



Florida Department of Transportation Research

Development of Thickness Design Tables Based on the M-E PDG
BDH10

Version 1.0 of the Mechanistic-Empirical Pavement Design Guide (M-E PDG) program became available in May 2007. The program helps engineers create pavement designs by comparing trial designs with required pavement performance criteria. The models included in the M-E PDG are based on a national field pavement performance database. States wishing to use the M-E PDG need to recalibrate the models according to their local pavement conditions.

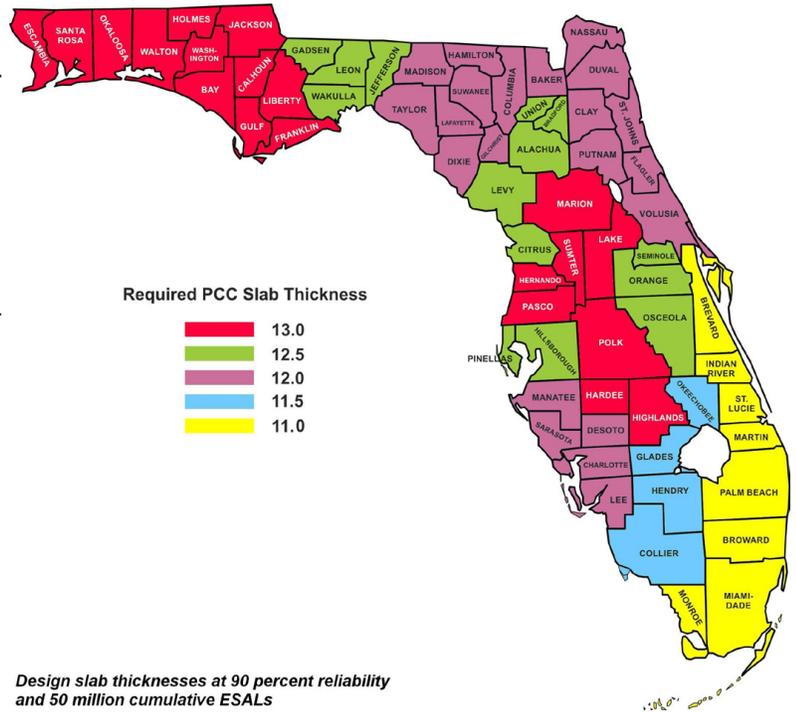
FDOT researchers from the Texas Transportation Institute to establish and characterize field test pavement sections in Florida to validate M-E PDG predictions, to calibrate the models to local conditions as necessary, and to establish a database for design models. The researchers conducted sensitivity analyses to identify critical design parameters for hot-rolled asphalt and jointed plain concrete pavements in Florida.

For jointed plain concrete pavements, made of Portland cement concrete (PCC), analysis identified the concrete coefficient of thermal expansion and compressive strength as important predictors of PCC pavement performance. Joint spacing, dowel diameter, and slab width were also important to slab performance. Two sets of PCC tables were developed from the analysis, which include recommended slab width and thicknesses.

For flexible pavements (asphalt concrete, or AC), the base modulus was found to significantly influence the amount of alligator (bottom-up) cracking. AC thickness design tables for new pavements and for asphalt overlays were developed based on predictions of alligator cracking over a 20-year design life.

The design tables will allow input of data on average annual daily truck traffic and on conditions from five climate regions in Florida.

The database and design tables developed through this project will make possible designs for pavements that perform with enhanced durability under Florida's widely variable traffic and weather conditions.



Project Manager: Bruce Dietrich, Roadway Design Office
Principal Investigator: Emmanuel Fernando, Texas Transportation Institute
For more information, visit <http://www.dot.state.fl.us/research-center>