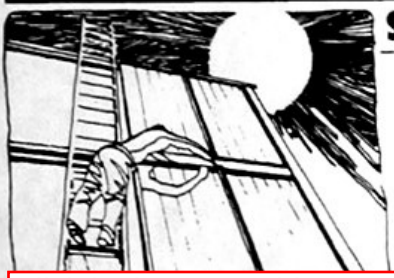


STEVE BLISS: BUILDING IT RIGHT

Detailing for Roof Ventilation

The insulated roof requires a few adjustments in detailing – all changes for the better.

Concerns about energy conservation have focused much attention on how buildings work. While some of the questions raised have yet to be answered, many have resulted in longer-lasting, more trouble-free details.

Take, for example, the standard detailing of the eaves on a gable or hip roof. Rafter ends were notched over the top plate with "birdsmouth" cuts; wooden gutters were often notched into the rafter ends; and eaves were boxed in with soffit and fascia and rarely vented. When water backed up in the gutter from clogged outlets—as it often did—the result was rotting rafter ends and lookouts and peeling paint on the soffit. Above the top plate was little space for insulation. Consequently, heat losses at this area contributed to ice dam problems in areas of heavy snowfall. If insulation is stuffed tightly into the corner, the problem is reduced, but ventilation is blocked.

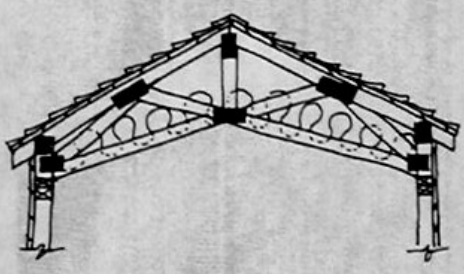
A lot happens at the eaves of a standard gable house. Rafters and joists must solidly connect to the sidewalls. The joint must resist the outward thrust of the rafters in addition to wind and snow loads. The configuration must accommodate a full thickness of insulation above the top plate plus a 1- to 2-inch air space. Good ventilation should be provided both within the eaves and up into the roof. At the same time, the eave should seal out wind, rain, and flying critters. Finally, the overhang should effectively conduct water away from the house. Healthy overhangs do a summer shading job as well.

Trussing it

Outside of the northeast, trusses are king. In some states—notably Texas and California—they account for over 90 percent of new residential and light commercial roofs. Designers can easily modify any truss to accommodate the added insulation and air space over the top plate. The simplest way to do this is to cantilever the truss out beyond the wall line. A solid wedge of wood provides rigidity at the bearing point. In this design, soffit and fascia nail right to the truss with no additional blocking or framing—a definite time-saver. A similar design called the "raised-heel" or Arkansas truss kicks up the top chord with an extra web piece over the bearing point. This may be necessary if you want much more than a foot of insulation over the top plate. The extra webs add extra dollars—say $10-$20 per truss.

Other types of trusses can do the job. For cathedral ceilings, scissors trusses offer room for insulation plus the design flexibility of a clear span. If you're planning a structural ridge beam, consider using flat trusses of plywood I-beams to obtain adequate rafter depth. Hybrids, such as RoKi's Super-Truss® (*Solar Age*, 11/82) can meet a variety of design needs: in this case you get a thick insulated roof, clear span, and cathedral-type ceiling in one fell swoop. Generally, solutions that avoid rigid insulation, double-roof decks, and multiple layers of strapping will be the most economical.

A note to first-time truss users: trusses may fail structurally if they are improperly lifted or stacked, if they fall over due to inadequate bracing or if tradesmen cut into them. The manufacturer's recommendations are worth looking into.



Scissors trusses provide a ceiling slope flatter than the roof.

Raising the rafters

If you're not using trusses, there are other ways to raise the roof at the top plate. A few

Steve Bliss is an associate editor at Solar Age.