

Compressive Strength of Partially Grouted Concrete Masonry Using Small Scale Wall Elements

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Abstract:

Partially reinforced concrete masonry has many advantages such as increased compression, shear and flexural tensile strength over hollow concrete masonry, while grouting reduces the variability. This paper presents the results of an experimental research program aimed at studying the mechanics and strength of partially grouted block masonry under axial compression utilizing small scale modeling technique. The relationship between masonry compressive strength and properties of constituent materials for different grout spacing is presented. The results show that compression capacity of partially grouted masonry decreases as grout spacing increases. An expression is proposed to determine compressive strength of partially grouted masonry in terms of unit strength, grout strength, net area and ratio of area of grouted cells to gross area. Based on best fit of test data compressive strength of partially grouted masonry is expressed in terms of strength of fully grouted masonry and grout spacing.

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