Influence of Application of Geosynthetic in Construction of Cobblestone Pavement in Ethiopia

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ABSTRACT

Ethiopia is facing challenges in the road construction industry, particularly in the construction of cobblestone pavements. Ethiopia is almost entirely covered by weak black cotton soil, which has more swelling and shrinkage characteristics, and as a result, failures in the construction of cobblestone pavements have been identified. In geotechnical applications, synthetic products are commonly used to change the physical and engineering properties of the weak soil. Geosynthetic refers specifically to permeable textile fabric material that can be used as a geotechnical engineering soil material. The main goal of this study is to improve the weak formations of sub grade black cotton soils in laying cobblestone road way construction by using geosynthetic fabrics made of polypropylene, polyester, or polyethylene materials and to strengthen the stability of the cobblestone pavement subgrade, maintain the proper evenness of the cobblestone pavement, minimize the cost of patch work maintenance, and avoid weeds between the cobblestone. Many developed countries use geosynthetics in road construction, erosion control, soil consolidation, slope stabilization, and other applications. Because Ethiopia is a developing country, we have the advantage of using geosynthetics for the reinforcement of subgrade weak black cotton soil in pavement construction.

Keywords*: Geosynthetic, Fabrics, Cobblestone, Subgrade, Weak Soil*