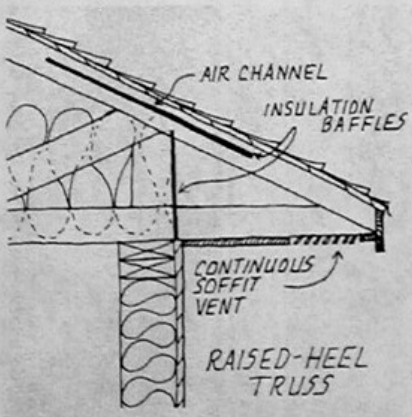
of these are sketched below. In details where the rafters are not tied directly to the ceiling joists they should be tied back with strapping or gussets. Collar and cross ties should also be beefed up. The net result at the plate line of these details is essentially the same as with trusses. As for the structural specifics, it is advisable to leave truss design and the engineering of non-conventional roofs to the engineers.

Vents and baffles

Having gained the added space, now you'll need to divide it for ventilation and insulation. Vertical blocking or baffles must be positioned in each rafter space so that the insulation installer has a solid surface against which to push or blow the insulation. Most designs require a second baffle, 1 to 2 inches below and parallel to the roof sheathing. This preserves the free air space from soffit to attic. In cathedral ceilings this baffle may continue all the way up to the vented ridge. This is primarily useful for blown-in insulation.



Trusses can be raised with webbing or blocking to make room for insulation.

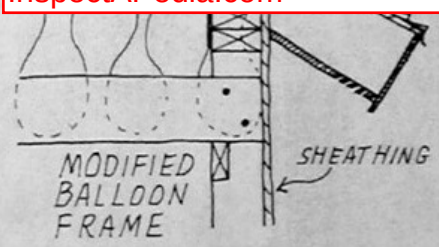
For the vertical baffle, builders choose cheap lightweight materials such as hardboard, Thermoply™, or treated cardboard. If you're doing a lot of this work, it may be worthwhile to have treated cardboard baffles custom-fabricated with flanges so you can quickly staple the things in place. Corrugated plastic baffles called ProperVent™ (*Solar Age*, 2/83) are made to staple to the underside of the sheathing. They can also be slit and bent down to form the vertical baffle as well.

With raised-heel or flat trusses, the vertical baffle can install flush with the sidewall sheathing in long strips. Or the sheathing itself could extend beyond the plate line to form the baffle. These approaches will go a lot quicker than nailing blocking and panels in every rafter space.

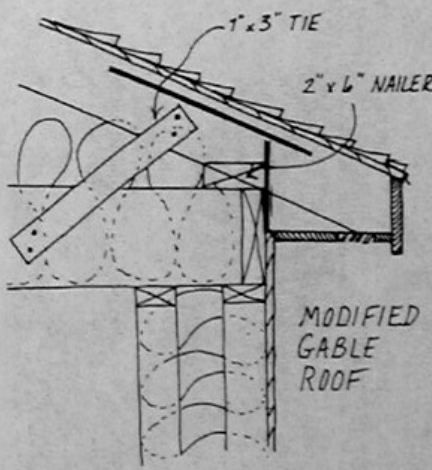
Finishing touches

After taking the trouble to carefully engineer this detail, it would be a shame to soak it with rainwater. If the joint under the roof's edge is structural, as it is in some of these details, I would be especially careful about avoiding rot. If you plan to use a gutter, hang it so overflow won't cause trouble. Strap hangers are good because they hang the gutter away from the fascia. In snow regions, gutters should hang so that their outer edge is below the roof line (projected down). This allows the snow and ice to slide off.

There are many ways to detail the eaves, ranging from open rafters to the most elaborate formal cornices. With each, place the vent strip where it will be protected from wind-blown water.



In this design, steel strapping keeps the rafters from lifting up or kicking out.



Raising the rafters above the ceiling joists is an easy solution for stick builders.

Traditional soffits are unfortunately pretty good rain-catchers. Full strip vents will help air them out should any water find its way into the eave.

Fire and ice

The concept of the fully vented *cold roof* was developed by building researchers as the surest and simplest cure for ice dams, which cause a lot of problems in heavy snow country. The exterior of the *cold roof* approximates the outside temperature because it is well insulated and well ventilated below. In an unvented or unevenly insulated roof, melted snow refreezes at