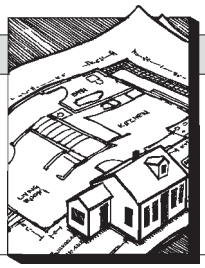

Shedding Light Gracefully

by Gordon Tully

I like to think of a skylight as a tool to solve a design problem, not a feature to be inserted at all costs into a house, like low-voltage lighting or an unglazed terra-cotta floor. As significant design elements, skylights demand careful consideration of several design and detailing issues.

Good Places for Skylights

There are some situations where skylights work well, including:

- At the top of an interior staircase, to shed light on the lower floors and enliven the climb.
- At an inside wall. Skylights are the only way to light a room that has no outside walls. They can also add natural light at the dark end of a deep room, balancing the glare from windows at the other end.
- In place of a dormer. A skylight is much cheaper than a dormer and brings light in more directly.
- As a supplement to vertical glass in a greenhouse or solarium.
- As a substitute for a window where the view is undesirable or a neighboring house is too close.
- Wherever a view of the sky is desired, such as over a bed (mainly appropriate for romantics and dreamers).
- At special lighting and viewing opportunities: for example, down low near the top of a knee wall, to make a neat place for kids to sit.

Placement and Selection

Skylight placement and selection should involve more than just the notion that it'd be nice to have some light here or there. There are important aesthetic and practical considerations to evaluate, both from the outside and the inside of the house.

From outside. Modern skylights tend to stand out visually, because they stand up physically: The top of the skylight is usually 4 to 6 inches above the plane of the roof. (There are cheaper designs which flash right into the shingles, but I don't recommend those for rainy or freezing climates.) Also, glazing is shiny, and contrasts with typical roofing. For this reason, skylights are inappropriate in some situations or locations. For example, in a well-designed formal house, a skylight on the front roof

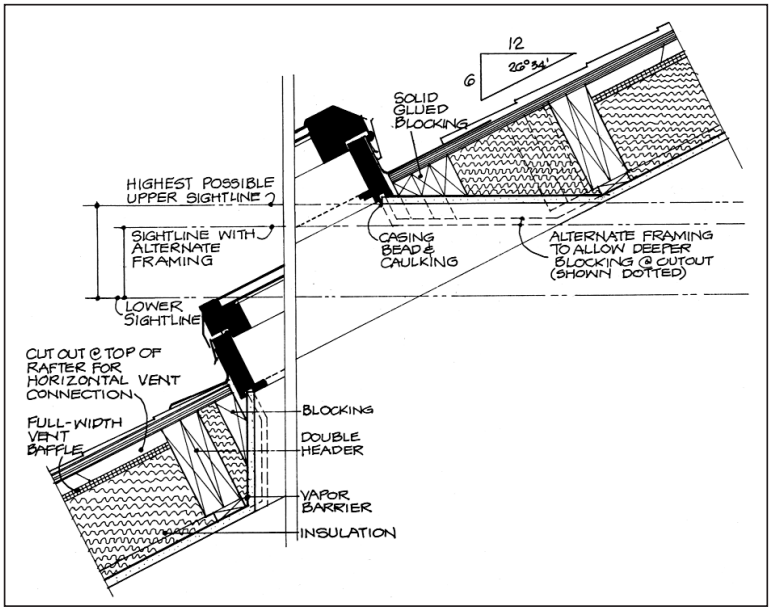

Figure 1. *To provide maximum views through a roof window from both sitting and standing positions, finish the light well as shown. Make the upper surface of the light well horizontal and the lower surface vertical. If the roof pitch is shallower than 6/12, the blocking around the frame must be deeper, lowering the upper sightline a little.*

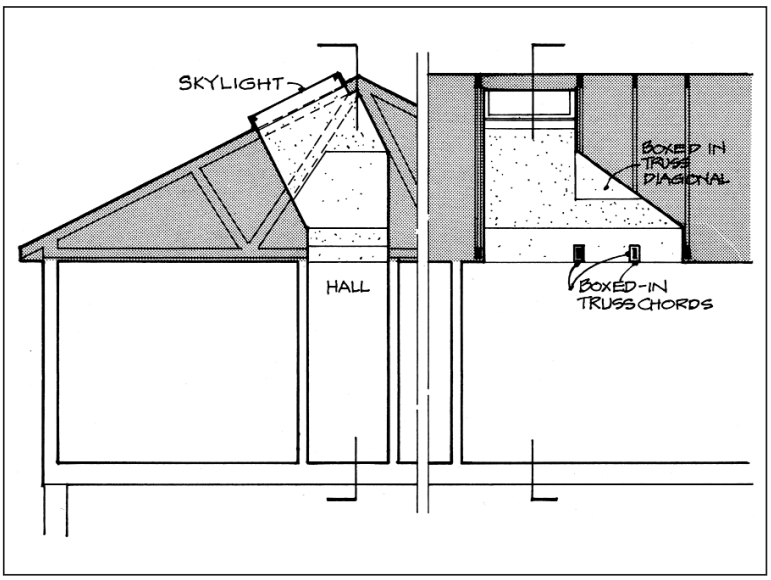

Figure 2. *To let in the most light, an overhead skylight well should be flared as much as possible. With a truss roof, this will expose framing members where the flare crosses the trusses. Unless the truss chords are attractive wood, they should be boxed in with drywall or finish wood.*

would be intrusive, although it might be acceptable on the back roof.

Similarly, where several skylights occur on the same roof, lighting different spaces, they are unlikely to line up. The results can look pretty casual from the outside, as if someone had lobbed a few cannon balls through the roof and glazed over the holes. A compromise may be in order. Leave some of them out, rather than creating a mess; replace one or more with dormers; or adjust their positions until you achieve some kind of line-up that is less offensive from the outside.

Finally, don't put a skylight too close to a valley, to avoid trapping ice or debris. Too close might be one foot in a mild climate, two feet in a snowy one.

From the inside. These caveats aside, skylights should be placed to suit interior design needs. The most important consideration is how high you place the skylight, which largely determines the horizontal sight lines. By building the inside ceiling surrounding the skylight with a level upper surface and a plumb lower surface, you can maximize the viewing possibilities from both sitting and standing positions for a variety of persons (see Figure 1). (If you have a basketball player in the family, you can set two skylights in a column, one above the other—the lower one to provide a sitting view, the upper one a standing view.)

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Of course, the actual sight lines for a given skylight will vary depending on how far you are from it—as you get closer, the sight lines will broaden dramatically. A skylight placed so that you can get your head right in the skylight's well, for instance, will give you an almost 180-degree view.

Glazing large areas. If you need to glaze a large area of the roof, you might consider buying a commercial unit. These are usually well-detailed. Unfortunately, they must be made to order, which is incredibly expensive. Shop drawings and other procedures unusual in the home building or remodeling market are also required.

An easier way is to bank a number of stock skylights together. This will likely be cheaper than one big skylight, easier to install, and will avoid shop drawings and long lead times. In addition, you can run the roof structure between the lights. Use large units and put them as close together as possible. Banking too many small skylights together costs more, and the glut of relatively small openings looks fussy and produces a closed-in feeling.

Punching through an attic. In a house with an attic, mounting a skylight anywhere except near the eaves creates a very tall well. To let the light in, the well should flare as much as possible, within the limits of the space below (see Figure 2). Flaring in the direction of the rafter and joists or trusses is easy. But when you open the well sideways across the path of framing members, you'll have to let the framing run through somehow.

Unless the timbers are very clean and of attractive wood, it's a good idea to shroud them in gypsum board or finish wood. And remember to seal the vapor barrier where the framing runs through.

Glazing and Sun Angles

Most skylights now come with tempered glass rather than plastic. A variety of glazing possibilities exist—check with your local distributor.

Low-e glass is always a good idea. There are basically two kinds: winter and summer. Even up north, I would use summer low-e glazing to cut down on summertime heat gain, which can be tremendous through an ordinary skylight. And if direct sun through the skylight can reach art objects, valuable books, good furniture, fabrics, or rugs, you should apply ultraviolet-filtering film to the inside of the glazing.

How do you know how much sun will come through a skylight and where it will strike inside? The rules of thumb for windows don't apply to skylights. Generally, skylights admit more sun in summer and less in the other seasons, while windows do the reverse. The reason: As the summer sun climbs higher in the sky, it tends to shine more directly on the roof, and hence through any skylights, whatever their direction of exposure. You need to take this into account when siting a skylight.

Structure and Detailing

Many contractors simply remove a joist or truss or two and stick in a skylight. This is bad practice, because the remaining roof members now carry more load. To do the job properly, double or triple up the rafters or trusses on either side of the skylight and insert double headers at top and bottom.

As noted earlier, it's a good idea to let the inside surrounding bevel away from the glass, to improve sight lines. To achieve this, you must set the headers well away from the skylight cutout. Additional framing is needed as close to the cutout as possible to keep the plywood stiff. In extreme cases, insert intermediate framing members.

A skylight set into a cathedral ceiling will block the roof's ventilation channels. Don't ignore the problem. There is no standard solution, but this method will illustrate the principle. In place of the usual plastic vent baffle, install rigid foam board parallel to and blocked down from the sheathing. Then notch the top of the joists above and below the skylights to allow air to move sideways into the adjacent joist space, around the skylight, and back into the spaces above the skylights.

In cold climates, be cautious about putting skylights above humid spaces on north roofs. All but the most careful detailing will allow some air leakage around the skylight. This, combined with the natural cold bridges which occur around the skylight curb, can cause serious condensation, even ice, on the skylight. Some cases of "rain leakage" occurring in spring are actually caused by thawing ice formed around improperly installed skylights. ■

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