

ENGLISH SUMMARY

Immonen, Olli, COMPUTER AIDED DESIGN OF REINFORCED CONCRETE COLUMN

The article deals with determination of the reinforcement of the column under biaxial horizontal load and axial force. Main attention has been put on calculating the dimensioning bending moments and determination of the stiffness of the column by use of a computer program based on "finite element" method.

Kouhia, Reijo, ITERATIONS OF NEWTONIAN TYPE IN NON LINEAR STRUCTURAL ANALYSIS

The paper deals with the solution methods of non linear algebraic equation systems, which arise in non linear finite element analysis of structures. Particularly, special attention has been given to so called quasi-Newton iterations. Convergence rate of quasi-Newton methods lies between the convergence rates of the complete Newton-Raphson iteration and its modified version, but quasi-Newton methods are often computationally more effective than both of these standard methods. Update formulas have also been derived in the case of so called are-length methods, which allows also handling of snap-buckling phenomena. In these methods, change at configuration have been limited in displacement-load space with elliptic constraint. Capacity of these methods have been compared by some simple examples analyzed.

Räty, Raimo, SELF-EXCITED ICE-INDUCED VIBRATIONS OF AN ARCTIC OIL DRILLING STRUCTURE

The monopode structure is suitable for an oil and gas drilling structure in deep arctic waters. Because of the crushing strength properties of ice the structure may experience self-excited oscillations. By the aid of the developed mathematical model and computer program it is possible to predict the dynamic response and the stresses of the structure. The effect of the location of the exciting force is studied numerically.