

## **SUMMARY**

The aim of the thesis is to determine the original stress state of a clay massif in the town Brno. Stress state of rock mass is generally expressed by an empirical relationship of coefficient of earth pressure at rest  $K_0$ . This coefficient can be determined by numerical methods, laboratory tests and also using inverse numerical analysis. This diploma thesis deals with the determination of the original stress state in rock mass by means of numerical modeling. Excavation of an exploratory adit R2 has been selected as a case study for the backanalysis. It was excavated for the purpose of engineering geological survey within the construction of Královopole tunnels. The numerical model was developed using geotechnical software Plaxis 2D and 3D using two advanced hypoplastic models. These models did not consider stiffness anisotropy.

The results of the presented diploma thesis are the values of the coefficient of earth pressure at rest  $K_0$ , obtained using four different types of numerical analyses. In addition, overconsolidation pressure of a natural clay was determined using empirical relationship by Mayne and Kulhawy (1982) and using oedometric compression tests on undisturbed samples of brno clay.