associated with fault systems with average strike N20°-40°W and N30°-50° E. There exist, however, evidence abouth the existence of a young system of normal faults (EP - Greek acronym for active fault) striking N60°-70°E. The postulated system does not exhibit apparent surface manifestations, but a plethora of indirect evidence, including hydrothermal phenomena and phreatic explosion features, attest to its presence. A high resolution AMT survey was carried out in two phases (1989 and 1991), to explore the geothermal potential of the flat part of the caldera (Lakki area). The results indicate that the geoelectric structure underneath Lakki can be distringuished in a southern-central and a northern part with different characteristics. In the first (geothermally active) part, the weakly two-dimensional conductivity structure appears to be closely associated with the strike of the EP system, while telluric current flow takes place along the direction N60°-70° -W. In the second (geothermally inactive) area, the geoelectric structure appears to be homogeneous and normal to the EP system. Assuming that current flow is facilitated along the conductive conduits of fluid circulation, we conclude that the latter strike along the direction N60°-70° -W and may be identified with the young EP system. Such an interpretation requires the existence of an extensional stress field, of direction N-S to NW-SE.

PHYSICAL PROPERTIES AND MECHANICAL CHARACTERISTICS OF PHILIPPI PEAT

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The area of the former Philippi swamps lies in the south-east parf of Drama plain and occupies an area of approximately 700 km^2. Metamorphic rocks. Tertiary and Pleistocene sediments and Holocene deposits structure the wider area. Organic formations (peat, lignitoid peat and lignite) belonging to both Pleistocene and Holocene are included in these sediments and present significant geomechanical problems. The results of a number of geotechnical investigations carried out in the southern part of the swamps were analysed and evaluated in order to draw certain conclusions both about the geomechanical behaviour of peat and the most feasible foundation method.

The geotechnical investigation, showed that the unity of peat consists of intercalating layers of silty clay, clayey silts with sand, organic clays and peat. In the deeper horizons, cohesive clayey sands with gravels prevail. Results of the laboratory tests showed that extremely wide variations exists in both the physical properties and the mechanical characteristics of the unity of peat. Liquid limit varies between 30.0% and 202.5%, plastic limit between 11.0% and 122.2%, moisture content between 19.0% and 499.1%, while the organic content between 2.4% and 83.1%. Similar variations are observed in the values of the mechanical characteristics, with unconfined compressive strength

varying between 0.2 and 17,5 kPa, cohesion (as obtained from direct shear strength tests) from 0.7 and 3.6 kPa), angle of friction between 6^0 and 25^0 and compression index between 0.092 adn 2.400 (with corresponding void ratios between 0.38 and 6.14). The deeper formations present geotechnical characeristics of increased quality with unconfined compressive strength varying between 11.0 and 20.0 kPa and SPT values between 11 and 36 (for a penetration of 30 cm).

Since one of the sources of the observed variation was thought to be the percentage of organic material, a regression analysis was carried out, and statistically significant correlations were found between the former and the percentages of silt and clay, the plastic index and the plasctl limit, moisture content, voids ratio, wet and dry density, unconfined compression strength and cohesion.

As far as the foundation of technical works is concerned, foundation by pilling is considered to be the most applicable one, both from a safety and from an economical point of view. The other methods are considered to be either mora expensive or unsafe.

GEOTECHNICAL BEHAVIOUR OF OLONOS-PINDOS ZONE FORMATIONS WITH EMPHASIS ON THE CONSTRUCTION OF LARGE TECHNICAL WORKS

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Olonos-Pindos geotectonic zone is one of the external Hellenides and is characterized by its intense folding and imbrication structures. In order to investigate the geomechanical features of its formations, with final purpose to predict the rockmass behaviour during construction of large technical works, a geotechnical research was carried out, including field observations, borehole-data and in situ and laboratory tests. Field measurements were taken in several localities throughout the studied area and both a microstructural analysis in order to find the main discontinuity sets, and a rockmass classification (CISR system) were carried out for all the formations.

The formations which were investigated, can be distiguished into the following units (from oldest to youngest):

a) *Middle to Upper Triassic dolomites and limestones.* Thin to medium bedded dolomites and limestones with flint, sandstone, claystone and chert interbeds. They present satisfactory geomechanical properties, but they can easily manifest rock falls or landslides, as they are highly fractured due to intense deformation. Fair rock.

b) *Jurassic limestones,* usually thin bedded, with claystone and chert interbeds. They present satisfactory geomechanical properties, but they can easily manifest rock falls or landslides, as they are highly fractured due to intense deformation. Very poor to fair rock.