Effect of brick types on compressive strength of masonry prisms

Piyawat Foytong, author

Abstrak

This study investigates brick types and masonry prisms under compressive loading according to ASTM C1314–14 as the basic parameters for evaluating lateral resistance of masonry infill walls and to compare compressive strength amongst various brick types. The lateral resistance capacity of a masonry infill wall model depends on the compressive strength of the masonry prism, and the lateral deformation of a masonry infill wall model depends on the strain at the maximum stress of the masonry prism. A masonry prism is an assemblage made of representative units (clay brick, hollow brick, lightweight block, etc), mortar and grout. In this research, eight types of brick are considered which are hollow brick, lightweight block and six types of clay brick. From the test results, the ductile behavior of a masonry prism under compressive loading means that it undergoes further deformation. The masonry prisms made of solid clay brick show the best performance with the largest average compressive stress of 10.8 MPa and largest cumulative energy dissipation of 444 kN/mm, but their behavior is non-ductile. The compressive stress of lightweight block is the weakest with the average compressive stress of 2.62 MPa. The compressive strengths of masonry prisms made of all clay brick types are higher than the compressive stresses of those made of hollow brick and lightweight block.