

Comparative Study on the Effect of Compaction Energy and Moisture Content on the Strength Properties of Lateritic Soil

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Abstract : Lateritic soils are found in abundance and are the most common types of soils used in construction of roads and embankments in Nigeria. Strength properties of the soils depend on the amount of compaction applied and the amount of water available in the soil at the time of compaction. In this study, the influence of the compactive effort and that of the amount of water in the soil in the determination of the shear strength properties of lateritic soil was investigated. Lateritic soil sample was collected from an existing borrow pit in Kano, Nigeria and its basic characteristics were determined and the soil was classified according to AASHTO classification method. The soil was then compacted under various compactive efforts and at wide range of moisture contents. The maximum dry density (MDD) and optimum moisture content (OMC) at each compactive effort was determined. Unconfined undrained triaxial test was carried out to determine the shear strength properties of the soil under various conditions of moisture and energy. Preliminary results obtained indicated that the soil is an A-7-5 soil. The final results obtained shows that as the compaction energy is increased, both the cohesion and friction angle increased irrespective of the moisture content used in the compaction. However, when the amount of water in the soil was increased and compaction effort kept constant, only the cohesion of the soil increases while the friction angle shows no any pattern of variation. It was also found that the highest values for cohesion and friction angle were obtained when the soil was compacted at the highest energy and at OMC.

Keywords : laterite, OMC, compaction energy, moisture content

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