

Settlement Behaviour Of Stabilised Peat: An Assessment with Eco-processed Pozzolan (Epp) In Modified Electro-osmotic Triaxial Cell

ABSTRACT

Peat's settlement behavior is a classic problem in construction. The dominant feature of peat is when subjected to load, it is noted for its great compressibility, high moisture content, poor shear strength, and long-term settlement. This study adopts the method of electro-osmotic to stabilize peat soil with Eco Processed Pozzolan (EPP) in the modified electro-osmotic triaxial cell. Peat samples were tested incorporated of the controlled; peat soil, and treated samples; peat soil with 70% of EPP, peat soil with 50% of EPP and 50% of cement, and peat soil with 70% of EPP and 30% of cement. EPP and cement were mixed with 10ml of EPP's liquid concentration. The objective of this study is to investigate the characteristics of peat soil settlement behavior on the load-carrying capacity and its compressibility and to assess the chemical properties of peat soil stabilized with EPP, and addition of binder, cement before and after the treatment. In this study, the results show that EPP coupled with cement is qualified to reduce the settlement behavior of peat soil with the addition of a stabilizer. It is observed that the settlement behavior of peat soil mixed with 70% of EPP and 30% of cement underwent small-scale settlement at first and remained constant. Peat soil coupled with 50% of EPP and cement has shown a significant improvement compared to the control sample and peat soil with 70% of EPP. Additionally, the mixes were examined using Scanning Electron Microscopy (SEM) and X-ray powder diffraction (XRD) for phase identification of a crystalline material between peat and EPP relationships. The analyzed material composition shows crystallization process occurs between peat and EPP filled the void that presents in peat soils and reduced the voids. It was found that peat soil mixed with EPP and cement has a smoother surface texture and is less porous and voids, in contrast to the controlled sample, there are more voids present in the surface imaging.