

Daylighting That Works: A Builder's Perspective

■ By Daystar Systems

Natural sunlight has long been known to be superior to any kind of artificial light source. It contains the full spectrum of colors and studies show that people are generally happier and healthier living, working, and shopping in sunlit environments.

As a result, business and warehouse owners are turning to daylighting systems to reduce and sometimes even eliminate the need for artificial lighting during the day. Daylighting systems, which passively harness and enhance the sun's light, are not simple skylights. Rather, applying physics to standard glass domes facilitates and diffuses the light entering a building without harshness or glare.

One example of these daylighting systems is DayStar. Their system is composed of four parts. First, sunlight is gathered and diffused through an ultra-clear outer dome and inner collimation lens. A light shaft made of insulated panels with highly reflective interior surfaces amplifies natural light as it is captured. And finally, a ceiling lens, engineered to diffuse highly concentrated light into a broad lighting pattern, is installed on the interior ceiling.

Avoiding Leakage

The contractor is usually focused on two things: ease of installation and reliability. The contractor's prime concern typically is "after the job, can I sleep at night without worrying about getting a callback for leakage after the first rain?"

After all, any penetration of a watertight roof membrane can introduce a potential pathway for water, which no one wants. So, contractors need to trust that the systems they install will have a high level of leak-free integrity.



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PHOTO COURTESY OF DAYSTAR

One way to ensure leak prevention is to begin with a properly installed essential roof curb that ensures the daylighting components have a level platform for attachment. Rooftop curbs are raised metal frames designed for mounting structures safely to the roof. Some skylights are comprised of a dome with pre-attached metal flashing, which the contractor cuts around to fit into an opening, and then seals with caulk. This arrangement requires the contractor to be very careful when installing.

Insulated roof curbs made of galvalume steel or aluminum with continuously welded watertight seams work well to stop leakage. Fit the curb to the roof pitch and metal rib design. A system may also come in regular slope and ridge-mounted versions. Rib caps may be supplied to fit the roof panel and mastic sealant should

be applied between the roof curb flange and roof metal.

A manufacturer that will work with you on different configurations to make the system function well with different roofs or roof profiles can help facilitate leak-free installation according to Jonas Yoder, owner of JY Construction and a 30-year contractor.

Thermal Efficiency

After concerns about potential water leaks, many contractors seek a system that will prevent outdoor hot or cold air intrusion, or transfer through the components. Features that can help with thermal efficiency include an insulated roof curb, a double-glazed top dome with a vinyl thermal barrier, an insulated light shaft and lens, which can provide a great thermal value. In addition, these

enhancements can create a system that has a low solar heat gain coefficient (SHGC) as well as U Values (a measure of insulating performance) that are over twice the thermal efficiency ratings of some common skylights. This means the customer will lose less heat in the winter and gain less heat in the summer.

Installation Instructions

The daylighting installation process is quite simple, and a contractor does not need any special experience to perform an expert job. The installation instructions from the manufacturer should make it easy to install, step by step. If it is not, contact the manufacturer and ask questions.

Trust Earned

If you follow the instructions and the system has problems, the manufacturer should always stand behind their product. Of course, the hope is that you will not have to ask them to do that because the system

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• Solatube International	solatube.com
• Advanced Glazings (Solera)	advancedglazings.com
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performs reliably over the long term. If you have no experience with a product, see what other contractors have to say.

Yoder says he originally installed 40 DayStar systems in a 24,000 sq. ft. pre-engineered steel building about 10 years ago. "Now, the same, industrial warehouse customer is looking to build another 9,000 sq. ft. structure with 12 more daylight systems. In my mind, that shows long-term value and reliability," he concludes. **PB**

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