6
Attics and Roofs

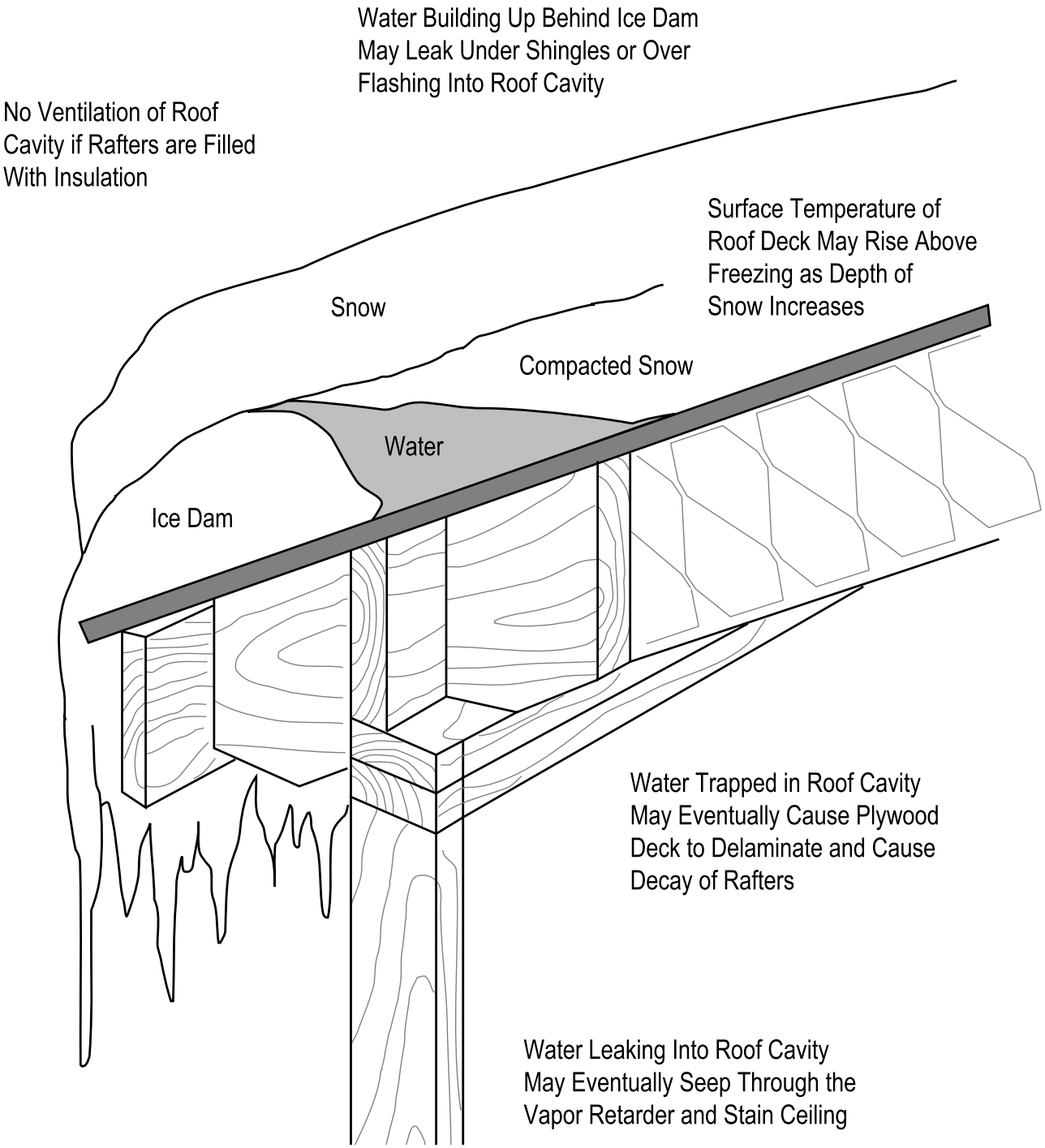
Hot Roof vs. Cold Roof

The designer must decide whether to build a hot (unventilated) or a cold (ventilated) roof. This decision is usually based on the likelihood of snow building up on the roof during the course of the winter. If snow will accumulate, then a cold roof is in order. Snow build-up insulates the roof, causing snow near the roof surface to melt from the heat of the building. This melted snow runs down the roof and refreezes at the edge, forming ice dams. These dams cause water to back up underneath the shingles. The solution is to provide ventilation in the attic, so heat from the building does not melt the snow.

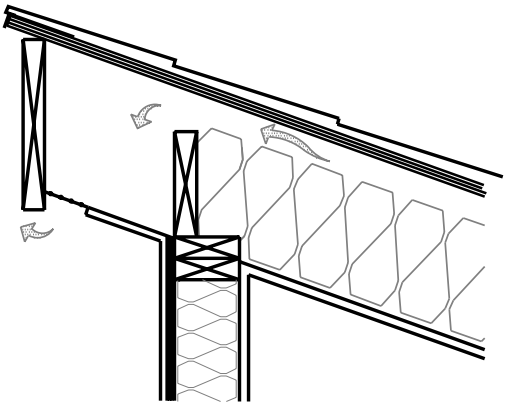
The decision to ventilate or not to ventilate the attic or roof must be based on which strategy is most likely to contribute to the longevity of the building. Once the air/vapor retarder on the warm side of the ceiling and insulation is so nearly perfect that heat, air, and moisture leaks from within are no longer a concern, then the major consideration should be whether or not ice damming can be caused by snow build-up on the roof. If the building is on a site exposed to high winds and no snow is likely to accumulate on the roof, an airtight hot roof may be desirable. A number of snow-resistant ventilated roof designs have been experimented with over the years with varying degrees of success. Whatever design you choose, keep in mind that an attic full of snow will not last long.

In areas where wind-blown snow or rain could be driven into the roof cavity, a hot roof may be required, but it must be tightly sealed. Roofs must be designed to accommodate snow loads and be securely anchored to resist wind and seismic loads.

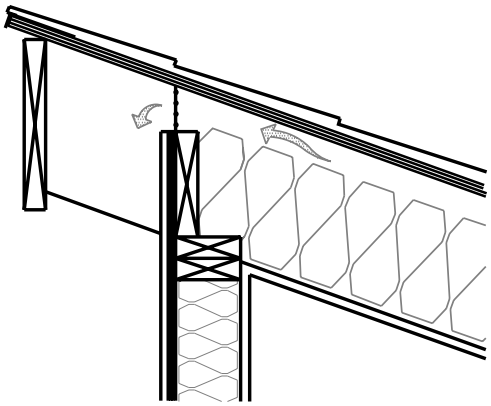
Formation of Ice Dams



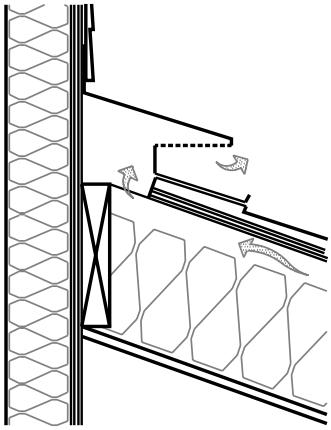
Providing Ventilation for a Cold Cathedral Ceiling Roof



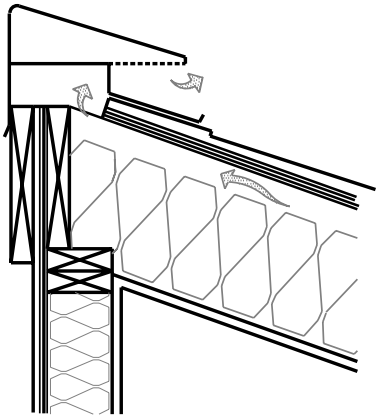
Shed Peak With Soffit



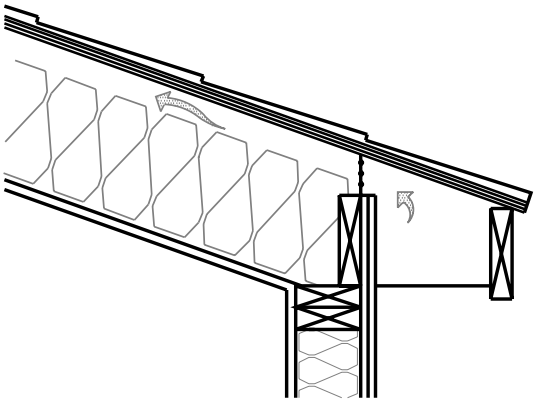
Shed Peak Without Soffit



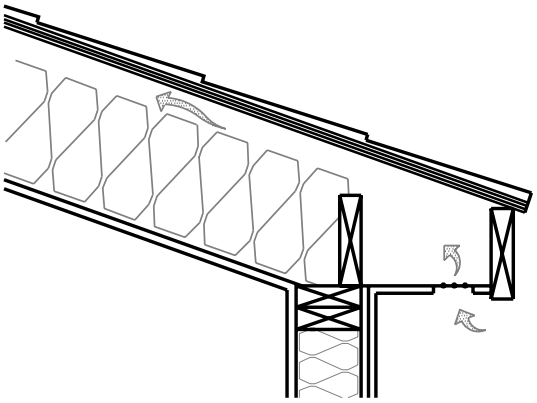
Shed Roof At Wall



Shed Peak: No Overhang

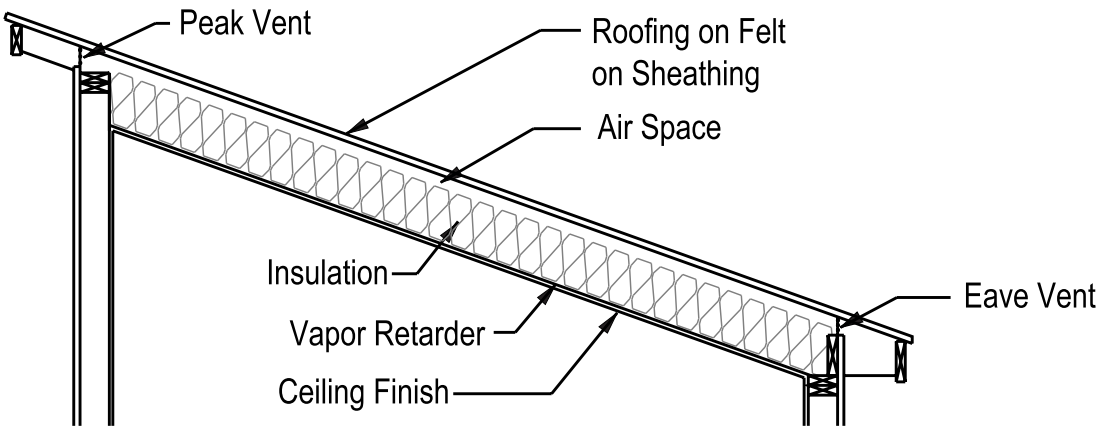


Eave Without Soffit

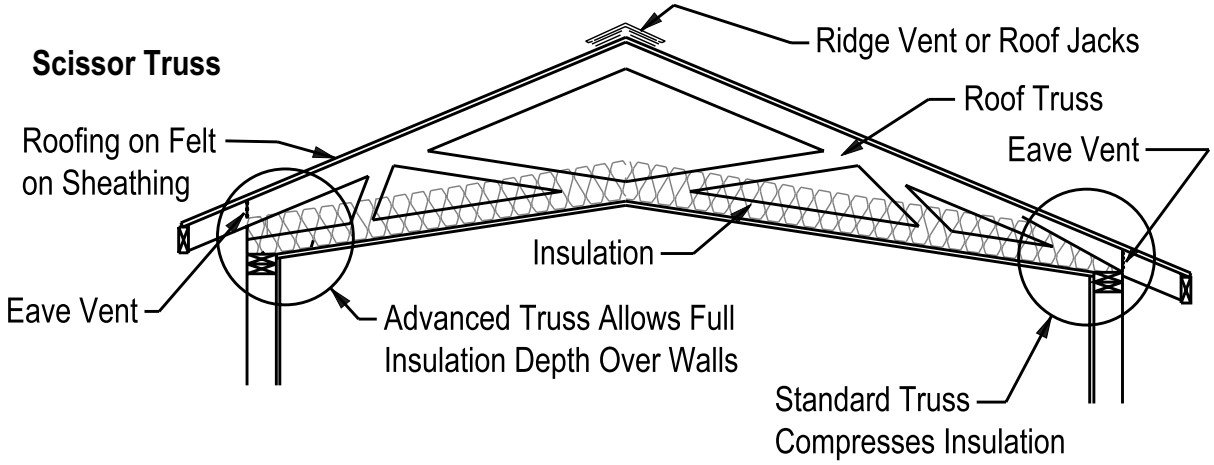


Eave With Soffit

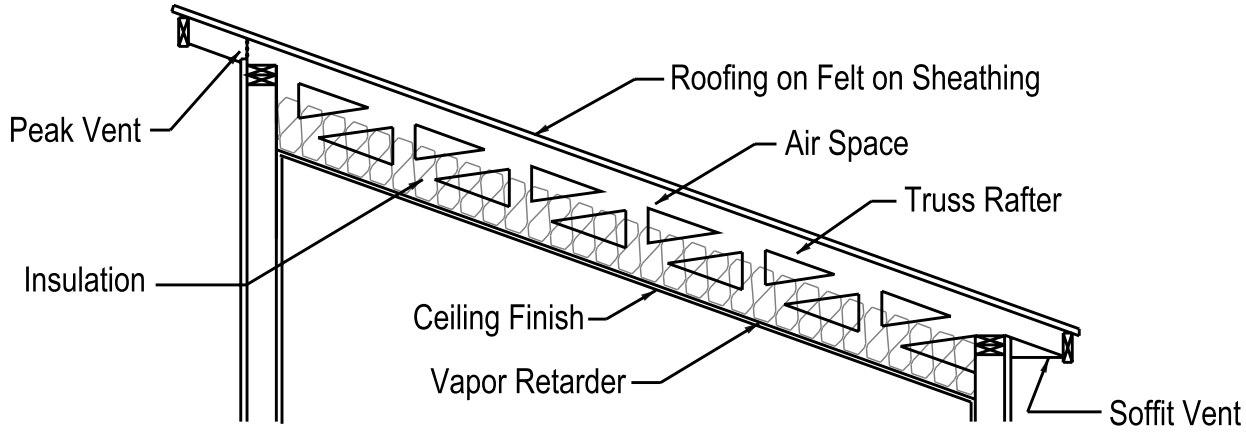
Single Rafter

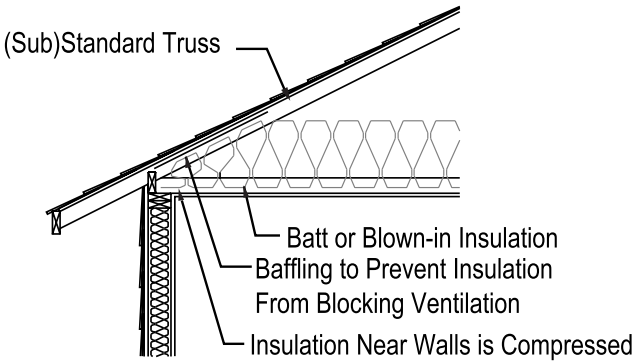


Scissor Truss



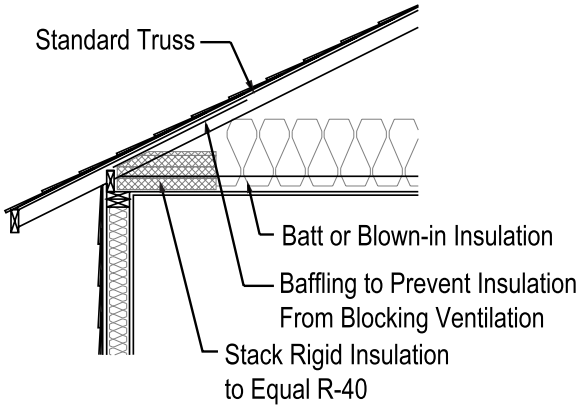
Flat Truss

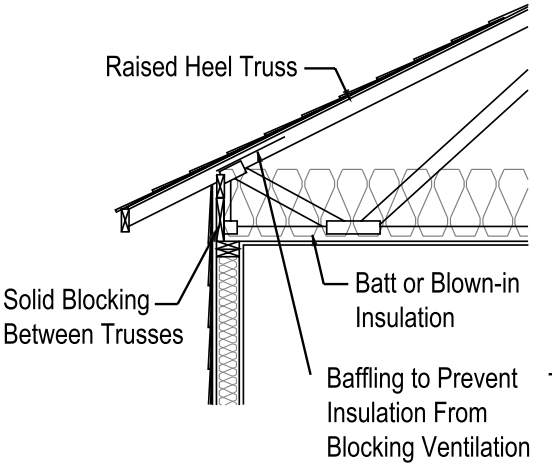


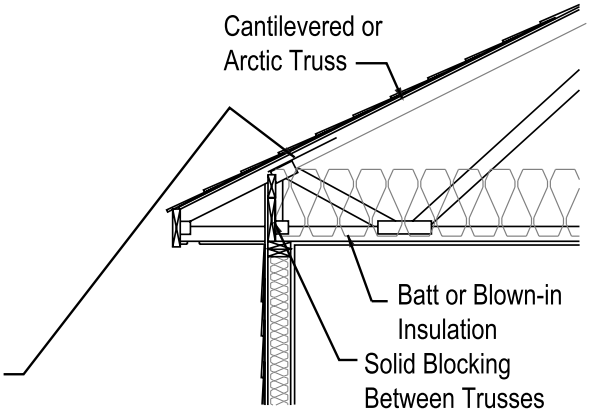


(Sub)Standard Framing

Advanced Framing

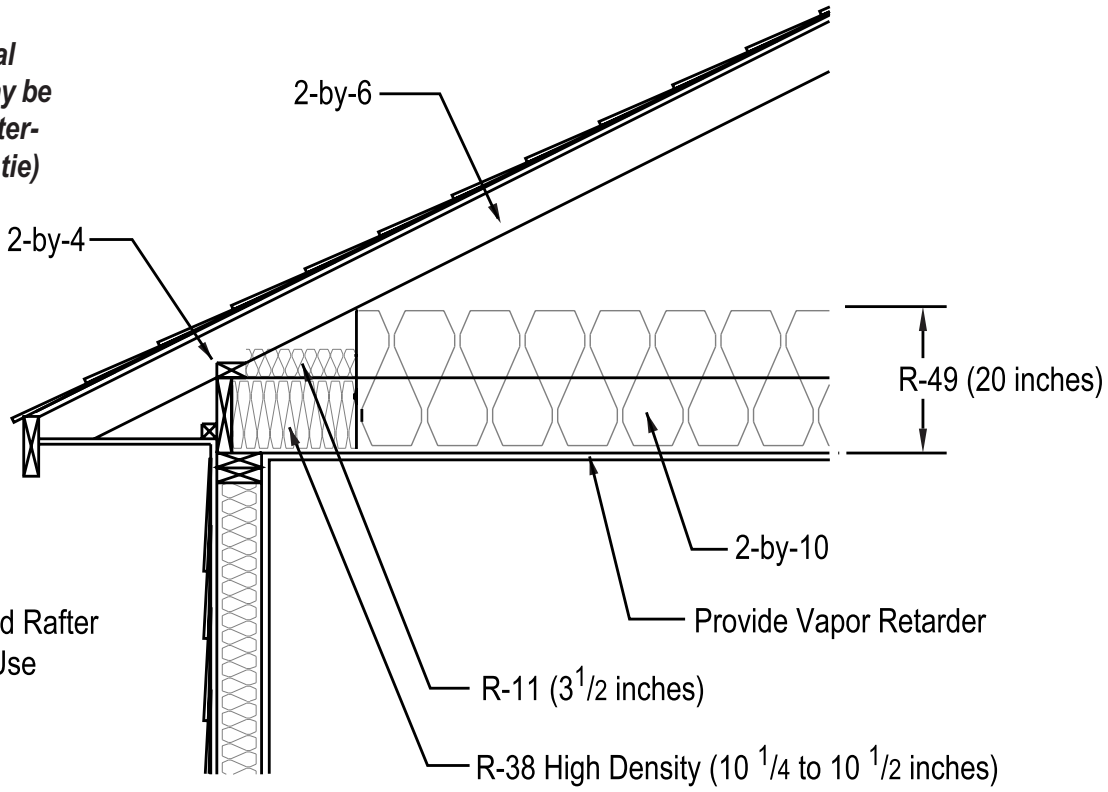






Advanced Framing
Using Rafters

(Note: Structural engineering may be required for rafter-to- ceiling joist tie)



Note: Point Load Rafter Over Studs or Use Double Plates

Continuous Ridge Vent Over Attic