

Effect of Inclusion of Rubber on the Compaction Characteristics of Cement - MSWIFA- Clayey Soil Mixtures

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Abstract : The aim of this study is to show the effect of adding cement municipal solid incineration fly ash and rubber as stabilizer materials on weak soil. A detailed experimental study was conducted in order to show the viability of using these admixtures in improving the maximum dry density and optimum moisture content of the composite soil. Soil samples were prepared by adding Rubber and Cement to municipal solid waste incineration fly-ash - oil mix at different percentages. Then, a series of laboratory tests were performed, namely: Sieve analysis, Atterberg limits tests, Unconfined compression test, and Proctor tests. Three different percentages of fly ash (10%, 20%, and 30%) MSWIFA by total dry weight of soil and three different percentages of Portland cement (10%, 15%, and 20%) by total dry weight of the mix and 0%, 5%, 10% for Rubber by total dry weight of the mix were used to find the optimum value. The test results reveal that adding MSWIFA to the soil up to 20% increased the MDD of the mixture and decreased the OMC, then an opposite trend for results were found when the percentage of MSWIFA exceeded 20%. This is due to the low specific gravity of MSWIFA and to the greater water absorption of MSWIFA. The laboratory tests also indicate that adding Rubber to the mix Soil-MSWIFA-Cement decreases its MDD due to the low specific gravity of rubber and it affects a slight decrease in OMC because the rubber has low absorption of water.

Keywords : clayey soil, MSWIFA, proctor test, rubber

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