Forward Calculated Stiffness

This web-based tool is based on forward calculation spreadsheets developed as part of an LTPP Data Analysis project (FHWA Publication No. HRT-05-150). This tool generates an estimate of the stiffness of the asphalt concrete (AC) or Portland cement concrete (PCC) surface layer and the subgrade soil based on user-input FWD deflection data.

There are four forward calculation spreadsheets: two for asphalt-bound surfaces (SI and U.S. Customary units) and two for cement-bound surfaces (SI and U.S. Customary units). The files are in Microsoft ExcelTM format. Note that the forward calculation spreadsheets are intended to serve as a quick-and-dirty tool for users to obtain a rough estimate of the resilient modulus of the AC or PCC surface layer and that of the subgrade, regardless of the layers in between.

Inputs for the spreadsheets for LTPP sections are downloaded by clicking on the box next to **Deflection Raw Data** under **Data Selection and Download – Performance – Back calculation and Deflection**. There are multiple tables associated with this selection. The table of interest is labeled FWD\_Drop\_Data. The table includes the following columns: State code, SHRP ID, Test Date, Test Time, Deflection Unit Identifier, Point Location (M), FWD Test Lane Position Code, Drop Number, Record Status, Drop Height Code, Drop Load (kPa), Peak Deflection Sensors 1-9 (microns). Drop Height has four levels: 1 for 27kN (6kips); 2 for 40kN (9kips); 3 for 53kN (12kips); 4 for 71kN (16kips). The process for finding the desired subset of sections and setting the data up for download is the same as previously discussed. For additional documentation on FWD data, please refer to “LTPP Manual for Falling Weight Deflectometer Measurements” <http://www.fhwa.dot.gov/pavement/ltpp/pubs/06132/index.cfm>.