عنوان مقاله:

Influence of Plastic Fiber on the Geotechnical Properties of Gypseous Soil

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خلاصه مقاله:

In the last five decades, the rise of the plastic industry led to increase in the waste of plastic in the environment, therefore the scientists were thinking to reduce plastic waste by recycling the plastic. On the other hand, there is a problem of collapse of gypseous collapsible soil upon wetting. In this paper, one of the methods to recycling plastic is adopted to improve the gypseous soil by mixing with ۱% plastic fiber to increase the shear strength and improve collapsibility of soil at the state of saturation or soil wetting. The soil used is classified as SW-SM, the gypsum content is ۳۹% and the relative density is equal to ۷۳%.Fiber plastic is made from plastic waste in the environment of investigation. Several tests were conducted on the soil such as collapse test, direct shear test, also model loading test on the soil before and after mixing with fiber plastic. The worst case of gypsum soil is at saturation by rain or groundwater rise which was simulated during the loading test. It was concluded that the value of soil cohesion gradually increases from ۲ MPa at the state of the natural soil to ۱۱ MPa after mixing with ۱% of plastic fibers. From the three model loading tests, the load carrying capacity of a model footing on submerged gypseous soil increased from ۲.۶۶ MPa for untreated soil to ۴.۸ MPa when the soil is mixed with ۱% plastic fiber and extended to a depth of ۰.۵ B. The earing capacity also increased to ۶.۸ MPa when the soil is mixed with ۱% plastic fiber and extended to a depth of .B

کلمات کلیدی:

Fiber plastic, Collapse, Gypseous soil, direct shear strength