

The Behavior of Masonry Wall Constructed Using Biaxial Interlocking Concrete Block, Solid Concrete Block and Cement Sand Brick Subjected to the Compressive Load

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Abstract : Masonry is an isotropic and heterogeneous material due to the presence of the different components within the assembly process. Normally the mortar plays a significant role in the compressive behavior of the traditional masonry structures. Biaxial interlocking concrete block is a masonry unit that comes out with the interlocking concept. This masonry unit can improve the quality of the construction process, reduce the cost of labor, reduce high skill workmanship, and speeding the construction time. Normally, the interlocking concrete block masonry unit in the market place was designed in a way interlocking concept only either x or y-axis, shorter in length, and low compressive strength value. However, the biaxial interlocking concrete block is a dry-stack concept being introduced in this research, offered the specialty compared to the normal interlocking concrete available in the market place due to its length and the geometry of the groove and tongue. This material can be used as a non-load bearing wall, or load-bearing wall depends on the application of the masonry. But, there is a lack of technical data that was produced before. This paper presents a finding on the compressive resistance of the biaxial interlocking concrete block masonry wall compared to the other traditional masonry walls. Two series of biaxial interlocking concrete block masonry walls, namely M1 and M2, a series of solid concrete block and cement sand brick walls M3, and M4 have tested the compressive resistance. M1 is the masonry wall of a hollow biaxial interlocking concrete block meanwhile; M2 is the grouted masonry wall, M3 is a solid concrete block masonry wall, and M4 is a cement sand brick masonry wall. All the samples were tested under static compressive load. The results examine that M2 is higher in compressive resistance compared to the M1, M3, and M4. It shows that the compressive strength of the concrete masonry units plays a significant role in the capacity of the masonry wall.

Keywords : interlocking concrete block, compressive resistance, concrete masonry unit, masonry

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