Implementation Plans for Mechanistic Pavement Design Guide

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TRB

Workshop 137

The Kansas Plan
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Why Implementation in Kansas

- Mandated by Legislative Post Audit review.
- Equitable analysis of rigid and flexible pavement.
- Evaluate value of new construction.
What’s Being Done

- Laboratory tests on field mixed HMA.
- Laboratory tests from field prepared cylinders and cores from PCCP.
- Laboratory tests on undisturbed soil.
Expectations

- Design and analysis tool that reflects engineering properties in performance of pavement structures.
- Identify material characteristics and construction practices that affect performance.
- Evaluate affects of time, environment, materials, traffic and construction practice in an integrated system.
Expectations - conti

- Is a framework to build next generation of design and analysis tools.
- Identify targeted research for most pressing needs.
- Move forward regardless of road blocks that surface.
Legislative Post Audit Mandate

- LPA is branch of Legislature.
- Investigate issues raised by citizens or interest groups.
- Issue with actions and timing in LCCA.
- Actions can be structural or functional.
- At odds with KDOT’s structural model.
- LPA charged KDOT to implement new Guide ASAP.
Equitable Analysis of Rigid and Flexible Pavement

- Evaluate performance of new materials based on engineering properties.
- Guide uses similar input values to extent possible.
Evaluate Value of New Construction

- Value of pavement when contractor doesn’t meet specifications.
- Value of inputs can be fairly evaluated regarding effects on performance.
- Fair monetary value assigned to measured parameter.
- Insitu properties used to feed PMS performance models.
Laboratory Tests

- Four HMA field mixed materials, 12.5 and 19.0 mm w/ high and low sand content.
- Represent eastern and western Kansas materials.
- Two PG asphalts.
- Dynamic and flexure fatigue, ASTM D-3497 & AASHTO TP8-94.
Laboratory Tests

- QC/QA specifications for concrete pavement require strength tests.
- Measure elastic modulus and flexural strength of cores.
- AASHTO T-22 & T-97.
Contract Work

- $65,000 contract with KSU.
- Evaluate software.
- Perform sensitivity analysis for input variables.
- Identify future needs for collecting input parameters.
- Attempt local calibration, develop plan.
Expectations

- Design and analysis tool that reflects engineering properties in performance.
- Identify material characteristics and construction practices that affect performance.
- Evaluate effects of time, environment, materials, traffic and construction practices in integrated system.
- Guide is framework to build next generation of design and analysis tools.
- Research efforts will identify Guides strengths and weaknesses.