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## **Strength Characteristics of High Plasticity Clay Sub-grade Soil Stabilized with Ground Granulated Blast Furnas Slag, Fly-Ash and Diatomite**

*High plasticity clay soil is one of the soils that can be found in most regions of Iran. This soil is known as a problematic soil and as subgrade soil for transportation infrastructures, its characteristics must be improved. The purpose of this study is to evaluate the strength characteristics of high plasticity clay soil stabilized with industrial waste, which in addition to soil stabilization, also has environmental benefits. In this research, steel furnace slag, fly ash and diatomite have been used as stabilizer agents. Stabilization was performed using with 10, 20 and 30% of stabilizer agents by dry weight of soil and samples were compacted at optimum moisture content. In the present study, compaction as well as unconfined compressive strength (UCS) were conducted to compare the strength parameters of soil before and after stabilization. The results showed that the steel furnace slag had a much better performance as a stabilizer than fly ash and diatomite. Samples stabilized with 10% of steel furnace slag with a UCS of 2.16 MPa has a better performance in comparison with other stabilized samples and is the optimum sample. This sample shows a 3.92 times increase in UCS compared to the untreated clay soil. Treated samples with 30% of fly ash and 30% of diatomite with UCS of 0.9 and 1.03 MPa, show 49% and 88% increase in UCS compared to untreated samples, respectively.*

**Keywords:** Clay Soil Stabilization, Unconfined Compressive Strength, Tensile Strength, Ground Granulate Blast Furnace Slag, Fly-Ash, Diatomite.

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