


**EVALUATING SUITABLE SOIL STABILIZATION
METHOD FOR LOCAL ROAD CONSTRUCTION
INDUSTRY**

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DECLARATION

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ABSTRACT

There has been a rapid development in infrastructures in Sri Lanka since early 90s. Roads and related constructions are the major components of infrastructure development. Due to this construction boom, there is a heavy demand to the construction materials. Availability of natural resources is not sufficient to satisfy demand of the industry. Due to this reason there is a scarcity of good quality natural resources like soil, metal etc. As a result of this scarcity, many road projects have been delayed in completion and costly.

Soil can be identified as one of the major construction material in road constructions. To overcome the dearth of suitable soil for construction, soil modification should be done in major scale. Soil stabilization is a well known soil modification method, commonly used in developed countries. But, soil stabilization is not popular technique in Sri Lanka. The aim of this research is to evaluate the suitable soil stabilization methods for local road construction industry.

To determine the real reasons for invisibility of this technology in Sri Lanka, questionnaire survey was done among the professional in the industry. Further, selected sandy clay soil with unsatisfactory engineering properties were used for the investigations. Extensive lab and field tests were conducted to examine the effect of mixing, mixing time and stabilizer type, delay compaction to evaluate the performance of stabilized soil. When consider the availability and suitability of the stabilizers, Cement and Lime are the most appropriate stabilizers for local conditions. Strength variation of cement and lime stabilized soil with the mixing time and degree of pulverization were determined. It was found that, degree of pulverization is a critical factor should be considered in the stabilization. Further, blending action is more effective than rolling action in soil mixing with stabilizers.

Influence of compaction delay was another important factor in soil stabilization. It was found in this study that the soil-stabilizer mixing should be done in dry condition and compaction should be done at the relevant optimum moisture content of the mixture at the time of compaction, for the maximum compressive strength. Finally, cost evaluation was carried out to compare the transport sub base material and soil stabilization. As the results of cost comparison, soil stabilization is most suitable for the soil which have properties just out from the specification.

DEDICATION

To My Dear

Father, Mother, Brother, Sister and my wife
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