

Improvement of Soft Marine Clay with Laterally Reinforced Silica-Manganese Slag Stone Column

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Abstract

Among all the techniques available for ground improvement, stone columns are the most preferred elements used for supporting a wide variety of flexible structures such as road, railway embankments, and oil storage tanks. In this study, several laboratory tests have been conducted to improve the soft marine clay with end bearing stone columns by using Silica-Manganese slag as stone column material. Further, these stone columns were reinforced with circular geotextile discs by placing them laterally within the column. The improvement in load carrying capacity was studied and compared to the clay bed and unreinforced i.e. plain stone column. Circular geotextile discs of two different spacings (D and $D/2$, where " D " is the diameter of the stone column) with varied reinforcement depths, such as D , $2D$, $3D$ and $4D$, were tried. It was found that the soil reinforced with a spacing of $D/2$ to the embedment length of $3D$ shows better performance than a spacing of D . It was also observed that the bulging diameter was reduced by incorporation of the geotextile reinforcement and found below the reinforcement.

Keywords: Stone column, Marine clay, Silica-Manganese slag, Geotextile discs

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