Airtight
Attic Access

Hot air rises.
And where does it go?
It could be going right
out the attic access
in your house.

BY MIKE GUERTIN

I have been building airtight, energy-efficient homes for more than ten years. Before that, I built homes I thought were energy-efficient. Because I didn't make them airtight, though, I wasn't addressing half of the equation. Making a house airtight means closing the holes between conditioned spaces, such as the living room, and unconditioned spaces, such as the outdoors. I attack big holes first and work my way down until I reach the point of diminishing returns.

The single biggest, leakiest hole in most houses is the attic access

Often, attic accesses are no more than a piece of painted plywood on a couple of cleats. Most homeowners and builders don't recognize how much conditioned air escapes through an attic access. The access is in the ceiling, probably in a closet, and no one notices the draft. Or they rarely connect the cold drafts on the first floor of the house with the attic access upstairs. However, this hole in the highest part of the ceiling can allow a tremendous amount of heated air to escape into the attic, creating a convection-driven stack effect just like the draft in a chimney. This heated air is replaced by cold outside air, which you might notice as a draft that enters below the front door.

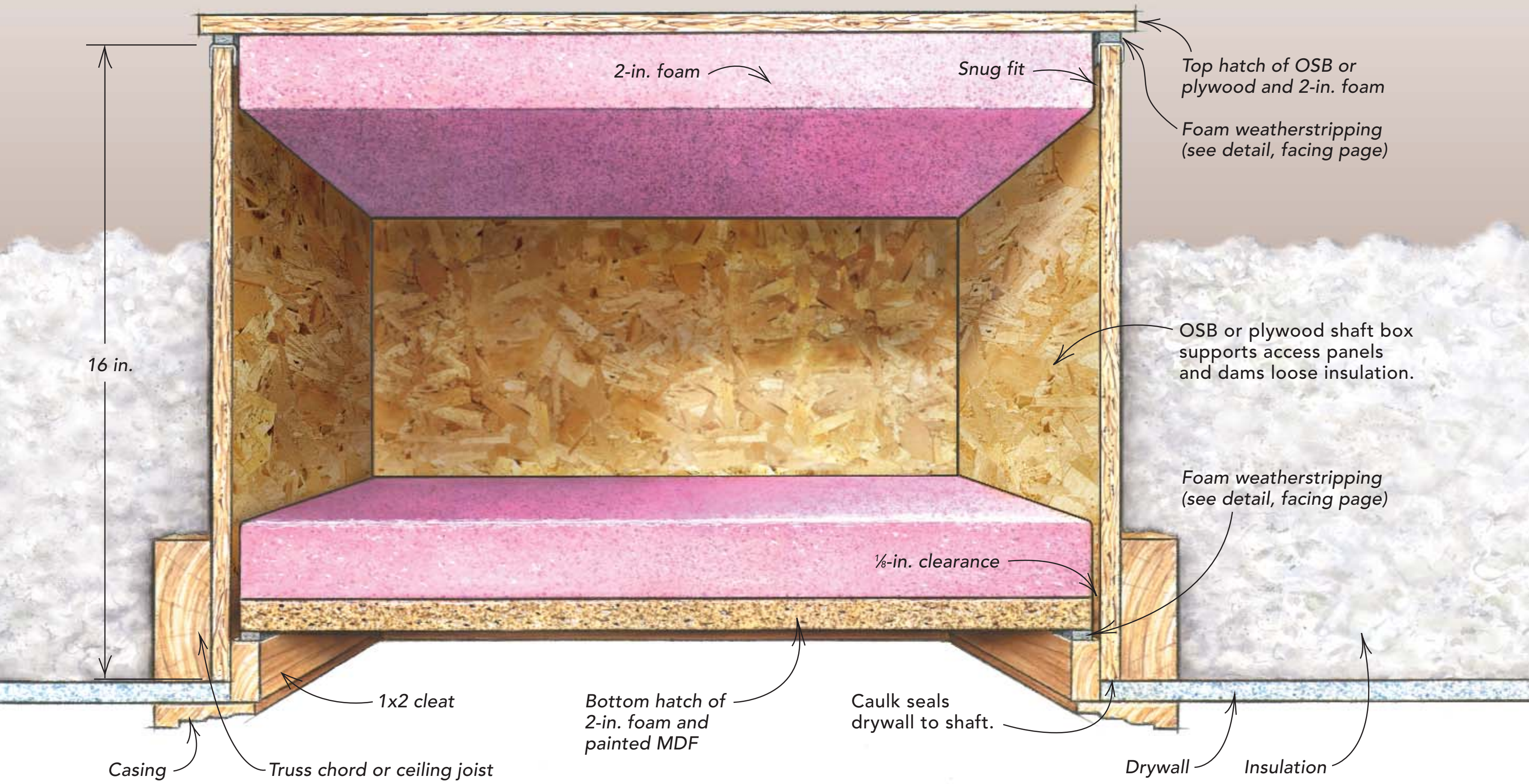
In less than an hour, using just a few materials, some of which ordinarily would end up in the scrap pile, I can build an energy-efficient, somewhat attractive attic access (photo above). It also doubles as a dam to prevent insulation from falling back down into the house whenever the hatch is opened.

Build a shaft from sheathing scraps

I start by making a shaft box that acts as an insulation dam and that supports the hatches (drawing p. 76). In new construction, I size the shaft box to fit between roof trusses, usually 22½ in. wide and about 33 in. long. A couple of 2x4s nailed between the trusses provide nailing for drywall and for the shaft. I make the sides at least 16 in. tall to hold back the attic insulation. For remodeling projects, I size

TWO INSULATED HATCHES SEAL THE ATTIC ACCESS

The shaft is built from sheathing scraps, and the two hatches from about $20 worth of foam insulation, MDF and weatherstripping—not a bad investment in an airtight attic access that might save its cost during the first heating season.



the shaft to fit the existing opening to the attic. If possible, I enlarge small openings to provide easier attic access.

There's no need to make the shaft out of anything fancy, just as long as it's solid. I usually can find several pieces of ½-in. oriented strand board (OSB) or plywood sheathing in the scrap pile that need only to have the edges dressed up and to be cut to size (photo left, facing page). Even though the shaft fits between framing members, I like to screw the corners together. A little panel adhesive in the joints keeps them tight for a better air seal.

I set the shaft into the rough opening and slide it up until the bottom is flush with the lower edge of the ceiling framing. It then can be screwed or nailed in place (center photo, facing page).

It's important to connect the shaft to the ceiling air retarder. Before raising the shaft into place, I cut an X-pattern in the plastic vapor barrier that stretched over the rough opening and folded the ears into the attic. After securing the shaft in place, working from the attic I sealed these ears to the sides of the shaft with acoustical sealant. Caulk seals the ceiling drywall to the bottom of the shaft.

Deep shaft makes space for two hatches

Making the shaft 16 in. deep gives me the space to install two insulated hatches and provides maneuvering room to remove or replace the bottom hatch. The top panel is larger than the shaft opening and sits on top of the shaft. I make it out of scrap OSB or plywood. On one side of this panel, I glue and screw a 2-in. thick piece of rigid-foam insulation (photo top right, facing page). The foam faces down when the panel is in place, trimmed to fit within the shaft so that the panel is oriented to the shaft opening. You also could add a piece of foam to each side of the top panel.

The bottom panel is visible from inside the house, and even though most attic accesses are in closet ceilings, I like to give the panel a finished appearance. To this end, I use a piece of medium-density fiberboard (MDF) or finish-grade plywood for the panel. I cut the panel about ¼ in. smaller than the inside dimensions of the shaft to make a ⅛-in. space all the way around. A piece of foam the same size as the panel is glued and screwed to its top side.

The bottom panel needs to rest on cleats. I make the cleats from strips of 1x2, then glue and nail them flush with the finished drywall ceiling. To dress up the bottom, I picture-frame the opening with casing.

Foam weatherstrip forms gaskets

I use ⅜-in. thick adhesive-backed foam weatherstrip to form gaskets because it's readily available. I stick the foam to the top edge of the shaft and to the top of the cleats. The foam doesn't stick well to the cut plywood or OSB on top of the shaft, so I run aluminum duct tape over the edge first, lapping both the inside and the outside of the shaft box (drawing facing page). The acrylic adhesive on this tape is relatively long lasting and bonds well to the plywood or OSB. Another method of ensuring a good bond is sanding the edge of the plywood or OSB and brushing on a layer of contact cement. Once dried, the contact cement sticks well to the foam's adhesive. I ap-

Drawings: Don Mannes

A box made of sheathing scraps forms the attic-access shaft

Drywall screws and construction adhesive hold the sides firmly together (photo left), sealing against air leaks and making a unit that's easy to lift into place (photo center). A Pageris gun (Todol Products Inc.; 508-651-3818) dispenses urethane foam, which the author uses to glue foam insulation to the hatch panels (photo right).

ply the same foam gasket to the tops of the cleats to form an air seal with the lower panel. Because the tops of the cleats are smooth and clean, extra measures usually aren't called for to get the foam to stick here (photo right).

It's easiest to install the top panel first. A couple of taps on the side of the shaft may be necessary to cause the top panel to drop snugly into place on the gasket. The lower panel needs to be inserted at a slight angle into the shaft to make it past the cleat (photo p. 75).

I've done blower-door tests on numerous homes where I've installed this type of attic access. Blower doors depressurize the house, and smoke-generating pencils are used to find drafts caused by leaking air. Unlike typical attic accesses, those built my way show no appreciable air leakage. □

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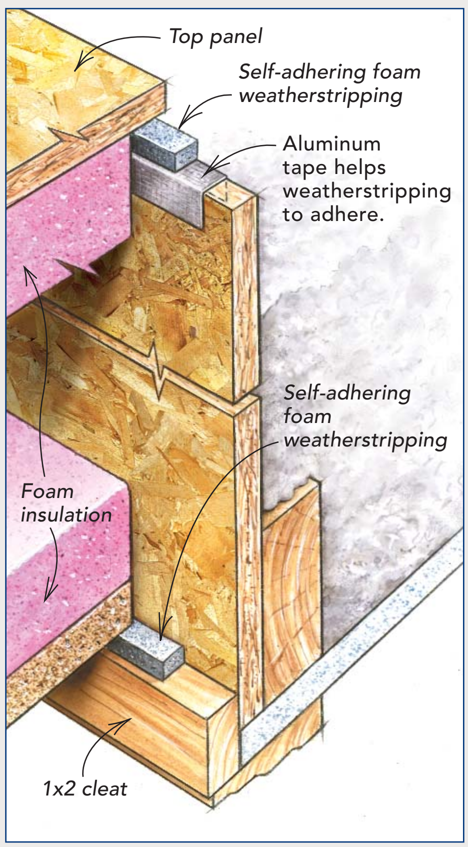
Weatherstripping details



Inexpensive self-adhering foam weatherstripping works well and is readily available. However, it doesn't stick well to the edges of OSB or plywood. The author's solution is first to wrap the top edge of the shaft with aluminum duct tape and to apply the weatherstripping to that (drawing left). The weatherstripping sticks to the 1x2 cleats that support the lower hatch (photo above).

Photos top left, center: Tom O'Brien.