

Assessing the Reinforcement of Subgrades Having Polymer Inclusions

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Construction of flexible roads, ridged roads, gravel roads and native-surface roads require considerable amount of soil when the strength or other properties of the in-place materials do not meet the desired or required criteria for the anticipated traffic. Soils can be either replaced, modified, or stabilized. Soil stabilizers can be used to treat the upper layer of soil formations by numerous methods. One of the most well-known methods of soil modifying and enhancement is using polymers. In the last decades, using of non-traditional chemical materials like polymer in soil stabilization and reinforcement field has been widely increased to treat the weak materials in available local soils. As compared to the traditional stabilizers, polymers have various advantages such as stable chemical properties, less swelling and heaving, less pollution development, easy to achieve target additive amount by controlling dilution ratio. To evaluate the likelihood of a viable subgrade reinforcement as alternate to the traditional approaches, the process of polymers within the road construction and its reinforcement role is examined in this paper. Polymer amended soils refers to the addition of additives to improve the physical properties of soils, most often for geotechnical engineering or construction projects. Even at very small concentrations within soils, various polymers have been shown to increase water retention and reduce erosion, increase soil shear strength, and support soil structure. Polymers can be mixed with targeted layer of the soil or sprayed on soil surface to achieve pre-calculated depth of stabilized layer. Few road schemes that have been constructed through the utilization of polymers on the subgrade in the Kingdom of Saudi Arabia are herein further studied for recognizing the opportunity of shifting from the old-style road design into this more viable and cost-effective approach.

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