

# **Determination of in-situ density and physical properties with microstructure of Klias peat soil**

## **ABSTRACT**

In Sabah, peatland can be found across Papar, Beaufort, Klias and Bukau in western region of North Borneo Island. With distinct behavior in peat soil, it provides growing consideration and limitations, it has various special characteristics and different from other types of soil. In this research, the physical profile and index properties of peat soil have been investigated through field and laboratory testing methods. Peat categorized as uncertainty material that has high compressibility and variety of index properties. In Klias peninsula where peat abundantly exist, has not recorded any engineering studies and the information of its index properties are inadequate. Thus, this study conducted to determine insitu density and physical properties of peat soil classify peat soil in engineering terms. Modified peat sampler used to collect sample from various level of depth from soil surface to almost 5.0 m depth where boundary of peat zone and marine clay zone found. In-situ density of peat carried out simultaneously during sampling works of each increasing depth with interval 0.5 m. Disturbed sample analyzed in laboratory to determine the index properties. SEM imaging represents microstructure analysis of Klias peat soil. There are substantial significant relationships between peat behaviour against depth and consequential properties discovered. Both zones of peat and marine clay have significant correlation. The pH value was in the range from pH 4.80 to pH 5.25. Certainly, high pH acidity of mixed-layered at 5.0 m level are believed due to the predominantly present of clay soil content in peat element. In-situ density of peat increasing proportionally to the depth of sample taken using peat sampler.