

Appropriate Control Prism for Prestressed or Reinforced Masonry Floor Systems

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Abstract:

The properties of masonry are generally determined from the tests on control prisms for use in the theoretical analysis and design of masonry structures. A conventional form of prism may not be generalized for all types of structures since the strength and stress-strain behavior of masonry obtained from these prisms vary with variation in their size; the masonry unit bond pattern and the loading direction with respect to the bed joints. Specially, in case of reinforced or prestressed masonry floor systems the load conditions with respect to the bond pattern are quite different, and hence a detailed study was made to investigate a suitable prism type for such structures. Tests were conducted on prototype beams and slab specimens as well as on five types of control prisms with different bond patterns. Theoretical results obtained with the finite element analysis of the prototype specimens using the stress-strain behavior of masonry in different prisms and the experimental test results of these specimens are compared to determine the most suitable type of control prism.

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