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## **The Influence of Pre-consolidation on Undrained Shear Strength Characteristics of Peaty Clay in Sri Lanka**

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The undrained shear strength is a key parameter in the estimation of the stability of embankments constructed on soft soil. In Sri Lankan context, many embankments constructed on peaty clay were failed due to incorrect estimation of undrained shear strength parameters of peat. Therefore, it is important to determine the operative strength of the peat. There are several factors affecting the shear strength of peaty clay such as soil composition (shape, size and distribution), soil structure (undisturbed, disturbed, compacted, void and cementation), initial density (loose or dense) and type of loading (drained or undrained). The pre-consolidation pressure is another factor which contributes to vary the shear strength of peaty clay. As such, this research study has provided an opportunity to study the effect of pre-consolidation pressure on the shear strength parameters from laboratory Triaxial tests in peaty clay. Peaty clay collected from the Nilwala river basin subjected to series of Consolidated Undrained (CU) Triaxial tests. Remoulded peaty clay specimens with diameter 50 mm and height 100 mm were pre-consolidated using an especially fabricated device at the oedometer apparatus. The pre-consolidation pressures vary from 0 to 100 kPa in the interval of 20 kPa. The CU triaxial testing program consists of 15 tests, 3 tests under each pre-consolidation pressure with varying cell pressure of 50 kPa, 100 kPa and 150 kPa. According to the CU triaxial test results, it can be observed that peak deviator stress decreases with the pre-consolidation pressure irrespective of the cell pressure. As such, shear strength parameters of peaty clay decrease with increases of pre-consolidation pressure. This is clearly illustrated that peaty clay is very sensitive for disturbance. Once the peaty clay is disturbed or natural micro structure has been changed, it needs sufficient time to gain shear strength.

*Keywords: Peaty clay, Preconsolidation pressure, Triaxial test, Undrained shear strength*