

# Sliding Shutters

This modern approach to traditional storm windows offers better air-sealing and thermal insulation

BY PAT FARRELL

**B**uilding energy-efficient houses in Fairbanks, Alaska, the United States's northernmost city, is no easy task. As the bar for energy efficiency is set higher and higher, any weaknesses in the thermal envelope become more apparent. In a house with a tight building envelope, walls performing at R-30, and a roof at R-60, I've found windows to be one such weakness.

On the house shown here, I installed low-e, argon-filled, triple-pane, Energy Star-rated windows. All that window technology adds up to a thermal value of only about R-5; that's a big weak spot. Herein lies the conflict: We crave natural light, but when we include windows, we pay for them constantly in terms of our heating bills.

Just as hybrid cars employ internal-combustion engines only when they are needed, I decided to use the windows only when they were needed for light and thermal gain. To that end, I built insulated shutters out of framing lumber and rigid foam. All told, the parts cost about \$500 for each shutter, and both were assembled on site. As shown in the drawing, self-sealing geometry and perimeter brushes are the keys to their operation. Now, when the sun sets, I can push a button to cover 128 sq. ft. of glass with insulated sliding shutters. □

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Drawings: Dan Thornton. Photo this page: Max Kaufman.

# for a Cold Climate

## LET IN THE LIGHT, KEEP IN THE HEAT

Faced with extreme Alaska winters, Pat Farrell designed his house with a series of large windows on the south- and east-facing sides to collect solar heat during the day. But rather than bleed away all of that captured energy during cold winter nights, Farrell created a pair of site-built insulated shutters hung from a roller track. Slid open in the morning to let in the light, the shutters are closed after sundown to keep the heat inside.

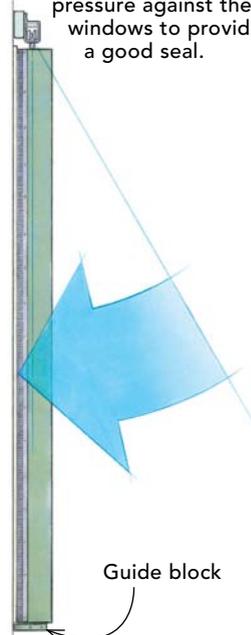
A rolling track ([www.wayne-dalton.com](http://www.wayne-dalton.com)), rated for 500 lb., is anchored to the side of the house using brackets spaced every 32 in.

A 2x6 with a 1/2-in. plywood spacer is sandwiched between the sheathing to provide solid attachment for the track hardware.

A screw-drive garage-door motor ([www.geniecompany.com](http://www.geniecompany.com)), which is separate from the roller track, is hidden in the soffit and is operated remotely to open and close the shutters.

### DETAIL

An off-center pivot point works in conjunction with an adjustable plastic guide block to apply just enough pressure against the windows to provide a good seal.



Guide block

White-painted 1/2-in. ACX plywood covers the interior side of the door.

The 1 1/2-in. by 2-in. door frame was made by ripping 2x6s.

Two-in.-thick expanded polystyrene (EPS) rigid foam offers R-10 insulation.

The 3/8-in.-thick fiber-cement board has custom-made flashing between panels (any type of siding will work, though some require more nailing support).

Finish block hides exposed edges of siding.

Commercial door brushes create a seal against the edges of each window.

Large low-e, argon-filled, triple-pane windows ([www.alside.com](http://www.alside.com)) allow for maximum solar gain when shutters are open during the day.

