almost all available axle load spectra. Those data have been used to check design sensitivity of rigid pavements in Kansas. The subcontractor has been providing NYSDOT with pavement and overlay design support and has analyzed the traffic data collected by NYSDOT. A list of data items needed for the local calibration was discussed with NYSDOT engineers, along with potential sources for assembling the data. The assembly of calibration data has continued, the challenge to find complete calibration data for a sufficient number of sections to conduct a meaningful calibration. The literature review on the calibration activities conducted by other states has been continued. The new models and material testing requirements developed under several NCHRP projects have also been reviewed; the models and the associated material testing protocols for top-down cracking were released in August 2021 with AASHTOWare Pavement ME version 2.6.1, several other versions have been released since then. The laboratory testing of asphalt concrete mixes used in the surface layer or overlays has continued. The new models for cracking, rutting and IRI require a new state-level calibration. The calibration of the updated models for HMA overlay over distressed flexible pavements has continued. The preparation of training materials is continuing.

Anticipated work next quarter:
Laboratory tests will continue on materials from other projects of KDOT. The subcontractor will continue the development of the software for FWD data processing for the NYSDOT part of the contract. The collection of data necessary for the calibration and the analysis of the traffic data will also continue. The calibration efforts for the new version of the software (2.6) will continue, with focus on the models for HMA overlays over distressed flexible pavements. The preparation of training materials will continue.

Significant Results:

This research work aims to contribute to the implementation of the AASHTOWare Pavement ME design software for rehabilitation design in Kansas and New York by performing the local calibration first.

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

The AASHTOWare Pavement ME has been issued in a new version (2.6.1) in August 2021. In comparison to version 2.5, it contains new models for cracking in flexible pavements, new material parameters and new calibration coefficients. The Covid-19 pandemic has affected the material testing program.