

Reinforced Grouted Core Provides Seismic Resistance to Existing Unreinforced Masonry Wall

The CenterCore seismic strengthening system consists of a reinforced, grouted core placed in the center of an existing unreinforced masonry wall. A continuous vertical hole is drilled from the top of the wall into its footing or basement wall. The core achieved by this oil-well drilling technique may be four to six inches in diameter, depending on the thickness of the unreinforced masonry wall and the strengthening required. The drilling is a dry process with debris removal handled by a vacuum and filter system that keeps dust to a minimum. Reinforcing steel is positioned in the center of the hole and a polyester-sand grout is placed under pressure provided by the height of the core, and the low viscosity grout that is not influenced by the moisture content of the masonry, migrates to all voids adjacent to the core shaft. The strong bonding of the grout to the inner and outer wythes of a brick wall provides a "homogeneous" structural "frame" much larger than the core itself. This reinforced vertical beam provides strength to the wall with a capacity to resist both in-plane shear and out-of-plane bending. Wall anchors for lateral ties to the roof and floors are placed at the core location to make a positive connection to the wall. There is no disturbance to the internal or external fabric (historic building or not) during the strengthening, so the building may remain occupied during the entire retrofit process.

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