

ENGLISH SUMMARY

UDK 624.044.3:551.332:539.376

LEPPÄVUORI ERKKI KM, Creep of ice. Part II. Rakenteiden Mekaniikka 10(1977)4, p. 1...20.

The second part of the article about the creep of ice treats first the strength tests of ice made at the Helsinki University of Technology, Division of Structural Engineering, describing in somewhat more detail the creep test arrangement and results. The low values of the measured strains are due to the good quality of the test ice and the direction chosen for loading (c-axis direction). Four different creep models were tested with the results. For applications a t^n -model was formulated, with which static ice pressures were calculated in a number of simple cases. In the examples the calculated pressures were compared with the results obtained with the model formulated earlier for the Saima Channel ice and with the measurements made in the nature.

UDK 624.074.4

ORIVUORI SEPPO, Isoparametric element for axisymmetric thin shells. Rakenteiden Mekaniikka 10(1977)4, p. 21...42.

The article deals with the isoparametric axisymmetric thin shell element there are only few papers concerning this element. The detailed formulas needed in the construction of the stiffness matrix and load vector of the element are represented. Modifications needed to solve branched shells are discussed. The computer code IVOKUORI using this element is briefly represented. There is included three examples solved with this program, two of which can be compared with either analytical or other numerical solutions.

UDK 539.4.015

KÄRNÄ TUOMO, First principles of fracture mechanics. Rakenteiden Mekaniikka 10(1977)4, p. 43...55.

The fracture mechanics that is used in studying the brittle fracture of metal structures is treated in this paper. The treatment of the subject is elementary and directed to readers, who have no prescience about this theory and about its applications. The fracture mechanics is based on the observation that the strength of the material depends on its defects. Another base of the theory is the law of conservation of energy that Griffith as the first investigator applied in the research of brittle materials. The fracture mechanics is a macroscopic theory of the strength of materials, where the problems connected with the microstructure of the material are evaded by using suitable material constants determined by material testing.