

USER INSTRUCTIONS FOR MEPDG SOFTWARE RIGID PAVEMENT DESIGN (Revision 1/28/09)

GETTING STARTED

Obtain MEPDG Software by downloading it from the [MEPDG Software](#) link shown on the webpage, or obtain a copy from Office of Pavement Engineering.

Download the Traffic and Materials Properties tables from the INDOT Y drive or from INDOT Internet.

Make Indiana Design Manual, Section 52-8.0, Pavement Design Procedural Guidelines, available. Section 52-8.0 is the primary source for all MEPDG input data.

Compile project-specific information, such as traffic data, road classification, number of lanes, geotechnical report, etc.

Each New project must start with all new data inputs, and not data saved from a previous project. You may not change the chosen weather station of an existing project. To change a weather station location, you must start a New project.

START THE MEPDG PROGRAM

Click on File, then select New.

The **CREATE NEW PROJECT** screen appears.

Choose and enter a name for trial design.

Example: SR 62, DES 9902940, PCCP, 13 in. thickness

Select a project folder where you wish to save your file.

Unless working on a metric project, leave the Measure System as US Customary.

Click OK.

You should now see a Master screen with boxes for Project, Input, and Results.

Double click the General Information box to open the **GENERAL INFORMATION** screen.

Select the Type of Design from the options shown.

Enter the Design Life, in years, value based on Section 52-8.0.

Complete the Date fields per Section 52-8.0.

Click OK.

Double click the Site/Project Identification box to open the **SITE/PROJECT IDENTIFICATION** screen.

In the Location field, input the Route number or name and County or City.

In the Project ID field, input the Des. No.

In the Section ID field, input the description of the location, i.e., From Route ____ to Route _____. This can be obtained from SPMS.

Leave the Date field as it is.

In the Section/Milepost field, select the option, normally miles.

In the Sta/MP field, input the beginning point of the project.

In the Sta/MP End field, input the end point of the project.

In the Traffic Direction field, choose the applicable option.

Click OK.

Double click the Analysis Parameters box to open the **ANALYSIS PARAMETERS** screen.

In the Initial IRI field, enter the value per Section 52-8.0.

Under the Performance Criteria, the Rigid Pavement tab is highlighted.

Fill in the Limit and Reliability values from Section 52-8.0. These values depend on the road's classification which can be found in the SPMS data.

Click the Flexible Pavement tab to turn it green, no action required, then click back on the Rigid Pavement tab.

Click OK.

At this point, the Project spotlight and all three boxes associated with it should be green.

SAVE THE FILE.

Start the INPUTS portion of the process.

Double click the Traffic box to open the **TRAFFIC** screen.

Click the Import/Export button. You will now see an **IMPORT/EXPORT TRAFFIC** screen. On this screen, click the 3-dot button to open a **BROWSE FOR FOLDER** screen.

Select the INDOT_MEPDG (D:) option and from the Module 11B- Traffic Input Files. Choose the appropriate Input Traffic Group in accordance with Section 52-8.0. You should now be back to the **IMPORT/EXPORT TRAFFIC** screen.

Click OK.

Click Import.

Click Yes.

You should now be back to the **TRAFFIC** screen.

Click the Traffic Volume Adjustment Edit button. You will now see a **TRAFFIC VOLUME ADJUSTMENT FACTORS** screen. Click on each of the 4 tabs to turn them green.

Input the correct Growth Rate with the Compound Growth button selected.

Click OK.

Click the Axle Load Edit button. You will now see a screen showing the **AXLE DISTRIBUTION FACTORS**.

Click OK.

Click the General Traffic Inputs Edit button. Your screen should now show **GENERAL TRAFFIC INPUTS**. Click the box on each of the three tabs to turn them green.

Click OK.

Input the Initial Two-Way AADTT, the Number of Lanes in Design Direction, the Percent of Trucks in Design Direction, the Percent of Trucks in the Design Lane, and the Operational Speed.

Click OK.

SAVE THE FILE.

Double click the Climate box. The **ENVIRONMENTAL/CLIMATIC** screen appears.

Select and click the Generate button.

Complete the Depth of Water Table with the information provided in the geotechnical report if available, or from Section 52-8.0.

Choose the Climatic Data for a Specific Weather Station option if the project is near one of Indiana's 11 weather stations. Scroll the highlighted area to view the weather station options. You may use the option to interpolate data from 3 Weather Stations by choosing that button and entering the latitude, longitude, and elevation of the project.

Click Select Station.

You will see a **SAVE GENERATED CLIMATIC DATA FILE** screen.

Assign the file a name, such as Terre Haute Weather Data.

Click Save.

You should now be back to the Master screen.

SAVE THE FILE.

Make the structural inputs.

Double click the Structure box and you should see a **STRUCTURE** screen.

Check to see that the value for surface short-wave absorptivity is per Section 52-8.0.

You will now build the cross section of the trial pavement cross section to be analyzed by MEPDG. Do not consider the thickness of Layer 1 at this time, as you will edit it later.

Click the Insert button and the **INSERT LAYER AFTER** screen appears. Choose the correct Material Type and Material options and input the design layer thickness.

Click OK.

Once again, click the Insert button and the **INSERT LAYER AFTER** screen appears, ready for the next layer of the cross section. Choose the correct Material Type and Material options and input the layer thickness for the third layer of the pavement cross section.

Click OK.

Again click the Insert button and enter the information for the fourth layer of the pavement cross section.

Click OK.

Again click the Insert button and enter the information for this layer. If this is the last layer to be considered in the design, e.g., the subsurface layer that will not be modified, click the Last Layer box instead of entering a thickness.

Click OK.

You should now be back to the **STRUCTURE** screen where you will see the various layers of the trial pavement's cross section. Next you will edit each of the layers shown starting from the lowest layer.

Highlight Layer 5, or lowest layer, and click the Edit button. You should now see an **UNBOUND LAYER – LAYER #5** screen.

Choose Input Level 2.

At this screen, with the Strength Properties tab highlighted, you should review the information shown for correctness. At the User Input Modulus option, choose the Representative Value (Design Value) and enter the correct Modulus value for the design per the Section 52-8.0 instructions.

Click OK.

You are returned to the **STRUCTURE** screen.

Highlight the next Layer upward and click the Edit button. The screen for this layer will now be shown. As previously instructed, choose Input Level 2, review the information shown, choose the Representative Value (Design Value) option, and enter the correct value in the Modulus window.

Click OK.

Repeat the same procedure for the next Layer.

Click OK.

When you get to Layer 1, which should be the concrete layer, highlight it, and the screen will appear as **PCC MATERIAL PROPERTIES – LAYER #1**.

At the Thermal tab, edit all values, making sure that the thickness is correct. Section 52-8.0 includes the recommended values.

At the Mix tab, select the Cement Type, and edit the values for Cementitious Material Content and Water/Cement Ratio, then select the Aggregate Type for the mix, using the Section 52-8.0 guidelines. Check the PCC Zero Stress Temperature box, and the software will calculate this value. Edit the values for Ultimate Shrinkage, Reversible Shrinkage, and Time to Develop 50% Ultimate Shrinkage, then select the Curing Method option, again per Section 52-8.0.

At the Strength tab, select Input Level 3, then, edit the value for Modulus of Rupture per Section 52-8.0. Click the Elastic Modulus box and the value is computed by the software.

Click OK.

You are now back to the **STRUCTURE** screen.

Click OK.

SAVE THE FILE.

Double click the Design Features box to open the **JCCP DESIGN FEATURES** screen.

Edit the Joint Spacing and Sealant Types information.

Click the Doweled Transverse Joint box and enter the values for the dowel diameter and dowel spacing.

Click the correct Edge Support option box and edit the value per Section 52-8.0.

The PCC-Base Interface is per Section 52-8.0.

Select the applicable Erodibility Index option and input the value for the Loss of Full Friction window all in accordance with Section 52-8.0.

Click OK.

SAVE THE FILE.

You should now be back to the Master screen. Check to see that all of the traffic signals and boxes have turned green on the Projects and Inputs side of the screen.

If the signals are all green, you are ready to run the trial pavement design analysis.

Click the Run Analysis button.

The status of the analysis run time will show in the upper right-hand portion of the screen. The analysis may take several minutes, depending on the computer's speed.

Once the analysis is completed, you will have the option to review the Inputs, and the Results. Some of the Results can also be reviewed in a chart format.

SAVE THE FILE.