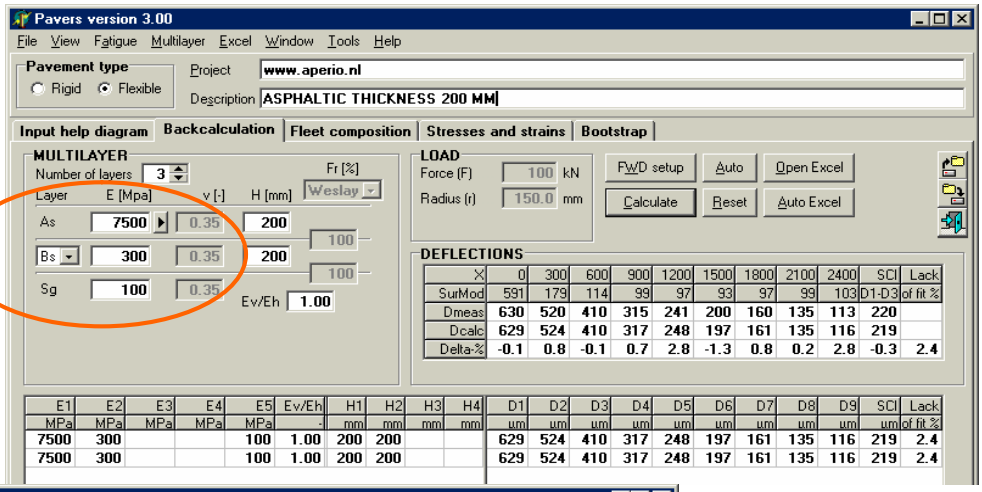
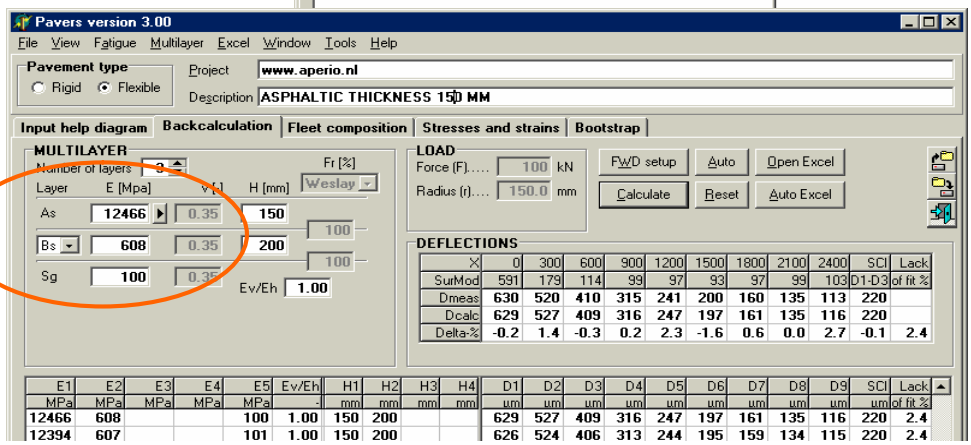
PAVERS®
The Premium Pavement Tool

Back-calculating Pavement Structures

FWD Deflection Survey: The structural condition of in-service airfield pavements, either remaining life or strength of the pavement is deduced from the FWD response, inducing a test load which allows to model a pavement. The assessment of the structural condition, non destructive testing by means of falling weight deflectometer (FWD), GPR measurements, targeted coring and material testing is common practice. FWD, like GPR impulse Radar, is truly an in-situ test that evaluates a pavement without material disturbance or modification.

Back-Calculation: The condition of the pavement is deduced from the response in terms of vertical displacements due to the impact of an FWD load, simulating actual traffic loads. Measured deflections are translated into stresses or strains by back-calculating the pavement structure. For flexible pavements that is the determination of the distinct layer moduli of constructed layers and the subgrade *from known layer thickness'*. For rigid pavements the slab support conditions, i.e. the foundation parameters at the *slab's edge* are back-calculated taking the slab thickness and resonance Young's modulus of the concrete as input. It is essential that accurate pavement layer thickness must be used in the back-calculation process. Layer thickness are used to back calculate elastic moduli of distinct pavement layers and subgrade. It does not work vice versa. From the graphs the importance of accurate layer information is demonstrated. It can be depicted, that the input thickness' have a dominant effect on the back calculated moduli. Hence on the pavement life too, which is deduced from these moduli.





Impulse Radar &Targeted Core Drilling: The number of required cores is decreased significantly when impulse radar survey data are available. Therefore, it is recommended practice that some coring is carried out to determine layer thickness' for accurate back-calculation of the layer module and determining strength of pavement layers by laboratory testing.