

Performance of nonwoven geotextile as a filter at road shoulder

Abstract

Geotextile is one of material in engineering field. In this research, nonwoven geotextile is used at road shoulder to flow clean water to the drainage system since it can act as a filter. The purpose of this research are to determine the ability of nonwoven geotextile as filter media and identify the quality of the filtered water before and after placing the nonwoven geotextile. Therefore, the road shoulder is designed to show the filtering process. Based on the JKR Manual On Pavement Design, a minimum thickness for soil and aggregate is 100 mm and each layer is compacted. However, the actual thickness is not being used because it is only to show the ability of nonwoven geotextile in filtering process and its consequence of using it. Two small scale models are created, first is with nonwoven geotextile and another one is without geotextile which which aims to show the difference. Tank size 350 × 200 × 240 mm is used for placing material same as road shoulder such as nonwoven geotextile, sand, soil, and aggregates which form in three layers. Water was poured in the road shoulder model. Then the water sample flow out from the tank was tested in terms of level of turbidity and suspended solids contained in the water. Base on the results, it shows that the use of nonwoven geotextile can reduce almost 100% of suspended solid and turbidity of the water from flow into drainage system. As conclusion, the use of nonwoven geotextile at road shoulder can contribute positive impact to reduce the level of water pollution.

Keywords

Filter; Nonwoven geotextile; Road shoulder