Performance of Hollow Concrete Block Masonry Under Lateral Loads

Shujaat Hussain Buch and Dilawar Mohammad Bhat

Abstract Hollow concrete block masonry is widely in use. In this study hollow blocks are tested for their compressive strength. The overall lateral strength of masonry walls made of hollow concrete blocks is compared with the lateral strength of the fire-brick kilned masonry wall. Different models with and without reinforcement, with and without sand infill and with different types of mortar, are compared for stiffness. The cracking patterns are studied.

Keywords Blocks · Finite-element · Hollow · Masonry · Stiffness · Strength

1 Introduction

Masonry walls are an important feature of all types of load bearing or non-load bearing buildings. The reason of their widespread use is the ease of availability of materials, economy, easy and skilled labor and construction. Traditional clay brick masonry walls have been replaced with fire-kilned bricks and in Kashmir region lately by hollow and solid concrete blocks. Hollow concrete blocks have been used in many parts of India for last few decades. The present study is an experimental investigation and comparison of behavior of reinforced and un-reinforced hollow concrete blocks, and of fire-kilned bricks in clay and mortar. The bricks and blocks are all locally manufactured in Kashmir valley. The compression behavior is determined by three methods. In first method, ACI 530 1992, BSI 1992, Euro-code 6 and IS 1905-1987, Koksal et al. [10], gave masonry strength based on unit block

S.H. Buch (✉)
Civil Engineering Department, Islamic University of Science and Technology, Awantipora, Jammu and Kashmir, India
e-mail: shujaatbuch@yahoo.com

D.M. Bhat
Engineering Wing, Sarva Shiksha Abhiyan, Jammu, Jammu and Kashmir, India
e-mail: dilawar.bhat@gmail.com

V. Matsagar (ed.), *Advances in Structural Engineering*,
DOI 10.1007/978-81-322-2187-6_186