Applied Research Associates

Release Notes

Build 2.5.0

July 1ˢᵗ 2018

Contents

1 Introduction

This document describes the resolved and closed issues as well as the features present in the v2.5.0 release of AASHTOWare Pavement ME Design released on July 1st 2018.

2 Enhancements

Pavement ME Design 2.5.0 implemented the enhancements described in the following subsections.

2.1 Manual of Practice Integration

The manual of practice or MoP is now integrated with the Pavement ME Design software. Users can now select "Help – MOP Help" in the menu ribbon and then select a property in the application and the application will open the integrated manual of practice PDF or addendum to the appropriate location.

2.2 Modulus API

The modulus API was developed for researchers wanting to work directly with the modulus analysis module in Pavement ME Design. The API allows users to programmatically access modulus data including master curve coefficients, A-VTS, and standard error reports.

2.3 MasterTCModel File API

The MasterTCModel File API provides researchers with programmatic access to the thermal cracking outputs in Pavement ME Design. It completely defines the input and output intermediate files and provides programmatic access to those files.

2.4 Report Customization

Users may now customize their output report based on performance criteria. The performance criteria user interface has been improved to include checkboxes next to each performance criteria. Checking or unchecking these boxes will appropriately display or hide these outputs in the PDF and Excel reports.

2.5 Enhanced Project Comparison

Significant improvements have been made to the comparison tool in the Pavement ME Design user interface. Users can now enter a "filter" mode when comparing projects and select which properties they want to compare between two projects. The user's filter selections are automatically saved and used by the application for future comparisons. More user-friendly metadata is now available in the comparison tool window.

2.6 Maintenance Strategy Tool

Users now have access to a single shot maintenance strategy which affects the projects performance parameters during an analysis run for specific surface treatments for rigid and flexible pavements. Only "non-structural" maintenance strategies are currently available. The results of applying the maintenance strategy are included in the PDF and Excel output reports.

2.7   Integration of MERRA Climate Data for Flexible Pavements

Flexible designs have now been calibrated to use the MERRA-2 data set. Users can download climatic HCD files from the InfoPave site https://infopave.fhwa.dot.gov/Tools/MEPDGInputsFromMERRA or by selecting a project location from a map based input in the updated climate tab. The application will not allow rigid designs to be run with the MERRA data set as they have not yet been calibrated for that climate data. For more information on the available climatic data sets and their application in Pavement ME Design, please see the climatic addendum at http://me-design.com/MEDesign/Download.aspx under the "Addendums to the Manual of Practice" tab.

2.8   Transliteration of Analysis Executables to C#

All FORTRAN and C++ code in the analysis engine has been converted to C#. Major step toward creating a viable web application.

2.9   Tensile Strength for Level 1 Inputs

Input level 1 is now available in the user interface for entering tensile strength data. Level 1 inputs are used to predict the change in tensile strength over different temperatures. The Molinaar default relationship between tensile strength and temperature have been added to the software. Users may now enter different tensile strengths with different temperatures.

2.10   Recalibration

New flexible and flexible rehab pavement designs (including semi-rigid) have undergone recalibration as a result of the technical audit changes and the new MERRA-2 climate data set.

2.11   Other Notable Changes

- APADS now runs 100-year designs. The analysis should now correctly run 100-year designs.

3   Issues Resolved

This section will detail the issues resolved in build 2.5.0 since the previous (2.3.1) build was released.

ID	Title	Repro Steps	State

6826	Coefficient of lateral earth pressure duplicate warning message	Open the attached file Note the warnings regarding coefficient of lateral earth pressure There are two warnings, but only 1 subgrade field with coefficient of lateral earth pressure Should be only 1 warning message Click on the subgrade layer Note a third coefficient of lateral earth pressure warning message appears Change the coefficient of lateral earth pressure to 0.5 Note that one warning is removed while the other two remain. There should be only one warning and it should disappear when the user corrects the property value.	Resolved
6827	Long design life failing for projects that run Cracking or CrackingBOL analysis	* Run an analysis on a project that has a JPCP top layer set to 90 years * Observe error in cracking/crackingBOL	Closed
6854	Change the error message for lane width property	1-Create flexible project 2-Go to traffic tab and go to design lane width property 3-Change the value of design lane width property 4-Error will pop up saying that "For this type of design, you cannot set the lane width" Change it to "For this type of design, lane width must be <value> <units>"	Closed

6926	Modulus range change	Change the following recommended and absolute ranges as follows: Recomended Range Subgrade modulus: 5000-50000 Non-stabilized base modulus: 10000-100000 Absolute Range Subgrade modulus: NO ERROR Non-stabilized base modulus: NO ERROR Current values Modulus subgradeModulus Elastic/resilient modulus (psi) Elastic/Resilient modulus is out of range (5000 - 50000 psi) 5000 50000 Modulus nonStabilizedModulus Elastic/resilient modulus (psi) Elastic/Resilient modulus is out of range (10000 - 100000 psi) 10000 100000	Closed
5395	Target thickness of the last subgrade layer above the bedrock is being transferred into the .dgpx file.	The average thickness calculated by evercalc of the last subgrade layer above the bedrock should be transferred into the .dgpx file. * add data structure for depth to bedrock in summary file from EverCalc (done) * add parsing for thickness (done) * add check for subgrade before bedrock exist (done) * do not add if condition not met (done) * add data to plot model for future reference (done) * calculate avg during export to MEDesign step	Closed
970	Semi rigid interface range values are invalid	1) Create a New Pavement -> Semi-Rigid Pavement design strategy 2) Click on the Semi rigid layer 3) Observe the property names in the material property grid. The names are not correctly formatted.	Closed

1169	Error in Excel Report - Distress Charts	The threshold values in the "Distress Charts" worksheet has an extra series (shown as a numeric value in the chart). This series matches the "Threshold Value" series and is extraneous. Please remove this value from the distress charts.	Closed
1170	IRI Flexible	IRI Flexible is pulling data from the fatiguecsm.tmp file. When it pulls the data for CTB fatigue cracking it pulls from the wrong column. (Column 2 is the incorrect column, it should be column 3). Please update IRIFlexible to pull the CTB fatigue cracking value from the correct column in the file.	Closed
1225	Error message in the case of EICM fails stability check	In attached project customer entered his values for PCC heat capacity and thermal conductivity and EICM stopped was not working but Pavement ME didn't stop. I think that the reason of the bug is in failing of EICM stability check but currently there is no error message in this case.	Closed
1336	Validation of calibration equations	As a user, I would like the application to help check & control calibration equation entry errors	Closed
1380	CSB Property Grid displays incorrect values	Open a New Pavement/Semi-Rigid and look at the Cracking, General, Strength, and Thermal properties. They appear to be incorrect.	Closed
1629	Excel files not generating	Open the attached project in ME Design. Attempt to generate output report with Excel output turned ON. Excel output does not generate.	Closed

2489	Air voids not saving to the database	1) Open ME Design with a database connection 2) Change the air voids on a project to 10% 3) Save the project to the database 4) Close the project 5) Retrieve the project from the database 6) Air voids will be set to 4% (incorrect) Air voids should maintain the value entered before they are saved to the database.	Closed
2954	AC over JPCP Analysis checking for Base Construction Date	http://me-design.com/MantisBT/view.php?id=3660 Summary 0003660: AC over JPCP Analysis checking for Base Construction Date Description The interface is checking the base construction date for AC over JPCP analysis (and warning that it is in error). Base construction should not be checked for AC over JPCP analysis. Steps To Reproduce Look at attached project. Reproduce by setting the pavement construction date far in the past.	Closed

2955	Default AC/AC on [46in A-2-4, 40in A-2-4, HFW] analysis gets wrong thickness values in _space.dat	http://me-design.com/MantisBT/view.php?id=3386 Description The _space.dat intermediate file gets wrong thickness values for the bottom finite layer (40in thick) in the attached DGPX. When the thickness of that layer is increased to 100in, the values are still wrong When the thickness of that layer is decreased to 20in, the values seem okay Steps To Reproduce 1. Download the attached DGPX file. 2. Launch ME Design. 3. Open the DGPX file. 4. Run the project. 5. When the run completes, an error is reported: ThermalCracking1.tmp couldn't be found. This seems due to ReflectionCracking.exe attempting to parse "-Inf" to double from _space.dat. (See add'l info on this report.) The presence of "-Inf" seems due to the wrong thickness values at the top of _space.dat. Additional Information Debug "path": I tried running the MapME-generated AC/AC analysis. It errored out saying that "ThermalCracking1.tmp" couldn't be found. IRIFlexible.exe generates it, so I ran its command and checked the errorlevel (6), which means that it never reached the code that generates the file. It errored out when new'ing a ReflectiveCracking object on line 87 of IRIFlexible/Program.cs. The ReflectiveCracking ctor requires two log files which didn't exist, causing the ctor to fail. Those two log files are generated by ReflectionCracking.exe, the command for which failed before generating the log files when it tried to new a SpaceFile, attempting to parse the string "-Inf" (in the	Closed

		modulus position) to a double in the _space.dat file (line 103 of SpaceFile.cs).	

2956	Update ground water table depth in the hourly climate data table	http://me-design.com/MantisBT/view.php?id=3000 Description Enter GWT depth 10 ft and import/load any climate file. Then click hourly climate data tab. The value in the last column of the table will be 10 (which is GWT depth in feet). Close the hourly climate data tab. Now, change the GWT depth from 10ft to 20ft. Open hourly climate data tab again. You will see value of GWT doesn't change. It's still 10. The value of GWT in the hourly climate data tab should automatically change when you change the GWT depth.	Closed
2958	Add AC, CRCP and JPCP IRI variance equation	http://me-design.com/MantisBT/view.php?id=3052 Description Currently, the label says "PCC IRI JPCP Std. Dev." and "PCC IRI JPCP Std. Dev.". Actually it is initial IRI standard deviation. Please change the label to something like: "PCC Initial IRI JPCP Std. Dev." and "PCC Initial IRI CRCP Std. Dev.". And add JPCP IRI variance equation in the interface.	Closed

2976	Tensile strength not being computed correctly	http://me-design.com/MantisBT/view.php?id=3267 The tensile strength is not being computed as a function of temperature, when it is in fact temperature dependent.	Closed
2978	Water Table has no effect on calculated distresses	http://me-design.com/MantisBT/view.php?id=2674 Description It is my understanding the depth to water table is a sensitive input value, however, no matter what depth to water table I use, I get the same results. Steps To Reproduce Run the attached file with depth to water table of 5 feet. Change the depth to water table to 60 feet (or any other value). Run. Results are identical.	Closed

2981	APADS; IRIFlexible	http://me-design.com/MantisBT/view.php?id=3393 Description The reflection cracking in the case of AC over Semi-rigid design seems to have an issue. One bug is in APADS – for this type of design program printed out zero fatigue cracking in existing AC layer instead of real values. Also it is necessary to check how FlexibleIRI program combines existing cracking from AC and CTB layers for calculation of reflection cracking.	Closed

2983	VC++ Redistributable Failing to complete installation	http://me-design.com/MantisBT/view.php?id=3716 Description It appears on VM's only (although it could come up on a physical machine), the VC++ 2015 redist does not complete installation. This will cause the analysis to fail. The analyses will produce an error mentioning that a dependency is missing. If the user is stuck on installing the redist package, they will need to manually install https://www.microsoft.com/en-us/download/details.aspx?id=49093 [^] (make sure its the appropriate architecture for the OS). Then uninstall/reinstall or repair the redist package. It should go through.	Closed

2984	ME Design 2.3 installer (a VS Installer Project) confuses .NET 4.6 with the prerequisite 4.6.1	Description	Closed
		Normally when installing ME Design, the user will receive a notification before installation begins if the required version of .NET is not installed on their system. This notification stops installation and sends the user to the Microsoft website to download .NET.	
		With ME Design 2.3's move to .NET 4.6.1, it has been observed and reproduced that the presence of .NET 4.6 will "fool" the installer into thinking that 4.6.1 is already installed. The installation will begin and then, near the end, emit an error: "Error 1001. InstallUtilLib.dll: Unknown error." The installation then rolls back.	
		It has been verified that versions of .NET prior to 4.6 do not confuse the installer in this way.	
		Additional Information	
		The "workaround" is to know to install the right framework version when this error occurs. For ME Design 2.3, the right framework version is 4.6.1. This is likely a bug in the VS Installer project type, whether it's specific to interaction with 4.6 or generally applies when "x.y" is present but "x.y.z" is required. It would be an unavoidable issue if we continue to use VS Installer and probably provides another good reason for us to move to InstallShield at some point.	
		See the updates at this MSDN blog article for descriptions of various VS Installer issues, and note that one older issue is similar to this one:	
		https://blogs.msdn.microsoft.com/visualstudio/2014/04/17/visual-studio-installer-projects-extension/ [^]	
		There is general indication online that VS Installer is rather broken (perhaps a reason why MS abandoned it in favor of recommending/bundling the 3rd-party solution of InstallShield) and will simply stop receiving serious maintenance. Some discussion: http://stackoverflow.com/a/12894710/402749 [^]	

2985	No check performed on the user-entered value for water table depth	http://me-design.com/MantisBT/view.php?id=3667	Closed
		Description	
		From engineering review of input ranges during 2.3.0-alpha testing:	
		"There is no check performed on the user-entered value for water table depth. The program accepted a trial value of 600,000 ft. for water table depth, and this was also used in the calculations (verified with daily water table depth in "input.tmp", which is used by EICM). Current minimum value is 0 ft. – program shows error message for negative water table depth. Recommend setting a maximum value of water table depth that can be entered by user. Program may internally have a limit (not verified), but needs to be shown in the output."	
		Additional Information	
		Should review code for pre-existing internal limits. If not present, needs determination of recommended maximum depth from engineering.	

| 2986 | No error message shown if steel depth exceeds half the depth of concrete slab | http://me-design.com/MantisBT/view.php?id=3668

Description

From engineering review of input ranges during 2.3.0-alpha testing:

"Program shows error message if Steel Depth (in.) is less than 3.5 inches, but does not show error message if value exceeds half the depth of concrete slab. When the Steel Depth (in.) variable is selected, the program shows the following message to the user in the info panel:

Steel Depth (in.)

Depth to the center of reinforcing steel from pavement surface. A minimum steep (TYPO for steel) depth of 3.5 inch and a maximum of mid-depth are recommended. Minimum: 3.5

It is recommended to display an error message for maximum steel depth. Program produced output for a trial value of 5000 inches for steel depth, though the distresses predicted were very high."

Additional Information
Note that the description points out a typo in the warning message. This text seems to be drawn from one of the configuration files, probably InterfaceRange.txt.

Need to confirm exact absolute/recommended limits. Assuming above write-up indicates 0;3.5;-;h/2. | Closed |

| 2987 | No error messages for irregular values of modulus of rupture and elastic modulus of PCC for Level 3 inputs | http://me-design.com/MantisBT/view.php?id=3669

Description

From engineering review of input ranges during 2.3.0-alpha testing:

"Program does produce any error message for irregular values of modulus of rupture and elastic modulus of PCC for Level 3 inputs. Error message is shown for Level 1 and 2 (tested on new JPCP and new CRCP designs) but no error message is shown for Level 3.

No error message was shown for Modulus of Rupture = 600,000 psi and E = 90,000,000 psi.

No error message was shown for Modulus of Rupture = − 6000 psi and E = − 3,000,000 psi. However, program crashed for negative values with the message − PDF output cannot be produced.
…
Inconsistencies between configured reliabilities and those found in C:\Users\dayyala\Documents\Project Data\ME Version 2.3 Alpha Testing\Dinesh - Error Check Cone Files\new CRCP 20 years\crcpResults.txt.

Recommend error messages for both minimum and maximum values of modulus of rupture and elastic modulus for Level 3.
Additional Information

Need to determine absolute/recommended min/max for level 3 PCC moduli from engineering. | Closed |

| 2988 | No error message for irregularly high values of resilient modulus for unbound base course | http://me-design.com/MantisBT/view.php?id=3670

Description

From engineering review of input ranges during 2.3.0-alpha testing:

"Program did not show error message for trial values of resilient modulus for unbound base course (non-stabilized A-1-a) = 90,000,000 psi and subgrade (A-1-a) = 50,000,000 psi. Program crashed with the same error message as shown above for Issue 3 [http://me-design.com/MantisBT/view.php?id=3669 [^]]. Error message is displayed if negative values are entered for Level 3 input.

Recommend displaying error message if user-input exceeds a limiting maximum value for resilient modulus of unbound materials."

Additional Information

Need to verify any existing limits and add correct maximum. Determine the right values from engineering. | Closed |

2989	Program accepts both negative and extremely high values for the joint spacing in JPCP Level 3 design	Description From engineering review of input ranges during 2.3.0-alpha testing: "Program accepts both negative (trial value = –10 feet) and extremely high (trial value = 50,000 feet) values for the joint spacing in JPCP Level 3 design. Output showed very high distresses for 50,000 ft. spacing and reasonable distresses for – 10 ft. spacing. Recommend error messages for negative joint spacing and user-entered values exceeding an upper limit." Additional Information Need to determine full absolute/recommended min/max value set from engineering.	Closed

| 2990 | Possible to enter any value for interface friction | http://me-design.com/MantisBT/view.php?id=3672

Description

From engineering review of input ranges during 2.3.0-alpha testing:

"In Layer Interface under the drop-down options for Full Friction Interface, the user has an option to specify the Interface Friction values. The info panel for this variable suggests that the user enter values between 0 (for no bonding) and 1 (for full bonding). It is possible to enter any value in the boxes, and no error message is produced (values of 5000 and 8000 were used in trial run). There is absolutely no difference in predicted distresses between these values and 1.0, hence it is not significant. However, recommend to implement error message for interface friction, as the input values are printed to the PDF output." | Closed |

| 2991 | No error checks for user-entered values of strength parameters for cement-stabilized layers | http://me-design.com/MantisBT/view.php?id=3673

Determine absolute/recommended min/max limits from engineering.

Description

From engineering review of input ranges during 2.3.0-alpha testing:

"There are no error checks for user-entered values of strength parameters for cement-stabilized layers (e.g. Chemically Stabilized – Soil-Cement layer). Trial values were entered for variables CSB Modulus of Rupture = 450,000,000 psi, Minimum Modulus = – 50,000 psi and Elastic Modulus = 800,000,000 psi. No PDF output was produced, as run could not be completed and the output error shown for Issue 3 [http://me-design.com/MantisBT/view.php?id=3669 [^]] was encountered.

Recommend limits for minimum and maximum values for CSB strength parameters." | Closed |

| 2992 | Traffic inputs - no error messages for percentage of trucks with different wheelbases | http://me-design.com/MantisBT/view.php?id=3675

Description

From engineering review of input ranges during 2.3.0-alpha testing:

"Error messages are shown for average spacing of short, long and medium axles (ft.), but not for the percentages. I did a trial JPCP design run with values of 0%, 50%, 50% for short, med, long axles and there was a minor difference in JPCP transverse cracking (2.76 percent slabs cracked) as compared to default values of 17%, 22%, 61% (2.65 percent slabs cracked). It is possible to enter erroneous values (tested with 500,000%, 800,000% and 32,000,000%) and still get the program to run, producing very high distress values (122.90 percent slabs cracked, which is an impossible number for a percentage value).

Recommend limiting all individual percentage values to be between 0 and 100, and add a check that the sum is equal to 100. This affects only rigid pavement design, as flexible pavement does not use wheelbase in traffic calculations."

Additional Information

Check with engineering for any recommended limits (in addition to the implicit absolute limits at 0% and 100%). | Closed |

| 2994 | Virtual weather station – User can use any combination of weather stations irrespective of their distance | Description

From engineering review of input ranges during 2.3.0-alpha testing:

"User can use any combination of weather stations irrespective of their distance to generate virtual weather station. Program does not restrict the maximum distance of stations that can be selected. E.g.: Single weather station of Cahokia/St. Louis, IL versus Virtual weather station generated using the following stations: Des Moines, IA (276 mi), Little Rock, AR (288 mi), Pensacola, FL (584 mi), Wilkes-Barre, PA (786.3 mi) and St. Johns, AZ (1100 mi). Recommend restricting the selection to stations within a limited distance from the intended project location."

Additional Information

Needs interface & code review to confirm that project location is an input. The lat/lng entry in the climate summary may already be internally related to the station entry in a way that needs to be accounted for. | Closed |

| 2995 | Single weather station – User can enter any value in the Elevation field | http://me-design.com/MantisBT/view.php?id=3665

Description

From engineering review of input ranges during 2.3.0-alpha testing:

"Program accepted values of -50,000 ft. and 950,000 ft. for elevation, but showed the actual elevation of the location (408 ft. for Cahokia, MO station) in the PDF output. The elevation does not affect any calculations, including EICM. Since the program does not use the user-entered value of elevation in any manner, it is recommended to change the field to "read-only"."

Additional Information

Needs code review verification of elevation input's non-influence on calculations. | Closed |

2996	Pavement ME does not stop in the case of project run exceeding 19 sublayers in APADS	http://me-design.com/MantisBT/view.php?id=3757 Description User is trying to run projects with non-typical thick GB (in SI units 1,000 mm and more), and for the cases GB thickness more than 1,000 mm (40 inches) he received following message: "Number of sublayers exceeded 19. Try reducing the number of layers input or split a thick base into a thin base and subgrade layer of the same material." But Pavement ME does not stop in the case of project run exceeding 19 sublayers, APADS is running (with wrong results) and finally fails to create Output report.	Closed
2999	Read license information from license file during remote deployment	http://me-design.com/MantisBT/view.php?id=3744 Description During remote deployment, the license information should always be read from the license file instead of checking the registry.	Closed

3001	Issue with Semi-rigid pavement having a sandwich granular layer beneath asphalt	http://me-design.com/MantisBT/view.php?id=3643 Description Get an error when running a semi-rigid pavement that has a sandwich granular layer between the bottom of the asphalt and the top of the chemically stabilized layer. Analysis completes and files are written to the file, but the output report is not generated and error message is displayed instead of report. Output window shows "Inconsistencies between configured reliabilites and those found in "…\semi-rigid test w drainage\flexibleResults.txt." Using version 2.2.6 Steps To Reproduce Perform analysis on pavement structure of Flexible, Sandwich/Granular, Chemically stabilized, Subgrade, Subgrade. Additional Information Running a semi-rigid overlay with no sandwich layer works, but with a sandwich granular layer the error message is reported. Semi-rigid projects (whether a granular sandwich layer is used or not) with the multi-layer rutting calibration has an "Error writing intermediate files message". Flexible pavements on unstabilized bases had no issues. AC overlay of Semi-Rigid project worked with a sandwich granular layer within the existing pavement structure to work. Had an issue entering the project into the database, got message: "Error inserting project: String or binary data would be truncated. The statement has been terminated." File still gets saved to the database, but it will not generate an output report (similar report generation error mentioned in previous email).	Closed

| 3003 | Structure Issue associated with New Flexible/Semi-Rigid Pavements | http://me-design.com/MantisBT/view.php?id=3732

Description

User wanted to create a structure with the following layers:

1) New Flexible
2) Sandwich Granular
3) Semi-Rigid

Reflection cracking does not apply in this case, as cracks will not propagate through the sandwich granular layer. A different structure is required.

The application should not allow users to create this type of structure when new flexbile - semi-rigid is selected.

Steps To Reproduce

Create a new project with the structure described above and run it. Error in output window "Error in configured reliabilities, cannot find file flexibleResults.txt" - or similar.

Additional Information

To model the desired pavement, please create a design with the following attributes:

New Flexible, Granular base (with constant modulus), Granular base (with constant modulus) and subgrade. | Closed |

3007	ReflectionCracking.exe - Regionalization settings issue	http://me-design.com/MantisBT/view.php?id=3679 Description MEDesignAPI does not account for regionalization settings when parsing date/time. This may cause the executable to fail when parsing date/time from regions other than the US. This issue has been confirmed with US (Canada) regionalization settings. Steps To Reproduce 1) On the client machine, open the regionalization settings windows console. 2) Under "Formats" change the "Format" field to English (Canada). Hit Apply, then OK. 3) Run any AC/AC analysis (see attached file). 4) Error will occur during report generation. (Examine the event viewer for details).	Closed

3008	License not showing up as activated when administrator performs installation	http://me-design.com/MantisBT/view.php?id=3095 Description If a user has previously had ME Design on their system and attempts to automatically reactivate their software they encounter an issue if another non-admin user attempts to use the machine with their login where the license shows up as "Unlicensed". The issue can be corrected by deleting the PvMEDLicense.license file and having the user re-input their most recently received license code. I believe the web service is not overwriting the PVMedLicense.license file during automatic activation in some cases.	Closed

3009	PvMEDLicense.license file	http://me-design.com/MantisBT/view.php?id=3150 Description Users who have previously installed the software and uninstall it to install a new version cannot get their license to register correctly. Typically occurs when an IT admin installs the software and the user logs in afterward. (The license seems to work at first for the admin, then afterward does not). One of two things is happening: 1) The PVMedLicense.license file is not being uninstalled and/or 2) The PVMedLicense.license file is not being overwritten.	Closed
3154	Modulus crash - Filename issue	1) Open the attached file in ME Design and run it. 2) Modulus immediately crashes. Modulus should run to completion (along with the rest of the analysis).	Closed

3329	0003773: Exising Asphalt Layer Thickness	Description	Closed
		I did a pavement design. Average existing layer thickness is 8.70". The rehabilitation strategy is 3.75" mill and 3" AC Overlay. I used version 2.3.1.	
		In the AC layer properties, for rehabilitation level 2, one of the input is milled thickness. I ran two designs with 0" milled thickness and 3" milled thickness and the output is same. Does the milled thickness is taken into account?	
		What is the input for existing asphalt later thickness that I need to enter; 8.7" or 4.95"(8.7"-3.75").	
		Please clarify.	
		For existing AC layer you need to enter the thickness after milling (in your case it will be 4.95 in).	
		For mill parameter in AC Rehab you nee to use 3.75 in	
		In the web-based help page and in the explanation box for each input in the software, there is no indication that the existing asphalt layer thickness should be milled thickness. Since there is an input for milled thickness, we assumed that the input for existing asphalt layer is pre-mill thickness. It would be great if you guys can clarify it in the next update of the help page.	

| 3330 | 0003777: PDF Enhancement: Multi-rut coefficients | Description

The PDF printout for a design using a HMA multi-rut under the 'AC Rutting (user Multilayer Calibration), at the bottom of the table only shows the AC Layer coefficients for only the first layer.

When reviewing a design, the reviewer needs to see the coefficients for all layers to ensure the proper numbers are being used, particularly when reviewing a consultants design.

Request: Please place the coefficients of all layers on the pdf printout.

Steps To Reproduce

1. Run a typical HMA with multi-layer rutting
2. Open the pdf
3. Go to the last or second to last page and under the section 'AC Rutting (using Multilayer Calibration)' at the bottom of the table you will only see the coefficients for the top layer.

Version used: 2.2.6
I can confirm this Need to be fixed for both PDF and Excel Output report. | Closed |
|------|------|------|------|
| 3901 | Station.dat file - User Edits | 1) Manually edit the station.dat file adding a space after the desired climate station. (just before the first comma).
2) Attempt to load that station file in the app
3) App says it can't find the HCD file and you need to visit the website to download them.
Need to trim off whitespace when reading in filenames for HCD files. | Closed |

4236	7-parameter model output reports	Modulus now produces (based on user inputs) data for either the five or seven parameter model. The output reports currently only handle the five parameter model and need to be updated to include the output from the new file produced by modulus in the case of seven parameter model usage. The type of model used should also show up in the output report in both the PDF and Excel outputs. Consider renaming AC Thermal Cracking in the Excel output report to AC Thermal Cracking and Dynamic Modulus.	Closed
4240	Bug in the file seasonaLayerModulus. txt in the case of using models relating material index to Mr	For unbound material modulus input Level 2 general correlation between soil indexes (CBR, R-value or others) and resilient modulus (Mr) can be used in estimating Mr. Based on this input Pavement ME for rigid analysis should develop intermediate file seasonalLayerModulus.txt with monthly or annual values of converted from indexes Mr. Instead of this program put in the file monthly or seasonal values entering indexes (CBR, R-values or others).	Closed
4241	Incorrect values of calibration coefficients in Help for SI version	In Help for SI version values of calibration factors for rigid pavement are from the previous calibration and must be updated.	Closed
4242	Bugs in Output Report for CRCP design (SI version)	On the Output Report page "CRCP DesignProperties" internally calculated values of Crack Space is not convertedfrom the inches to mm. In Output Report for AC over CRCP design type - correct values but wrong caption's units on Distress Chart "AC total thermal +reflective" (ft/mile instead of m/km)	Closed

| 4243 | EICM bug for month's number | ICM version 6 for number of months writes *** in file _space.dat if this number is more than 999

Recommend to fix in the C# transliteration. The code should write out the actual number of months. | Closed |
|------|------|------|------|
| **4244** | Only one HMA surface layer for AC over CRCP and AC over JPCP design types | Currently user can insert additional HMA layers in default structure for AC over rigid design types.

At the same time distress calculation programs assume only one asphalt overlay layer.

Need to modify GUI to prevent insertion of additional HMA layers for AC over CRCP and AC over JPCP design types. | Closed |
| **4245** | Pavement structure for Semi-rigid and AC over Semi-rigid design can't include additional stabilized base layer | Semi-rigid default pavement structure includes stabilized layer below HMA surface layer. Current GUI allows to use for this type additional stabilized layers which is incompatible with APADS because it assumes only one CTB layer in structure. Need to modify GUI to prevent inserting of additional stabilized layers for Semi-rigid and AC over Semi-rigid design types | Closed |

| 4270 | Confirm rebuild capability for all legacy analysis dependencies | The legacy analysis relies on a sequence of executables being run in child processes. Each executable is written in either C#, C++, or Fortran, and sometime a mixture when accounting for custom dependencies.

All C# and C++ executables and dependencies are accounted for and are able to be rebuilt, and have been integrated with the solution build for the legacy GUI project.

All Fortran executables and dependencies are not integrated in this way. We have the build output artifacts of these modules, and we have (we believe) almost all the codebases.

We need to confirm that we have the source for and can rebuild the following modules:

prep7NN.dll - We have a very similar form of the source, which could be used to remake and rebuild it.

LEVNN7_12.dll - We have a very similar form of the source, which could be used to remake and rebuild it.

bfit.dll - We have the source, we need to confirm rebuild.

FNN7.dll - Don't seem to have the source.

HALIL_NN.dll - Don't seem to have the source. But, doesn't seem to be used anywhere. Only file-copied in the main app. | Closed |
| 4304 | Bug in calculation of thermal SIF for fatigue reflection cracking | ReflectionCracking program uses for calculation fatigue's thermal stress intensity factor (SIF) zero value of overlay thermal modulus (see column P in fatigueReflectiveCracking.log file) which is wrong. | Closed |
| 4332 | Exporting calibration factors | See attached email. | Closed |

4335	AC\JPCP - Error for binder selection	1) Create a new AC\JPCP design. 2) Note that there are no errors shown in the error list. The error list should show an error for the lack of a binder selection in the asphalt layer. When the user clicks on the asphalt layer, the error then shows up in the error list, and the user cannot run the analysis. However, if the user attempts to run the analysis before selecting the flexible layer, the analysis attempts to run and crashes with an "Object reference not set to an instance of an object" error. The application should show the binder error after selecting the AC overlay from the pavement type dropdown. The application should prevent the user from running the analysis until after the error is corrected.	Closed
4337	Sensitivity run produces intermittent errors	1) Run the attached sensitivity projects. 2) May get attached error. Program should not have any errors related to permission issues or otherwise when running sensitivity. Output sensitivity report CANNOT be loaded as there are too many projects to load into memory at once. This is a known issue and is a limitation on the current system. It appears that the error is mitigated (still occurs with much less frequency) by streaming a video in the background while ME analysis is running. This may mean a context switch is eliminating a race condition.	Closed
4342	Reflection cracking analyses require base	Create an overlay AC/AC design, add a subgrade and run the analysis. The results will be invalid. Reflection cracking requires a base.	Closed

4348	Mixing 7 and 5 parameter models in the UI	- Create any project design with two flexible layers - Set the Dynamic modulus master curve coefficients to use the seven parameter model in the first flexible layer - Set the dynamic modulus master curve coefficients to use the five parameter model in the second flexible layer (or vice versa) - Run the analysis Outcome: The analysis will treat both layers as if the seven parameter model was selected. Users SHOULD NOT be able to select different dynamic modulus master curve models in the flexible layers. The application should automatically set the dynamic modulus master curve model (in the case with multiple flexible layers) whenever ANY flexible layer is updated. The application should notify the user in the output window that the other flexible layers have been automatically updated.	Closed
4419	AC/CRCP with bedrock runs but fails to generate report.	Run attached project. Report fails to generate, with null reference exception message, ultimately due to empty CRCPSummary.csv, which seems to be caused by CRCPOptACRehab crashing or otherwise failing. An error message from within CRCPOptACRehab when this runs: Unhandled exception at 0x005053B1 (LEVNN7_12.dll) in CRCPOptACRehab.exe: 0xC0000090: Floating-point invalid operation (parameters: 0x00000000).	Closed

4431	(Pavement)/Base/Bedrock-pattern structures should invalidate by "minimum of 2 unbound layers" rule	In ME Design, open and/or recreate the attached project's structure (AC/CRCP/Base/Bedrock). Start project analysis. It will run, but it should not even start running. Also applies to other (Pavement)/Base/Bedrock-pattern structures. Generally, all designs require a minimum of 2 unbound layers, for the ICM to run correctly. Since bedrock is not an unbound layer (even though the bedrock object currently piggybacks on the unbound data object), this structure should trigger the validation error that there is not at least 2 unbound layers to correctly model drainage.	Closed
4466	Interface should not add an empty layer to (Pavement)/Subgrade structure	Create a new project (e.g. New JPCP) and add one subgrade layer. Fill out the rest of the properties (climate etc) and make sure all nodes are green. Then click Run. Instead of complaining about there not being 2 unbound layers to model drainage, the interface adds a "dummy" empty layer that's labeled subgrade but has no properties. This should not happen. The error message dialog should show instead. Also, if you try to add a layer after the "dummy" layer, the interface crashes outright. Whatever logic is adding the empty layer should be eliminated.	Closed
4508	Wrong presentation of CSM Cracking in Output Report	On calibration coefficients page of pdf and Excel Output reports is missing term log10 after coefficient C4	Closed

4566	For AC Rehabilitation GUI should not allow sandwich layers	Current GUI allows to use sandwich layers between AC layers for both New flexible and AC rehabilitation types of design. But in the last case (AC rehab) Reflective cracking program doesn't assume the presence of any other layers between HMA layers.	Closed
4652	Bug in the file Input.tmp in the case of Monthly representative values of modulus	For unbound material input Level 2, Analysis type - monthly representative values, ICM Writer calculates 0 values of frozen and unfrozen modulus and writes in the file Input.tmp. This is wrong but it is not clear how to calculate one pair of representative moduli for EICM in this case.	Closed
4687	Incorrect drop-down selection names for 3 project-specific calibration factor grid types	1. Launch the app. 2. Create a new project. 3. Give it any of these design types: restore JPCP, bonded PCC/JPCP, unbonded JPCP/CRCP. 4. Respectively select or double-click the appropriate calibration factor tree node: Restore Rigid, Bonded Rigid, Unbonded Rigid. 5. Note that the drop-down selection name in the central property grid on the project panel uses the fully qualified type name of a calibration factor object, instead of a user-friendly string as the other calibration grids do (for new flexible, rehab flexible, and new rigid).	Closed

4712	Total Depth in EICM	We have the issue in Mantis #3386 and VSTS about wrongsublayering in our customer AC/AC project with the following layer thicknesses: 4 in AC overlay 8 in existing AC 40 in Subgrade A-2 46 in Subgrade A-7 Bedrock Total depth from the pavement surface to the top of the lastlayer in this project is equal 98inches. I ran couple projects with the very thick unbound layers,looked into the EICM source code and, according to the EICM, maximum depth to the top surface of last layer should beless than 96 inches. For the deeper last layertop surface position EICMsublayering is working wrong. It should be fixed.	Closed
4713	Bug in the program PCCwriter.WriteJPCPSeasonPattern	For the type of design "JPCP Restoration" program crushes during writing the file "PCCModulus.txt" in the case of the long period between existing pavement construction and the last year of design after restoration.	Closed
4740	Update MEDesign website license registration error message	License message on the MEDesign website does not fully describe the detailed error/cause that user has occurred during registraion. * License registration webservice for 5 (workstation, evaluation, site, edu, bct) license types * Customer Administration website update error code message correspondingly from webservice	Closed

4741	Disable submit button after user clicks Register and re-enable after response return	On the MEDesign website, when user clicks the Register button for license registration, the button is not disabled/grayed out, so it's misleading to the user and may cause user to click multiple times, hence results in duplicate license registration. The button should be disabled/grayed out after register clicked and re-enabled after a registration result comes back. This applies to all license type registration.	Closed
4742	No error checks for user entered values for Permanent curl/warp effective temperature difference		Closed
4743	No error checks for user-entered values for CRCP user defined Crack spacing		Closed
4744	No error check in JPCP Rehabilitation for Bonded PCC/JPCP design type	Should be similar check as in JPCP Restoration design type: Percent of slabs cracked must be equal or greater than percentage of slabs repaired	Closed
4745	Percent of distress slabs before restoration must be less than 100	For Bonded PCC/JPCP and JPCP restoration design types in JPCP Rehabilitation page percent of distress slabs before restoration must be not more than 99	Closed

4800	Null reference exception dialog appears when editing a project	I was editing an existing AC over semi-rigid project, I changed the design type to New flexible, pavemen type to Semi rigid. Clicked on the Flexible layer, changed the asphalt binder type, when i click anywhere else the message pops up The message medium is the conventional Windows pop-up dialog for unhandled exceptions, and the message itself is the generic NRE message, "object reference not set to an instance of an object". Repro: 1. Launch ME Design. 2. Open the attached DGPX. 3. Click the surface asphalt layer to edit its properties. 4. Change the asphalt binder to Pen 40-50. Observe the unhandled NRE, evidently due to a null project in FormError.RemoveRowWhere.	Closed
4819	Custom Report Tool	* The custom report tool configuration tree node should be under the "Tools" node. => (9/14/2017 remove the tree node instead) (done) * It should also have its own icon. Use attached png file or something similar. (done) * The popup window should also have the custom report icon showing in the upper left icon portion of the window. (done) * Note that the report customization default settings should apply to all projects by default. (done) * Lastly, the popup window should show up in the center of the parent application (center screen). (done)	Closed

| 4893 | JPCP and CRCP damage models missing in APADS | Currently JPCP and CRCP damage models are missing in APADS. These models were presented in the NCHRP 1-37A report,including Level 1, 2, and 3 existing PCC damage and equation (3.6.18) forPCC damaged modulus but not realizing in APADS. As a result, for of AC over rigid design, APADS uses intactPCC modulus not only for calculation additional PCC transversecracking but also for calculation flexible distresses.

For fixing this issue we need to realize the following steps:

 * Add   Level 1 input on JPCP Rehabilitation page for AC/JPCP and AC/CRCP types of   design. This input has to include FWD data for existing PCC. Currently   only level 3 is working for entering percent of distressed and repaired   slabs, but APADS is not using this inputs for definition of existing PCC   layer damage.
 * Modify   APADS for reading JPCP rehab data and calculation existing PCC damage.
 * Modify   APADS for calculation of monthly values of damaged PCC modulus and   replacing current intact PCC modulus in the pavement structure for JULEA.
 * Make   changing in ReflectionCracking executable for correct calculation of   damaged PCC modulus using in NN.

Another question is how to correctly use results ofbackcalculation for flexible distress calculation and additional transversedamage calculation. | Closed |

4952	Semi-Rigid Design - Software does not consider a compacted subgrade as a base layer and prevents analysis from running.	Running Version 2.5.0-alpha.1 * Create new pavement project * Select Semi-Rigid * Add layer - subgrade (any type) * Add layer - subgrade (any type but typically the same material as above) * Enter other information until all is green * Click Run * Error pops up The issue is related to not having a bound material directly on a subgrade/natural soil. Adding a compacted subgrade or a granular base layer is sufficient for apads to run.	Closed
4956	Default LTE values for chemically stabilized layers are 0	Steps 1-Create a new semi-rigid project 2-Delete the default chemically stabilized layer 3-Add any chemically stabilized layer except for soil cement 3- Look at the fatigue LTE %, transverse LTE % and crack spacing. They all are 0. The values should be : Fatigure LTE % - 50 Transverse LTE % - 50 Crack Spacing - 25	Closed
4958	No error checks for user entered Cracking variables in Semi-rigid and AC over Semi-rigid design	No error check for fatigue and transverse LTE and crack spacing	Closed

4978	_thermal.dat has wrong number of columns for at least "new semirigid", "AC/JPCP", "AC/CRCP", and "AC/semirigid" designs	1. Launch PMED 2.3 or 2.5 alpha. 2. Run a "new semirigid", "AC/JPCP", "AC/CRCP", or "AC/semirigid" design. 3. The whole app may or may not crash. Ignore that. Open the intermediate files folder. 4. Open the _thermal.dat file. It has the wrong number of column. It looks like there are too many columns. Briefly reviewed the Fortran ICM source. Relevant behavior seems to be at lines 2211--2337 and 4129--4152.	Closed
4991	New/Overlay Semi-Rigid Throws Exception	* Create a new or overlay semi-rigid project * Attempt to add a subgrade beneath the CTB layer * Program encounters exception during debugging * The program is able to continue (does not crash the UI). The program should not be throwing an uncaught exception here. I think layer needs to be checked for null, or the IRO needs to be checked for null (not really sure).	Closed

4992	Message Box Incorrect	* Create a new or overlay semi-rigid design * Attempt to add a subgrade layer beneath the CTB layer. * Continue past exception if debugging * Complete all other parameters required to run the design (climate, traffic, etc.) * Attempt to run the analysis * Analysis does not start and gives the following message box The message box needs a title, "Pavement ME Design" and should read, "For AC and semi-rigid designs, the structure must have a base layer.	Closed
5001	Saving project to the database and retrieving projects from the database	1) Attempt to save any project to the oracle database 2) Attempt to retrieve any saved project from the database Both operations seem to fail in the Oracle environment. They should not fail.	Closed
5008	IRIFlexible error in the case of thermal cracking amount between 0 and 1 ft/mile	IRIFlexible extracted the value of thermal cracking amount from the file thermalcracking.tmp. If this value is equal 0 IRIFlexible replaces it on 1.0 but uses for calculation extracted value in other cases, including values between 0 and 1. It should be changed on replacement all values less than 1.0 on value 1.0	Closed

5013	Certain AC/CRCP project runs with 45 year life, but not 50 year life.	1. Launch the WinForms GUI. 2. Open the attached project. 3. Run it. 4. An index out of range exception occurs while writing initial intermediate files.	Closed
5028	After saving config.json, the application throws error if we reload the page. Provided 1 new unsaved project is loaded	1. Add a new project and upload a saved project. 2. save an app config file 3. reload the page. 4. App throws the error, file not found	Closed
5038	0003471: axle load distribution file .alf not working	axle load distribution file .alf not working Description Our axle load distribution files .alf do not work in Version 2.2 anymore. When importing the file, there is no change on all the four 'axle load distribution' tables. They used to work in Version 2.0 or earlier versions. Attached a typical file for your testing. Steps To Reproduce At <Explorer>, right click at <Traffic>, click at <Axle Load Distribution>, click at <Import ALF file>, choose files under user folder, and click <Open>	Closed

5040	Chemically stabilized layer range	Fix the ranges of chemically stabilized base Modulus of Rupture - minimum 150 & maximum 600 Elastic Modulus - minimum 50000 & maximum 4000000 Minimum Elastic Modulus - minimum 50000 & maximum 4000000	Closed
5065	ESAL output for Quad uses Tridem factors	Look at the "quad" section of AASHTOWare.Pavement.MEDesign.FileManager.TrafficWriter.CreateEsalOutput(). It does not use the quad factor list populated from "FlexibleLoadFactor.csv". It uses the tridem factor list instead, at 3 different locations: 2 for initializing the quad sum arrays, and 1 for multiplying with the factor value itself.	Closed
5066	New projects with flexible layers validate those layers despite no binder selection	1. Launch the app. 2. Create a new flexible project. 3. Double-click the tree-node for the default asphalt layer. 4. Watch the tree-node turn from yellow to green. This happens despite the binder still not being selected. Note that the analysis will still correctly refuse to start.	Closed
5113	UseSIUnit - UI flag is not in sync with isUSCustomary flag		Closed

5114	Asphalt layer number is not correct in the errorlist	1-Create AC over AC structure 4-Add asphalt layer below layer 2 2-Add non-stabilized layer below layer 3 4-Add bedrock layer below non-stabilized layer 5-Set the the asphalt binder for the asphalt layers so that the error will not show in the error list 6-Delete layer 2 and try to add the flexible layer at the same position i.e after layer 1 In the Object column of the error list it says that-Layer 3 Aphalt Concrete:Default asphalt concrete, it was supposed to be Layer 3 Aphalt Concrete:Default asphalt concrete. Also, if you try to set the asphalt binder of this layer, the error will not get removed. If you try to set the asphalt binder of 3rd layer(which is already set), then the error will get removed	Closed
5121	Recommended and absolute range for Chemically stabilized base crack spacing (US and SI) in incorrect	Open a new semi-rigid design Change the chemically stabilized base crack spacing to a value > 30 ft. The program will not allow an analysis to run. The recommended range of values for this property should be 10-50ft with an absolute range of 10-200ft This is on line 556 of the InterfaceRange.txt file and needs to be corrected for both US and SI units.	Closed

5125	New Semi-rigid: Fails to output pdf report - Output Window Message: Starting output report. Input string was not in a correct format.	The 9 attached files fail to produce pdf output. I ran them in batch mode initially and then individually. Same results occurred. I also noticed some strange things happening with the apads timer in the user interface. File 34_1638_1 fails to run at all. Windows popup: "Apads MFC Application has stopped working" Repro Steps: 1. Load any of the attached .dgpx files 2. Run analysis 3. Fails to produce PDF output after stepping through all analysis procedures. 4. Output tab message: "Input string was not in a correct format"	Closed
5145	Loaded project starts with performance criteria errors	1) Launch app 2) Create a new default project 3) Note that performance criteria shows 2 errors 4) No errors show up in the performance criteria table Validation errors should not be showing up for performance criteria if there are no errors. If there are errors in the performance criteria table, they should show up in the validation portion of those property's components.	Closed
5146	Chemically stabilized layer unit weight range	For chemically stabilized base unit weight ranges US version- minimum 100 & maximum 200 pcf SI version- minimum 1600 & maximum 3200 kgf/m^3	Closed

5160	Wrong presentation of Dynamic Modulus Master Curve in Output Report	We received from one of our customers question why in the case of Level 1 calculated dynamic moduli are not equal the input values for the same moduli. I checked Modulus and found that in the program Printplots5 there is no limit for viscosity (2.7E4). Modulus uses this input in the program Viscosity. I inserted this limit in Printplots5 (after multiplying on1e-8) and received correct calculated values of dynamic modulus.	Closed
5163	No Error Check for User Entered Heat Capacity & Thermal Conductivity		Closed
5164	Reflective Cracking Crush - Thermal Profile Issue	Semi-Rigid project 37_1645_1_20, Climate Station NC, 137827 crashes.	Closed
5166	Title on Error Message Box	1-Create AC over CRCP project 2-Add Subgrade layer 3-Try to add flexible layer after subgrade 4-Error will pop up stating "Invalid structure" Ignore the error. Look at the title bar of the error message box. The message box needs to have a title.	Closed
5169	Remove Duplicates rows from InterfacRange.txt for both SI & US	Remove the duplicates rows from the InterfaceRange.txt For example - try to search for "unitWeight". You will find that there are 4-5 rows with the column1 has value-"Compare" and column2 value -"unitWeight". All such duplicates rows needs to be removed.	Closed

| 5183 | "DSWCC" array bound does not align with actual indexed usage | Line 514 of the current IM9.for file (as of this writing) shows the bounds of the DSWCC array:

ALLOCATE(DSWCC(NLAY-IAL,100000))

Then at line 4859, a loop over the DSWCC array goes 1 further in the second dimension:

DO I = 1,100001

Inside this loop, the bad index is written to.

Also at line 4868, the bad index is explicitly read from:

WATER_LOW = DSWCC(L-IAL,100001)

Fortran does not do runtime array bounds checking, so this has been "working" in the legacy ICM by simply cannibalizing whatever few bytes of heap space is above the DSWCC array, which could be a scalar or the first element(s) of another array in the process's memory space.

This issue was discovered during integration testing of the C#-transliterated ICM analysis module. In order to keep going right now, the transliteration will assume that the DSWCC array should have a second dimension of 100001, not 100000.

This issue will be reviewed as part of a larger collection of ICM issues no sooner than the first "passing" integration test. | Closed |
| 5187 | Unbonded Rigid Calibration factors doesn't show updated results | As a user, I would like the application to edit Unbonded Rigid calibration factors(equations/values) and view updated factors when I come back to the same.(either by closing form or application and opening it again.) | Closed |

5196	Traffic axle load distribution export crashes the application if project has not been previously saved	Open a new project Open all traffic nodes Export the traffic axle load distribution to xml Program crashes The program should prompt the user to save the project, then prompt the user for a save location for the axle load distribution file.	Closed
5198	Unhandled Exception Occurs when loading multiple .dgpx files - build 2.5.0-alpha 6541.29348	I am loading multiple files at once and the software pops up a message box: Repro Steps: 1. Open Pavement-ME build (currently using build 2.5.0-alpha 6541.29348 2. Click "Open" 3. Select multiple files 4. Click Open on the bottom 5. Message pops up after loading 3 or 4 files. Notes: I tried it with selecting 10 files (maximum) and 6 files. Error occurred both times.	Closed
5227	Program should not allow saving of a running project.	1-Create any project 2-Run it 3-Click on export Message will pop up saying that "Saving a currently running project is not allowed" but then opens the save dialog box.	Closed

5228	Program crashes if the user has not selected any design type or climate file	1-Open MEDesign 2-Hit run Program crashes 1-Open MEDesign 2-Select any design type 3-Select any pavement type 4-Hit run Program crashes	Closed
5229	Property with error is showing green tick instead of red cross	1-Create design type of Overlay 2-Create AC over AC as pavement type 3-Try to set the unit weight of any of the two layer to 1500 Error is added in the errorlist Instead of a red cross mark, its a green tick mark All such errors that are added in the errorlist must have a red cross mark if they have error	Closed
5230	Error should take the user to their respective property window when it is clicked	1-Create design type of Overlay 2-Create AC over AC as pavement type 3-Try to set the unit weight of any of the two layer to 1500 Error is added in the errorlist Double clicking on any error in the error list should supposed to take you to their respective property window	Closed

5232	Errorlist is not updated if the layer is deleted	1-Create AC over AC project 2-Add a bedrock layer 3-Set the unit weight value to 1500 4-Error is added in the errorlist 5-Delete the bedrock layer The error of unit weight with this layer is still in the errorlist All the errors, associated with the layer needs to be removed from the errorlist	Closed
5233	Several property names should be corrected	1-Create AC over Semi Rigid 2-Select Chemically stabilized layer See the screenshot Look at heat capacity and thermal conductivity They have no spaces	Closed
5295	Users should be able to import xml material files from the structure images in the UI exactly as they can from the project navigation tree view.	1) Create any project with any structure 2) Right click on one of the tree view structure nodes note the "Import" context menu item. 3) Right click on the same representative image in the UI structure. Import is not available, but it should be and should have the same functionality as its counterpart in the tree node context menu.	Closed
5296	Typo in input.tmp file comments - Water Content	There is a typo in the input.tmp file. 1. Open input.tmp file for any project 2. Look for the "Initial Water Conent (volumetric)" input associated with base and natural layers. This should be corrected to "Initial Water Content (volumetric)"	Closed

5343	Provide an error message if the user attempts to run the project if the traffic data is incomplete.	Open ME Design Create a valid pavement structure Load all nodes EXCEPT traffic Click "Run" The software runs without valid traffic data (the analysis then proceeds to fail). The user should be prompted to complete the traffic data before being allowed to run the project file.	Closed
5374	ICM - "bedrock" material name contains extra space in the ICM, input.tmp expects "bedrock" with no space	1) Create any project with bedrock 2) Run ICM Not sure what the expected operation would be. Recommend changing the transliterated C# code to fix. The ICM currently ignores bedrock, but this may change in the future.	Closed
5385	Error in AC Writer in Poisson ratio information for .dgd file	1. Create New Flexible project with false option for Asphalt layer "Poisson ratio is calculated" 2. After running project, in the file .dgd. we can see 3 values 0 - Poisson ratio model type -1.63 0.000004 At the same time APADS considers this information as the case of case of true option "Poisson ratio is calculated" . The opposite situation we have in the case of True value of this option.	Closed

5573	Typo in dgd_subk DynamicAsphaltStiffness2014 gives literal zero instead of 500000	In the loop labeled "Calculate Asphalt frequncey" [sic] there is a typo where the comma operator was mistakenly used as a digit group separator. The sub-expression is `(500, 000 / dSubgradeE)`, which evaluates to `0 / dSubgradeE`, which is always zero.	Closed
5574	".tcr" intermediate file being read within FilterOutput seems to be unexpectedly short	1. Create a project which runs FilterOutput.cs or upload a project attached with is bug 2. Run the analysis. 3. A 'NullReferenceException' is thrown at line number 914 of FilterOutput.cs file.	Closed
5582	Need to be able to enter negative values for SI version of IDT	Open a new flexible project in SI Attempt to enter -1 for the IDT level 1. The program should allow negative celcius values corresponding to a minimum of 1 degree F. (Also removed some of the SI/US related hard coded string to interface range file)	Closed
5583	IDT default temperature values for SI are incorrect	Open a new flexible SI project Navigate to the level 3 IDT property and click it to open. Note the IDT default values are the US customary default values. They should be SI default corollaries.	Closed

5584	Removal of IDT from multi-flexible layer structures	Open any project with multiple asphalt layers in any configuration. Note that IDT on asphalt layers below the first asphalt layer can be modified - This does not affect the analysis Remove IDT property from the UI for each asphalt layer below the first layer.	Closed
5586	Add "IDT error statistic" to the Excel output report	* Add error fields to asphalt object * Add to copy constructor * Add to db functions * Add to report for level 1	Closed
5589	Change the Modulus of rupture of CSB(and all of its types) to 2.75	1-Open ME Design 2-Change the US Customary to false 3-Create AC over Semi rigid 4-Error will pop up in the error list - Modulus of Rupture is out of range. After talking to Alex, he suggested to change the default value of modulus of rupture from 3 to 2.75 Also, you will see the error for crack spacing and ndt modulus as it is taking the default values of US. Fix the default values of those as well so that no error will be there.	Closed

5621	Update IdtMaxValue when running an old project file	Open any old (pre-idt) project with asphalt layers. Run project without clicking Save. IdtMax value should be updated before running/save to project file.	Closed
5660	Getting error in DamageSubs.cpp (code line is trying to find log of a negative number)	1. Load the project which is attached to this bug (It is one of the project from Alex's folder). 2. In the File DamageSubs.cpp at line number 1211 put a break point. 3. Click save and run it. 4. At the breakpoint, notice that variable 'Damage' is getting the value as 'nan (not a number)'.	Closed
5661	Program writes an empty string in CRCPSummary.csv file	1-Run the attached project with this bug. 2-The program will not be able to generate the pdf file. Its because the number of punchouts is 10. If we change it to zero, it will successfully able to generate the file.	Closed

5680	Range checks should exist for IDT (SI and US)	Create a new flexible project Open the IDT for level 1 Enter a negative value in for pressure for any temperature User should not be able to enter invalid pressures for IDT.	Closed
5681	IDT precision for temperature values - all levels	Currently the UI for temperature in IDT shows two decimals of precision, change to 1.	Closed
5682	CRCPRehabilitation should be CRCP Rehabilitation		Closed
5683	Bonded CRCP - Save vs. Run	Create a bonded CRCP project Do not save it Run the project after filling in all "normal" inputs. Project says "<ProjectName> cannot start because it contains errors" in the output window. Saving the project and then running it works correctly. If the user has not saved the project and they click run, they should first be prompted to save the project.	Closed

5684	Bonded CRCP project gives invalid input level detected error	Create a bonded CRCP project Crushed Stone A7a subgrade Fill in all inputs Save it Run it Get error "Invalid Input Level detected". Save it again Run it Error does not appear. Should not get the original error.	Closed
5685	Axle load distribution must sum to 100 or 0.	Currently it shows only a warning for invalid values. This should be an error.	Closed
5730	Report ACthermalCracking should use IdtMaxValue instead of matrix for running level 2/3	Open any pre v2.5 flexible project, run project, the ACThermalCracking generates an error due to searching through empty IDT matrix. It should use the IdtMaxValue directly.	Closed
5734	Tree node status of traffic, climate and other properties are not updated	1-Create Ac over Ac 2-Fill out all the inputs i.e traffic, climate 3-Go to AC Layer Properties 4-Make sure that the node is green 5-Change the value of microstrain from 100 to 10000 6-The node is still green. This is not only for AC Layer properties but also for traffic, climate and other tree nodes except the layer nodes which updates their node correctly.	Closed

5762	For SJPCP over AC, permanent curl warp name is not correct	1-Create SJPCP over AC 2-Go to SJPCP design properties Look at the name of permanent curl warp. It is not using the user interface name.	Closed
5763	Software should not allow non-zero values for subgrade rutting coefficient Bs1 for Rehabilitation Flexible	1-Open ME Design 2-Go to Rehabilitation Flexible Calibration Settings 3-Change the value of Fine Subgrade Rutting bs1, k1, Granular Subgrade Rutting bs1, k1 to zero Program should pop up an error if the value is zero.	Closed
5793	Poisson's Parameter A, B	Load a new flexible project Change poisson's ratio calculated to true Observe the Poisson's Parameter A,B Observe error in property grid and error window These properties should not be checked in the interface range file and no error should appear for calculated Parameter A or B. Additionally, Parameter A, B should be "grayed out" per H. Von Quintus.	Closed
5794	Update "Calculated" Poisson's ratio	Load a new flexible project Change poisson's ratio to calculated Observe that poisson's ratio shows up in the property grid as blank This should be changed to show the calculated poisson's ratio from the regression equation. Additionally, the poisson's ratio "(calculated)" in the property grid should show the calculated value for Poisson's ratio and then " (calculated)".	Closed
5797	CRCP Design Properties has incorrect spacing	Correct the spacing.	Closed

5843	Program crashes if a user is trying to retrieve the climate data from database	Please see the mail attached to this bug 1-Open ME Design 2-Connect to oracle database 3-Create new project 4-Right click on the climate node 5-Select Get from database Program crashes Mail also show an exception(See the image below)	Closed
5853	Changing design type does not force climate update	Open any flexible project Set the climate data using MERRA Change the design type to PCC Climate node should change to red and an error should be added to the error list which states: "Current climate selection does not match the global calibration. This may cause inconsistencies in your results. To resolve this issue, re-select a climate station from the climate node." Update Climate tree node color and icon as error upon this error and this should change back to green regular icon after error is resolved.	Closed

5857	Filter comparison tool does not show all properties	Open two identical projects Change the layer thickness property on the first project so that it does not match the second. Open the comparison tool Open the filter Type thickness into the search box Thickness is not present Thickness and all type properties relevant to ME Design should be available for selection.	Closed
5858	Filter comparison properties do not have proper UI names	Open/create two identical projects Change the layer thickness for a layer in the first project Compare the two projects using the comparison tool Open the filter Note that the property names are the code based representation Property names should reflect their name in the user interface.	Closed
6022	Maintenance strategy for top down cracking is not affected by ultra thin overlay	Run the attached project Note that the AC top down cracking prediction is unaffected by the selected maintenance strategy The top down cracking should be reduced by some amount.	Closed

6024	Errors in comparison enhancements	Note that the Type column in the cases where design layers are applicable, we should show the appropriate design layer index (1,2,3,etc.). Open the attached projects Change the number of axles for class 4 trucks to 1.55 Run the comparison No difference is reported The tool should show the difference. Default width of the filter properties form should be set such that the displayed properties are not cut off by default. Check resizing filter properties form, it should work correct.	Closed
6025	Add Save/Load functionality to the user profile data for selected filter items.		Closed

6194	Climate file selection - Exact climate station not shown on map	1. Open Pavement ME, create a new project and select a rigid pavement type (new JPCP or new CRCP). 2. Ignore all inputs and click on the climate node to select the climate file. 3. Click on the drop-down arrow to show the map, enter "Champaign" in the search box and press enter to search for climate stations. 4. The stations at Decatur IL, Springfield IL and Lafayette IN are shown as options to choose from. Champaign/Urbana NARR climate station is not shown as an option. It was confirmed that the C:\Program Data\... HCD folder has the 94870 NARR climate file for Champaign. There is no issue with station.dat or the HCD file. Expected behavior: The map should show a pin on Champaign/Urbana Willard Airport location and allow user to select that climate station.	Closed
6344	Importing a file crashes the program	1-Create a new flexible 2-Add a flexible layer 3-Now click on Add layer, select sandwich granular(3) & click on sandwich granular 4-Select Import from file(radio button) 5-Change layer type from sandwich Granular(3) to Flexible Program crashes.	Closed
6372	Nearby climate stations on map sometimes doesn't show correct points	When search in map for any climate ex. climate in Springfield area, near by climates shown is not correct(check algorithm what results it produces). Also make 4 climates displayed on search/double click on map.	Closed

6382	Property name in the output report is not user interface	1-Create any AC over AC structure 2-Run it and generate the pdf report 3-In report, go to page where you can see the "Layer Information" 4-See the property names	Closed
6433	Make an error check for the value of fatigue cracking amount	Create AC project Go to AC Layer properties Go to Level 2 Fatigue cracking amount should be between 1-80	Closed
6440	LTE column value in fatigueReflectiveCracking.log file in incorrect	1-Create an AC overlay 2-Go to AC layer properties 3-Set the structural rating to Excellent(1) 4-Make a valid structure and click run 5- Go to fatigueReflectiveCracking.log file and see the LTE column LTE value should be set accordingly to this Excellent-0.80; Good-0.70; Fair-0.40; Poor-0.20; Very poor-0.10; Currently, if the rating is Excellent, the LTE column will have value of Good i.e 0.7. If it is Good, the LTE column will have value of Fair i.e .40	Closed

6462	Tooltip message is incorrect for AC over AC overlay design main screen	1. Start Pavement ME and create a new AC over AC project (overlay design). 2. Hover the mouse over the entry labeled 'Existing Construction'. This is where the user enters when the original (existing) pavement has been constructed. The tooltip shows 'Select the month and year when the base is prepared for the pavement construction'. For an overlay design, there is no base construction as the pavement already exists. Recommended action: Change the tooltip text to 'Select the month and year when the original pavement was constructed'. Note: This bug was identified in Version 2.3.1, not sure if it is already fixed in 2.5	Closed
6546	Errors do not appear for project created in versions prior to v2.5	Calibration coefficient update errors should appear for projects created prior to v2.5 1) Create a project in v2.3.1 2) Open the project in v2.5 Should see errors regarding updated calibration factors in the error list. Errors are not shown until the user opens the appropriate project specific calibration factor node. Conversely, the errors should immediately disappear after updating open projects from the global calibration coefficients node.	Closed

6548	Climate node showing up in incorrect position	Open Pavement ME Design Open the attached project Note the climate node does not follow the traffic node. The climate node should always follow the traffic node.	Closed
6566	Program crashes if there is any error in the errorlist without project name	1-Open ME Design 2-Go to any global calibration factor(Let's go to New Flexible) 3-Make any of the equation to invalid 4- Save Changes to Calibration You will see an error in which the project column is empty 5-Keep the error as it and now create a new project Program crashes	Closed
6570	Capitalized .DGPX file extension causes a crash.	Rename any project file so that the extension uses .DGPX instead of .dgpx. Attempt to run the project in debug mode. A set of string comparisons in the application code fails as it is looking for .dgpx instead of .DGPX.	Closed
6571	Climate Page Changes	Change the climate station dropdown to a readonly text field. For the educational version just show the 9 climate stations as markers on the map. Double the size of the select climate and refresh buttons. Change the text of "Refresh" to "Update"	Closed

6574	Custom HCD Still Requires Check for MERRA or NARR Data	* Copy and Paste Attached files in Custom HCD folder in Program Data directory * Open Pavement ME design * Create Flexible Pavement with AC, Crushed Gravel, Any subgrade * Open Climate selection module * Select "Custom HCD" * Search for Akron, CO * Select Akron station (24015) * Save project * Click Run * Error message pops up: See below Pavement ME should not check whether the custom climate files are NARR or MERRA.	Closed
6585	Climate data selection inconsistencies	1) Create a new flexible design project 2) Type in Champaign, IL 3) Click the search button 4) Note the locations of the climate data points. 5) Double click the map near the southwest side of champaign 6) Note the climate data points have changed 7) Click back on the northwest side of champaign 8) Note the stations change again to different stations. There is clearly some issue with the climate data selection algorithm. Double clicking anywhere should find the nearest 4 stations by elevation in 250ft increments.	Closed

| 6590 | The need for a project to have its calibration factors updated is not clear when an error occurs due to missing ones. | 1. Open the attached project in the latest v2.5 beta.
2. Try to run it.
3. Observe a message saying the intermediate files could not be written, with suffix message about a null object reference.
4. Open the global rehab-flexible calibration factor panel.
5. Click "update open projects".
6. Re-run the project.
7. Observe that it runs (and, for this particular project, should produce the "too many sublayers" EICM error message).

Expected behavior:
Instead of an unclear message about a null object reference, the app should tell you that you need to go update the calibration factors via the calibration factor panel. | Closed |

6603	Discrepancy between PDF/Excel Output report and "flexibleResults.txt"	1. Run the attached .dgpx files 2. In the output folder: open the PDF/excel output report 3. Open the flexibleResults.txt intermediate output file 4. Compare AC total transverse cracking: thermal+reflective 5. The values are slightly different for AC total transverse cracking and not for other distresses. It seems to only be an issue for AC Rehabilitation sections as the "flexibleResults.txt" does not get generated for New AC pavement types. An in depth description is attached in the word document. ME Version - 2.5.beta2 Could be due to Transliteration. When transliteration analysis was completed, only the excel output report was used to compare Version 2.3.1 and the Alpha version for ThermalThermal.	Closed
6613	Latitude, longitude not getting updated on climate selection	Select climate when not set already, it reflects correct lat long values. Now try to change climate, its lat, long are not getting shown on Climate form.	Closed
6622	Climate file elevation unit mismatch between feet and meters	Investigate the text shown in teh elevation field for HCD files. Determine if they are shown in the correct converted units for both US Customary and SI versions.	Closed
6670	Traffic error is not showing up if the project is created in v2.3.1	1-Create any project in any version prior to v2.5 2-Don't enter the data for traffic inputs 3-Save the project 4-Open the project in v2.5 Traffic error will not show up in the errorlist	Closed

6671	1-year New Semirigid project fails in ReflectionCracking	1. Run the attached project in ME Design. 2. The report does not generate and an error message is shown.	Closed
6719	Global calibration factors' window tabs show incorrect text	1. Start Pavement ME and navigate to the global calibration factors in the side nav. 2. Open any of the 6 calibration factors windows. The text at the top reads "FlexibleNew" instead of "New Flexible," and so on. Recommended action: Make the text for the tabs the same as the text used in the side nav.	Closed
6724	New Pavement - Semi-Rigid Pavement - Error warning behavior issue	Check the behavior of New Pavement - Semi-Rigid Pavement Ensure that all warnings and errors are being applied correctly. If so, the associated beta test needs to be altered. Ensure the correct warning/error behavior is being applied for fatigue and transverse LTE as well.	Closed

6730	Values of MOR, EM, and MEM are incorrect in US (likely incorrect in SI as well)	Open ME Design Check modulus of rupture, elastic modulus, and minimum elastic modulus values in US Customary and SI Range of absolute values MOR: 150-600 MOR =150-400 EM: 50,000-4,000,000 Minimum = 150,000 - Maximum = 4,000,000 MEM: 50,000-4,000,000 Minimum = 150,000 - Maximum = 4,000,000	Closed
6732	Extra series labels in excel sheet distress chart	In excel report, the distress charts all have an extra threshold series that's labeled with the threshold value.	Closed
6733	Climate page - Elevation should be shown on the pushpin tooltip	All pushpins should show elevation data from the station.date file.	Closed

6734	Update Bottom up fatigue cracking calibration coefficients	The bottom up fatigue coefficient values are unclear and needs to be updated to reflect what the code is doing. The updates need to be made in two locations: * Asphalt writer * User Interface The current criteria: * <=5 * 5<hac<14 * >=14 The new criteria: * < 5 * 5<=hac<=14) * >14	Closed
6738	Custom HCD tried to find HCD in "HCD" folder instead of "Custom_HCD" on select climate	* Open ME * Select new pavement, new flexible * Navigate to climate node * Select custom HCD * Click on * Select file * File wont load since it is looking for HCD in regular "HCD" folder and not "customHCD"	Closed

6739	In FlexibleNew & FlexibleRehab XML calibration defaults, FatigueK/CFatigueK and FatigueBf/CFatigueBf are flip-flopped between US and SI versions	Check the calibration files and compare.	Closed
6745	NO ERROR CHECK FOR USER ENTERED HEAT CAPACITY & THERMAL CONDUCTIVITY	Note that the beta test check values do not match the software. It may be that the values in the software are correct. If this is the case, the test case needs to be updated. Try to enter the ranges outside this for the following layers US/SI(Heat Capacity) asphalt - .1 to .5/419 to 2093 Warning sign appears when heat capacity is outside of 0.22 to 0.4, not 0.1-0.5 as mentioned in the spreadsheet pcc - .1 to .5/419 to 2093 Warning sign appears when outside range of 0.1 to 0.28, the range is not 0.1 to 0.5 as mentioned in the spreadsheet csb - .1 to 1/419 to 4186 Warning sign appears when heatcapacity is outside 0.2 to .44, NOT 0.1 to 1 as mentioned in the spreadsheet US/SI(Themal Conductivity) asphalt - .5 to 1/.9 to 1.7 Warning sign apears outside the range 0.44 to .81 pcc - .2 to 2/.1 to 7 Warning sing appears wen range of thermal conductivity outside of 1 to 1.5, not to 0.5 to 1 as mentioned in the spreadsheet csb - .1 to 4/.35 to 3.4 Warning sign appears outside the range of 1-1.5 (written in the error list, however when you click the	Closed

		thermal conductivity - the definition says Recommnded min/max: 0.1/1.5; The excel spreadsheet recommended range is 0.1 to 4???	

| 6746 | UI REVISION FOR IDT STRENGTH | Ensure the linked test case matches the beta tester comments.
TEST CASE 5283: UI REVISION FOR IDT STRENGTH
Note exception - test had incorrect values. Will update test.

Start ME Design
Create a project with an AC layerClick the AC layer and open IDT strength form
Select level 3 input
 Temperature at 14/40/70/100 should be empty as default
Input Level 2 is is empty as default, not input Level 3.
Input values for deg 14 and click away from the control
Other IDT values should be auto populated using Molenaar equation
Input Level 2 once user entered IDT at 14 F, other IDT values populated. | Closed |

| 6747 | Check the user interface for inputs related to new and rehabilitated semi-rigid pavements | Note that the tester was unable to confirm if NDT modulus and Cracking spacing are grayed out as expected. Please check and confirm the functionality and update the linked test case as appropriate if changes are necessary.

Create AC over Semirigid project

Try to change the values of Elastic modulus, modulus of rutpure & minimum elastic modulus

If the user enters the value out of range, error will pop up in the error list stating that - "<Property name> is out of range)"
Ranges are as follows -
"For US
Elastic/resilient modulus - 150000 to 4000000
Modulus of Rupture - 150 to 400
Minimum elastic/resilient modulus 150000 4000000
For SI
all values should be multiplied by .0069"
Go to AC layer design properties
Change to level 1 inputs
Fatigue LTE, Transverse LTE, Crack spacing & NDT modulus are grayed out but not ndt modulus
NDT or backcalculated modulus is not gray. The explanation given in column C seems incorrect. Please see highlighted in BLUE in col C | Closed |

6748	Calibration factors export steps	Note that the test says the application should not export the calibration factors but the user was able to export them. ME Design should allow users to export calibration factors and the program should not crash. Please update the test check as appropriate. Note exception - Test case should allow for export of calibration factors (correct execution of the feature). ARA team will investigate further Open ME Design Attempt to export ME Design global calibration factors No export occurs and program does NOT crash Program did not crash, I was be able to export calibration coefficietns by right clicking on the project name "Export Calibration settings"	Closed
6764	Report customization - Blank page when removing all but AC top down cracking (ft/mile)	Using the attached project file, view the PDF output report. Note that there is a blank page that should be removed when IRI values are removed from the report via unchecked performance criteria.	Closed

6765	IRI Calibration Equations Missing	The program does not currently show IRI Initial Standard Deviation and IRI Model Standard Deviation equations. They are in the calibration file (FlexibleRehab.xml) but are excluded from the UI. They should be added to the UI and should remain read only.	Closed
6766	"Modify" should be "Import"	Open any flexible project Right click on the flexible layer See "Modify" in the right click menu Should be "Import"	Closed
6775	Educational license case: only 8 NARR/8 MERRA climates to be shown on map	1. Add entries to station_edu.dat.tx US, SI for MERRA climates. It should have only 8 entries per NARR and 8 per MERRA total 16 2. Application should be shipped with those 16 entries(installer side verification to be done). 3. Only program data path should be considered. 4. Disable show more stations button in this case. 5. No manually added entries to be shown.(restrict the set).	Closed
6789	Program crashes in SI version	Open ME Design in SI version Program crashes	Closed
6794	Error message is incorrect for heat capacity of asphalt layer	1-Create AC over AC project(US customary) 2-Change the heat capacity of asphalt layer to .45 There will be a warning sign which is good but the error says "Heat capacity is out of range <units> It is supposed to be "Heat capacity is out of recommended range <units>"	Closed

6799	Virtual climate station selection vs. Normal climate data selection	I then hit "Save As" to create a new project. I went back to the climate page and re-"Searched"for "Evergreen, CO". I attempted to pickonly 1 weather station, instead of using a virtual weather station. However, when I hit the "Select Climate"button with only the one weather station, the "virtual climate station"remained in the climate information box, see screen shot. I could not seem to change to a differentclimate station input.	Closed
6800	Climate station elevation does not match data point elevation	Unable to change climate stations, I then "closed" the projectand hit "New" to make a new project. Isearched "Evergreen, CO" and was able to select the one station. The latitude and longitude of the one stationare shown in the Climate information box (which is expected). However, theelevation is still grayed out and is not the elevation of the climatestation. See screen shot.	Closed
6802	Climate UI - Altitude for selected project location is not shown	Open ME Design Open the climate node Select a project location Note that the pushpin tooltip does not show altitude. It should show altitude.	Closed
6803	Climate UI - Climate node is not updating status correctly	The climate node remains red with a virtual station, but there is no error message. The programran to completion.	Closed

6804	Climate UI - Elevation does not match selected climate data	Unable to change climate stations, I then "closed" theproject and hit "New" to make a new project. I searched "Evergreen, CO" and was able to select the one station. The latitude and longitude of the one stationare shown in the Climate information box (which is expected). However, theelevation is still grayed out and is not the elevation of the climatestation. See screen shot.	Closed
6806	APADS crashes for long design runs	Open the project attached to issue 6805. Run it in ME Design v2.5-beta.5 or earlier Note that APADS crashes. APADS should not crash.	Closed

6812	Change behaviour for download hcd in case of custom hcd files: When using Custom HCD files, clicking on Red locations navigates to MERRA and NARR download sites	* Open Pavement ME * Select a New Flexible Pavement, Select New AC * Navigate to Climate node * Select "Custom hcd folder" * Select location where Custom hcd files are present (See attached files) * Locations where HCD file is present show up in Blue, Unavailable locations show up in Red * Click on a Red location icon. Current result: * A web browser opens and navigates to where the MERRA data is downloaded (if this was a rigid section it would navigate to where NARR data is downloaded) Expected result: * Clicking on a red icon should not open the web browser since it is only using Custom HCD files * User should be notified that there is a mismatch between the HCD files and the CustomStation.dat file. (Something like "Custom HCD file not found, please check Custom HCD Folder")	Closed
6822	Release version: custom climate stations could not be loaded	Error when application is launched after installation.	Closed
6825	Resilient modulus (MPa) in SI has incorrect default value	Open the application in SI Create a new flexible design Note that resilient modulus defaults to 20, which causes an error. Default resilient modulus should not result in an error. The default should be within the acceptable range.	Closed

4   Outstanding Issues

This section will detail known existing issues in this release of the software and any workarounds available for those issues.

ID	Title	Repro Steps
47 89	Multiple loading/unloading of many projects causes slow memory leak	Paraphrasing from W. Brink: 1. Open ME Design. 2. Open 10 projects. 3. Close all projects. 4. Repeat steps 2 and 3 several times. (W. Brink repeated 10 times with different sets of projects.) Observe application memory footprint growth (via task manager or VS diagnostic tools). Closing a project should leave nothing substantial behind in memory.
52 54	Address all "fixme"/"rename"/"hack"/"review" tags in the C# ICM source	No repro steps - see discussion
52 88	Basin characterization issue	When we use JILS .DAT files in the BCT, we need to manuallyenter sensor spacing. This is an issue with the DAT file format, which does notcontain sensor spacing values. It only contains information of how many sensorswere used during the test. It is also not possible to edit the DAT file andinsert the values there, as the file does not have place holders for thisinformation. Basin characterization is done using sensor spacings present inthe original input FWD file, and are not currently being updated when thosevalues are changed. I verified this with other file formats (Dynatest), and thebasin types remain the same when sensor spacings are changed. For the JILSfile, since the original file does not contain any sensor spacings, it isalways showing as NA. This issue went

		undetected during testing in the originalrelease, and will be fixed in the next version of the tool. Unfortunately, I amnot aware of a workaround for basin characterization with JILS files.
54 19	Customer administration website does not handle any client side form field validations	Form fields should be validated client side ex. Mandatory field, email validation(standard MVC practice)
57 86	BcT pavement structure (last layer) error	During inputting the structure in BcT, it saysthat the last layer needs to be infinite layer. However if you select one extralayer and then delete the extra layer after inputting the structure then thaterror doesn't stop the data processing.

The process definitely looks like a bug in the program,but it is only display-related and not a computational bug. I will explain thisusing an example and how it is reflected in the intermediate files. Thefollowing steps need to be performed in that order to replicate the userexperience with this issue.

a) Select the attached .FWD file (use Dynatest V20 as thefile format type)

b) Skip all screens by clicking Save & Proceed,directly go to the structure definition tab

c) Select the section (use only a single segment to speedup the process), select 4 layers. The four layers are AC (5 inches), AC (5inches), granular base (9 inches) and subgrade (fine-grained). Click Apply. Thestructure graph above will turn green.

d) Now, change the number of layers from 4 to 5. For the4th layer (formerly subgrade fine-grained, the last layer), change thickness to15 inches. Set last layer (now the 5th layer) to subgrade fine-grained. Thislayer should now have a zero thickness, which cannot be edited. Click Apply.

e) Change the number of layers back to 4 again. For this4 layer structure, subgrade thickness is locked at 15 inches, we cannot changeit to zero. Click Apply and then Save & Proceed. We are able to proceed tothe next screen, whereas logically it should not be possible.

This is the exact issue that the user is pointing out to.I ran the backcalculation and results are identical to when we use a 0 inchesthickness. The program is automatically setting the thickness of |

the last layerto zero, even though it is showing a read-only value of 15 inches on screen.

GEN file does not have any thickness information, so itis not relevant in this bug.

DEF file does show thicknesses, and it shows wrongthickness for the last layer.

Example: 5.354 12 5 5 9 15 76.00 72.00

In the first line of the DEF file, the order of entriesis <Station # = 5.354> <Number of drops = 12> <Layer 1 =5"> <Layer 2 = 5"> <Layer 3 = 9"> <Layer 4 =15"> <Pavement temp = 76 F> <Surface temp = 72 F>

EVERCALC correctly reads layer 4 as the last layer, andit appears that it internally sets the thickness of this layer to 0 inches.This is evident in the summary file (.SUM).

Example:	Station	Load (lbf)	E(1)(ksi)		E(2)(ksi)
E(3)(ksi)	E(4)(ksi)		RMS Error		
	5.354	Thickness(in)	5.00	5.00	9.00
-	-				
	5.354	9454.0	203.6	2418.0	13.1
39.8	1.22				

Line 2 shows the layer thicknesses as 5, 5, 9 and zero.

Computation-wise, the bug should not result in anycalculation errors. Backcalculated moduli should be identical whether there isa zero or non-zero thickness for last layer, as it is internally corrected byEvercalc. However, it should be notified to Chad/Yanbin that there is a displaybug.

57 99	New JPCP Design with a 1 inch Compacted Subgrade fails to run properly	Open Pavement ME Design Create a New JPCP Project Design Life 1 year Layer info:

* PCC
* Non-stabilized base (crushed gravel or stone)
* Subgrade (A-7-6) - Set thickness to 1 inch, select compacted subgrade in the gradation property grid
* Subgrade (A-7-6)
Default for others and make sure it is green.
Run project

Expected results: Software will run through EICM and stop working afterwards and fail to produce output report.

The issue is related to the sub-layering in the EICM. The original 1-37A report states that any base/subbase/subgrade layers should be at least 2 inches. From a practical aspect this particular error will not occur frequently by most users/designers as many base/subbase/subgrade thicknesses are greater than 2 inches.

Recommended Fix

1. Add check in interface to ensure that base/subbase/subgrade layer thicknesses are at greater than or equal to 2 inches to conform with the original intentions of the design software.

59 49	Clicking on "Save and Proceed" on the first few screens of the BcT does not save the .bctproj file	Open the BcT Load a JILS file Enter JILS spacing data Click "Save and Proceed" Close the program. The program does not save the changes to the .bctproj file. The application should save these preliminary changes (i.e. prior to segment creation) to the .bctproj file.
60 29	Data display relator vs. interface range file	Need to consolidate these interface files into a single OBJECT in the source code. No filter comparison properties should be using their "object name". They all must use their user interface name. For example, airTempMar is an object name. this should be Air Temperature Average, March or whatever is shown in the interface range file.
60 95	Trivial System.Math wrappers on Fortran emulation API add some unnecessary perf overhead	

63 73	Clicking PCC-base contact friction property throws NRE	1. Open the attached project in ME Design. 2. Navigate to JPCP Design Properties. 3. Click to expand the PCC-base contact friction property. - NRE is then thrown from DarwinTypeEditor.PaintValue.
63 80	Filter Properties dialog shows default icon in window pane.	Open two identical projects in Pavement ME Design. Click on the "Compare" utility Click on "Filter Properties" button Note that the "Filter Properties" dialog uses the default icon. Should be the Pavement ME Design icon.
67 21	Error in attached project not reachable through double clicking error in error list.	* Open Pavement ME and open the project attached to this bug called "AC_JPCP_Example_US.dgpx" * Update the calibration factors for "New Flexible" and "Rehabilitation Flexible". Do not update "New Rigid" * Close the Project window. Don't close Pavement ME, don't close the project itself, just the AC_JPCP_Example_US:Project window. * Double click on the error "AC_JPCP_Example_US|Calibration Factors|PCC Reliability Longitudinal Cracking Standard Deviation|Error found in formula. Error found: Value cannot be null.Parameter name: formula Text" At this point, double clicking should have taken you to the presence of the error. Instead, it reopens the project window. Double clicking the error again won't take you to the error. It was also observed that, if the other calibration factors were updated, double clicking the error would alter those calibration factors in some way, though the repro steps are uncertain. See Brendan if you can't make this happen.
67 40	US & SI interface range files have missing/extra records w/r/t each other	1. Compare the two interface range files in WinMerge. Note that the differences are not just in lines where units etc are different. There are whole blocks of lines that are present in the SI file and missing in the US file, and vice versa.
67 41	4 out of 5 SI Cement Base XML files missing 3 default values	1. Compare the US & SI versions of the Cement Base material XML files in WinMerge. For 4 out of the 5 files, these 3 properties are present in the US and missing in the SI: <fracturedSlabCrackSpacing>25</fracturedSlabCrackSpacing> <fracturedSlabLTE>50</fracturedSlabLTE> <semirigidLTE>50</semirigidLTE>

		The 5th SI file (SoilCement.xml) seems to have the correct values: <fracturedSlabCrackSpacing>8</fracturedSlabCrackSpacing> <fracturedSlabLTE>50</fracturedSlabLTE> <semirigidLTE>50</semirigidLTE> Confirm with research, then add the correct values to the other 4 files.
67 42	MaterialType is not set in SI Default Asphalt material XML file	1. Compare the US & SI versions of the file in WinMerge. Presumably, since the US value is set to 1, the SI value should be set to 1 as well. Confirm with research.

67
52
	Project using Copper Mt, CO, climate data does not run	1. Run the attached project in ME Design. (You may need to first select the custom climate data in the GUI. Use attached files.)
		
		Eventually, the reports try to read and parse MonthlyClimateSummary.csv (generated by EICM). For this project, that file has non-numeric output in the max-frost-depth column, which causes parsing logic in report generation to fail.
		
		Suggested fix, changing the 2nd-to-last loop in ICMWriter.WriteClimateRecords to this instead (tested, had no effect on behavior):
		
		for (var nNode = 0; nNode < lastNode - 1; nNode++)
		
		{
		
		   writer.WriteLine(annualTemperature.ToString("f2") + " 0");
		
		}
		
		writer.WriteLine((annualTemperature > 32 ? annualTemperature : 32.1).ToString("f2") + " 0");

68 09	Adding a row in the user management UI can cause database save issues	1.1-Add a new row in the ME Design Users UI 1.2-Fill out all the required details 1.3-Save the changes. The program may throw an exception. 1.4-Try to delete the row The program may throw an exception. 2.1-Add a new row in the database 2.2-Fill out the partial details 2.3-Save the changes The program may throw an exception.

		2.4-Try to delete the row The program may throw an exception.
68 16	Ensure fatigue cracking data matches correctly	TEST CASE 5986: ENSURE APADS AND IRIFLEXIBLE ARE READING THE CORRECT DATA FROM FATIGUE.TMP Create an AC over semi-rigid design Open the AC layer properties node Select the rehabilitation property Change the rehabilitation property to level 2 and then alter the fatigue cracking value Run the project using default setup and values Check the fatigue.tmp file (twelfth column). Should match what was entered in the UI for existing fatigue cracking
68 51	EICM output to MonthlyClimateSummary.csv is truncated	1. Run the attached input.tmp through EICM. -or- 1. Run the attached project in ME Design. After EICM terminates, the MonthlyClimateSummary.csv output file is truncated. It should contain more monthly lines.
68 56	Warning messages for datagrid values - Entering value vs. Copy-Paste	1. Open Pavement ME and create a new project, e.g. new flexible project. 2. Go to the Traffic module and (a) Type in '18' for Growth Rate (%) for any truck class and press Enter (b) Type in '40' for Axles Per Truck (single) and press Enter. (c) This shows a warning message in the Error List box at the bottom of the interface that these values are outside typical range for the parameters. 3. Repeat the first two steps, but don't enter the values using the keyboard. (a) Open Notepad or any text editor and type in 18, copy this value and paste it in the Growth Rate (%) cell as done above and press Enter. Control is passed over to the next cell. (b) Next, type in 40 in Notepad and paste this value in Axles Per Truck (single) and press Enter.

		4. Pavement ME shows a warning message for manually entered values (through the keyboard), but doesn't show any warnings when the values are pasted from clipboard. This could be due to the way the datagrid error handling is set up, which should be made consistent across different input methods. 5. This inconsistency was not tested across different datagrids in the software. P.S. This bug was observed while creating DGPX files for the Nebraska local calibration project and was not part of any AASHTO testing activity.
68 24	Errors in project not showing in error list until layer is selected. Error NOT preventing run of analysis	Open the attached SI project Note no errors are displayed by default Attempt to run the project Note the project will start/run without issue The project actually contains errors (see below) and should NOT be allowed to start until those errors are corrected. Click on the Layer 7 subgrade Note the resilient modulus error appears in the error list. This error should have appeared immediately upon opening the project.
67 20	Pressing "Update Open Projects" should update all open projects with all the calibration factors	1. Open Pavement ME and a pre-2.5 project 2. Go to any of the global calibration factors windows and press "Update Open Projects" Observe that only the calibration factors of the type you update are now different, and the other calibration factors have not been updated. The desired functionality is to have have the "Update Open Projects" button update every open project with all the calibration factors, not just the ones for the type selected. This will prevent users needing to know which calibration factors they actually need to update for any particular design strategy.

5 Feature Requests

Feature requests can be made to 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.

6 FAQ

This section describes the Frequently Asked Questions regarding Pavement ME Design.

1) **I am trying to run an analysis using "Special Axle Configuration", but I can't find this option within the software. Is "Special Axle Configuration" still available in ME Design?**

   Special axle is now available as of build 2.0.19 in ME Design. Please see the help manual for further instructions.

2) **When I run the software I get an error: Error running modulus.exe.Program cannot achieve optimization of dynamic modulus master curve. G* inputs do not allow convergence. Analysis aborted." What can I do to fix this?**

   This error message indicates that for your input data for the modulus.exe could not achieve optimization of the sigmoidal function. Have the user check their G* input data.

7 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.

8 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
Phone: 1-877-500-3496 or 217-356-4500
Monday through Friday
8:00am – 5:00pm CST