

**A  
PROJECT REPORT  
ON**

**BEARING CAPACITY OF ANNULAR RING FOOTINGS RESTING ON  
REINFORCED SAND  
(Sponsored by KSCST)**

**Submitted to  
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## **SYNOPSIS**

*Soil reinforcement is in vogue since ancient times. The simple mechanism of reinforced earth and the economy in cost and time has made it an instant success to improve the load carrying capacity of soil. Annular ring type of foundations is widely used as sub structural element for tall structures such as chimneys and water tanks. The mechanism of development of failure surface and hence the mode of bearing capacity failure is entirely different from those that occur under solid foundations resting over reinforced earth. The objective of the present study is conduct load-settlement test using circular model footings of different diameter and ring diameter ratio.*

*Load settlement tests are proposed to be conducted using locally available suitable sand that will be compacted to the specified value of relative density-in a steel tank of 250mm in diameter and 550mm height. Geogrids as a reinforcing material are placed under the model footings at various depth ratios of 0.5, 1.0, 2.0 and 3.0. Three series of model footings with outer diameter varying from 25mm, 40mm and 50mm are proposed to be used as annular ring foundations, so as to have an annular ring ratio (ratio of inner diameter to outer diameter) of 0.5. Geogrids with a breadth ratio of 4 times the external diameter of the model footing and at various depth ratios will be used to arrive at conclusions regarding the optimum vertical spacing of the reinforcement and hence to compare the bearing capacity of ring foundations with that obtained for solid footings. In the present investigation, two types of geogrids having different grid and different specifications are used. The test results thus obtained will be analyzed to study the load carrying capacity of the reinforced sand at a specified settlement value by comparing it with load carrying capacity of unreinforced sand at the same specified settlement-in terms of 'Bearing Capacity Ratio'. The test results will thus be analyzed to arrive at conclusions with regard to optimum vertical spacing of reinforcement, effect of geogrid opening, effect of breadth of the reinforcement.*