

BUILDING OUR FUTURE 2016

WILLIAMSBURG UNITARIAN UNIVERSALISTS

JUNE 17, 2015

ISSUE #62

Behind the Scenes with the Design Build Team

Each week, your Design Build Team is looking over many, many documents to make the best decisions on behalf of our members and friends as we prepare to build our future. Some decisions are easy and some are difficult.

One of the most difficult was skylights. There are issues of initial and future costs, lighting benefits, beauty, green considerations, potential water damage, etc. Your team brought their own experiences to the table and researched the options. As with many decisions, your Design Build Team represented the diversity of opinions that we know and love at WUU.

In the end, Kristin Baum, one of our architects at Guernsey Tingle, provided the analysis and perspective that enabled the Design Build Team to make its decision. Her analysis also provides our first look down the corridor passed the Little Sanctuary and into the Religious Education/Social Justice Rooms.

From Kristin:

“How can Skylights Improve Our Spaces?”

As we all discussed at the beginning of the project, we wanted to find affordable ways to create unique and positive spaces. We have achieved some unique, high spaces in the 2nd/3rd and 4th/5th classrooms with the vaulted ceiling and clerestory windows that will bring in indirect light and make the space feel taller. However, at the “flat roof” class/meeting rooms, we have a lower, flat ceiling, so we recommend having some natural light in these spaces with the skylights.

At the corridor, we proposed utilizing the skylights to delineate the entrances to the Little Sanctuary, the corridor to the RE wing, and the entrances to the classrooms (you will also see that these spaces have drywall ceiling here instead of AC tiles, which also make them different). This helps break up the long bowling alley effect of the corridor, and provides natural daylight down into what could be an otherwise bleak corridor. Imagine walking down a corridor with only a glimpse of daylight at the end, versus walking down a corridor where a diffused glow from the ceiling lights the

way to the Little Sanctuary, or to a classroom. It's a very welcoming effect.

In short, we feel that skylights can make the corridors and Pre-K and K-1st classrooms feel more spacious and open, as well as brighter, for an extremely minimal amount of money. To this point, skylights in schools have been found to be positively and significantly correlated to better student performance in several studies (I can provide stats if needed). It's a big design "bang for the buck!"

What's "Green" about a Skylight, Exactly?

Artificial lighting is one of the largest sources of energy consumption in commercial applications. On average, artificial lighting accounts for 40% of the building's total energy usage. Electric lights emit more heat than the same amount of natural daylight, so during the warmer months, the air conditioning system has to work harder and needs to be sized for the added load. Skylights naturally reduce your HVAC load because they typically provide less heat than electric lighting. With proper design, the cost of skylights is often paid back in less than two years. This is because high visible light transmittance skylights allow artificial lighting to be turned off on average of 70% - 80% of the time.

This means that they can cut down emissions and the need for electric lighting naturally. Daylighting reduces energy costs and consumption.

The skylights we selected have superior visible light transmittance AND good thermal values. They are designed with thermal breaks and weep systems to maximize energy efficiency, making them ideal for our application at WUU.

Don't Skylights Leak?

The skylights of the past usually did. However, the cracking plastic dome skylights of the 1980s have come a long way, and have now been designed with fewer components (read: pieces and parts that allow water in), frames that are continuously welded to be as continuous as possible, and high-efficiency, extremely strong glass, which prevents cracking (opportunities for water to get in). VELUX, the brand we specified, even offers "No Leak" warranties on their skylights (when installed per the manufacturer's instructions, which we certainly will detail). They can even be installed completely flat!

What about Solar Heat Gain, or Visual Glare?

VELUX's skylights provide improved energy efficiency – an advanced Low-E coating on the glass provides more daylight and better heat control than any other glass previously offered. Their solar heat gain coefficient (SHGC) is comparable to those of a typical window we'll be using elsewhere at WUU. The result is year-round comfort and energy savings.

Additionally, our skylights will be installed on low-slope roofs, so the shaft from the top of the skylight to the ceiling height will be, at a minimum, 4 feet deep, which means direct sunlight will enter the space, if at all, only for only a few minutes a day. In other words, you'll have all of the benefits of **indirect** daylight without glare or heat gain associated with **direct** sunlight.

In the case of needing the classroom/meeting spaces very dark for projection screen presentations, blinds can be factory-installed to control the amount of light and heat that enters the space. These can be manual (a pole is used to turn the blinds), electric (remote controlled), or even solar powered blinds that can operate utilizing only the power of the sun, with no wiring required.

While I recommend blinds, if they are not the desired solution, another option is to have white laminated glass, which will provide diffused lighting all of the time. This 100% haze factor would provide diffused lighting with no glare possible. High levels of visible light transmittance are maintained, but that light is spread evenly throughout the space.”

With Kristin's analysis, the Design Build Team made its decision to say Yes to the Skylights, and move on to the next items on the agenda. Thanks to the hard work of the team: Roger Guernsey, chair; Nan Piland, acting chair (while Roger is on vacation), Sally Fisk, Dave Neiman, and Franz Gross. Lola Warren and Les Solomon both ex-officio.

Les Solomon
Chair, Building Our Future

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