ENGLISH SUMMARY

UDK 624.012.45:624.046:624.072.2

LAITILA, J., LUMME, P. and KANERVA, P., The high strength steel A500HW as beam reinforcement

The purpose of the investigation was to determine to what extent higher steel stresses affect width of cracks, strain in the concrete and steel, deflection, load carrying capacity and manner of failure of beams in which high yield strength reinforcement are used.

The main part of the work consisted of an experimental study. Ten reinforced concrete beams having a cross section of 200×400 mm^2 and a span of 4.3 m were used. Reinforcing steels were hot rolled ribbed bars A400H and A500HW.

UDK 624.042.5:519.6

ORIVUORI, S., The stiffness derivative method in crack mechanics

A stiffness derivative method is presented with special reference to thermal loads. Using this approach it is possible to utilize the results of a standard FEM calculation to have an estimate for the crack behaviour. The theory presented is then applied to three different examples comparing the results obtained with those given in literature the test examples are: a plane strain plate loaded by temperature gradient, an axisymmetrical structure loaded by mechanical and temperature load and a point loaded 3D compact tension test specimen.

UDK 624.072.238:519.614

ALBERG, H., Analytical solution for eigenvalues of a rotating timoshenko beam.

In this paper the eigenvalue equation for a rotating hinged-hinged beam has been derived. The effects of gyration, shear deflection and rotary inertia, which are essential for thick beams, have been considered. When the cross-coupling between these effects is taken into account the number of eigenfrequencies is doubled.

UDK 624.04:531

GYLLENBERG, M., SALONEN, E-M., Three paradoxes in mechanics

The following surprising results are derived in the article: (1) The extension of a spring under a force is always zero. (2) In structural mechanics it is not necessary to take into account the gravity of the earth. (3) In fact gravity does not exist.

Finally the errors made in the derivations are corrected.