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Geomechanics abstract Properties of Rocks and Soils Deformation and strength characteristics

# Evaluation of strength of irregular rock lumps for characterization of rockfills : Ferreira, M Q; Rodrigues, J D; Pinta, A V; Jeremias, F T ***Proc 6th International Congress International Association of Engineering Geology, Amsterdam, 6–10 August 1990****V4, P3119–3124. Publ Rotterdam: A A Balkema, 1990*

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presented show a well defined state boundary surface for one-dimensionally consolidated clay, similar to that from a modified Cam-clay model.

**931078**
**Modified shear strength formulation for swelling clay soils**
Chatterji, P K; Morgenstern, N R
***In: Physico-Chemical Aspects of Soil and Related Materials (Papers to a Symposium presented at St Louis, 29 June 1989)*** *P118-135. Publ Philadelphia: ASTM, 1990 (ASTM Special Technical Publication N1095)*

A modified shear strength formulation is proposed which extends the classical Terzaghi relation to include the physico-chemical forces of repulsion and attraction which act in swelling and active clays. It was tested using residual strength data from large strain direct shear tests on a sodium montmorillonite, before and after leaching with distilled water at constant volume. Volume change and residual strength depend on true effective stress, difference between total stress and sum of pore pressure and net physicochemical forces.

**931079**
**Water content-cone penetration behaviour of fine grained soils**
Yudhbir; Shukla, R
***Proc International Conference on Geotechnical Engineering for Coastal Development, GEO-COAST'91, Yokahama, 3-6 September 1991*** *P141-146. Publ Japan: Coastal Development Institute of Technology, 1991*

Liquid and plastic limit values from the Casagrande procedure are operator-sensitive. In addition, if index properties are to be correlated with mechanical properties, it is more logical to use a test such as the fall cone test, which measures resistance to penetration more directly. Results are presented for fall cone tests for two cone weights on a high and a low plasticity fine grained soil. A model is proposed to represent the fall cone test. Values of model parameters are suggested for different soil groups depending on their liquid limit and position relative to the A-line. Liquid and plastic limits obtained are compared to Casagrande values.

**931080**
**Characterisation of the Vickers microhardness of rocks with a microhardness tester. Hardness difference between superficial and deep layers of minerals (In French)**
Galle, C; Leca, D; Struillou, R; Lapeyre, C
***Proc 6th International Congress International Association of Engineering Geology, Amsterdam, 6-10 August 1990 V4,*** *P3067-3074. Publ Rotterdam: A A Balkema, 1990*

Vickers microhardness tests were carried out on polished samples of granite and a foundry slag. The mechanical polishing produces a surface layer whose hardness differs from that of the underlying bulk material. As the test load increases, the depth of penetration of the indenter increases, and variation in microhardness with depth can be observed. Polishing produces a relatively harder surface layer on the granite, a softer one for the slag. To obtain meaningful microhardness values, it is essential to use a test load to allow sufficient depth of indentation to remove the effects of the 2-4 micron thick abrasion-induced superficial layer.

**931081**
**Evaluation of strength of irregular rock lumps for characterization of rockfills**
Ferreira, M Q; Rodrigues, J D; Pinta, A V; Jeremias, F T
***Proc 6th International Congress International Association of Engineering Geology, Amsterdam, 6-10 August 1990 V4,*** *P3119-3124. Publ Rotterdam: A A Balkema, 1990*

Initial characterization of rock material usually uses index tests. Mechanical properties of rockfill can be predicted on the basis of strength of irregular lumps. The use of the point load test for this purpose, as an alternative to the crushing test normally used in Portugal,is investigated. Results of tests on granite and greywacke indicate that the two tests are related. The point load test, which is portable, rapid, and simple, is therefore recommended for initial testing of potential rockfill materials.

**931082**
**Determination of mechanical properties of rockfill on model samples with reduced grain size distribution curve**
Rozsypal, A
***Proc 6th International Congress International Association of Engineering Geology, Amsterdam, 6-10 August 1990 V4,*** *P3125-3130. Publ Rotterdam: A A Balkema, 1990*

Particle sizes of rockfills may make large-scale testing impractical. The possibility of testing samples with a reduced gradation curve and extrapolating results to field scale is examined. Similarity theory requirements are discussed. Corrections for loading, dependence of the mechanical properties on grain size, dependence of density on angularity, similarity criteria of the aggregate structure, similarity construction of the spatial arrangement, test preparation, and sampling are considered. Results of tests and corrections for shear strength and compressibility are presented.

**931083**
**Use of crushed sedimentary rocks for concrete production in Iraq**
Elizzi, M A; Ikzer, B G
***Proc 6th International Congress International Association of Engineering Geology, Amsterdam, 6-10 August 1990 V4,*** *P2965-2970. Publ Rotterdam: A A Balkema, 1990*

Lack of natural gravel deposits in northern Iraq has led to study of the use of crushed sedimentary rock (mainly limestones) in concrete. Limestone aggregate from the El-Fadhwa area has been evaluated and chemical analysis, physical properties, alkali reactivity, and grading established. Concrete mixes containing coarse and fine crushed limestone aggregates were tested for workability, compressive strength, and shrinkage. The coarse crushed limestone aggregate produces good concrete, but use of coarse and fine crushed limestone together is not recommended.

**931084**
**Evaluation of some dimension stone occurrences in Saudi Arabia**
Shehata, W M; El Mukhtar, M A; Badiuzaman, M Y
***Proc 6th International Congress International Association of Engineering Geology, Amsterdam, 6-10 August 1990 V4,*** *P2987-2992. Publ Rotterdam: A A Balkema, 1990*

Although Saudi Arabia possesses and works many geological formations suitable for dimension stone, mainly marble and to a lesser extent granite, large quantities of dimension stone are imported. Suitable deposits have been identified and their