**A traditional profile that performs a modern function.** This crown-and-dentil eave provides nearly as much ventilation to the rafter bays as a continuous aluminum soffit vent.

# Venting a Traditional Eave

## On a shingle-style house, aluminum soffit vents just won't do

by Robert Wills

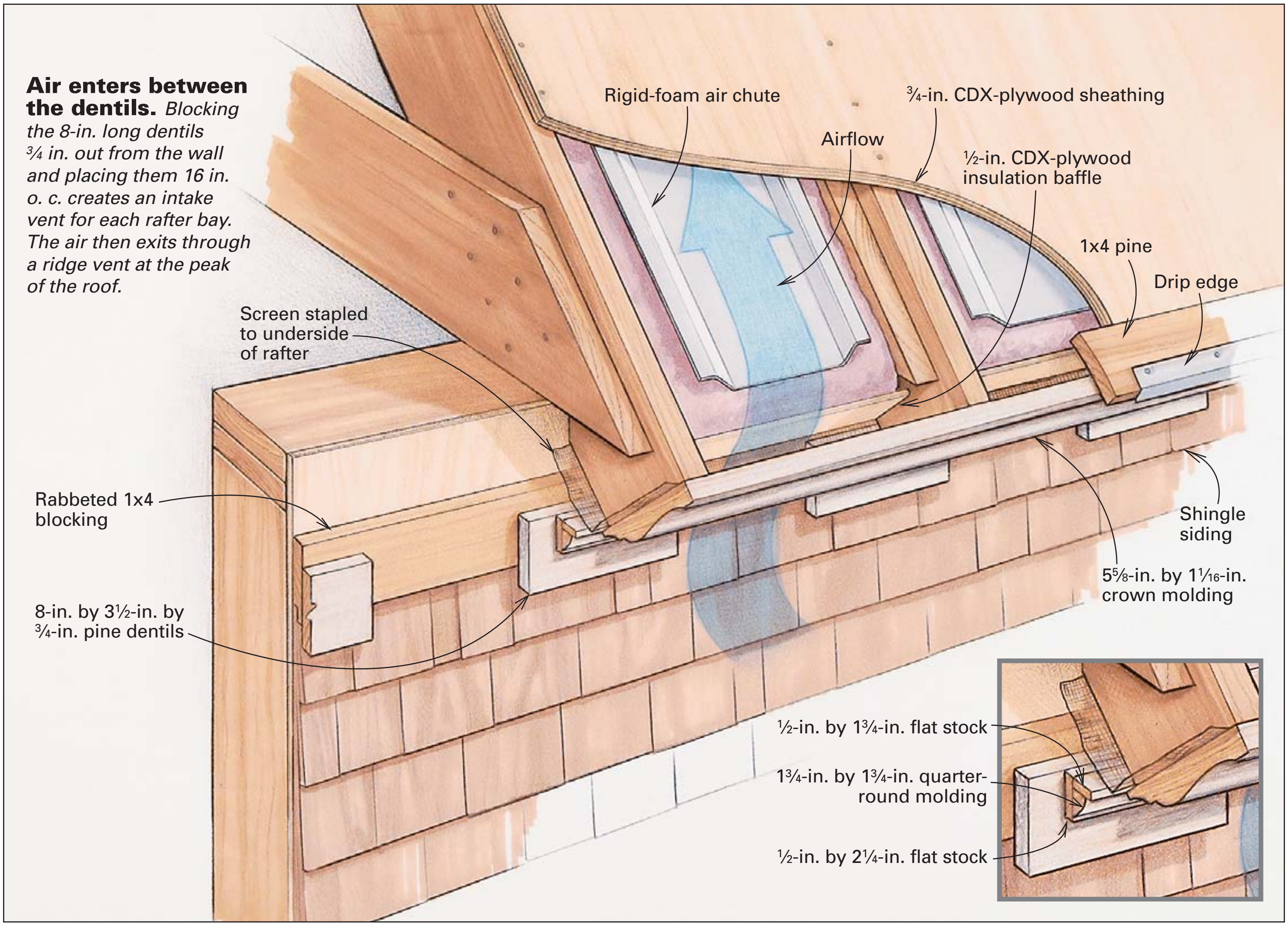
The eaves on a house are like a handlebar mustache: a visual clue about the character lurking behind the detail. Whether a simple cove or a classical cornice, the eave detailing of a home helps to define its architectural signature.

But incorporating soffit vents in a traditional eave can present a challenge, particularly with a historic restoration or when trying to match an existing design on an addition to an old structure. Even venting a traditional profile in new construction can seem like an exercise in futility.

**Old houses didn't need vents—**When 18th- and 19th-century houses, with their delightful eave details, were originally built, insulation, dewpoints, vapor barriers and ventilation weren't issues. Without indoor plumbing and modern heating systems, old houses didn't encounter much warm, moist air. Any moist air generated in the house could escape through uninsulated walls and gaps in sheathing boards.

But today's tightly built, highly insulated houses are filled with warm, moist air, driven upward by physics, leaking into attics and roof cavities through any holes it can find. Once in the attic, the warm air can condense on the cold underside of the roof sheathing, causing mold, mildew and rot. Or the warm air can heat the roof and contribute to ice damming.

Although vapor barriers can help limit the flow of moisture into the space below the roof, ventilation—as provided by eave (or soffit) vents, gable vents and ridge vents—is still required to help protect a house's sheathing and framing




**Air enters between the dentils.** *Blocking the 8-in. long dentils ¾ in. out from the wall and placing them 16 in. o. c. creates an intake vent for each rafter bay. The air then exits through a ridge vent at the peak of the roof.*

from excess moisture. Building codes require a net free-ventilating area equal to $\frac{1}{300}$ of the total area of the space being ventilated if half of the venting is low and half is high. Because only 50% to 80% of the required ventilating area can be provided by ridge or gable vents, the remaining needs to occur in the eaves.

**Dentils are the logical place to ventilate—** Camouflaging the modern technology of effective insulation and eave-to-ridge ventilation within the context of a historic solution to eave design can be tricky. Although the standard solution is to provide a gap in the soffit and then cover it with continuous aluminum soffit vents, this answer isn't always appropriate, particularly if there are no soffits to vent.

I was recently confronted with this sweaty problem while designing a new interpretation of a shingle-style house. Early practitioners of the shingle style, such as the firm of McKim, Mead and White, often incorporated classical motifs in their designs, such as ornate cornices. I, too, envisioned an eave with a combination of classical trim profiles in my design. But how could a vent be placed unobtrusively in this assembly? I didn't know.

I started by making a section drawing through the wall and roof. After adding the line of the ceiling and required framing, I could quickly see that slotting or spacing any of the molding profiles in the eave assembly was unacceptable.

The final profile I arrived at for the eave (drawing above) was simply an assembly of stock moldings, including a 5⅝-in. by 1$\frac{1}{16}$-in. crown molding and a 1¾-in. by 1¾-in. quarter-round built up with ½-in. stock tacked to the back. Because the dentils were the only noncontinuous pieces of the assembly, they were the logical spot to insert ventilation. By holding the trim assembly ¾ in. farther out than I had planned, I could fur the dentils out, too, leaving the spaces between these "teeth" open to the rafter space.

Dentil size can vary, and it usually depends on the scale of the trim. Typical dentils for this size of house with this type of trim would be approximately 2 in. wide by 3 in. high by 1½ in. deep and spaced about 2 in. apart. I made long and narrow dentils 8 in. long by 3½ in. high and spaced 8 in. apart. Although the proportions of the dentils might offend purists, this spacing enabled the vent openings to fall consistently on the open bays of the 16-in. o. c. rafters. It also visually simplifies the trim detail, appropriate with the shingled wall surface. This detail leaves each rafter bay with a ¾-in. by 8-in. ventilation opening. Although code would require 2.8-sq. in. per ft. net ventilating area according to the $\frac{1}{300}$ rule, this detail provided 4.5 sq. in. per ft.

This eave detail requires a simple square-cut rafter tail, and for this profile there was no room for a 2x subfascia. Builder Greg Haeflin applied screening to the underside of the rafters before installing the trim, and he rabbeted 1x4 blocking at the top of the wall to hold the dentils out far enough to allow an air passage and to provide enough room to slide the top course of the shingles up and behind. Now, if I could only come up with a good ridge-venting detail. □

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Drawing: Bob La Pointe