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Wirtschaftliche Bemessung von Fundamenten auf schwach verfestigten Keuperböden
- Kurzbericht in englischer Sprache -

The aim of the research work was the investigation of settlement behaviour and bearing capacity of foundations on weakly hardened keuper soils, which are common as foundation soils in the Frankonian region.

In the beginning load-settlement curves were to be established by large-scale experiments at test footings on the construction site of the hospital Nürnberg-South. Furthermore long-time measurements at columns of the erected building were to be performed.

Together with the results of laboratory investigations describing the behaviour of the considered soils basic informations are to be provided for an accurate estimate of building settlements, which are applicable to other buildings on comparable ground.

The foundation tests were performed in the way that on each of them, keuper clay and keuper sandstone, three quadratic footings with edge lengths of 1 m, 1,5 m and 2 m (all of 1 m hight) were loaded. At each experiment measurements were performed concerning the settlement of the foundation, the settlement of the underground beside the foundation, the applied load as well as the strain in the six single rod ancres, serving to transfer the vertical forces into the underground. In addition at both the foundations with 1,5 m edge length the variation of the vertical stress at the contact area and the variation of settlement with depth were measured by incremental and rod-extensometers. Further measurements by inclinometer dealt with the horizontal deformations in the ground. Since the beginning of the construction the settlements and the corresponding loads are measured in regular intervals at four building columns.

As a result of the footing tests, settlements of maximum 10 mm at the contact pressure of up to 3 MN/m^2 were measured on the weakly hardened sandstone and settlements of 90 mm were reached on the keuper clay at about 1,5 MN/m^2 contact pressure. Soil failure was not observed. However, the possible load duration on keuper clay (max. 90 h) does not allow sufficiently reliable conclusions.

At contact pressures between 380 and 460 kN/m^2 the building columns showed settlements of 9 to 12 mm, which is considerably less than should be expected from the footing tests. These measurements at the building will be continued. At present laboratory test results are available only to a limited extend. Further investigations and evaluations are planned.