ENGLISH SUMMARY

UDK 624.012.45:699.85

OLIN, JUHANI, SARJA, ASKO, JOKELA, JUKKA, Design of reinforced concrete structures of airraid shelters for vibration loads

The article deals with the elastic design method, based on one-degree-of-freedom vibration model, which has been developed so that the effect of plasticity can be taken into account approximately. For this purpose, the design spectra have been developed by means of computer calculations. The equivalent static load can be defined with the help of the design spectrum, and the spectrum is different for the bending moment and shear force.

UDK 519.612

KÖLIÖ, JORMA, Some practical examples how to use the linear constraint equations

In connection with finite-element and finite difference method applications, it is often necessary natural and economical to define linear constraint equations between some unknown degrees of freedom of the model. Applications are unlimited. In this article some simple examples, often met in practice, are presented.

UDK 624.042:519.6

IKONEN, KARI, Iteration in nonlinear stress analysis

In nonlinear stress analyses the equations of the structure are solved iteratively. In this article an iterative process is derived for the finite element method. The iteration method derived can be considered as a modified Newton-Raphson method. The special purpose of this article is to show how thermal loads can be taken into account during iteration.

UDK 624.012.45:624.072.2:620.176

PURSIAINEN, JORMA, LEHTONEN, RITVA, KANERVA, PEKKA, The reinforced concrete beam subjected to combined normal and shear force.

The article deals with the effect of the normal force on the shear strength of reinforced concrete beams. Three test series have been made at Helsinki University of Technology. In two test series special attention was given to the excentricity of the compressive normal force. In the third test series the beams where pretensioned. The test results have been compared with theoretical results calculated according to equations found in the litterature and according to the Finnish concrete code. All the compared theories seem to be satisfactory for design purposes.