Investigation of AASHTOWare Pavement ME Design Performance Prediction Models for Iowa Pavement Analysis and Design

Background
Mechanical Empirical Pavement Design
Guide (MEPDG) and AASHTOWare Pavement ME Design

- MEPDG: developed under National Cooperative Highway Research Program (NCHRP) Project 1-37A
- AASHTOWare Pavement ME: evolved from MEPDG and is now official AASHTO pavement design methodology (currently version 2.1)

Objectives
- Examine the AASHTOWare Pavement ME Design performance predictions using the previously identified MEPDG calibration coefficients
- Refine local calibration of AASHTOWare Pavement ME design predictions for Iowa pavement systems if needed

Local Calibration Procedure
Calibrate the pavement performance prediction models using actual field data

Local Calibration of Jointed Plain Concrete Pavement (JPCP) Systems

Calibration Set
Transverse Cracking Distress

Validation Set
International Roughness Index (IRI) Calibration Set

Faulting Distress

Summary: Key Findings and Significance of study
- For all performance measure types, lower average bias and standard error as well as higher R² values were attained
- The newly identified local calibration coefficients are recommended to Iowa DOT to be used in JPCP Pavement ME Design
- This study would be more comprehensive than previous MEPDG local calibration studies in literatures because of its methodologies including the detailed review of JPCP pavement responses and performance transfer function models and the employment of nonlinear optimization algorithm

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