Let there be light. And lower energy costs and privacy and security.

Daylighting improves worker and student performance, reduces energy consumption and supports sustainable design

Daylight causes flowers to bloom, animals to emerge from hibernation and supports all of life on this planet, yet Americans on average spend 80 to 90 percent of their time out of the sun. We have a natural need for daylight, yet we spend an unnatural amount indoors.

Indeed, the relationship between daylight and mood, attitude and performance is well documented. According to Electrical Construction & Maintenance Magazine, "The natural light, better air quality and other benefits associated with green building have been credited with improved employee and student health, comfort and productivity[i]. But this is just one of the many reasons more architects and designers are looking at ways to improve daylighting in commercial and public space.

Better access to daylight helps lower energy costs, support sustainable design and can play a significant role in U.S. Green Building Council LEED certification (leadership in energy & environmental design). And with the right daylighting products, architects can also enhance the privacy, physical security and overall ambience of a space.

All light is not created equal

Experts in psychology, sustainability, Feng Shui, design, and worker performance consistently agree that daylighting is preferred to virtually any other form of light. The benefits of natural light are many:

Worker Performance: From a Feng Shui perspective, choosing the light right is extremely important. Jill Lander, a Feng Shui consultant, says "Lighting has a great impact on the well being and productivity of any space. For example, when we are exposed to areas which are either too harsh or too dimly lit, lack of creativity may arise and we could be prone to headaches and confusion."[ii] Similarly, the Lighting Research Center states that, and that there is "a small but statistically significant improvement in task performance where windows are present."

Energy Efficiency – Consider that buildings consume approximately 37 percent of the energy and 68 percent of the electricity produced in the U.S. annually[iii], and the need for a well-thought daylighting strategy becomes, well, plain as day.

The Energy Center of Wisconsin conducted an experiment at the Energy Resource Station in Ankeny, Iowa to see if cooling energy could be saved using daylighting design. The results? The lighting and HVAC operating cost savings for the high-performance rooms were considerable, and represented a savings of more than 20 percent on operating costs of about $1.13 per square foot[iv].

GLASS BLOCK & LEED CERTIFICATION

Glass block can contribute to the following credits for USGBC LEED Certification. For more specific ways glass block can help your LEED project, see the "Glass Block & LEED" whitepaper on www.possibilitiesbegin.com.

Energy & Atmosphere

- *Prerequisite 2: Minimum Energy Performance*
- *Credit 1: Optimize Energy Performance*

Materials & Resources

- *Credits 2.1 and 2.2: Construction Waste Management*
- *Credits 3.1 and 3.2: Resource Reuse*
- *Credits 5.1 and 5.2: Regional Materials*

Indoor Environmental Quality

- *Credit 4: Low Emitting Materials*
- *Credit 8: Daylight and Views*

Innovation & Design

- *Credit 1 – up to three points*

Sustainable Design – The LEED® (Leadership in Energy & Environmental Design) Green Building Rating System is the nationally accepted benchmark for the design and construction of high performance green buildings. While the use of no single construction material can earn LEED® points, daylighting and daylighting products can be part of an overall strategy to earn points in several categories.

The right product for the right light

Daylighting approaches are virtually limitless, making choosing the right materials to enhance daylighting a daunting task. The architects Pittsburgh Corning has spoken with tell us they seek more than functionality. They want options that offer versatile designs, long-term durability and performance, fire-resistance, security, sound insulation, and can contribute to the overall aesthetics of a space. And, if possible, they'd like to know the product or approach is proven.

For decades, Pittsburgh Corning has helped architects achieve successful daylighting strategies through the use of its iconic glass block. Today, with new advances in pre-fabricated and custom engineered architectural systems, Pittsburgh Corning is offering a complete line of daylighting possibilities – those limited only by the imagination.

Pittsburgh Corning's latest approach to working with architects provides extensive customization and fabrication options that can address the unique requirements for unique projects. We also let architects capitalize on the possibilities and functionality that glass block has long offered, such as:

- Glare resistance – Glass block's horizontal joints produce a louvering effect, which helps reduce light transmission from the higher sun.

- Impact resistance – Glass blocks are inherently stronger than conventional glass because of the thickness of the spaces and the material that binds the blocks together. As a result, glass blocks are more difficult to break and thus provide resistance and deterrence to force.

- Noise reduction – The sound-reducing characteristics of glass block are most notable in the hollow block with its partial vacuum. With thick-faced and solid block, the STC is 48 and 53, respectively. This compares with about 29 for flat sheet glass, 45 for single wythe 4-inch brick wall and 50 for a 6-inch solid c.m.u. wall system.

- Fire resistance – All UL fire-rated glass block on the market meets a 45-minute or longer duration test. Thick faced and solid units are available with ratings of 60 minutes and 90 minutes.

For more information about Pittsburgh Corning's glass block products and architectural systems, go to www.possibilitiesbegin.com.

[i] "Seeing Green," Beck Ireland, Feb. 1, 2008

[ii] *RFP Magazine,* "Integrating Stress Management into Office Design," March 2007

[iii] US Green Buildings Council

[iv] www.daylighting.org