

around the HOUSE

Let the Sun Shine In

Soon we'll experience the shortest days of the year. This time of year, some people get depressed or are otherwise adversely affected by a lack of sunlight. This is known as seasonal affective disorder (SAD).

Sunlight is a vital necessity in our psychological well-being. It plays a significant role in nourishing and energizing the body. Sunlight is also vital in order to get the full nutritional value from the food we consume, and it has been proven that sufficient amounts can prevent ailments such as SAD, osteoporosis, mental depression, type II diabetes, and cancers affecting the bladder, breasts, cervix, colon, ovaries, prostate, and stomach. Adequate, abundant, and glare-free natural light and lighting are one of the most important features of Universal Design (UD).

Benefits

One of the prime health benefits of sunlight is that it supplies the body with vitamin D. This provides strength to the bones as well as contributes to a healthy nervous system by increasing the production of endorphins in the brain. Studies show exposure to sunlight for as little as ten minutes a day can provide our bodies with the vitamin D required for the entire day.

The benefits of sunlight go on and on. Wheelchair users and elderly people are more likely to spend more time indoors than most, especially in the winter months. I have friends who use wheelchairs, and their blinds seem to almost always be drawn, even on sunny days. Hallways can be dark and difficult to visually navigate. The possibility of elderly folks falling in these dark areas increases with age.

These are a few reasons it makes so much sense to include as much natural daylight as possible in homes. Sunlight can be introduced into an existing or new home without requiring a major remodel or being cost prohibitive.

Skylights

One of my favorite sustainable products to include in new construction and remodels is a tubular skylight, light tube, or solar light pipe. These can be considered the oldest and most widespread type of interior day-lighting devices. The light shaft was originally developed by ancient Egyptians. The first commercial reflector systems were patented in London in the 1850s,



Tubular skylights can reach as far as 20 feet and can bend.

much sunlight as possible into the highly reflective tube. Light transmission efficiency is greatest if the tube is short and straight. They are able to stretch as far as 20 feet, and they can bend. However, in these longer, angled or flexible tubes, part of the light intensity is lost.



Tubular skylights can really brighten up a bathroom.

but the factory was destroyed in World War II and the concept was rediscovered and patented in Australia by Solatube International in 1986.

In the case of tubular skylights, the light entrance point is usually a dome on the roof that has the function of collecting and reflecting as

To minimize light losses, the highly reflective tube lining is crucial. Some manufacturers claim reflectivity of their materials, in the visible range, of up to 98 to almost 99.5 percent. They can also be installed with a heliostat, which tracks the movement of the sun, thereby directing sunlight into the

tube at all times of the day. The heliostat can also be set to capture moonlight.

These are now marketed worldwide and used in residential and commercial applications. Velux has one named “Suntunnel,” and there are several other brand names. Don’t skimp on imitation brands; it may cost you more in the long run. The best products

include innovative moisture control systems that ensure the most air and watertight installation and provide the brightest, cleanest, and whitest natural light possible. They will cost \$700–\$800 per unit if professionally installed. The best products provide exceptional lighting. They can give three times the natural light as a window the same size in area.

Location, Location

I like to design skylights into hallways, closets, utility rooms, bathrooms, and kitchens. They are most effective deep within the home and in cramped narrow spaces where a traditional skylight (with its deep drywall surround up to the roof) is not practical. They also have optional dimmers, vents, and light kits. It is important to always wrap the tube with insulation as the tube rises to the roof through



Two tubular skylights add natural daylight in the hallway.

adhesive membrane also known as “Ice Shield” or another similar brand.

Integral effective flashing is available for sloped waterproofing, and the old myth that skylights always leak is simply not true when they are properly installed.

the truss/rafter space or attic. I like to waterproof around the roof connection or “flash” the exterior with an



A cross section of a tubular skylight through the roof.

These will help cheer up an otherwise dreary interior. They are also, of course, a “green” energy-saving feature. Look for sun tubes that carry the Energy Star™ label.

In the evening, always use night-lights in hallways and bathrooms. Light motion-sensor switches may be a good idea. These switch lights on when they detect motion and then automatically turn them off after a short period when motion ceases. This may be a solution to a fear of falling at night when you can’t see.

Contact: charlesschwab@universaldesignonline.com. The home plan book *Universal Designed “Smart” Homes for the 21st Century* now includes 102 home plans you can order and build, plus 28 new home plan designs. \$29.95. *PN* readers receive a \$5 discount by using coupon code Vethomes. Order at universaldesignonline.com. ■