Beyond Blocks and Bricks

Number Twenty-five

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Empty cereal boxes and thin masonry

An empty cereal box is lot like thin (adhered) masonry; on the shelf, an empty cereal box has the appearance of substance, but there is a surprise when you look inside.

Another similarity is more important. A full cereal box is akin to a conventional masonry chimney: press two diagonally opposite corners and not much happens. Press the opposite corners of an empty cereal box and the rectangle racks and flattens.

Wind on framed adhered masonry chimneys racks the corners and flattens the rectangle, too. This racking and flattening can crack corner units and may cause one face of a corner unit to lose its bond to the substrate.

Brace framed chimneys

The fix is prevention.

Install several levels of horizontal cross-bracing in framed chimneys. Except for holes cut for the flues, completely cover the top of every wood-framed chimney or steel stud-framed chimney with a single piece of plywood. Glue and screw the plywood to the framing. The glued and screwed plywood forms a diaphragm which braces the empty cereal box, preventing racking at the top of the chimney. Install partial plywood diaphragms or dimension lumber braces at lower levels to further stiffen framed chimneys.

(Use plywood, not OSB. In moist environments—chimneys—OSB holds moisture, swells, dries slowly, and deteriorates. The sidewalls of framed chimneys should be clad with plywood, too.)

Soft joints at inside corners and near outside corners

Just like conventional masonry, as the temperature of adhered masonry changes, the thin masonry expands and contracts. Thin units bridging inside and outside building

corners—including the 45° corners at bay windows—are exposed to the same movements as conventional masonry at corners. When these movements are not accommodated, units that bridge corners often crack.

In both thin and conventional masonry, placing a soft joint—usually identified as an expansion joint, a movement joint, or a control joint—at an inside corner is common and prevents cracking.

A soft joint at an outside corner, though, is ugly. In conventional masonry, soft joints are not placed at outside corners; a pair of soft joints is often installed a few feet from each outside corner. Designers protect thin masonry in the same way.

Horizontal soft joints between floors

Multi-story framed buildings are built with platform framing—each story is constructed independently of the ones above and below. If the internal connections of each story were immensely strong, one story might be lifted from the one below it and placed on the ground. (Or the opposite; build each story on the ground and crane each one into place! Modular housing, for instance.) Because the connections are likely not that good, each story is built in place—cereal boxes are stacked up until the building code says "Stop!"

While each story is strong, the connections between stories are often weaker.

Because of this relative weakness between stories, the second floor may move a bit more or less, or in a different direction, than the first or the third. To avoid cracking at the bottoms of the rim joists, install a horizontal movement joint between each platform.

Where else?

Over joints in the substrate.

Where the construction changes direction or cross-section.

If using a proprietary system, where the manufacturer recommends.

Where the metal lath is not continuous.

In stucco/plaster systems, no more than 15 feet apart, horizontally or vertically.

Where there would be a joint in an attached veneer.