

Applied Research Associates



# Release Notes

Build 2.6.1

*August 2021*



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# 1 Introduction

This document describes the resolved and closed issues as well as the features present in the v2.6.1 release of AASHTOWare Pavement ME Design released in August 2021.

## 2 Updates and Changes

### 2.1 General Updates

- The absolute minimum or maximum input value limits were adjusted for the following inputs:
  - Dual tire spacing
    - The absolute minimum value was changed from 1 to a 0
  - Saturated hydraulic conductivity
    - Absolute maximum
      - SI – from 300 m/hr to 915 m/hr
      - US – from 1000 ft/hr to 3000 ft/hr
  - These values have no impact on the predicted distresses and only defines the min/max limits when the software should not run. Values outside of these ranges result in an error which will stop the software from running.
- Fixed an issue where the predicted JPCP cracking at the specified reliability would exceed 100 %. The value is capped at 100%

### 2.2. Top Down Cracking Module Updates

- An error occurred in the AC over JPCP design strategy when an asphalt layer was included below the JPCP layer.
  - The layer converter module for TDC included the AC layer thickness below the JPCP layer when calculating the total asphalt thickness which resulted in an error when predicting the depth of top-down cracking.
  - The issue was fixed by only accounting for the AC layers above the JPCP layer.
  - This issue was not widely reported by users. A revision version were sent to any users with similar issues.
- Users have reported two convergence issues within the structural data converter module. The two items are identified below.
  - Dynamic modulus mastercurve conversion to relaxation modulus using Prony-series
    - It was found that the non-linear optimization fitting procedure did not use the correct gradient functions which resulted in higher sum of squared error (SSE) values in some cases.
    - The gradient functions were corrected which resulted in a consistently better fit for the mixes provided by users.
    - The issue was not widely observed for neat mixtures.
  - Power function fitting procedure to determine E1 and m.
    - The sum of squared error (SSE) convergence limit of 0.1 were too stringent. The value was adjusted to 0.2.

- The non-linear optimization procedure to determine the E1 and m values was replaced with a linear regression function after performing a log transformation.

- $$E(t) = E_1(t)^m$$

- $$\log(E(t)) = \log(E_1) + m \times \log(t)$$

- The simplification of the fitting procedure from a non-linear optimization to a linear regression resulted in near identical E1 and m values.
- The implemented changes did not show a difference in the final predicted top-down cracking for the set of verification and validation (v&v) test files. The v&v files are mostly based on neat mixtures and will be expanded to include a broader set of asphalt mixtures for future testing.

## 4 New enhancements

No enhancements were implemented.

## 3 Feature Requests

Feature requests can be made to [pavementmedesign@ara.com](mailto:pavementmedesign@ara.com) or to task force members. Requests can also be filed through the Pavement ME Design web portal at [www.me-design.com](http://www.me-design.com).

## 4 Upgrading

To upgrade to the newest version of the software, users will need to uninstall the current version and then reinstall the new version of the software on their machines. They will be required to input their updated or new license code (and license URL for site license users) after the program is installed and opened. The new version of the software can be downloaded at <http://www.me-design.com>.

## 5 Contact information

If you have any questions regarding these release notes, or regarding the ME Design software, please contact the ME Design Support Team at:

The ME Design Support Team  
Email: [pavementmedesign@ara.com](mailto:pavementmedesign@ara.com)  
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Monday through Friday  
8:00am – 5:00pm CST