

911201

**Dynamic strength evaluation of gravelly soils**

Tanaka, Y; Kokusho, T; Yoshida, Y; Kudo, K

*Proc Discussion Session on Influence of Local Conditions on Seismic Response, 12th International Conference on Soil Mechanics and Foundation Engineering, Rio de Janeiro, 18 August 1989 P113-120. Publ Tokyo: JSSMFE, 1989*

Undrained cyclic triaxial tests were carried out on samples of diluvial dense gravelly soil obtained from three sites by in situ freezing, and also on specimens of dense sandy and gravelly soils sampled from artificial ground. From test results and those of other workers, it is indicated that dynamic strength is related to effective confining pressure and grain size distribution, as well as penetration test blow count. Large penetration test (LPT) blow count,  $N_d$ , is less sensitive to effects of confining pressure and grain size distribution than SPT  $N$  count.

911202

**Dynamic shear strength properties of Golden Horn Clay**

Ansal, A M; Yildirim, H

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Dynamic strength properties of the organic marine clays found at Golden Horn have been examined. The clay layer thickness is about 35m, and a series of Shelby tube samples was taken from various depths. Natural water content, grain size distribution, liquid and plastic limit, and organic content were determined. Cyclic shear tests were undertaken. Effects of prior cyclic loading on static shear strength, of sustained shear stresses on cyclic response, and of cyclic stress level applied simultaneously with increasing static shear were investigated.

911203

**Developments and modeling of the free torsion pendulum test**

Van Impe, W F; Van Den Broeck, M

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Free torsion pendulum tests to measure the dynamic shear modulus and damping of soils are easy to perform, and low-cost when compared to resonant column tests. They have a limited range of amplitude. Improvements to the free torsion pendulum apparatus are described, and results presented and compared to those from resonant column, ultrasonic pulse, cyclic triaxial, cyclic simple shear, and cyclic torsional shear tests.

911204

**Pore pressures and lateral stresses using in situ properties**

Arulanandan, K; Muraleetharan, K K; Dafalias, Y F;

Shinde, S B; Kaliakin, V N; Herrmann, L R

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Prediction of pore pressures under static and dynamic conditions is illustrated. In the former case, pore pressures and lateral stresses of foundation clay of a caisson retained sand island in the Beaufort Sea are computed using the 2D finite element code SAC2. Output closely matches measured values. In the second case, behaviour of a soil profile under seismic loading is simulated using the finite difference code ELMA1 and a one dimensional elastoplastic constitutive model. Results correspond well with observations at a site in China during the 1975 Haicheng earthquake.

911205

**Shear wave velocity in a very soft clay - measurement and correlations**

Bouckovalas, G; Kaltezoitis, N; Sabatakakis, N; Zervogiannis, C

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Shear wave velocity and dynamic shear modulus profiles were obtained in a very soft clay deposit using the crosshole method. Results are correlated with those from cone penetration, pressuremeter, field vane, and undrained triaxial tests. Empirical correlations are compared to others from the literature, from medium stiff and soft clays. Correlations are qualitative overall, but quantitatively different. This may be due to the very soft nature of the soil or of statistical origin, due to the relatively small database analysed.

911206

**Ground moduli determined by seismic methods**

Denver, H; Steffensen, H

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Dynamic moduli can be easily and quickly estimated from seismic wave velocities. A series of tests was carried out in a soil profile, with dynamic elastic modulus compared to those from static pressuremeter, screw plate, SPTs, and CPTs. Dynamic elastic modulus was about 10x the value for static modulus, similar to the relation for shear modulus, and varied correspondingly with depth. If this relation can be generally validated, settlement calculations can be made on the basis of inexpensive seismic refraction surveys.

911207

**Forced vibration tests of compacted gravel-sand**

Dingosov, G; Sotirov, P; Jellev, E; Kostov, V

*Proc 12th International Conference on Soil Mechanics and Foundation Engineering, Rio de Janeiro, 13-18 August 1989 V1, P219-222. Publ Rotterdam: A A Balkema, 1989*

Forced vibration tests were carried out by exciting a square foundation block using a servo-hydraulic actuating system. Dynamic characteristics of the soil mass were evaluated using lumped parameter linear elastic, elastic half space theory, and transfer function methods. Results are compared and discussed. Particular attention is paid to the effects of contact pressure on dynamic characteristics of the soil.

911208

**Dynamic properties of a railway subgrade formation with expansive soil**

Yang, C W; Zhou, S P; He, L S; Lian, C J

*Proc International Conference on Engineering Problems of Regional Soils, Beijing, 11-15 August 1988 P745-748. Publ Beijing: International Academic Publishers, 1989*

Settlement of a railway subgrade over expansive soils was monitored. Seasonal climatic shrink-swell was superimposed over long term movement. Static and cyclic triaxial compression tests and compaction tests were carried out on the expansive soil. Strain accumulates with number of cycles. The threshold stress for plastic deformation was significantly reduced by one wet-dry cycle of the soil. The poor compactability and engineering properties of the soil are the main cause for continuous deterioration of railway subgrades.