

Installing Fiberglass Batts in Stud Walls

by Mike O'Brien

In most aspects of building, the key to quality is to do the basic things right. With insulation, this usually means installing that most basic of insulating materials, fiberglass batts, in a way that won't compromise their performance.

Batts are carefully manufactured to have a specific insulating value, as indicated by the rated R-value. To keep its R-value, however, a batt must not be compressed or crushed during installation. Batts should completely fill the stud cavity, fitting snugly against every piece of framing, the sheathing, and the drywall. If they don't fill the space evenly, or if they get crushed, you lose R-value. For example, when a standard 6 1/4-inch-thick, R-19 batt is compressed to fit into a 5 1/2-inch-deep 2x6 stud cavity, its R-value drops to just under R-18 (although the R-value *per inch* of a batt actually rises slightly as it is compressed). Higher density batts are rated to deliver R-21 in 5 1/2 inches.

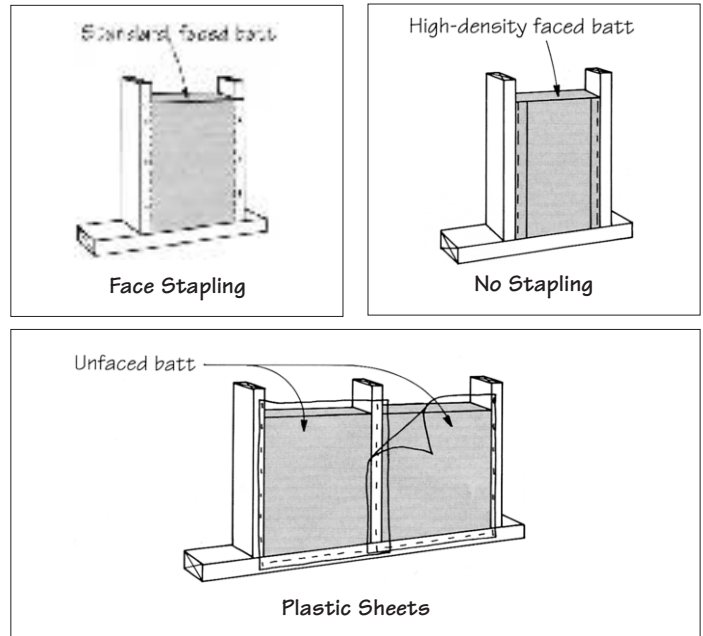
Voids are another common problem. Even tiny voids can cause heat loss, because they allow air to move around inside the stud cavity. If a batt is stapled to the sides of studs, crushed, or cut short, air can rise up the warm side of the cavity and fall down the cool side. Heat rides on this convective loop, actually traveling around the insulation, significantly eroding the R-value.

That takes care of your everyday stud bays. But you also need to know

how to deal with the pipes, conduits, wires, and other obstacles that potentially cause breaks or crushed insulation. The accompanying illustrations show how to work your way around the most common problems. ■

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▼ Vapor Retarders



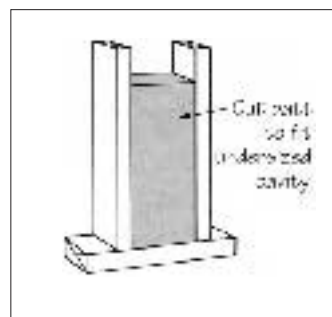
Vapor retarders. One essential element of the moisture protection system is a vapor retarder. Vapor retarders help protect wall framing from decay caused by condensation. There are several types of vapor retarders to choose from. Be careful to install the vapor retarder in a way that doesn't interfere with the wall insulation. There are three installation options:

Face stapling. Staple the flanges of Kraft-paper or foil-faced batts to the surface of the stud facing the inside of the house (top left). "Side-stapling" compresses the insulation.

No stapling. Since the new high-density batts are more rigid than older batts and won't settle over time, there is no need to staple the flanges at all (top right). This saves installation time and allows drywallers to use panel adhesive on the face of studs.

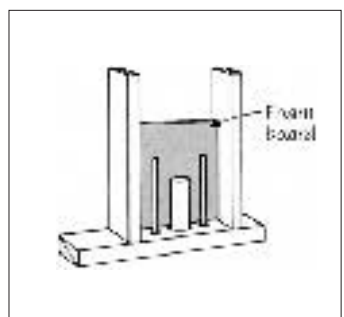
Plastic sheets. Some insulators prefer to install unfaced batts and staple up clear 4- or 6-mil polyethylene sheets. Staple the plastic to the top and bottom plates. At seams, overlap the sheets 3 inches and staple both sheets to a stud (above).

▼ Narrow Bays



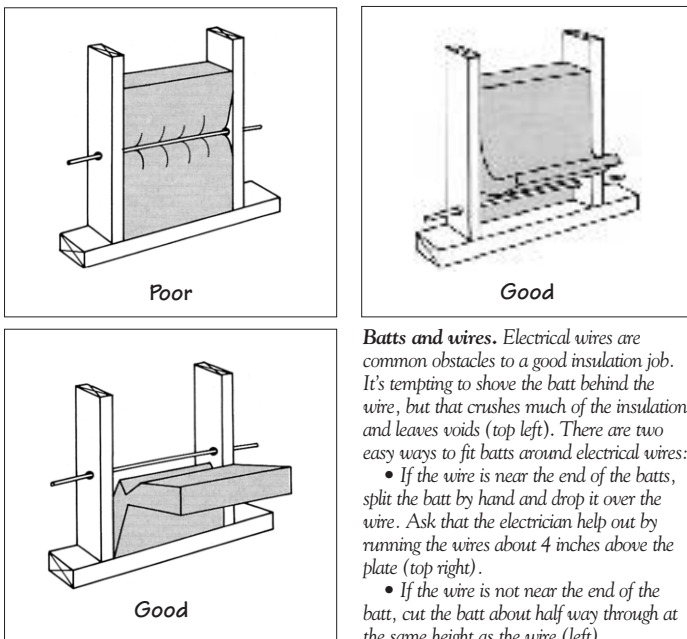
Narrow bays. To insulate undersized cavities, cut the batt for a tight fit. Crushing a batt into place will inevitably leave voids.

▼ Plumbing Bays



Plumbing bays. Some places are too tight for batt insulation to do a good job. Use foam board to insulate behind plumbing, electrical panels, and heating ducts in outside walls. Cut the foam to fit precisely, or use foam sealant around the edges.

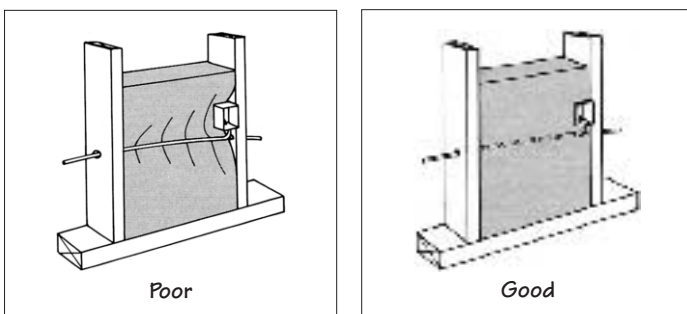
▼ Batts and Wires



Batts and wires. Electrical wires are common obstacles to a good insulation job. It's tempting to shove the batt behind the wire, but that crushes much of the insulation and leaves voids (top left). There are two easy ways to fit batts around electrical wires:

- If the wire is near the end of the batts, split the batt by hand and drop it over the wire. Ask that the electrician help out by running the wires about 4 inches above the plate (top right).
- If the wire is not near the end of the batt, cut the batt about half way through at the same height as the wire (left).

▼ Electrical Boxes



Electrical boxes. Cutting is also needed around electrical boxes to prevent compression (left). First, work the batt behind the box. Then slice into the batt around the box so that the fiberglass can fluff up to each side of it. When you finish, only the material behind the box is actually compressed (right).