

4 Ways to Get an A+ From Your Clients in the Education Market

KALWALL®
high performance translucent building systems

Metea Valley High School | Aurora, IL | Architect: DLR Group | Photography: James Steinkamp



*Continually, though silently,
a school building tells students
who they are and how they
should think about the world.
It can help to manufacture rote
obedience or independent
activity; it can create high self-
confidence or low self-esteem.*

- Alison Lurie,
The Message of the Schoolroom

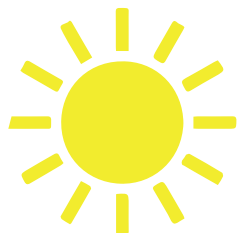
Architects and educators are constantly working together to find ways to enhance the learning experience in schools and classrooms. Conferences are dedicated to the issue, with trends emerging and best practices improving as more data is collected.

It's about more than doing what's right for the students, it's what they've come to expect. A survey by the Association of University Directors of Estates showed that 61% of students viewed facilities as crucial to making their college decision¹. There's increasing demand for modernized, yet affordable housing and Science, Technology, Engineering and Math (STEM) facilities.

But there is also caution on behalf of the schools and universities. A mix of economic factors and declining enrollment at some institutions means clients are looking to stretch their budgets. Which means it's up to the architects and engineers to provide unique solutions.

Here are four ways to ensure you are designing a space that not only provides optimal environments for learning, but also satisfies budget concerns.

¹<https://www.aude.ac.uk/>



museum-quality daylight™



productivity

There is one constant when designing buildings for learning: natural daylight. Studies have shown that introducing natural daylight into a classroom will increase performance. A widely-used and highly-respected study by the Hescong Mahone Group showed students in classrooms with the most daylighting progressed 20 percent faster on math tests and 26 percent faster on reading tests over a year period than those with the least daylighting. The value of daylighting has since been vetted in numerous scientific studies².

In its *Advanced Energy Design Guide for K-12 School Buildings*, the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) describes good daylighting as seeking “the right balance between enough daylight and too much sunlight, which can be a source of glare and excessive heat gain.” Introducing natural daylight without glare or excessive heat is a foundational part of creating a great learning space.

A+ Architecture

Here are three ways to introduce natural daylight into a space and put you at the head of the class.

I. Skylights and Skyroofs® in Common Areas

Well-designed skylights and skyroofs control natural daylight in common areas and even classrooms, helping improve the moods of the people in those areas. They serve as a great way to bring natural light to hallways and make dining areas and other gathering spots more welcoming.

II. Window Replacements in the Classroom

Replacing existing windows in older buildings with an updated curtain wall system creates a more productive space by eliminating the need for blinds, curtains or solar control. A new façade reduces the need for artificial lighting by allowing floor to ceiling diffused and healthy daylight to flood the interior, while providing privacy for students and removing any distractions.

²<http://h-m-g.com/Projects/daylighting/projects-PIER.htm>

EXTRA CREDIT

Daylight modeling allows architects to achieve control by bringing science into the art of daylighting. Revealing the pattern of daylight within any building through 3D simulation software removes the design mystery. Significant savings and increased energy efficiency can be achieved by reaching peak daylighting autonomy, which measures a person's ability to work in a space without the use of artificial light.

III. Passive vs. Active Daylighting

We all agree that introducing natural daylight into a building is healthier for the people inside, but how that is done differs. Harvesting natural daylight through translucent panels can maximize its ability to diffuse light further inside a building. Glazing will also bring daylight into a building, but requires mechanical ways to control, such as shades, blinds or screens – all at an additional cost. Plus, once you start implementing shades, daylighting is lost along with possible building credits for spatial daylighting autonomy (SDA). Passive daylighting with translucent panels maintains optimal SDA values.

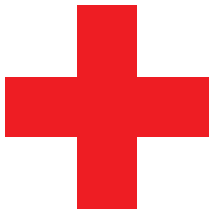


Hunters Point High School | New York City, NY

Architect: FXFowle | Photography: David Sunderburg | ESTO



energy savings



comfort + wellness

Energy efficiency isn't just a budget concern. As institutions that are shaping the minds of our future, many schools are rightfully focused on how sustainable design will impact that future and create healthier environments for learning. Daylighting, for example, is a core design strategy for zero energy buildings. By eliminating uncontrolled sunlight, reducing the reliance on artificial light and introducing diffuse natural daylight, architects are also able to provide building occupants with circadian health benefits.

“When enhanced student performance, alertness, and attention are factored in along with the other non-energy benefits, daylighting is still an excellent investment for school districts and should be an essential element of all zero energy schools” ASHRAE says in its Advanced Energy Design Guide for K-12 School Buildings³.

A+ Architecture

Here are three items to consider if you want to impress on energy efficiency.

I. Solar Heat Gain

Designing the look and feel of a building's daylighting is a delicate balance of considerations. Primary among them is the solar heat gain coefficient (SHGC) of a fenestration system, including wall systems and skylights. It's not about choosing the product with the highest levels of visible light transmittance but making an impact with the ideal amount of usable light, while introducing a low SHGC to prevent excessive heat buildup. High solar heat gain can lead to additional cooling costs.

II. HVAC

As the operating budgets of school systems get tighter every year, the ability to find savings through energy efficiency is paramount. According to the Arlington-based Center for Climate and Energy Solutions, 41% of total energy usage is from HVAC. Introducing a thoughtful daylighting design can drastically reduce HVAC costs by creating the right thermal envelope. Ensuring air quality through control of temperature and relative humidity is also critically important.

³<https://www.ashrae.org/>

EXTRA CREDIT

Kalwall's ability to tailor visible light transmission (VLT), thermal insulation values and solar heat gain control properties allows specifiers to customize properties based on light level targets, climate zones and building type, as well as building orientation and microclimatic considerations. With a wide range of insulation packages, from 0.23 to 0.05 U (1.25 to 0.28 Wm²k), no other fenestration product performs better at reducing HVAC heating and cooling loads while harvesting daylight and managing solar gain.

According to studies by the U.S. Environmental Protection Agency, indoor levels of air pollutants may be two to five times higher than outdoor levels. While a high percentage of glass across a building's surface can dramatically reduce thermal performance, thoughtfully including operable windows within another fenestration system can provide natural ventilation to indoor spaces.

III. Sustainability

Sustainable practices come in all forms, whether it is a stated practice of turning off lights when the room isn't occupied or implementing lighting designs with sensors. Introducing diffuse natural daylight through wall systems or skylights relieves the burden on artificial lighting through a building, including classrooms and hallways. "Properly designed daylighting uses sunlight to offset electrical lighting loads, save energy and reduce cooling loads," ASHRAE says.



Dunbar High School | Washington, DC

Architect: Perkins Eastman + Moody Nolan | Photography: Joseph Romeo

Kalwall Case Study

Georgia Tech's Carbon Neutral Energy Solutions Laboratory

Atlanta, Georgia

KALWALL SPECIFICATION:

Panel: 2.75" | 70 mm

Grid core: reverse shoji

Exterior FRP: crystal

Interior FRP: white

System finish: aluminum #79

U-Value: 0.14 | 0.78 Wm²K

Solar Heat Gain Coefficient: 0.17

Visible Light Transmission: 12%

Georgia Tech's Carbon Neutral Energy Solutions Laboratory (CNES) in Atlanta, Georgia, is one of the few buildings in the country that approaches net zero carbon emissions and has been hailed for setting a new standard in sustainable design.

The impressive curtain wall of Kalwall panels floods the main portion of the building in diffuse natural light, integrating perfectly with the goals of the CNES because of its industry best solar heat gain control. It is one reason the building achieved LEED Platinum certification.

The system also allows for simplicity by doing away with the needs for blinds, curtains or solar control. Even on cloudy days, Kalwall allows for ample daylighting, which means less artificial lighting. And, because Kalwall is highly insulating, energy costs are reduced.



Architecture: HDR Architecture | Photography: Jonathan Hillyer



safety + security

Creating a safe environment for students is essential to helping young people feel welcome and motivated to learn. Decades of tragic violence in and around school campuses has made protecting students and teachers with purposeful architecture an important consideration.

Increasing the level of safety in our school buildings can consist of measures that include utilizing blast or windborne debris resistant materials, well-designed entry and exit points, and increased lighting in common areas and walkways.

A+ Architecture

Here are three ways to introduce safety to your design.



windborne debris
protection

I. Line of sight protection

Choosing materials that protect students from prying eyes is key, especially in recreation areas or locker rooms. While vision glazing provides natural daylight and views to the outside, it also leaves students exposed. Translucent materials, on the other hand, provide the benefit of both daylight and line of sight protection.

II. Windborne debris/hurricane-force winds

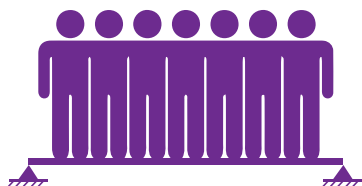
Protection from natural disaster is a concern, particularly in regions where hurricanes and tornadoes are seasonal threats. Classroom and recreational areas, such as gymnasiums, are spaces that benefit from natural daylight, but may require windborne debris protection.

III. Canopies

Canopies and walkways are ideal for linking buildings or providing protection from the elements at entries and drop off areas. They also provide a startling first impression as an entryway. The superior structural integrity of translucent sandwich panels stands up to hurricane-force winds, high snow loads and meets the most demanding code requirements.

EXTRA CREDIT

Unlike glass and polycarbonate systems, Kalwall skylights, skyroofs and canopies not only bathe spaces in diffuse usable light and stand up to the elements, they are shatterproof, offer OSHA fall-through compliance (man-safe), low maintenance and easy cleaning, in addition to masking rooftop debris and bird droppings.



structural performance

Among its top five green building trends for 2017, the U.S. Green Building Council named a more focused effort on renovating existing buildings. That focus has not changed and is a key consideration for many school and universities who may have facilities dating back decades or even centuries.

When undertaking renovations for these clients, however, it is important to keep in mind that classes continue to run. Being able to complete an installation quickly, such as during summer break, can make a huge difference.

A+ Architecture

Here are three ways to help schools stay on budget and on schedule.



lightweight materials

I. Turning old spaces into vibrant learning areas

Renovating an existing building can turn the drab and dull into a vibrant space filled with diffuse natural daylight. Adding an atrium or remodeling a lobby creates spaces in schools that inspire. Our expansive skyroof systems have been used to dramatically introduce light, even transforming an underused outdoor space into a stunning media center.

II. Lightweight material

Lightweight materials are easy to work into existing structures. As energy efficiency demands grow and more insulating materials are specified, the weight of double- or triple-glazing can often exceed the structural limits of the existing substrate that was designed to be load-bearing for old glass and technology. This causes major headaches with more disruption, wasted time and additional cost needed for support or stabilization. The use of lightweight materials that are easy to handle means a reduction in manpower and less preparation for quick and easy recladding over any existing building skeleton.

EXTRA CREDIT

Any prefabrication or pre-assembly which can be completed at the factory is ideal. The ability to keep materials off-site and minimize the amount of preparation needed upon delivery can be key when working to meet installation requirements. Kalwall panels are factory unitized, and its strategic partner, Structures Unlimited Inc., offers a turnkey solution from design and engineering through installation.

III. Turnkey solutions

Having a single-source partner means having a reliable team member that understands the vision from the very beginning and can reduce project management needs. Rigorous building codes for fire safety, hurricane protection and more are driving the need for team members who understand every stage of a project. Finally, in a time when the building industry is experiencing worldwide labor shortages, single-source partners ensure the project is installed faster because the labor is already in place and you don't need to coordinate different trades.



Roosevelt Elementary School | Elkhart, IN

Architect: Fanning/Howey Associates, Inc. | Photography: Bill Lempke

Kalwall Case Study

Featherstone High School

London, UK

KALWALL SPECIFICATION:

Panel: 4" | 100mm

Grid core: shoji

Exterior FRP: crystal

Interior FRP: white

System finish: bronze #85

U-Value: 0.08 | 0.45 Wm²K

Solar Heat Gain Coefficient: 0.04

Visible Light Transmission: 5%

Featherstone High School's 1958 concrete framed building, located in Southall, Middlesex, was failing due to decay and ingress of water, and needed structural stabilization. The renovation required the removal of the old concrete spandrel panels and repairs to the concrete structure. Kalwall panels were installed and supported on a new steel frame, which was added to extend the floor space.

The two fully-replaced elevations are a perfect example of how Kalwall can be used for the refurbishment of an older building with a failing curtain wall. The new facades allow floor to ceiling diffused and healthy daylight to flood the interior, while providing privacy for students and removing any distractions.

The build was completed in two phases over the course of a year while the school continued to operate. Time and money were saved by using Kalwall Unitized Curtain Walls that are assembled and glazed at the factory. Once delivered to the site, these large units can be installed rapidly, allowing the building to be enclosed quickly and interior work to commence earlier. The ability to keep the school functioning while the work was completed meant minimum disruption to staff and students.



Architecture: DSP Architecture | Photography: Alex Upton

KALWALL®

high performance translucent building systems

Want to know more
about using Kalwall
in your project? We'd
love to talk to you.

Please call us at
+1 603 627 3861

1111 Candia Road | PO Box 237 | Manchester, NH 03105 USA | +1 603 627 3861 | KALWALL.COM | © 2019 Kalwall Corporation

