

Stabilization of Rambo Panjang peat soil using lightweight materials mixed with cement as subgrade for road pavement

ABSTRACT

Most of the road constructions in Riau Province are built on problematic and poor peat soil that resulted in the roads in this province do not last long according to their design. The aim of this research is to improve the engineering properties of the peat soil obtained from Rimbo Panjang, by using lightweight materials such as Bagasse and Sawdust Ash mixed with Portland Cement so that they meet the conditions stipulated as subgrade for road pavement layer. The tests conducted include determination of the physical properties of the peat soil such as Moisture Content, Organic Content, Ash Content, Unit Weight, Specific Gravity, Atterberg Limit and Dry Density, and engineering properties such as CBR and Unconfined Compressive Strength. A total of 18 CBR and 24 Unconfined Compressive Strength samples were prepared and tested. Results obtained showed the increases in the Dry Density, CBR value, and Unconfined Compressive Strength value. The highest increment is observed on peat soils that mixed with 15% Cement with Unconfined Compressive Strength of 92 kN/m² , Dry Density of 0.53 gr/cm³ , and CBR value of 4.67 %. It is followed by peat soils that mixed with 15% Cement and 30% Bagasse Ash with Unconfined Compressive Strength of 90 kN/m² , Dry Density of 0.5 gr/cm³ , and CBR value of 4.56%. It can be concluded that Bagasse Ash shows a better result than Sawdust Ash in stabilizing Rimbo Panjang peat soils.