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Improvement of Bearing Capacity of Soft Clayey Soil by Inclusion of Sand Columns

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Abstract: Civil engineering structures need adequate foundation to carry the imposed loads safely, but natural soils of good performance do not exist on each site. Alternatively soil improvement / modification are needed to improve the soil in hand. In this study an attempt is made to evaluate the bearing capacity of soft clayey soil containing sand columns. Three parameter of sand columns including size of columns, spacing of columns and pattern of installation were studied for their effects on bearing capacity. For this purpose clay beds with and without sand columns were prepared in a test tank of 250 mm x300 mm x250 mm in a standard manner and then tested in a compression testing machine for finding load settlement behavior of the samples. It was observed that inclusion of sand columns in clayey soil considerably improved the load settlement characteristics of the soil and hence bearing capacity. The triangular pattern of sand columns installation was found most effective in improvement of bearing capacity, however; by increasing centre to centre spacing of sand columns the improvement was decreasing while variation in size of column did not show much effect on bearing capacity.

Key Words: Soil, Improvement, Sand, Columns

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