Title	Lateral Response of Nominally Reinforced Masonry Wall Made of Interlocking Compressed Earth Block Subjected to Cyclic Load
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Abstract

Structural performance of load bearing nominally reinforced masonry wall, made of interlocking compressed earth blocks (ICEB), subjected to in-plane cyclic load in conjunction with gravity loading was investigated by conducting full scale physical model test in the lab. Lab test results of physical model were validated by simplified numerical modeling. Suitability of a structure comprised of ICEB walls as load resisting component was also checked for various seismically active regions. A comprehensive assessment of structural behavior of the ICEB wall was accomplished by conducting physical model test both at material and element level. Testing at material level helped to establish the local behavior of ICEB blocks and assemblies. Local behavior included cracking and crushing of blocks, yielding of rebar, closing and opening of head or bead joints. Compressive strength and flexural strength tests were carried out on a single block. Compressive strength of the grout was also determined by testing. Shear strength of the joint increased with the increment in the pre-compression. Normal stresses (6_x and 6_y) were determined by compressive strength test parallel and perpendicular to bed joint on prisms. Material and block level testing provides valuable parameters for micro modeling of masonry wall. Element level testing of full wall panel facilitated to assess the global behavior of the ICEB wall. Wall panel size was 3.0m x 2.7m x 0.15m with height to width aspect ratio of 0.90. Shear and flexural capacity of the wall predicted by ACI 530-8 was compared with actual capacity of panel. Compression produced by bending moment causes the failure of the wall panel. Cracking pattern noticed during the test reasonably strengthened the flexural failure argument. Shear, rocking and flexural deformations were measured by sensors. Deformations at yielding and crushing were calculated and an overall ductility factor was determined to be 2.34. Recommendations for the application of structure in seismically active region are also included in this dissertation.

Keywords Interlocking Compressed Earth Block, Physical Model, Numerical Model.