

ABSTRACT

In recent years, many construction projects had been built on the new land-filled area. Most of these new land-filled areas in Macau are located on the soft soil layers. Therefore, the estimation of settlement becomes an important aspect. In this investigation, two methods had been developed for predicting the settlements of clayey and cohesionless soils.

A new method for predicting the amount of settlement for cohesive soil is based on its natural water content without making a consolidation test. This method had been developed from the correlation of the results of laboratory consolidation tests. Using the equation developed in this investigation, the void ratio at any incremental pressure and given natural water content can be determined. The maximum difference between the predicted values of compression index $*C_c$ and the compression index C_c obtained from one dimensional consolidation tests was not greater than 20% and the average difference was not greater than 10 %. Hence, the method developed in this investigation for predicting the settlement in cohesive soils is quite satisfactory.

Janbu's modulus method is one of the popular methods using the tangent moduli to compute the settlement in cohesionless soil. The determination of the modulus numbers is important for using this method. For the situation in Macau, commonly, the SPT will be carried out in the field investigations. In this investigation, a correlation had been developed from which the modulus number, m , can be estimated based on the SPT value. Using the value of m obtained in the new method developed in this investigation yielded almost same range of values of m for different soils given by Janbu. Hence, the method developed to predict the value of m is satisfactory.

In order to verify the practical application of the new methods developed in this investigation, the total settlement of with multi-layer strata had been computed by these new methods and found to be satisfactory when compared with the actual settlement observed in the site.