Some geotechnical properties of a cement-stabilized granite-gneiss-derived lateritic soil from Ile-Ife, Southwestern Nigeria


Samples of granite-gneiss derived lateritic soil from Ile-Ife, Southwestern Nigeria were stabilized with between 0 and 20% by weight of cement. This was with a view to determining the influence of cement on some engineering properties of the soil.

Strong negative correlations of -0.97 and -0.96 were established between the percentage cement and the linear shrinkage and the plasticity index respectively. Positive correlations of 0.22 and 0.89 were established between the maximum Dry Density and the percentage cement of the samples compacted at the West African and Modified American Association of State Highways and Transportation Officials (AASHTO) levels respectively. Negative correlations of -0.49 and -0.79 were found between the optimum moisture content and the percentage cement of the samples compacted at the West African and modified AASHTO levels respectively.

The influence of cement on the compaction characteristic of the soil thus increases with the energy of compaction. The influence of cement stabilization on the unconfined compressive strengths of the soil was found to be strong upon compaction at both the West African and the modified AASHTO levels. However, soil samples compacted at the modified AASHTO level without adding cement exhibited much higher strengths than those stabilized with cement and compacted at the West African level.