

Maximum strain effect and secant modulus variation of hemic peat soil at large deformation due to cyclic loading

ABSTRACT

This study presents the findings obtained in post-cyclic behaviour and degradation of shear strength from the static triaxial test, cyclic triaxial test and post-cyclic monotonic triaxial test to study the dynamic loading relationships with the degradation of shear strength after cyclic loading to the maximum strain effect due for Hemic peat soil and aim of this research was to assess the post-cyclic loading condition that brought to the understanding of secant modulus by using dynamic triaxial apparatus. It begins with a visual inspection of fibre characteristics. This is followed by an analysis of static, cyclic, and post-cyclic loading with stress-strain behaviour. Shear strength decreased and notched lower strength than its initial strength. As a matter of fact, PNpt-25 kPa from 1, 2, and 3 Hz are accumulated in the adjacent maximum strain. With regards to this maximum strain, the undrained shear strength ratio shows sequent decreases from higher to lower frequency applied. For instance, PNpt-25 kPa-1Hz to PNpt-25 kPa-3Hz recorded 1.16 to 1.13 undrained shear strength ratios, respectively. The secant modulus (E_{sec}) for all specimens reflects decrement. The secant modulus for BSpt at an effective stress of 100 kPa in static monotonic is about 18.74 MPa, while in post-cyclic, the secant modulus expanded to 19.630 MPa cyclically loaded with 1 Hz. Unfortunately, the secant modulus returned to decline position when higher frequency applied at 2 Hz, where the secant modulus is about 12.781 MPa and continues to decline with 3 Hz at 7.492 MPa.