# BEHAVIOUR OF BUILDINGS ON RECLAIMED MARSHY LANDS IN COLOMBO

J.J.P. Ameratunge, P. Samaranayake and K.S. Senanayake
National Building Research Organisation, Colombo 05.

Industrial and economic development has taken place in a rapid rate over the last two decades in the city of Colombo and in its suburbs. This has completed the developers to focus their eyes on the low lying marshy lands with poor ground conditions which were hitherto considered as economically unsuitable for building purposes. One noticeable but common feature in these marshy areas is the existance of organic soils. These organic soils occurring in thick layers have been formed by the decomposition of natural vegetation, and exhibit very low shear strength and very high compressibility as characteristics. Many buildings founded on these reclaimed marshy lands have undergone significant settlement and distress in the form of cracks, tilting or even partial structural failure.

Settlement and development of distress in about 100 buildings which are distributed over 35 sites in the low lying areas were monitored for a period of three years to examine the performance of foundations and ground behaviour so that appropriate types of foundations could be evolved. The buildings monitored were mostly single to two storied having different structural and foundation types. During the period of monitoring, about 60% of the R/C framed structures exhibited minor to moderate distress in the form of cracks while similar distress was found only in about 25% of the load bearing type structures.

In this paper, the performance of the buildings monitored are discussed, under broad categories of load bearing and framed structures, and further according to foundation types.

The behaviour of these buildings enables one to determine the behaviour of organic soils, particularly of peaty soils, in the field. It is shown that field behaviour of peat could be significantly different from laboratory behaviour. The importance of immediate settlement and the rate of settlement in these soils is highlighted here.

A few case studies are presented to illustrate the significant features associated with the behaviour of buildings in the low lying areas. For each case study, important analyses including predictions from fundamental principles using known subsoils profiles and other parameters are presented. The sensitivity of selected subsoil parameters on the behaviour of buildings is also illustrated.