UDK 624.012.4:624.044
624.072.2:539.376

JUMPPANEN, PAULI, Some models suitable for representation of creep and shrinkage of concrete. Rakenteiden Mekaniikka 8 (1975) 3-4, p. 165...187.

The most common linear creep and shrinkage laws applied in the design of concrete structures in the European countries are discussed in the paper. Moreover, the CEB recommendations and the corresponding Finnish code requirements are compared with these linear models. The determination of deflections of a reinforced concrete beam is treated as an illustrative application.

UDK 624.04:681.3.06

ORIVUORI, SEPPO, Description of finite element program IVOFEM. Rakenteiden Mekaniikka 8 (1975) 3-4, p. 188...210.

IVOFEM is a general program system based on finite element method. The structure of the program is represented by means of flow charts. Following subjects are dealt: reading and checking of input data, formation rules of stiffness and stress matrices, preparation of the solution of linear equations, solution of linear equations by means of frontalmethod, evaluation of element stresses. The purpose of each subprogram and file is briefly declared. Finally the possibilities of updating the system with new features are discussed.

UDK 624.073.1:624.042:
539.384.2

TUOMALA, MARKKU, KAIRA, HEIKKI and MIKKOLA, MARTTI, Large deflection finite element analysis of flexible plates. Rakenteiden Mekaniikka 8 (1975) 3-4, p. 211...252.

In this paper, the finite element method is applied to the large deflection analysis of plates and shallow shells. By the use of the Lagrangian description, all the quantities required in the analysis are referred to the initial configuration of the structure. The equilibrium equations are derived by using the principle of virtual displacements.

Based on the Marguerre shallow shell theory two triangular 15 dof and 27 dof finite elements are constructed.

Numerical examples and comparisons with the results of previous investigators illustrate the practicability and accuracy of the method.