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Daylighting With Skylights

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Daylighting is the practice of placing windows, or other transparent media, and reflective surfaces so that, during the day, natural light provides effective internal illumination.

Within the overall architectural design of a building, particular attention is given to daylighting when the aim is to maximize visual comfort, productivity, or to reduce energy use. Energy savings from daylighting are achieved in two ways - either from the reduced use of electric lighting, or from passive solar heating or cooling.

Skylights are often used for daylighting. Skylights admit more light per unit area than windows, and distribute it more evenly over a space. They can therefore be a good choice when daylight is being used to illuminate a space. The optimum number of skylights (usually quantified

as effective aperture) varies according to climate, latitude, and the characteristics of the skylight, but is usually 1-10% of floor area. The thermal performance of skylights is affected by stratification, i.e. the tendency of warm air to collect in the skylight wells, which in cool climates increases the rate of heat loss. During warm seasons, skylights also can cause internal heat problems, which is usually treated by placing a shade over the skylight, or by opening it if it is operable.

The amount of light skylights deliver peaks around midday, when the additional light and heat it provides is least needed. Some skylight designs use domed or pyramidal shapes along with prismatic or other light-redirecting glazing's to achieve more even light levels through the course of a day.

Poorly constructed or installed skylights may have leak problems and single-paned ones may weep with condensation. Using skylights with at least two panes and a heat reflecting coating will increase their energy efficiency. Skylights may also be more prone to breakage than vertical windows.

The skylight topic is controversial. Although roof-angled glass provides good daylighting, it can also create a solar furnace in the summer (when the sun is nearly perpendicular), and then lose more solar gain than it captures (when the low winter sun reflects off of it, and warm interior air rises to touch the cold glass on winter nights).

Is Daylighting right for your building? Contact a qualified roofing contractor, like Service Works, to see if it makes sense for you.