CASE STUDY: CUSTOM SUNROOM DESIGN DRIVEN BY SPACE, FUNCTION, AND LOCATION

PROJECT ID: 12-09-327

Edition: 3.4.2016

CHALLENGE

Solar Innovations, Inc. was sought to provide a dual function sunroom that would give a universal space for both people and plants. The climate of Palmyra, Wisconsin proved to be the first major challenge for the design team working on the project. The month of January has an average low temperature of10˚F with below average sunlight, and the month of July has an average high temperature of 82˚F with above average sunlight. Extreme temperatures can range from a low of -25˚F in the winter to a high of 100˚F in the summer. The second challenge was providing a custom design that attached to an odd-shaped area on the southwest corner of the house and maintained the overall aesthetics of the property.

SOLUTION

Solar Innovations, Inc. accounted for the major differences in temperature and sunlight between the winter and summer by recommending different glass types in the roof versus the walls. By understanding the varying sun angles between the warmer and colder months, based on a location's latitude, glass type can make a huge contribution to controlling interior temperature. The roof was designed with Cardinal LoE 340 glass in order to counteract the effects of the intense summer sun by blocking 60% of visible light transmission and 82% of the solar heat gain. This glass has the additional benefit of eliminating the need for sun shades. The walls included Cardinal LoE 272 glass, which allows increased light transmission and solar heat gain. The less intense, low angled winter sun can penetrate deeper into the living space and provide more light and heat. Both glass types perform as excellent insulators and have center of glass R-values of 4. This significantly decreases conductive heat loss in the winter and heat gain in the summer when compared to other manufacturer's glass structures. The grow beds for plants were positioned along the outside walls, so they would receive excellent light for photosynthesis through the LoE 272 glass.

The available site for attachment on the southwest corner of the home proved to be the next challenge. However, with Solar's unlimited number of custom configurations, the design team was able to provide a few solutions. The customer chose a design with a three-sided conservatory nose and roof pitch to match the adjacent roof lines.

Series: SI5207 Straight Eave Double Pitch Sunroom with 3-Sided Conservatory Nose

Roof Glazing: 1" Insulated Glass Unit with LoE 340

Wall Glazing: 1" Insulated Glazing with LoE 272
Nine Insulated Awning Windows
One Out-Swing Terrace Door

Glazing: 1" LoE 272 Insulated Glazing

SOLAR INNOVATIONS® GLASS STRUCTURES

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