

ABSTRACT

This thesis originated as a part of the PhD research carried out by Mgr. Radek Suchomel. To calibrate a hypoplastic model for granular materials a large number of laboratory tests was needed and a part of the testing constitutes the present thesis. The hypoplastic model by von Wolffersdorff (1996) has eight materials parameters. The critical state friction angle φ_c' , which was obtained directly by the measurement of the angle of repose, is one of the eight parameters. Other parameters are determined from the results of experiments and empirically.

Aim of this thesis was to carry out field and laboratory tests, to determine selected soil properties and to interpret them with regard to the variability of the soil in the selected face of the sand pit.

The material for investigation comes from the south part of the Cretaceous Třeboň Basin in the South Bohemia from the Kolný sand pit. The pit is located in the upper part of the Klikov layers. The fluvial layers are characterised by rhythmical variation of gravelly sands, sands and sands with dark grey clayey inclusion. Samples were taken in the face of the sand pit with the dimensions of 9 x 36 m.

The following tests were performed: drained triaxial compression test (38 samples), oedometric compression test (38 samples), measurement of the angle of repose (38 samples), determination of particle size distribution (37 samples) and determination of density in situ (5 points).

The results show, that the soil had the character of gravelly sands with an average content of particles smaller than 0.063 mm to 13%. The results show that the value of the critical friction angle φ_c' depends on the content of particles larger than 2 mm and the content of particles from 0.63 mm to 0.2 mm. The value of the peak friction angle φ_p obtained from the triaxial tests is dependent on the porosity. The value of the compression index C_C obtained of oedometre test depends on the shape of the grading curve - the curvature coefficient and the non-uniformity coefficient. The C_C was also dependent on the porosity of the sample, which shows that different soils were tested.