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Dynamic Modulus Pre-Programmed Testing Software

Procedures Covered

AASHTO TP 62-03, NCHRP 9-19, NCHRP 9-29

System Configurations:

AASHTO TP 62-03, This test uses a load cell and 2 or three axial deformation transducers attached to the specimen. The specimens are nominally 100 mm in diameter and 150 mm high. A temperature controls the thermal environment. Requires Interlaken UniTest Control System to run pre-programmed software.

NCHRP 9-19, This test uses a load cell and 2 or 3 axial deformation transducers attached to the specimen. The specimens are nominally 100 mm in diameter and 150 mm high. A temperature controls the thermal environment. Requires Interlaken UniTest Control System to run pre-programmed software.

NCHRP 9-29, This test uses a load cell and 2 or 3 deformation transducers attached to the specimen. The specimens are nominally 100 mm in diameter and 150 mm high. A temperature controls the thermal environment. Requires Interlaken UniTest Control System to run pre-programmed software.

AASHTO 62-03
NCHRP 9-19
NCHRP 9-29

Background:

This application will support the procedures specified in AASHTO 62-03, NCHRP 9-19 and NCHRP 9-29.

The loading waveform is a sinusoidal load. The load levels are specified by a contact load and load amplitude.

This procedure tests asphalt mixtures to determine the dynamic modulus and phase angle over a range of temperatures and loading frequencies.

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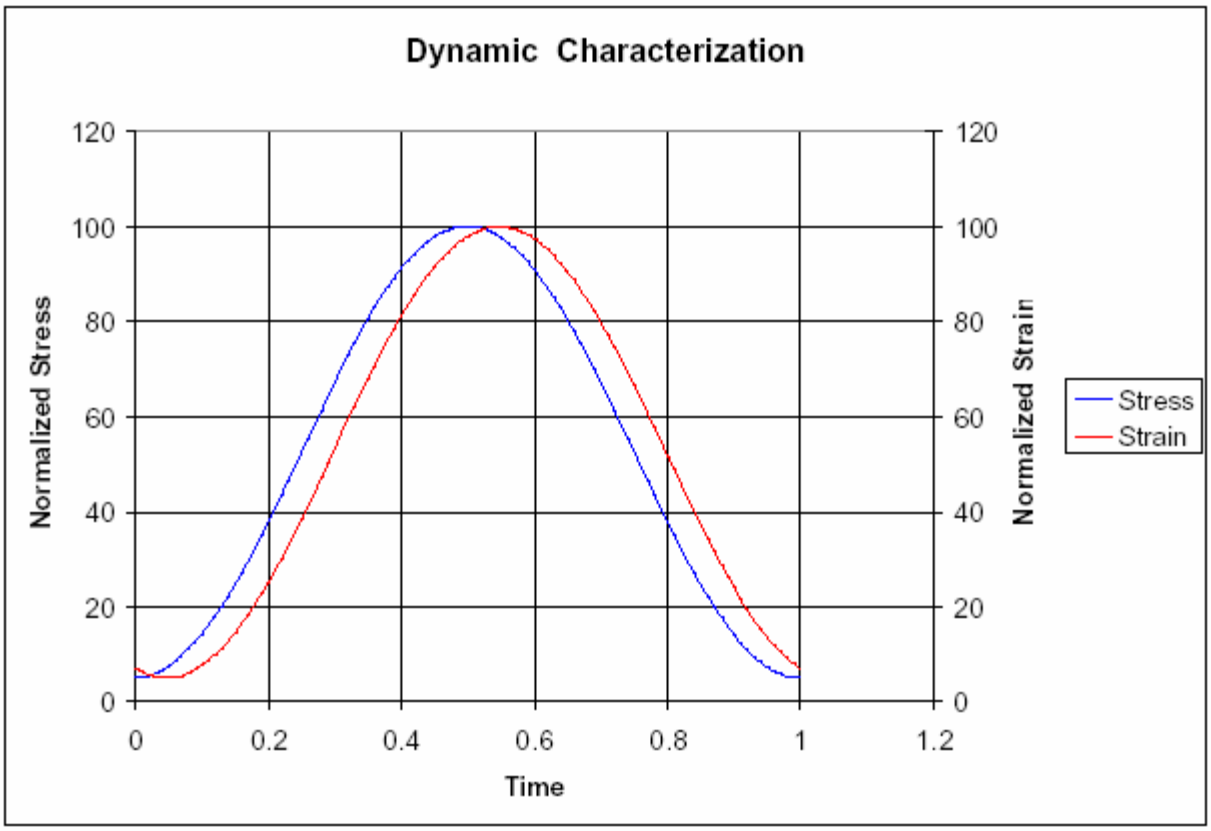
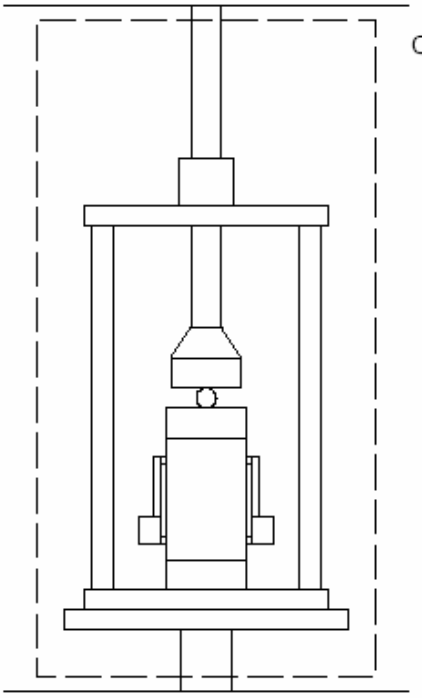
Background:

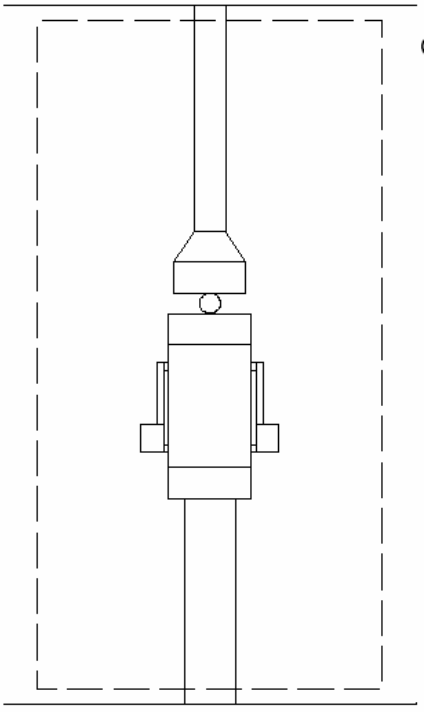
The loading waveform is a sinusoidal load. The load levels are specified by a contact load and load amplitude. There is an option to have the program automatically adjust the load levels to maintain a specified strain amplitude.

The analysis procedures are based on the methods developed in the NCHRP 9-29 program and the reader should refer to the reports from this program for details. The phase relationship and amplitudes are determined with a discrete Fourier transform approach.





Load cell and deformation transducers in a triaxial cell and temperature chamber for the 9-19 and 9-29 procedures.



The AASHTO 62-03 procedure require a load cell, deformation transducers and a temperature chamber.

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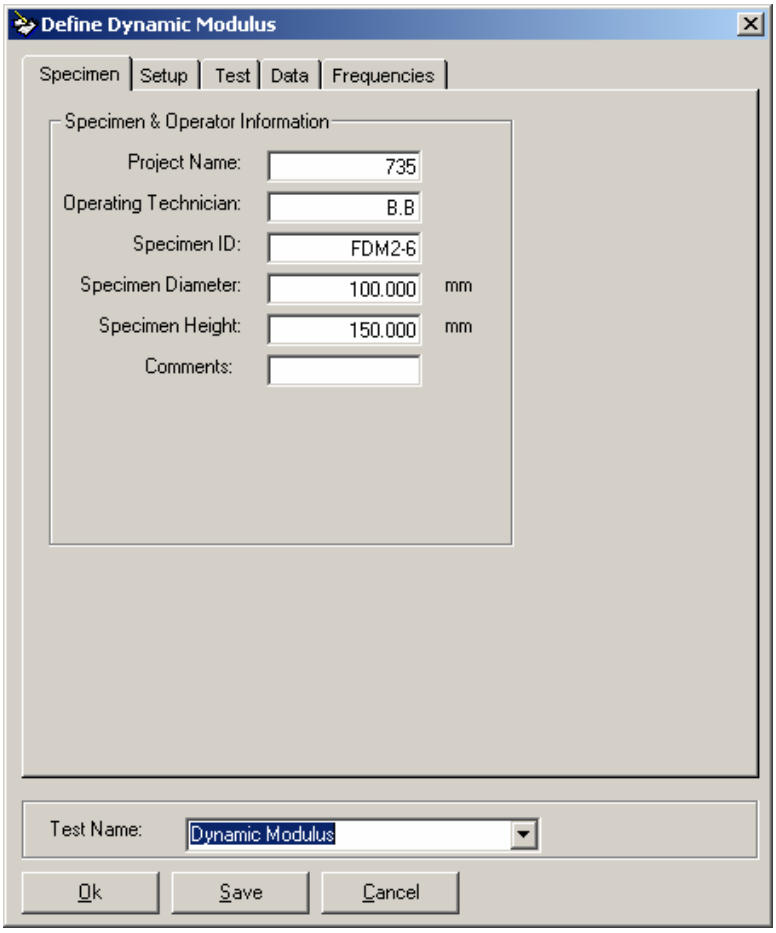
Selecting the Software

To start the application go to the **Test** pull down menu.
Then select the **Dynamic Modulus** and then the **Define** option.



Specimen Tab

Project Name - General information, not required
Operating Technician - General information, not required
Specimen ID - General information, not required
Specimen Diameter - Required Field
Specimen Height - Required field
Comments - General information, not required

Test Name - Identifies a specific version of the test.

All of the above fields are saved to the raw data file by default.

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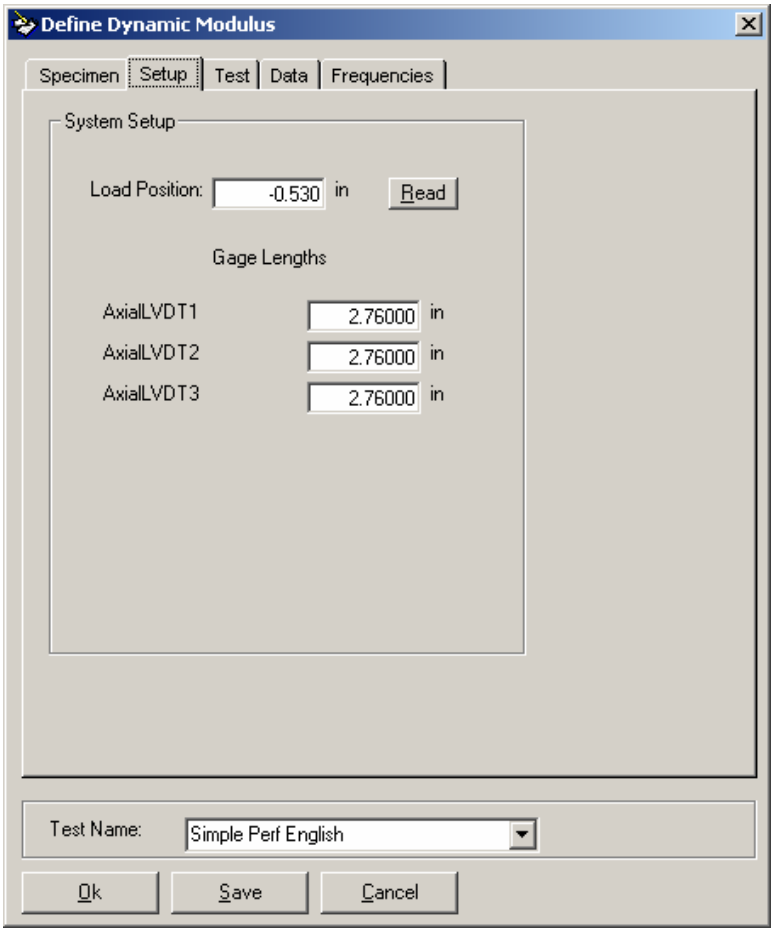


Setup Tab

Load Position - Used for setting the ram home position. This is the position that the ram will return to before and after each test. The value in the box is the amount of "tare" that is used for the ram. There is no need to enter a value, simply position the ram at the desired home position and press the READ button, then press the SAVE button to save the value.

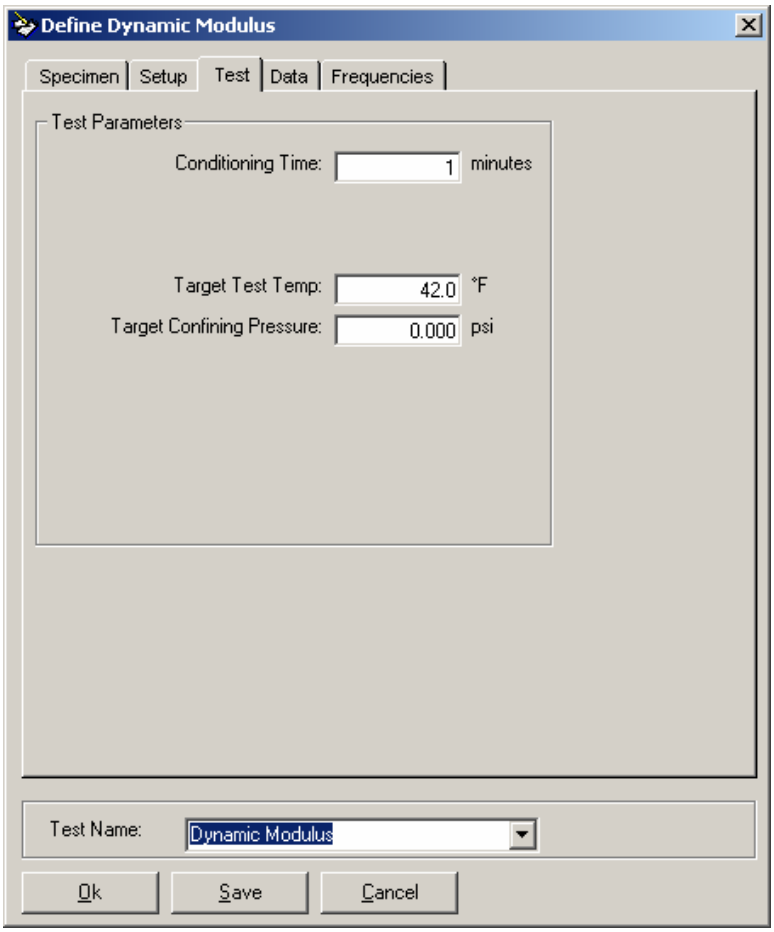
Note, different systems may have a different number of deformation transducers.

LVDT 1 Gage Length - Gage length of the first deformation transducer.

LVDT 2 Gage Length - Gage length of the second deformation transducer.

LVDT 3 Gage Length - Gage length of the third deformation transducer.

LVDT 4 Gage Length - Gage length of the fourth deformation transducer.

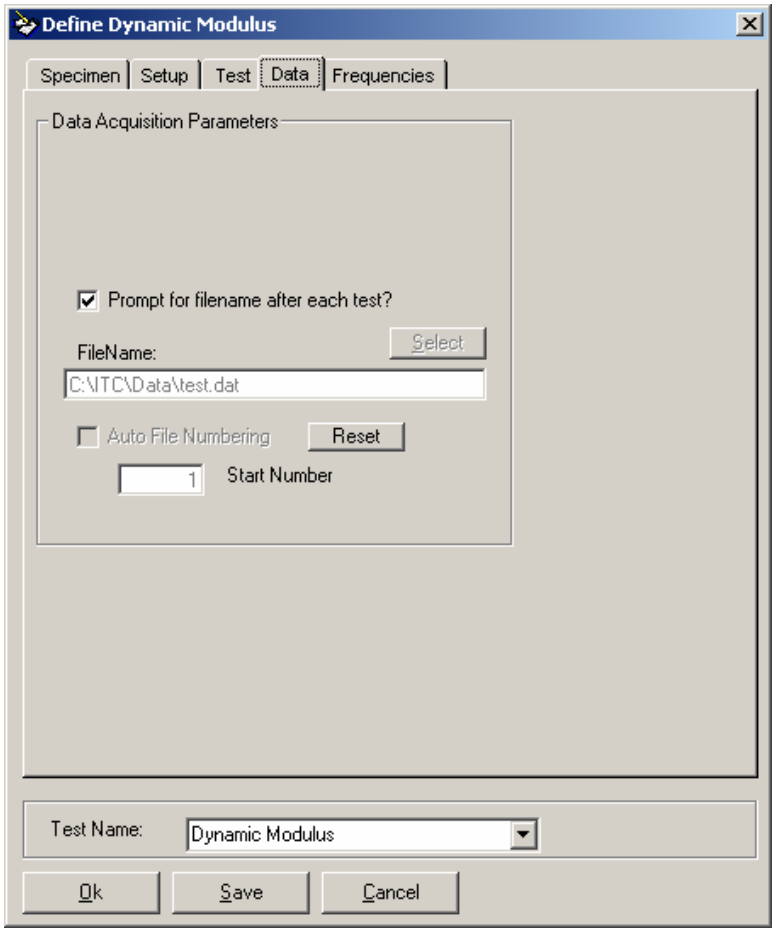


Test Tab

Conditioning Time - This is the amount of time that the specimen was conditioned before testing.

Target Test Temp. - This is the temperature setpoint for the test. This value will be sent to the temperature controller after these settings are saved and the temperature controller is turned on.

Target Confining Stress - This is the confining pressure value that will be used during the test. A value of zero is used if the test will be run as unconfined.



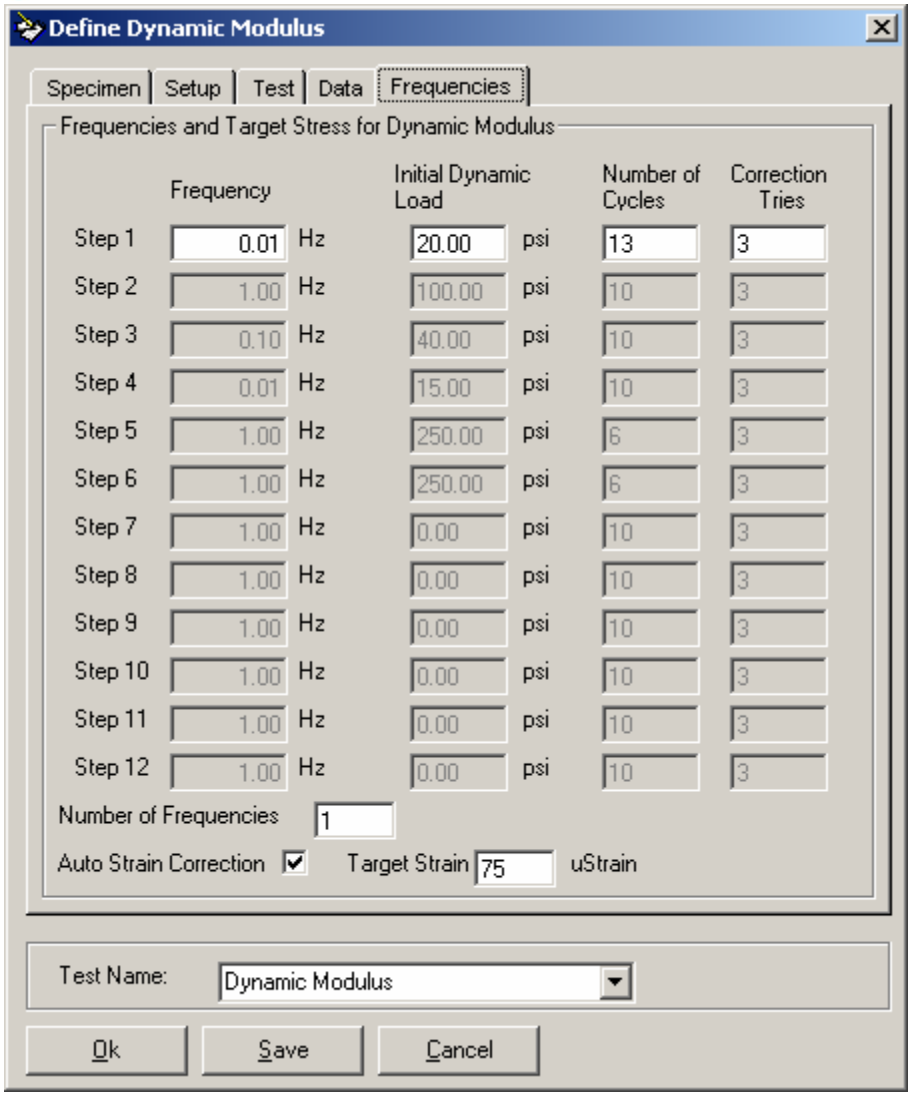
Data Tab

If the user checks the "Prompt for file name after each test?" box, a prompt will appear after each test to allow name selection and location for the data file. A file name can be selected by choosing the Select button.

If the user selects the "Append data to file?" box, the data will be appended to the file named or selected if there is already some data in that file.

The data files are typically set up with the "Prompt for file name after each test?" box checked, and the "Append data to file?" box checked. This will prompt the user for a data file after each test and if an already used file name is selected the file will be appended to rather than overwritten.

If the prompt for file name is not checked, the user can select Auto File Numbering to have the system automatically number each file name.



Frequencies Tab

Cycle # - This is the frequency that the cycle will run 10 sinusoidal load profiles to the corresponding defined stress level.

Number of Frequencies - This value allows more test conditions to be defined.

Auto Strain Correction - If this box is checked, the system will vary the target stress level applied to the sample to reach the correct strain level (target strain). This is usually used during testing. If this box is not used, the test will be ran to the specified stress level, regardless of the level of strain yielded by the specimen.

Target Strain - This value is used by the auto strain correction. It is defined in micro strain. The range is usually between 75 to 150. The typical setting is 100.

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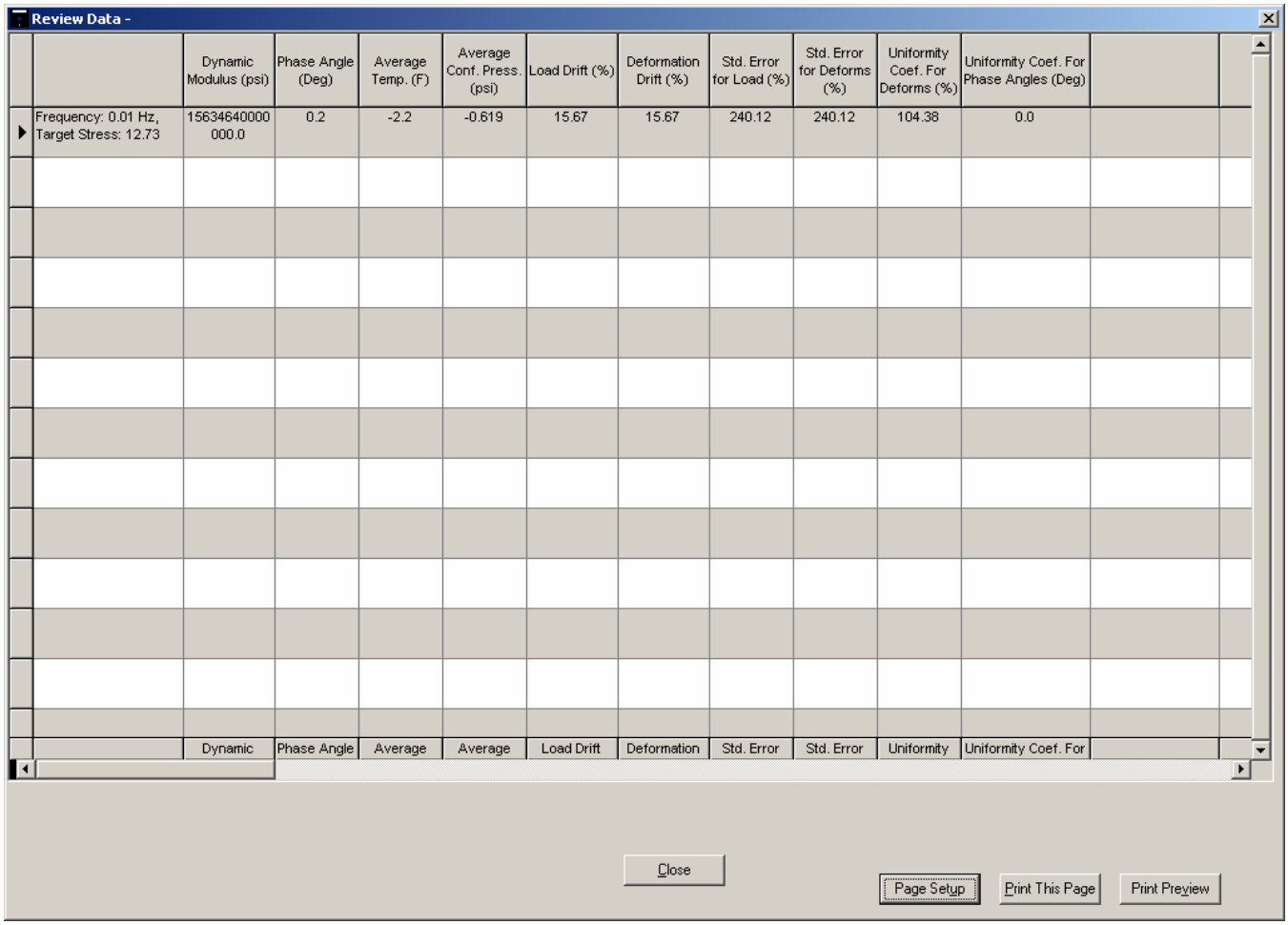
Reports

A summary report appears after all the frequencies have been completed. This report is also available as an Excel worksheet.



Detailed results for each frequency are available after the test. The results and presentation are based on the methods developed in the NCHRP 9-29 program.

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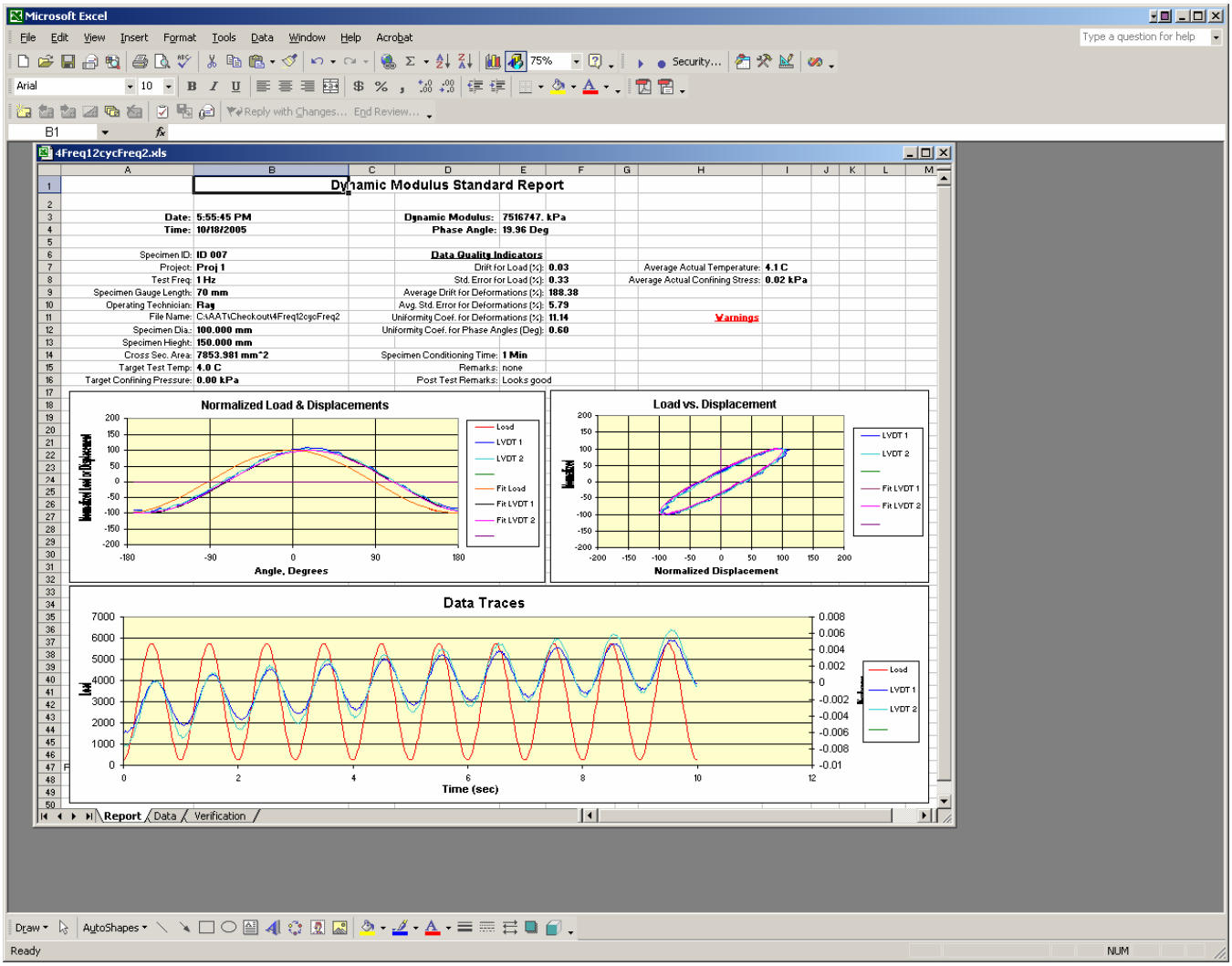
Individual Frequency Report



The report includes the raw data and results. The various plots allow the waveform quality to be assessed. In the “Normalized Load & Displacement “ the data has the mean removed and is converted to a percentage basis. The normalized information is also plotted in a hysteresis loop format.

The time history information is on the Data worksheet.