American Concrete Pavement Association

Positions & Perspectives

Pavement ME Design

The American Concrete Pavement Association (ACPA) has long held the position that fair competition between the pavement industries in surface transportation infrastructure construction and rehabilitation provides the highest returned value to the American taxpayer. Fair competition is affected at many points in the process of roadway design, bidding, and construction, and may affect the implementation of any solution (new construction, resurfacing, rehabilitation or preservation).

One of the keys to achieving fair competition between the pavement industries is through the use of state-of-the-art technology in pavement thickness design. It is ACPA's position that the American Association of State Highway and Transportation Officials' AASHTOWare Pavement ME Design® is the state of the art in pavement design, as it builds upon the NCHRP mechanistic-empirical pavement design guide, and expands and improves the features of the original prototype computational software (DARWIN M-E).

As such, ACPA affirms the following:

- Mechanistic-empirical design is the most comprehensive, and scientifically rigorous approach to developing comparable pavement designs available at this time;
- The concrete pavement industry supports the adoption of AASHTOWare Pavement ME Design® by state highway agencies for design of both concrete and asphalts pavements (as well as concrete overlays). Ideally, implementation should be based on locally derived calibration factors, and its application based on judicious and fair selection of input variables;
- Adoption of AASHTOWare Pavement ME Design® for concrete pavements is not contingent on adoption for asphalt pavements. If an agency is not yet confident in models within the asphalt design module, it should not prevent the adoption of the concrete design module.
- AASHTOWare Pavement ME Design®—when calibrated and used with properly selected design inputs—will produce more accurate pavement performance predictions and reduced occurrences of over- or under-design than AASHTO's previous thickness design guides.
- The default national calibration coefficients for the jointed plain concrete pavement (JPCP) designs in AASHTOWare Pavement ME Design® are adequate in most situations while performing local calibration, and where sufficient local sections for performing calibration are unavailable. In many instances, utilizing the national calibration coefficients results in more conservative pavement designs relative to results using local calibration coefficients (Mu et al. 2018).
- ACPA engineers will provide assistance to any industry personnel—including ACPA members and ACPA-affiliated Chapter/States—as well as to agencies interested in using AASHTOWare Pavement ME Design®. ACPA holds a site license for the software, providing its use to affiliated Chapter/States.
- ACPA will continue to support other thickness design procedures, including PavementDesigner, WinPAS, and BCOA-ME particularly for city, county, state and private facilities where AASHTOWare Pavement ME Design® is less applicable or appropriate, due either to complexity and expense, or where other procedures allow for technology not addressed in AASHTOWare Pavement ME Design®.

References

1. Mu, F., Mack, J. W., and Rodden, R. A. (2018). Review of national and state-level calibrations of AASHTOWare Pavement ME Design for New Jointed Plain Concrete Pavement, International Journal of Pavement Engineering, 19:9, 825-831, DOI: 10.1080/10298436.2016.1210804

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