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Laboratory evaluation of mechanical behavior of normal and Geotextile Reinforced Soils (GRS) under intermittent freeze-thaw conditions

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ABSTRACT:

The present paper investigated the effect of temperature reduction on shear strength parameters of soil using a tri axial test. This test consisted of a cylindrical soil sample exposed to a uniform mall-round confining pressure, and then an extra vertical load was exposed until its failure. In the first phase, five different tests were done at different temperatures; and the reduction of sample strength was studied due to the temperature reduction from 23°C to -32°C. Results of these test indicated that temperature variation had a significant negative effect on shear strength parameters of the soil. Reduction of soil cohesion was the greatest effect of temperature. An increase in the period of temperature variation led to soil failure in lower strain. Reduced percentage of angle of internal friction of soil during temperature variation was also less than soil cohesion. Finally, addition of geo textile to soil samples increased shear strength parameters of the soil.

Keywords:

Triaxial test, Temperature variation, Stress-strain diagram, Geotextile.

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