

Summary (Abstract)

Thesis title: The verification of design and calculation methods for the construction of trench shoring plates

This doctoral thesis concerns the experimental verification of the distribution of soil pressure acting on trench shoring plates and the verification of the permissible load-bearing capacity of the plates, resulting from static and strength calculations.

The first part of the thesis (chapter 2) includes a review of the literature on geotechnical investigations of the subsoil, determination of the geotechnical parameters of soils, calculation of the soil pressure, and a description of the various types of protection of excavation slopes used. The methods of static calculations of shoring plates with the adoption of the beam and plate model are also discussed.

The next part (chapter 3) describes the course, methodology and scope of the field research. The method of selecting the site for the study subject, the applied field research methods (test holes, CPTU probing, hydraulic probe) and the scope of measurements carried out on the subject (strain gauge tests, measurements of deflections with a laser scanner and a measuring staff) have been discussed.

After the description of the performed tests (chapter 4), the analysis of the obtained results was carried out, and on its basis, static and strength calculations were done (chapter 5). The calculations were performed in the traditional way used so far when considering the beam model and the finite difference method (FDM), which allowed for taking into account the plate model and any load. During the calculations, the results were analyzed on an ongoing basis and compared with the results of study tests.

The following chapters (chapter 6) contain conclusions resulting from the research and calculations carried out, and chapter 7 contains a summary and the final conclusions.

The last chapter features a list of literature used in the process of preparing this thesis (chapter 8).

8.06.2021 - Marek Kozras