UDC 624.131.53:624.073

HIEKKANEN, RAUNO, Distribution of passive earth pressure on a rigid anchor slab in sand. Rakenteiden Mekaniikka 7 (1974) 2, p.63...77.

An experimental study was performed to determine the distribution, magnitude and point of action of the resultant of passive earth pressure on a rigid slab. The slab was rotated about its upper and lower edges in a sand tank (dry density γ_d = 1.45 kp/dm^3). The width of the slab was 30 cm and the height 85 cm, 55 cm and 25 cm. The pressures were measured on elements of size 5 x 5 cm^2 using strain gauges. When the slab was rotated about its lower edge the point of action of the pressure resultant was at relative depth d_c (= depth/height of slab) = 0.4 ... 0.6. When the rotation was about the upper edge the point of action was at depth d_c = 0.6 ... 0.8. The failure area was a slip zone similar to the logarithmic spiral when the rotation axis was at the upper edge. When the rotation axis was at the lower edge the failure happened in progressive zones starting from the surface.

UDC 624.075.4

MIKKOLA, MARTTI and SALONEN, SEPPO, Analysis of continuous annular plates by the use of the displacement method. Rakenteiden Mekaniikka 7 (1974) 2, p.78...93.

The displacement method, analogous to that of the elastic frames, has been employed for the solution of continuous annular elastic plates in bending. The plate and its loading are assumed to have rotational symmetry. The supports of the plate can be rigid or flexible. Uniform load and line load have been considered. A numerical example illustrates the use of the method.

UDC 624.041
624.073.1

SALONEN, EERO-MATTI, On error estimation in the displacement method. Rakenteiden Mekaniikka 7 (1974) 2, p. 94...107.

Possibilities of estimating errors in approximate solutions of structures based on the displacement method of analysis are discussed. When a kinematically admissible approximate solution is employed the solution is an exact one for a certain fictitious calculated loading differing from the real one. Comparison of these two loadings can give estimates about the accuracy of the approximate solution. The procedure is applied in connection with a Rayleigh - Ritz solution for a beam on an elastic foundation and in connection with a finite element solution for a stretched plate. A difficulty in the application of the procedure is to find a quantitative measure for numerical comparison of the two loadings.