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IMPROVEMENT IN CHARACTERISTIC STRENGTH OF SUBGRADE SOIL BY USING LIME AND ECONOMICAL ANALYSIS OF STABILIZED PAVEMENT

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ABSTRACT:- Most of the time flexible pavements in India need to be constructed on problematic subgrade soil. Such subgrades have low California Bearing Ratio which leads to more pavement thickness. Decrease in availability of suitable subbase and base course materials for highway construction leads to a search for economic method of converting locally available troublesome soil to suitable one for highway construction. An experimental program was undertaken to study the effect of lime stabilization on pavement response which in turn will help the road building sector to evolve a stronger, durable and economic design. Liquid limit, Plastic limit, California bearing ratio (CBR) and unconfined compressive strength tests were conducted on unstabilized and stabilized soils for varying percentage of stabilizer to study the effect of stabilizers on the properties of subgrade soils. It was observed that 4.5 % of lime by dry weight of subgrade soil was optimum in terms of reduction in layer thickness, material saving and cost optimization. Pavement section was designed as per Indian Practice code IRC 37: 2012 for different traffic intensities and construction cost was estimated for 1 km pavement section resting on unstabilized and stabilized subgrade with different percentages of lime. It is observed that due to stabilization process there is considerable decrease in layer thicknesses leading to reduction in cost of construction and it is the function of percentage of lime and traffic intensity for which pavement is designed.

Keywords— subgrade stabilization; California bearing ratio; Unconfined compressive strength Traffic intensity; layer thickness reduction;

