

Stabilization of Highway Embankment Using Stabilized Cohesive Frictional Soil with Shredded Scrap Tire

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ABSTRACT

Limitation of exceptional construction sites, particularly due to fast growing of human population and economic development is common nowadays in Malaysia. Utilization of waste materials, which are lightweight, was one of the possible solutions that can be used to solve bearing capacity and settlement problems of embankments on soft compressible soil. It has been found that the utilization of tire shreds in highway construction offers economic and environmental benefits. Research focused on the determination of physical and engineering properties of stabilized cohesive frictional soils using shredded scrap tires. Laboratory tests according to British Standard 1377 were performed on untreated cohesive frictional soil, 100% shredded tire and mixtures of the soil and shredded tire by ratios of 90%-10%, 70%-30%, 50%-50%, 30%-70% and 10%-90%. Results show that admixtures of soil and shredded tires by ratio of 70%-30% give highest improvement in term of shear strength parameters with 23% improvement of internal friction angle compared to the untreated cohesive frictional soil with 31° of internal friction angle. Mixtures of 50%-50% produced the best lightweight mixtures with internal friction angle value was 34° and the maximum dry density was 44% lower compared to the untreated soils respectively.

Keywords: *Stabilized soil, shredded scrap tires and shears strength.*