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Analytical Studies on Subgrade Soil Using Jute Geotextiles

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Abstract : Application of fiber reinforcement in road construction is gaining some interest in enhancing soil strength. In this paper, the natural Geotextile material obtained from gunny bags was used due to vast local availability material. Construction of flexible pavement on weaker soil such as clay soils are a significant problem in construction as well as in design due to its expansive characteristics. Jute Geotextile (JGT) was used on a foundation layer of flexible pavement on rural roads. This problem will be conquered by increasing the subgrade strength by decreasing sub-base layer thickness by improving their overall pavement strength characteristics which ultimately reduces the cost of construction and leads to economically design. The California Bearing Ratio (CBR), unconfined compressive strength (UCS) and triaxial laboratory tests were conducted on two different soil samples CI and MI. Weaker soil is reinforced with JGT, JGT+Bitumen; JGT+polythene sheet was varied with heights while performing the laboratory tests. Subgrade strength evaluation was investigated by conducting soak CBR test in the laboratory for clayey and silt soils. Laboratory results reveal that reinforced soak CBR value of clayey soil (CI) observed was 10.35%, and silty soil (MI) was 15.6%. This study intends to develop new technique for reinforcing weaker soil with JGT varying parameters for the need of low volume flexible pavements. It was observed that the performance of JGT is inferior when used with bitumen and polyethylene sheets.

Keywords : CBR, Jute geotextile, low volume road, weaker soil
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