



Recently in *Canadian Geotechnical Journal*

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The *Canadian Geotechnical Journal* generally has a pleasing mixture of practical and theoretical papers covering soil and rock mechanics and engineering. The reader will not be surprised to find the occasional paper in French; the generous number of papers published in each issue will amply compensate the non-Francophone. Papers on soil behaviour tend to form the majority, while, as for many international Journals, there is a stated desire to publish case histories of practical application that is frequently fulfilled. Not surprisingly given the number of papers, there tends to be a voluminous Discussion section at the end. The following brief selection from the February and April 2002 issues gives a flavour of the Journal.

Slug tests in a confined aquifer: experimental results in a large soil tank and numerical modelling

R. P. Chapuis and D. Chenaf

Canadian Geotechnical Journal, 2002, 39, No. 1, 14–21

This paper defines a unified interpretation of slug (variable-head) tests, based on the velocity graph describing the conservation equation underlying all methods. Numerous slug tests were performed in a large tank containing a confined aquifer in sand. Other tests determined the transmissivity T and S values for comparison with slug test results. A finite element numerical analysis was performed for comparison with measurements.

Contrasting failure behaviour of two large landslides in clay and silt

L. Fletcher, O. Hungr and S. G. Evans

Canadian Geotechnical Journal, 2002, 39, No. 1, 46–62

Two large landslides in over-consolidated glaciolacustrine clay and silt, located in river valleys in British Columbia, were found to be quite similar in their main aspects but very different in their failure behaviour. Three possible mechanisms for brittle flow slide formation are proposed to explain the differences in failure behaviour: one based on the undrained brittleness of soil at the rupture surface, one based on the high

internal strength of the sliding body and one based on the macroscopic brittleness developed by pre-failure ductile deformation and softening.

A model for gas and water flow through the core of earth dams

J.-P. LeBihan and S. Leroueil

Canadian Geotechnical Journal, 2002, 39, No. 1, 90–102

The paper proposes equations describing the transport of gases through the initially unsaturated core of a dam by dissolution and diffusion in water, and examines different numerical simulations based on these equations. The simulation results provide pore-water pressure distributions similar to those observed in several earth dams, with higher pore-water pressures than expected in the downstream part of the core. Practical considerations to estimate the implications of the phenomenon are then discussed.

Effect of ageing on stiffness of very loose sand

J. A. Howie, T. Shozen and Y. R. Vaid

Canadian Geotechnical Journal, 2002, 39, No. 1, 149–156

The paper presents the results of laboratory triaxial compression tests to study the stiffness of very loose Fraser River sands. The stiffness has been shown to be very dependent on the time of confinement prior to shearing and the stress ratio at which the sample is aged. The results suggest that close attention must be paid to the age of laboratory samples prepared to study the stress-strain response of sands at strains up to about 0.1%, particularly in studies on loose sand.

Heavy metal transport in soil contaminated by residual light non-aqueous phase liquids

J.-S. Dub, R. Galvez-Cloutire and T. Winiarski

Canadian Geotechnical Journal, 2002, 39, No. 2, 279–292

This paper presents an experimental study on heavy metal behaviour in soil contaminated with residual non-aqueous phase liquids (NAPLs). Commonly encountered contaminants include light and dense organic liquids (LNAPLs, DNAPLs) and heavy metals. The study investigated interactions between three residual LNAPLs and three heavy metals (Cd, Cu, Pb) in a carbonated soil. Results showed that the LNAPL having the highest residual saturation enhanced heavy metal mobility and

decreased heavy metal retention by the soil. On the other hand, the geochemical distribution of heavy metals was not significantly modified by chemical interactions with the residual LNAPLs.

Construction over organic soils in an urban environment: four case histories

R. A. Gould, P. R. Bedell and J. G. Muckle

Canadian Geotechnical Journal, 2002, 39, No. 2, 345–356

'Failure' occurred in three of the four cases of buildings unwittingly constructed over organic soils. In the fourth case, peat was identified and the design accommodated the resulting settlements. Two of the 'failures' involved houses founded on fill overlying organic soils where differential settlements caused severe damage. Repairs consisted of re-levelling and reducing loads, with a unique method of foundation reinforcement being applied in one case. The information presented should assist the design engineer in

mitigation the effects of having compressible, organic subsoil beneath structures.

Evaluation of subgrade and climatic zone influences on pavement performance in the Canadian Strategic Highway Program's (C-SHRP) Long-Term Pavement Performance (LTPP) study

S. Tighe

Canadian Geotechnical Journal, 2002, 39, No. 2, 377–387

Sixty-five sections in 24 provincial test sites received pavement rehabilitation comprising various thicknesses of asphalt overlays. This paper describes the impacts of the various alternative rehabilitation treatments on pavement performance in terms of roughness progression under comparative climatic, subgrade soil and traffic loading conditions. The methodology developed in the paper provides valuable insight into how subgrade and climatic factors influence pavement performance and can be applied to performance trend analysis of other pavements with similar conditions.