

The Damage Assessment of Industrial Buildings Located on Clayey Soils Using in-Situ Tests

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Abstract : Some of the industrially prefabricated buildings located on clayey soils were damaged due to soil conditions. The reasons of these damages are generally due to different settlement capacity, the different plasticity of soils and the level of ground water. The aim of this study is to determine the source of these building damages by conducting in situ tests. Therefore, pressuremeter test, which is one of the borehole loading test conducted to determine the properties of soils under the foundations and Standart Penetration Test (SPT). The results of these two field tests were then used to accurately obtain the consistency and firmness of soils. Pressuremeter Deformation Module (EM) and Net Limiting Pressure (PL) of soils were calculated after the pressuremeter tests. These values were then compared with the SPT (N30) and SPT (N60) results. An empirical equation was developed to obtain EM and PL values of such soils from SPT test results. These values were then used to calculate soil bearing capacity as well as the soil settlement. Finally, the relationship between the foundation settlement and the damage of these buildings were checked. It was found that calculated settlement values were almost the same as measured settlement values.

Keywords : damaged building, pressuremeter, standard penetration test, low and high plasticity clay

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