

Effect of Sand Wall Stabilized with Different Percentages of Lime on Bearing Capacity of Foundation

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Abstract : Recently sand wall started to gain more attention as the sand is easy to compact by using vibroflotation technique. An advantage of sand wall is the availability of different additives that can be mixed with sand to increase the stiffness of the sand wall and hence to increase its performance. In this paper, the bearing capacity of circular foundation surrounded by sand wall stabilized with lime is evaluated through laboratory testing. The studied parameters include different sand-lime walls depth (H/D) ratio (wall depth to foundation diameter) ranged between (0.0-3.0). Effect of lime percentages on the bearing capacity of skirted foundation models is investigated too. From the results, significant change is occurred in the behavior of shallow foundations due to confinement of the soil. It has been found that (H/D) ratio of 2 gives substantial improvement in bearing capacity, and beyond (H/D) ratio of 2, there is no significant improvement in bearing capacity. The results show that the optimum lime content is 11%, and the maximum increase in bearing capacity reaches approximately 52% at (H/D) ratio of 2.

Keywords : bearing capacity, circular foundation, clay soil, lime-sand wall

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