ENGLISH SUMMARY

Leskelä, Matti, THE DEFORMATIONAL CHARACTERISTICS AND THE STRENGTH OF CONCRETE IN PLANE STRESS AND PLANE STRAIN CONDITIONS

The plane stress condition is met in various beam and plate constructions and it is characterized as biaxial. The plane strain condition is also found in some concrete structures, which can be considered by taking a strip of unity width and supposing equal loading- and deformational conditions in every strip. Reference is made for example to the walls and like. Plane strain condition is characterized as triaxial stress case and a special one in that one of the normal stresses, perpendicular to the plane, is determined by the other two, acting in the plane. The paper considers the strength and deformation characteristics of biaxially and tri-axially loaded concrete using compatible failure functions and constitutive equations of non-linear elasticity, developed by some outstanding researchers: a failure criterion of Danish N.S. Ottosen is applied together with the constitutive models of M.D. Kotsovos (UK), L. Cedolin (Italy) and N.S. Ottosen (Denmark).

Noro, Heikki, REINFORCED CONCRETE STRUCTURES AT HIGH TEMPERATURES

A computer code to carry out the structural analysis of a reinforced concrete wall loaded by an arbitrary temperature distribution and eccentric axial force has been developed. The uni-axial state of stress with Bernoulli's hypothesis is assumed. Material and geometrical nonlinearities and temperature dependence of the material properties are included in the calculations.