

**VISVESWARAIAH TECHNOLOGICAL UNIVERSITY
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A Dissertation Report on

***“DEVELOPMENT OF HOLLOW SOIL-CEMENT BLOCK FOR
WALL CONSTRUCTION”***

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Submitted in partial fulfillment of the requirements for the award of the degree

**MASTER OF TECHNOLOGY
IN
STRUCTURAL ENGINEERING**

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ABSTRACT

The technology of stabilized soil for wall construction has been known in India for more than 60 years. The Research & Development programme at the department of Civil Engineering and ASTRA at the Indian institute of science since 1975 has led to a maturing of the stabilized mud block technology. Today there are more than 15000 buildings and houses in about 8 states of India using the stabilized mud block technology for walls.

From the initial years of research to the present time, blocks have been manufactured with various percentages of cement stabilization and sizes of blocks for which the blocks of wet strength in the range of 3 to 4 Mpa have been easily obtained with the density in the range of 1800 Kg/m^3 which is fairly good for wall construction.

In this thesis Physical properties of hollow soil-cement blocks of dimension $30 \times 20 \times 15 \text{ cm}$ (Blocks with two circular voids of 9cm diameter each and Blocks with two rectangular voids of $8 \text{ cm} \times 10 \text{ cm}$ each) manufactured by adding cement as stabilizer in three different proportion i.e., 8%, 10% and 12% by weight of soil and 3 block prisms are casted and tested for compressive strength and young's modulus and also the masonry efficiency has been determined for the same through an experimental investigation.

The results from the hollow blocks manufactured gave an average gross volume density of 1642 Kg/m^3 which is less when compared to solid soil cement blocks and the average compressive strength of 4.360 Mpa for 12% cement stabilization and 3.666 Mpa for 10% cement stabilization with gross area were achieved which is good enough to be used in the buildings of two to three stories. In this thesis the stress-strain relationships of masonry prisms of hollow soil-cement blocks are also reported.

Based on the results obtained, it is concluded that good acceptable quality of hollow soil-cement blocks can be manufactured which can be easily used in the construction of 2 or 3 storey buildings and with hollow voids it not only reduces the dead load on the structure but also can make provision for introduction of reinforcement if required.