

New framework for predicting compacted soil behaviour

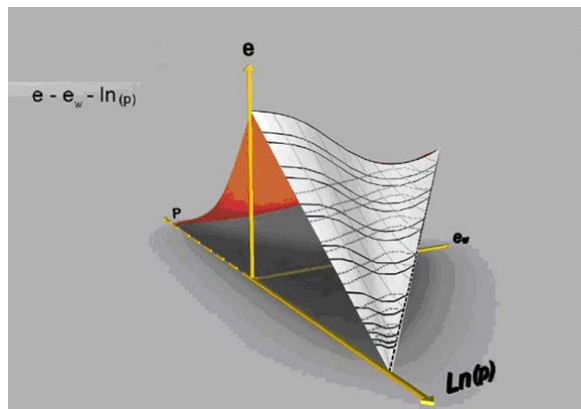
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The soil compaction is one of the most common activities of civil construction. It is applicable to construction of fills, dams, roads and embankments. The compacted soils can be subjected to various external and environmental loading after construction. The external loading can arise from superstructure loading, moving traffic and overburden soils. The environmental loading can come from the interaction of surficial soils with the atmosphere in forms such as wetting and drying. Under the combination of these loadings, the compacted soils display complex patterns of behaviour such as swelling, collapse, tensile cracking and swelling pressure development against buried non-yielding bodies. The current approaches for predicting the behaviour of compacted soils during subsequent external and environmental loading are, on one hand, are very complex, and on the other hand, are not entirely satisfactory. The seminar will present a new framework for predicting the behaviour of compacted soils under these loadings, referred to as MPK (Monash-Peradeniya-Kodikara) Framework (Kodikara, 2012). More recent experimental results supporting the framework will also be presented.



Reference:

Kodikara, J (2012). New framework for volumetric constitutive behaviour of compacted unsaturated soils, Canadian Geotechnical Journal, 49: 1227-1243.

Available to download freely from:

<http://www.nrcresearchpress.com/doi/pdf/10.1139/t2012-084>

Brief biography of Professor Kodikara

Prof Kodikara belongs to the Geomechanics Group at Monash University, Victoria Australia. Currently, he leads research on fundamental analysis of soil/atmosphere/structure interaction problems including unsaturated soil behaviour and applications to modelling of infrastructure behaviour. He has specific research expertise on fundamental topics of fracture in clay during desiccation and external loading, soil compaction, piled foundations and rock joint behaviour. On field applications, he leads research on water and gas pipe failure prediction (www.criticalpipes.com; <http://www.eng.monash.edu.au/civil/research/centres/mapps/>) and road pavements affected by climate and reactive soils. He has about 200 journal and conference publications and is a Fellow of Engineers Australia and Associate Editor of the Canadian Geotechnical Journal.