

EFFECTS OF CAPILLARY SUCTION PRESSURE ON PINDOS AND IONIOS FLYSCH PELITIC ROCK MASS SOUNDNESS BY EXCAVATIONS

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The two processes «slaking» and «swelling» are made responsible for rock breakdown and floor heave, respectively, during excavations of the Power and Tailrace Tunnels in the Pigai Aeos Hydroelectric Project. The tunnels were built through the pelitic rocks of the Pindos and Ionios Flysch. The interpretation of the test results of the investigated samples led to limitation of the conditions under which these processes occur. Slaking takes place under varying high humidity conditions due to capillary suction pressures, whereas swelling occurs after strong dehydration of the rock mass and the expandable clay minerals (current site).

GEOTECHNICAL PROBLEMS OF THE UNDERGROUND STRUCTURES AND DAM FOUNDATIONS IN THE HYDROELECTRIC PROJECT PIGES AEOIS

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The hydroelectric project «Piges Aeos», as a construction, is a large scale technical project and is constructed in an area with complicated and unfavourable geological conditions. During the execution of the work various and serious geotechnical problems were dealt, with in the dam foundation (one main dam and six lateral ones) and the excavations of the underground structures.

The main dam has been founded on strongly tectonized and serpentized peridotites. The problems that have been encountered during the foundation were the difficulty of preparing an acceptable foundation plain and the weak but outspread confined aquifers.

The diversion tunnel was also constructed in peridotite which in the first part was strongly tectonized and serpentized. During the opening of the tunnel many stability problems were encountered.

In the foundation of the lateral dams (in the Pindos Flysch) the problems were the difficulty to form the foundation plain because of the strong tectonism of the rocks and the differential erosion.

The power tunnel was constructed in the Pindos Flysch. Stability problems were met only in the red pelites of the Pindos Flysch. The underground water, the drainage of the tunnel, the great grout absorptions in the injections were the major problems in the thick-bedded sandstones.