



**ESTIMATION OF THE CALIFORNIA BEARING RATIO FOR
LATERITIC SOILS BASED ON COMPACTION
CHARACTERISTICS**

BY

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ABSTRACT

California Bearing Ratio (CBR) is a commonly used indirect method to assess the stiffness modulus and shear strength of subgrade in pavement design works. However, civil engineers always encounter difficulties in obtaining representative CBR value for design of pavements as the conventional soaked CBR testing method is tedious and time consuming. Over the years, many correlations have been proposed by various researchers in which the soil index properties are used to estimate soil CBR. Most models have however been developed for saturated fine grained soils and temperate climatic conditions.

The objective of this study was to develop models to estimate the CBR of lateritic soils based on compaction characteristics. Six types of commonly used lateritic soils used for road construction in Eastern Uganda were considered, two of these soils were fine grained while the other four were coarse grained. Soil samples were compacted at five different levels of compaction and at five different levels of moisture contents on dry and wet sides of an optimum moisture content (OMC) of a soil. A total of 125 soil samples were prepared in the laboratory and soaked CBR tests conducted on each sample. Test results showed that the CBR values of these soils are greatly influenced by the water content and dry density as well as the testing conditions (i.e. initial state factor).

Regression analysis indicated that there exist acceptable correlations between compaction characteristics and CBR. General, reliable and best-fit models; linear and non linear for predicting the CBR were developed based on the compaction test results. Linear statistical models showed a higher performance than non linear statistical models for predicting CBR. A relatively good agreement was observed between predicted and measured values of the CBR from the laboratory CBR tests.

Key words: Correlation; California Bearing Ratio; Compaction characteristics; Lateritic soils