

Peat soil engineering and mechanical properties improvement under the effect of eks technique at parit kuari, Batu Pahat, Johor, West Malaysia

ABSTRACT

This study focused on the stabilization of peat soil and its engineering and mechanical properties improvement such as shear strength, moisture content, liquid limit and shear wave velocity. Peat is considered as weak foundation soil as they have low shear strength, high compressibility and high moisture content. One of the major problems for the construction industries in Malaysia is slope instability, bearing capacity failure and excessive settlement foundation for the development of highways and buildings when its undertaken-on peatland. Malaysia contains about 3 million hectares peatland which cover 8% of its total land. Therefore, it is essential to find an appropriate way to enhance its properties and to ensure the reduction and solution of these problems can finally solve by applying the electrokinetic stabilization (EKS) method. The peat soil samples were collected from Parit Kuari, Batu Pahat, Johor, Malaysia. In the proposed technique, the voltage gradient of 110 and 150 V was applied for the period of 3 and 6 hours. Some laboratory parameters such as shear strength, moisture content (MC), liquid limit, and shear wave velocity were observed for pre as well as for post-EK. It was observed that strength was found significantly improved from 11.66 to 70 kPa, MC was reduced from 613.989 to 270.294%, liquid limit was increased from 159.261 to 217.603%, and shear wave velocity was improved from 68.5 to 110.5 m/s. A significant improvement has been observed in the physical properties of the peat soil by applying the progressive approach showing the robustness of the methodology.