

# Under the Roof

## *Design Techniques for building needed space into second-floor living areas*

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Roofs are the most primitive form of shelter, yet their primal role is still evident in today's modern home. Roofs that shelter or enclose living spaces give these areas a special quality—they contribute a sense of security to our lives. Roofs that are simply a cap on top of a building rarely fulfill this characteristic.

Roofs have other pertinent roles in the life of a building as well. From the outside, a roof defines the look of a home; from the inside, it enriches the spaces enclosed by it. Because a roof not only covers us, but also surrounds us, its sheltering nature seems to be universal.

Vaulted, or cathedral ceilings, are almost always an integral feature in a log home. This generally means that on an upper floor there are numerous opportunities to create living space under the roof. Rather than something just stuck on top of your home, this area becomes a place alive with activities and purpose.

### **Form Meets Function**

A home's roof and the space below it can be affected by different factors. Roof slope is the first. In order for roof vaults to be used effectively as living spaces, they generally need to have a steep slope, usually greater than 8 in 12 pitch. A lower slope could allow for some upper

floor living space if the vault is large enough, but there would be a lot of unusable space with low ceiling heights.

A second variable is roof shape. If the floorplan layout and the roof forms are not integrally designed, the roof can seem unbalanced or “chopped up,” and the spaces within it can seem more contrived. The roof should spring from a logical layout of spaces below.

### **The Dormer Approach**

Dormers are one option that can give you considerable extra usable space and provide additional natural light. There are two main types of dormers: Gable dormers, which are sometimes called “dog house” dormers, have a peaked roof, and shed dormers, have a uniform, gently sloping roof. Keep in mind, dormers need to have the correct proportion to look right from the outside and can present challenges in regions of the country that experience high snowfall. The size of a dormer can also affect the quality of the indoor space. A large dormer will create a larger interior space and bring in lots of light; a small dormer will make the space feel more enclosed, though, in many cases, more cozy. Balance is the key.

Oftentimes when a dormer is used, it may cut into a lower roof, which will likely intersect the front or gable wall of the dormer. This may affect the windowsill height. The steeper the roof slope and the thicker the roof construction, the higher up the dormer wall will intersect. If this pushes the sill more than 4 feet above the floor, the quality of the interior space will change dramatically. One option is to create a window nook or seat by raising the floor level directly in front of the window. A second option is to create a window well on the exterior by decreasing the pitch of the lower roof immediately in front of the window. Although this complicates roof detailing, it can be effective.

## **Making Room for Activities**

Headroom, which defines the area in which you can comfortably stand, is a critical factor in the design of any roof space. It is difficult to appreciate this measurement when looking at two-dimensional floorplans. Calculations based on the start of the roof slope and the distance from the exterior walls will give you your headroom. Often what appears to be a large space may actually have very little headroom. On the other hand, space below 6 feet in height will likely still be usable and will contribute to the sheltering effect of the space.

Consider how you wish to treat the “unusable” space. This will likely include any space below 4 feet in height, although some of that may be used for storage. While some people like to have the floor area extend as far as possible, I suggest you build a wall at the line of desired roof height to define the room and facilitate organization and cleaning. If the space includes an area you will be walking or placing a bed in, I suggest 5 to 5 1/2 feet in height. If the wall will have shelving or furniture against it, you may wish to make it closer to 4 feet in height. This combination provides both functional, efficient space and the feeling of shelter and intimacy.

## **Planning Roof Spaces**

The effect of log roof beams on roof spaces is often underestimated. Consider the size and position of the beams carefully as you plan your design. In most cases, log beams add to the quality of the space. However, their size can present problems, especially if they are large due to structural reasons. Large roof beams not only affect the scale of smaller rooms, they can often present headroom problems as the underside of the logs can be considerably lower than the roof they support.

Pay attention to the height of the ceiling within a roof space. While I am usually concerned with lack of height in the roof space, with steeply sloping roofs, the ceiling height may become too high for smaller spaces. Consider whether it is necessary to “drop” the ceiling to a lower level.

Providing adequate daylight can be another challenge within roof spaces. While dormer windows can bring in light, you may want to consider skylights for spaces in the interior. It is common to place bedrooms within the roof space. Avoid bathrooms in dormers unless they are large enough to provide flexibility in the placement of bathtubs and showers—otherwise, window placement can be awkward and exterior appearances compromised. It is sometimes possible to design a small toilet cubicle or sink within the overall bedroom space, tucked into an area with lower height.

Many types of rooms work well under sloping roofs, particularly rooms that are task-oriented. For an office, design your primary work area where you have ample ceiling height. Position your filing cabinets, shelving and other storage where the roof slope is lower. Varying room shape and ceiling height can be conducive to creativity for both adults and children. Children’s playrooms can work well within roof spaces and most kids love low ceiling heights, nooks and crannies, which are just their size and conducive to imaginative play. When planning roof spaces, often there are areas that are “leftover.” These spaces can make wonderful nooks that can be used for reading, crafts, sewing and other individual pursuits. Or you can design a computer station or a day bed to fit just right into such spaces. Who knows? It may end up being the favorite corner of your home.

In the end, it all comes back to the same principle: Humans desire shelter and security. The spaces under sloping roofs can often impart those feelings better than any other place in our

home. Creatively designing the overall and individual spaces, carefully sizing and placing roof logs, varying wall and ceiling heights and providing adequate lighting all make spaces that go beyond just being a shelter and turn your roof space into one of the most interesting and exciting parts of your home.

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