Modeling of Compaction Curves for CCA-Cement Stabilized Lateritic Soils

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Abstract : The aim of this study was to develop an appropriate model for predicting the compaction behavior of lateritic soils and corn cob ash (CCA) stabilized lateritic soils. This was done by first adopting an equation earlier developed for fine-grained soils and subsequent adaptation by others and extending it to modified lateritic soil through the introduction of alpha and beta parameters which are polynomial functions of the CCA binder input. The polynomial equations were determined with MATLAB R2011 curve fitting tool, while the alpha and beta parameters were determined by standard linear programming techniques using the Solver function of Microsoft Excel 2010. The model so developed was a good fit with a correlation coefficient R^2 value of 0.86. The paper concludes that it is possible to determine the optimum moisture content and the maximum dry density of CCA stabilized soils from the compaction test of the unmodified soil, and recommends that this procedure is extended to other binder stabilized lateritic soils to facilitate quick decision making in roadworks.

Keywords : compaction, corn cob ash, lateritic soil, stabilization

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