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A Study on the Inclusion of Geosynthetic to Clayey Soil Improved using Stone Column

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Abstract: *Stone column technique is an economical and environmentally friendly method used to improve the load settlement of problematic soils. Geosynthetics used for increasing bearing capacity and permeability of soil, reducing settlement of soil. Stone column with geotextile is placed horizontally and encapsulated in the soil and find the settlement done in by applying the load in the plate load test. The studiesshows that the settlement is lower for horizontally placed geotextile when compared to the settlement for encapsulated geotextile in the stone column. Improvement can be done by increasing the stiffness of the geotextile which increases the load bearing capacity of the soil. In the experimental programmed, we prove that the stone column with horizontally placed geotextile has high safe bearing capacity and low settlement. Geotextiles can be used in both vertical and horizontal applications to help solve drainage problems around the home and along the roads. For protection, geotextiles can be used to absorb stress and thus reduce or prevent damage and erosion in geotechnical structures. Stone column with Geosynthetic which ultimately increases the load bearing capacity of the stone column and prevents bulging.*

Keywords: Geotextile, Stone column, Plate Load Test

REFERENCES

[1]. Mr.T.Harish and Mr.P.Selvakumar (2020) "Stabilization of clay soil and red soil using geosynthetics" International Journal of Current Advanced Research Volume 9; Issue 06(C); June 2020; Page No 22515-22518.
[2]. Yagya Sharma (2020) "Ground Stabilization using Geosynthetics" IOSR Journal of Mechanical and Civil Engineering (IOSR-JMCE) Volume 17, Issue 3 Ser. III (May - June 2020), PP 01-04.
[3]. Safa Hussain Abid Awn and Jasim M Abbas (2020) "Improvement of Soft Soil by Stone Column Treated with Bentonite" Key Engineering Materials ISSN: 1662-9795, Vol. 857, pp 283-291.
[4]. Ankit Vadi and Ismail Vaghela (2018) "Ground improvement technique using stone column" International journal of innovations in engineering research and technology [IJIERT] ISSN: 2394-3696 Volume 5, Issue 4.
[5]. Brian O. Oyegbileet,al, (2017) "Applications of geosynthetic membranes in soil stabilization and coastal defence structures", International Journal of Sustainable Built Environment 6, 636–662.
[6]. Riya Robert and Annie Joy (2017) "A study on effect of stone column for soil stabilization" IJARIIE-ISSN(O)-2395-4396 Vol-3 Issue-3.
[7]. TilvaVikunj K (2017) "Study on Geosynthetic Reinforced Stone Column with soft & stiff clay" International Research Journal of Engineering and Technology (IRJET) Volume: 04 Issue: 07.
[8]. Dipty Sarin Isaac and Girish M. S. (2009)" Suitability of Different Materials for Stone Column Construction" Electronic Journal of Geotechnical Engineering, Vol 14, pp.1-14.
[9]. Ghazavi Mahmoud &LavasanArashAlimardani (2008) "Interference Effect of Shallow Foundations Constructed on Sand Reinforced with Geosynthetics", Geotextiles and Geomembranes, Volume 26, Issue 5, pp. 404–415.
[10]. Ambily, A. P. and Gandhi, S. R. (2007) "Behaviour of stone columns based on experimental and FEM analysis." J. Geotech. and Environ. Eng., ASCE, 133(4), 405–415.