

The Characteristics of Pontian Peat Under Dynamic Loading

Zolkefle Siti Nurul Aini (University Tun Hussein Onn Malaysia, Malaysia), Adnan Zainorabidin (Universiti Tun Hussein Onn Malaysia, Malaysia) and Habib Musa (University Tun Hussein Onn Malaysia, Malaysia)

Peat soils impose special problems in Geotechnical Engineering design as well as Civil Engineering and constructions. Most of researchers conducted investigations on the dynamic loading of soft soils such as sand and clay, but only a few had discovered the behaviour of peat in terms of static and dynamic loadings. Hence, this paper presents the behaviour of peat soil located in Pontian, Johor as well as to obtain the dynamic parameters of peat soil such as shear modulus and damping ratio by using different frequencies. The Index Properties test, Static test and Cyclic Test have been performed to determine the characteristics and also the parameters required by using stress-controlled cyclic triaxial test of 1Hz and 2Hz loading frequencies. All tests were conducted in RECESS, UTHM. The findings explained that Pontian peat behaves differently during the frequencies of 1Hz and 2Hz. The shear modulus behaviour on the Pontian peat increase as the loading frequency and effective stresses increased. The results show that the maximum shear modulus of Pontian peat was 1.19MPa for the frequency of 1Hz and 1.4MPa for 2Hz. Both at effective stress of 100kPa. Meanwhile, damping ratios show a reduction in the increasing of effective stress and loading frequency applied. The maximum damping ratio in 1Hz frequency was noted at 44% and the maximum value for 2Hz was 35%. Both at effective stress of 13kPa. For further research, the cyclic loading can be conducted with different frequencies to show clearly the behaviour of peat in terms of dynamic loading and the cause of frequency influences should also be stated as it would affect the results pattern.

Cyclic Loading, Peat Soil, Damping Ratio, Shear Modulus, Frequency, Cyclic Triaxial