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**Development of empirical correlations for local soils using field and laboratory test results**

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Standard penetration test (SPT) and cone penetration test (CPT) are widely used as in-situ geotechnical investigation tests in Sri Lanka. For constructions such as high-rise buildings, bridges, highways, towers, etc where subsoil investigation is necessary, SPT and CPT lay a major role. Geotechnical engineers and designers generally use various kinds of empirical relationships directly based on SPT blow count (N) as well as CPT tip resistance ( $q_c$ ) for their calculations. All these empirical relationships, which are used by the local designers, have been developed in other countries and very rare attempts have been taken to find out the suitability for Sri Lankan soils. It should also be noted that there are very few relationships which have been made according to the standard soil classifications. Although the classification of soil is unique for every country, there may be some differences due to tropical climatic conditions. Therefore, this attempt is to find suitable empirical relationships according to standard soil classifications for Sri Lankan soils.

Development of empirical relationships related to SPT and CPT may help designers conduct their initial design calculations more precisely. In addition, it may help reduce the cost involved in initial soil exploration. This research was strictly based on the initial sub soil investigation reports and laboratory reports prepared by few local soil investigation companies for their clients. Soil investigation reports were carefully studied, analyzed and summarized in a meaningful manner. Ultimately, correlations among various soil parameters which are useful for practising civil engineers are developed and compared with existing relationships.

This study includes a comparison of SPT-N value with CPT- $q_c$ , correlation of bulk density with SPT-N value for sandy soils, correlations of bulk density with friction angle, SPT-N with sand percentage, friction angle with sand percentage and cohesion with dry density. Though these relationships show some encouraging results, it should be noted that the limited available data could not help arrive at a proper conclusion.