

Bearing Capacity Improvement in a Silty Clay Soil with Crushed Polyethylene Terephthalate

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Abstract : The document presents a study based on the incremental bearing capacity of silty clay soil with the incorporation of crushed PET fibers. For a better understanding of the behavior of soil, it is necessary to know its origin. The analyzed samples came from the subgrade layer of a highway that connects the cities of Muniches and Yurimaguas in Loreto, Peru. The material in this area usually has properties such as low support index, medium to high plasticity, and other characteristics that make it considered a 'problematic' soil due to factors such as climate, humidity, and geographical location. In addition, PET fibers are obtained from the decomposition of plastic bottles that are polluting agents with a high production rate in our country; in that sense, their use in a construction process represents a considerable reduction in environmental impact. Moreover, to perform a precise analysis of the behavior of this soil mixed with PET, tests such as the hydrometer test, Proctor and CBR with 15%, 10%, 5%, 4%, 3%, and 1% of PET with respect to the mass of the sample of natural soil were carried out. The results show that when a low percentage of PET is used, the support index increases.

Keywords : environmental impact, geotechnics, PET, silty clay soil

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