

Surveying support in geophysical methods

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Traditional methods to identify the geological structure of the rock mass are based mainly on the analysis of cores from boreholes. Today, more and more often geophysical methods are introduced to support classical methods or completely replace them. One of the major advantages of this type of measurement is non-invasive analysis of the rock mass. Due to the nature of this type of geophysical measurements and calculations, they must be supplemented by surveying information. Gravimetry and microgravimetry are commonly used technologies to detect voids, located shallowly under the ground. They are based on the determination of changes in the vertical components of the force of gravity at a point. Determination of the value of gravity gives only apparent image of change. To be able to fully describe studied phenomenon we should also take

into account the topographic correction of rock masses located close to the measured point. Modern geodetic measurement methods used to determine the digital terrain model with high precision allow increasing the quality of the results of the study. To register terrain over the caves, which were the subject of research, total station technology and terrestrial laser scanning were applied. This allowed to create a fully metric terrain model in form of a cloud of points. The accuracy of both methods can be determined at the level of several millimeters. To calculate the correction for the excavation created three-dimensional models of voids located under the surface. They were also used to control the data obtained from gravimetry. The conclusion of our study was that geodetic measurements are important elements of geophysical researches.