

ENGLISH SUMMARY

THEORETICAL INVESTIGATION OF WALL PLATES LOADED AT THEIR LOWER EDGES

Björn Grundfelt

Rakenteiden Mekaniikka 1 (1968) pp. 4 to 11

This investigation of state of stress of wall plates is a part of the theoretical and experimental investigation of containers performed by the State Institute for Technical Research.

The state of stress of the plate is solved by means of the Airy stress function. The solution is composed of hyperbolic and trigonometric functions. The load is given in the form of Fourier series. The arbitrary parameters of the stress function are determined by the method of least squares, so that the boundary conditions of the plate will be satisfied as good as possible. Then the stress components has been stated by means of the second derivatives of the stress function.

A numerical example of the analysis of a wall plate is given. The distribution of stress components in the plate is shown in figures.

EXPERIMENTAL INVESTIGATION OF SLABS BY THE MOIRÉ METHOD

Teuvo Kolunen, Lasse Lahtinen and Martti Mikkola

Rakenteiden Mekaniikka 1 (1968) pp. 12 to 17

The present article describes the investigation of small slab models by means of the moiré method. To begin with the moiré effect and its application to the strain analysis is explained. The modification of Ligtenberg for the determination of bending moments in laterally loaded plates and grid

frames is treated in detail. In this connection accounts are given of the method developed for the analysis of moiré photographs which employs stereoinstrument (autograph) and digital computer, of the construction of models and of the transfer of model results to real structure. Use of the method is illustrated by an example of the determination of bending moments in a bridge slab.

SPACE FRAMES THE BARS OF WHICH HAVE ROMBIC CROSS SECTION

Pekka Helander

Rakenteiden Mekaniikka 1 (1968) pp. 18 to 25

The space frames are divided into three classes in this paper. In the first class all the bars are orthogonal to each other, in the second class all the vertical bars are orthogonal to the bars in the horizontal plane of the frame, and in the third class the bars are connected to each other at arbitrary angles. Based on some geometrical properties of rombic cross sections of bars the author presents a method for transforming the treatment of frames in the second and third classes to the consideration of frames belonging to the first class.