

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.):

In this quarter, some progress on laboratory tests have been done. 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 July 2020 with AASHTOWare Pavement ME version 2.6. Therefore, calibration coefficients for the cracking, rutting and IRI models are also new. The focus has been on the calibration of the models for the design of new flexible pavement structures. However, the calibration of the models for HMA overlay over distressed flexible pavements will continue. The new laboratory testing of representative asphalt concrete mixes used in the surface layer has continued, but a limited number of samples are available. The preparation of training materials has continued.

Anticipated work next quarter:

Laboratory tests will continue on materials from other projects. 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. Laboratory testing of materials will continue. 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) in July 2020. It contains new models for cracking in flexible pavements, new material parameters and new calibration coefficients. The Covid pandemic has delayed the material testing program and slowed down the progress.