Stabilizing a Brick Exterior

by Kyle Keever


1

Here in Seattle, we get occasional good-sized earthquakes that can damage the unreinforced masonry buildings common in some areas of the city. Recently my company completed a six-week job stabilizing the facade of a double-wythe structural brick apartment building. The repairs were not meant to be permanent; instead, the idea was to buy some time until the owner decides whether to make more extensive repairs or demolish the building. The inner wythe was in decent condition, but the bricks outside were spalling and deteriorating; the mortar crumbled when prodded with a screwdriver. Worse, the facade was gradually peeling away from the inner bearing wythe, leaving gaps up to 8 inches wide between the two layers in some spots.

The engineer's plan called for tying the exterior masonry to the existing floor framing with sections of threaded rod fastened to the floor joists. These tie rods — spaced 6 feet apart at each floor level — would extend through holes bored through both layers of brick to steel tie plates at the outside face of the building.

We used a Sawzall to cut through the

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plaster and wood lath at the junction of wall and ceiling **(1)**, then bored through the brick with a rotary hammer equipped with a 3/4-inch masonry bit. Fortunately, the brick was soft enough that the bit tended to emerge cleanly on the outside, provided we didn't apply too much pressure **(2)**. We secured the inboard ends of the rods to Simpson HDU2 hold-downs attached to the ends of the joists **(3)**. Where the rods emerged from the brick outside, we applied sealant, then capped them with 6-inch-by-6-inch-by-3/8-inch galvanized plates fabricated by a local metal shop. After threading on the galvanized nuts, we applied cold galvanizing compound to the ends **(4)**. Because of the risk of cracking the brick or mortar, we made sure to use a light touch when tightening the nuts; we turned them until they felt snug, but resisted the temptation to give that one last twist.

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