About the Presenter

- **Georgene M. Geary, PhD, PE** is the Principal Engineer and Owner of GGfGA Engineering LLC, a DBE certified consulting firm located near Atlanta, GA.
- Georgene's past experience involved geotechnical, construction, materials, pavements and general transportation research prior to her retirement from Georgia DOT. She is a registered professional engineer in Georgia.
- She holds a BS degree in Civil Engineering from the University of Illinois, Champaign-Urbana and a Masters and PhD from Georgia Tech. Her PhD research involved using high-speed 3D laser technology to analyze and predict concrete pavement life.
- Beyond consulting she also teaches undergraduates at Georgia Tech as an Adjunct to give back to the next generation.

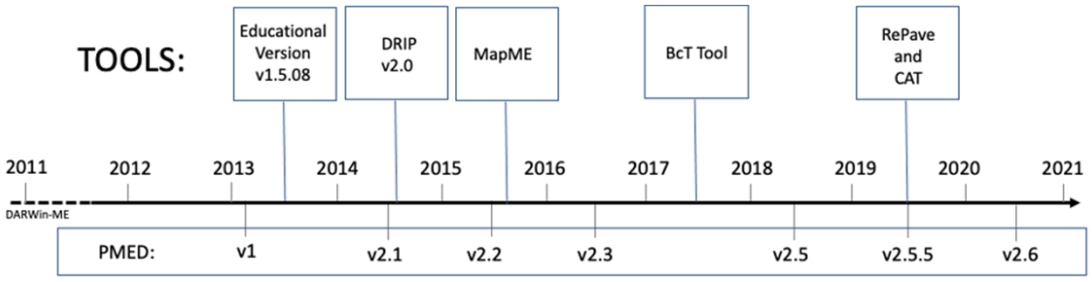
Updates to AASHTOWare Pavement ME Design Software Affecting Concrete Pavements: A Synthesis of the Changes to the Software Related to Concrete Pavements

Final Report
September 2021

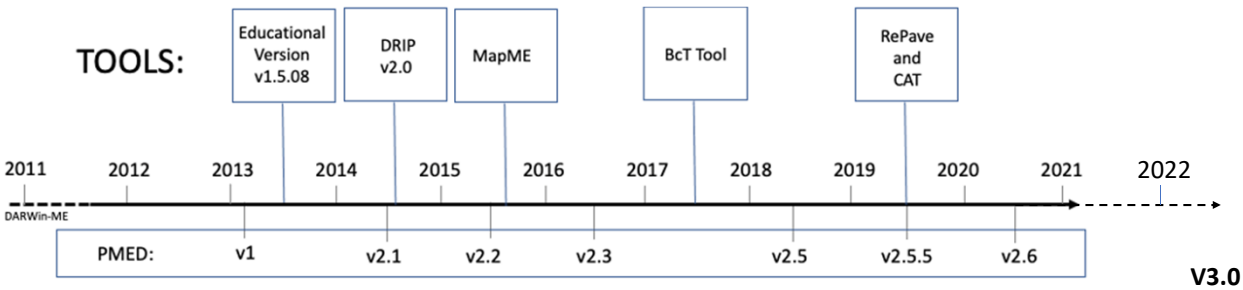
Georgene M Geary, PhD, PE
GGfGA Engineering, LLC
NCC Spring Meeting
April 2022

Report is at:
https://intrans.iastate.edu/app/uploads/2021/12/synthesis_of_changes_to_ME_Design_for_concrete_pavements_w_cvr.pdf

PMED Timeline in the Synthesis



PMED v3.0 is coming!



V3.0

New version Coming!

The new Pavement ME v3.0 concrete models will be different than the current v2.6 models

THE END

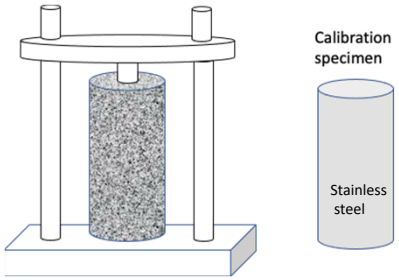
Why you should still download the report!

- What is the big deal with CTE?
- NARR, MERRA, MERRA2 what's the difference?
- What the heck is a NALS or a SJPCP?
- Do I have to Calibrate?
- What other tools are there out there to help me with Pavement ME??

?

Materials -- CTE recalibrated in v2.2

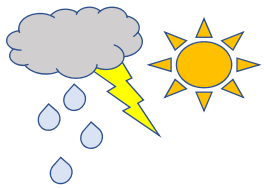
- CTE= coefficient of thermal expansion
- Tests performed prior to ~2010/2011 commonly used an (incorrect) assumed value for the steel calibration specimen
- Important for design:
  - JPC: opening and closing of joints and curling
  - CRCP: crack spacing and crack width



Climate -- NARR and MERRA2

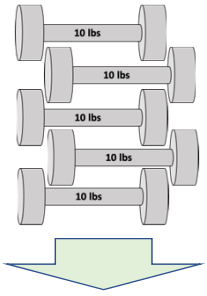
- The Enhanced Integrated Climate Model (EICM) uses climate data
- JPCP design uses **hourly** climate data!
- The EICM effects every aspect of JPCP distress prediction
  - Cracking and Faulting are affected by curling and warping
  - IRI uses climate in both the Spalling and Site Factor components

MERRA2 data will be incorporated in v3.0



Traffic – NALS

- NALS = Normalized Axle Load Spectra (Loads)
  - Actual loads on the trucks by vehicle class
  - Loads = *f*(vehicle class and axle)
- **Not** Equivalent Single Axle Load (ESAL)

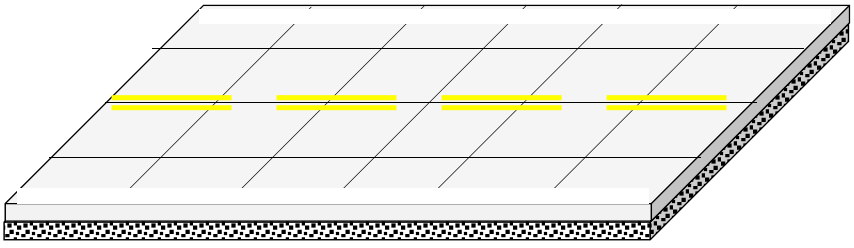


25x heavier!

SJPCP – added in v2.3

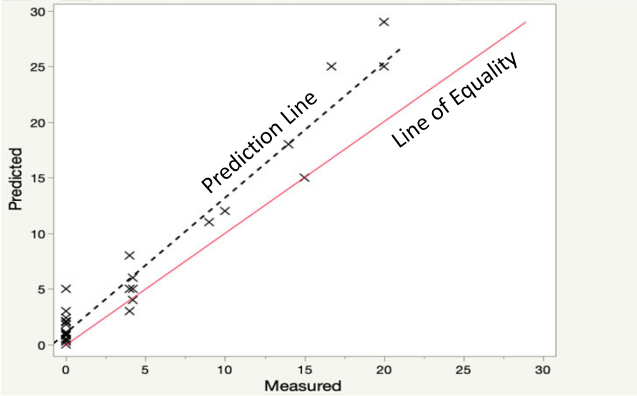
- COA- concrete overlay over asphalt
- SJPCP- short jointed plain concrete pavement = type of COA

Typically 6’ x 6’ panels



Local Calibration

Why do we get different results?



Coming in PMED v3.0

- Web Based
- MERRA2 (latest climate data) for concrete pavements
- Enhanced slab interface model (NCHRP 1-51)

Synthesis Document Outline

- Introduction
  - Terminology
  - Changes related to concrete pavements by software version
  - Tools
  - What has not changed
- Materials
- Climate
- Traffic
- Concrete Pavements (Design of JPCP, CRCP and SJPCP)
- Local Calibration
- MEPDG Users Group
- Research in Progress
- Conclusion

www.ggfga.com

Questions?

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THE REAL END