

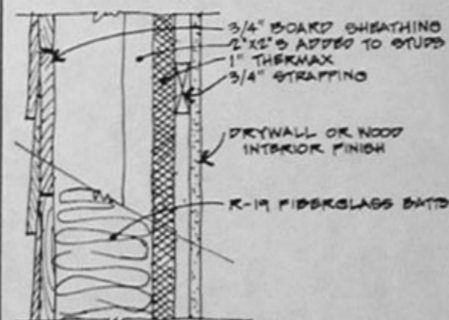
flooding in the wall. The retrofit team had yet to install soffit or ridge vents, so the 1-inch air space above the insulation was blocked off. That and two northeasters that dumped 3 feet of snow on the roof were to blame.

### Taking the doctors' advice

Having pinpointed the attic as a major source of leaks, Turner and crew went

back and temporarily removed the 16 inches of attic insulation. They laid in a continuous poly air/vapor barrier in the ceiling. The new vapor barrier ran across the ceiling, going up and over each ceiling joist, and all joints were caulked and stapled. Then they reinstalled the insulation over the new vapor barrier. "It was a job I hope never to repeat," says Turner.

As for the ice dams, Turner chose not



Cathedral ceilings and conventional 2x4 walls alike were stripped on the inside, fattened up with 2x2's, and insulated with fiberglass and rigid foam, plus an air space for wiring.

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Joel Carrol, Solar Building Products, Annapolis, MD



The Retrotec Door Fan Five minutes after arrival

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to install top and bottom vents, given the complexity of venting a shed roof. Instead, he used electric heat tapes timed to run one hour a day—they seem to work satisfactorily.

The other major step the house doctors recommended was to seal air leaks in the floors. A cantilevered section of the second floor, which projects over the porch, was sealed with Tyvek. The main floor, built over a vented crawlspace, has yet to be sealed. Says Turner, "On windy or very cold days, it's still uncomfortably drafty on the first floor—but there's no easy way to seal it." In some places, the crawlspace is just a foot high. Options being considered include Tyvek, rigid foam, and rigid fiberglass insulation.

Although the house couldn't be thoroughly tightened, the next winter's energy consumption fell well below the original estimate—at around 90 MMBtu. "The major savings" says Turner, "may have resulted from sealing the building well up top." While the current performance doesn't hold a candle to the featherweight heating bills many superinsulators seek, it's quite respectable for a sprawling 3600-square-foot antique in an 8500-degree-day climate.

Turner's plans for the future include a sunspace with 100 square feet of vertical south-facing glass, replacement windows for the hopelessly leaky French-style antiques, and a better air seal on the floor. These improvements, plus Turner's continuing effort to caulk and seal against air leakage, will win further savings.

"Insulation alone will create a 'super-insulated' structure," says the weary but warm retrofitter, "but only meticulous attention to reducing air movement in and out of the structure will allow it to perform as an energy-efficient dwelling."