

The Masonry Market is Booming in Brazil- Why?

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Abstract:

This paper is motivated by the keynote presentation at the 12th North American Masonry Conference in Denver, Colorado in 2015. It gives an overview on how engineered masonry became the preferable construction system to build thousands of mid-rise apartment buildings for the 200-million residents of Brazil, South America. Recently, the peak production of hollow blocks was reached with more than two billion units delivered in a single year. This paper presents reasons for the current prevalent use of structural masonry, which was introduced in Brazil during the late 1960s. One of the first cases presented is the substitution from a reinforced concrete wall system to a reinforced masonry system without changing the in-place foundation. Some of the reasons for masonry's popularity are related to design. Another advantage is a favorable layout. Each story of these multistory buildings is a "box system" with several interlocked structural masonry walls in both directions with a top rigid reinforced concrete slab diaphragm. Load demand includes wind loads from 30 to 45 m/s (67 to 100 mph) but no significant seismic loads. Different tailored-to-masonry design models and software include vertical load distribution among interlocked walls while others use "frame" models to provide lateral stability. Others advantages of structural masonry are related to materials availability and quality control. Blocks of more than 50 MPa (7,250 psi) are readily available. Grout and mortar specifications vary per the block strength, providing higher prism strengths. Code specification demands testing of mortar, grout, block and prism at every floor and includes verification of several construction tolerances. However, the reasons above do not wholly explain why masonry is so often used. The main reason is the recognition of a highly precise and straightforward method to plan and construct structural masonry systems. Masonry has the ability to be adapted to various types of buildings and aesthetic needs, allowing different architectural expressions. In addition, the speed of construction can be balanced with various construction needs. Furthermore, masonry technology, including materials, workmanship and equipment, is available through both small and large businesses, and do not require high initial investments. If the building layout is favorable, as most residential mid-height projects are, the overall construction cost will be less compared to other systems

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