

Stabilization of Expansive Soils with Polypropylene Fiber

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Abstract : Expansive soils are often encountered in many parts of the world, especially in arid and semi-arid fields. Such kind of soils, generally including active clay minerals in low water content, enlarge in volume by absorbing the water through the surface and cause a great harm to the light structures such as channel coating, roads and airports. The expansive soils were encountered on the path of Apa-Hotamış conveyance channel belonging to the State Hydraulic Works in the region of Konya. In the research done in this area, it is predicted that the soil has a swollen nature and the soil should be filled with proper granular equipment by digging the ground to 50-60 cm. In this study, for purpose of helping the other research to be done in the same area, it is thought that instead of replacing swollen soil with the granular soil, by stabilizing it with polypropylene fiber and using it its original place decreases effect of swelling percent, in this way the cost will be decreased. Therefore, a laboratory tests were conducted to study the effects of polypropylene fiber on swelling characteristics of expansive soil. Test results indicated that inclusion of fiber reduced swell percent of expansive soil. As the fiber content increased, the unconfined compressive strength was increased. Finally, it can be say that stabilization of expansive soils with polypropylene fiber is an effective method.

Keywords : expansive soils, polypropylene fiber, stabilization, swelling percent

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