

BASP Help

The program determines the elastic out-of-plane buckling load for plates having stiffeners placed symmetrically about the plate. Loading should be applied in the plane of the plates. In the lateral torsional buckling analysis of beams, the web is idealized by the plate elements (two-dimensional finite elements) while flanges are treated as stiffener elements (one-dimensional finite elements). Arbitrary planar geometry, loading, and in-plane and out-of-plane boundary conditions may be accurately represented. The in-plane boundary conditions include support movements and springs. And, the out-of-plane conditions include the lateral deflection, the rotation about either x-axis or y-axis, which can be free to deflect and rotate or be fixed. In addition, lateral and torsional springs can be placed to represent brace stiffness or warping restraint.

The program consists of two types of analysis; the first one is the in-plane stress analysis, which calculates the stresses under the applied loading and in-plane boundary conditions. The second one is the out-of-plane buckling analysis, which determines the eigenvalue under the stresses calculated and out-of-plane boundary conditions. In the analysis, cross section distortion as well as local buckling of the web and torsional buckling of the flanges are accounted. The buckling load is the eigenvalue times the input load.