

THE KALWALL® JOURNAL

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Since 1955 **Kalwall** WHAT'S NEWS

Adelphia University in Garden City, New York, is a Building of America Gold Medal Award recipient. Architect **Cannon Design** incorporated a Kalwall Translucent Wall System into the renovation and expansion of two historic campus buildings, consolidating previously dispersed academic departments and enlivening the campus' east side.

According to *The Guardian*, "**Northumbria University** is one of the leading lights in the UK higher education arena." The School of Design, Law and Business, on the university's City Campus East, is by the **Atkins Design Studio** and includes extensive daylighting from a translucent Kalwall Wall System.

The May 2010 *Architect* describes how light filters into the **Merchants Millpond State Park Visitors Center** in Gatesville, North Carolina, through translucent Kalwall clerestory windows. The **Frank Harmon Architect**-designed building is a LEED® Gold candidate.

The New Hampshire Chapter of the American Institute of Architects awarded **UK Architects** of Hanover, New Hampshire, an Honor Award for the **Hanover Co-op Community Market**. A storefront system topped with Kalwall panels carries diffuse light deep into the store. Daylight harvesters measure the amount of light from the skylights and windows, and then dim artificial lighting accordingly.

Formerly the powerhouse of Sears Roebuck and Company's Chicago campus, the **Charles H. Shaw Technology and Learning Center: Henry Ford Academy Power House High** is a green charter school. "Architects chose to replace the aging glass panels in the ribbon of skylight of the great hall with translucent panels from Kalwall," according to the February 2010 *Architect*. "The panels' 50% light transmission reduces glare and heat gain into the space while also refracting the light to better diffuse [it] through the entire double-height room. They also improve the U-value and efficiency of the skylight significantly over the original single-pane glass."

The project has achieved LEED® Platinum, received the 2009 Richard H. Driehaus Foundation Preservation Award for Project of the Year, and *Midwest Construction* named it the K-12 Education Project of the Year. Builder **Pepper Construction** received an Aon Build America Award.

ARQ Architects is the architect of **Potter League for Animals**, another LEED® Gold building for Kalwall. The new adoption center in Middletown, Rhode Island, houses expanded animal care programs.



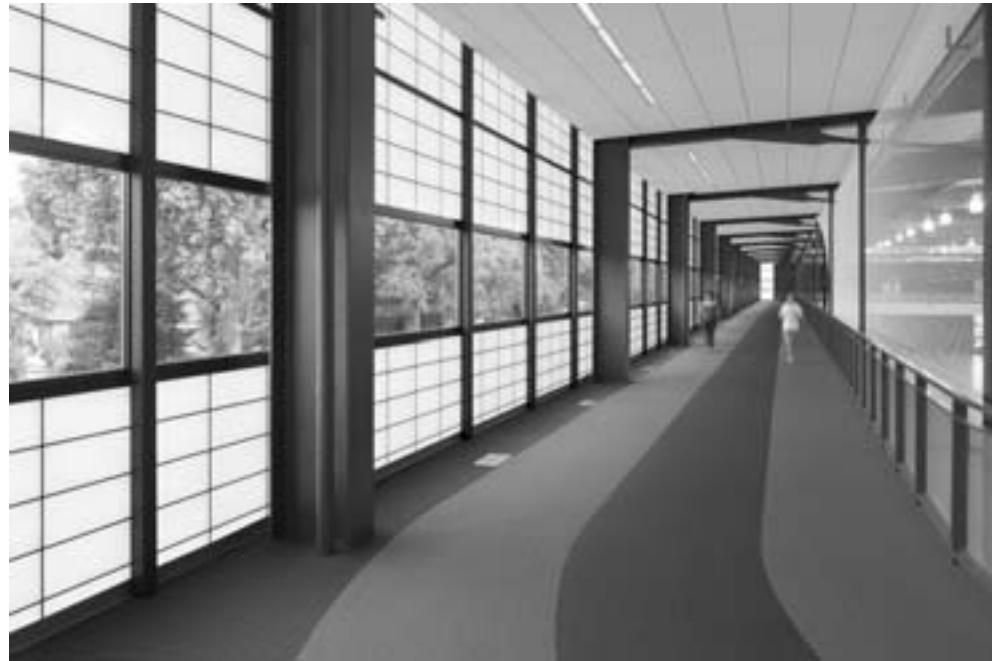
For the latest news on daylighting become a fan of Kalwall on Facebook.

CALIFORNIA STATE UNIVERSITY, CHICO EARNS LEED® SILVER RATING

Not long ago, students at the Chico campus of California State University had to dodge other athletic activities within the increasingly cramped confines of Acker Gymnasium. Today, the Wildcat Recreation Center gives an average 2,000 users per day a lot more room to move: 113,000 square feet, arranged over two floors, and another 16,000 outside.

The main entrance leads directly into a two-story, daylight-filled gallery that is the heart of the center and connects fitness areas, multi-purpose rooms, the gymnasium, an indoor track, a climbing wall, locker rooms, and offices. A forecourt leads to an outdoor pool, heated spa, and sun deck. Designed as a sort of "campus living room", emphasizing interaction in a relaxed atmosphere, the central space offers views of the center's activities and social areas while also providing more private spots for stretching and cardio exercise as well as reading and laptop work.

Contributing to the open, spacious feeling is well-balanced daylight created by various configurations of Kalwall translucent systems. In key areas, such as a second-floor exercise room and the 1/8-mile-long indoor running track, glare-free daylight creates a well balanced, comfortable space while furnishing energy saving insulation ($U = .14$ or 0.78 Wm^2). The unique translucent properties of Kalwall deliver controlled, shadowless, glare-free daylight deep into the space with



just a 15% transmission. This keeps heating and cooling costs down and reduces the amount of electricity needed for lighting.

Kalwall also demonstrates its superior design flexibility at Wildcat by incorporating optional eye-level clear glass into its translucent systems for views of the natural environment outdoors. The translucent properties create a degree of privacy without the need for shades or curtains while still revealing the action going on inside.

Combined with the center's solar thermal panels, high efficiency boilers, water conservation measures, and use of sustainable materials, Kalwall helps

to create a green building expected to garner a LEED®-NC Silver rating. The Wildcat Recreation Center's design also earned Sasaki Associates, Inc., of San Francisco, California, an Innovative Architecture and Design Award from *Recreation Management*. Judge Dave Larson called the center "a great piece of architecture regardless of its use" that "holds together as one complete design thought and not a series of arbitrary forms." Frank Beans noted the center's "transparent quality, not just on the exterior wall but as it displays the variety of activities." Daylighting with translucent Kalwall helps "bring the natural light deeper into the spaces."

SCHOOL LOOKS SMART WITH A 5,000- SQUARE-FOOT KALWALL SKYROOF™



For years, Kalwall has been rescuing aging school buildings, replacing old, leaky classroom windows with Kalwall Window Replacement Systems. School districts avoid the capital outlay for entirely new buildings and the highly insulating Kalwall panels provide natural daylight while minimizing solar gain and heat loss. This reduces operating costs for lighting, heating and air conditioning. But one high school in Gibsonville, North Carolina, was too far gone even for Kalwall: the 1950s-built structure had burned to the ground. The Guilford County Schools needed to save wherever possible on a new, multi-million-dollar school that could also inspire students and become the pride of the community.

Again, Kalwall was the clear choice, this time in the form of a dazzling, 4,837-square-foot ridge roof Skyroof™. This huge, translucent crown atop Eastern Guilford High School's two-

E. GUILFORD continued on page 4

KALWALL HURRICANE-RESISTANT WINDOWS CERTIFIED TO TAS AND ASTM STANDARDS

Kalwall translucent fenestration systems have long been known for their outstanding structural integrity. The unique Kalwall system has been certified for hurricane resistance for many years, but the newly introduced Kalwall E-Series Windows, which allow integra-



tion of clear vision glass with translucent panels in the unitized Curtainwall System, are certified to TAS 201, 202, and 203 as well as ASTM E1886 and E1996 in fixed and project-out sash models. Designers get all the benefits of Kalwall's glare-free, controlled

daylighting and high insulating values plus clear vision to the outside, an important component of LEED® certification. The clear glazing is five feet wide and can be up to three feet high, offering a variety of options to designers. Kalwall is the only translucent system meeting these new specifications.

Additionally, when properly installed, E-Series Windows meet ADA (Americans with Disabilities Act) and UFAS (Uniform Federal Accessibility Standard) criteria. For example, operable windows should be installed so as to have an unimpeded approach. The window takes less than 5 lbs. (2.2 kg) of force to open and close and the

single window handle is a comfortably curved, open-loop design that can be effortlessly operated without rotation of the hand.

All Kalwall systems are based on a structural composite sandwich panel



formed by permanently bonding, under heat and pressure, specially formulated, fiberglass-reinforced translucent faces to a grid core of interlocked, structural aluminum/composite, thermally broken "I" beams. Kalwall is exceptional at reducing heating/cooling loss and controlling solar heat gain to deliver significant savings in HVAC costs and is also maintenance-free and highly vandal-resistant.

On both cloudy and bright days, all Kalwall systems have the unique ability to fill a space with diffused, natural daylight. Millions of prismatic glass fibers imbedded in the faces of Kalwall refracts daylight in a balanced, diffuse wash of usable light; even on sunny days, there is no harsh glare. The quality of light is truly exceptional, especially where computer screens or video monitors are used. Shades, curtains, and light shelves can be eliminated.



LIGHTING UP THE ARMY

The U.S. Army's new Green Building Strategy is illustrated in a recently completed Military Center that uses state-of-the-art technology to maximize daylighting while minimizing energy loss and running costs. The new Greenlief Armed Forces Reserve Center (AFRC) in Hastings, Nebraska, has been designed and built to take advantage of all the latest developments in daylighting and energy-saving technology.



This not only provides the troops with the very best interior natural lighting but also helps reduce running costs. To do this as energy efficiently as possible and in accordance with the U.S. Army's new Green Building Strategy, a dramatic new way of improving the insulation has been achieved by introducing Nanogel® aerogel within the glazing.

Completed in April 2009, the 59,000-square-foot center provides assembly halls, classrooms, and repair bays for the local National Guard and Army Reserve. Architects RDG Planning & Design were asked to draft a modern facility with as much natural daylight as possible. To achieve this, they designed the building to include extensive areas of glazing for the assembly, main corridors, and repair centers. However, although this would let in

plenty of light, it would also admit unwanted glare and heat from solar gain. There was also the problem of insulation and energy saving in temperatures that ranged from -30°F in winter to over 100°F in summer. To help solve this problem, RDG turned to the daylighting experts at Kalwall Corporation.

At the architects' request, the Kalwall

methodology used daylight factor calculations, which assume an overcast sky. With dynamic daylight simulation (using Department of Energy weather tapes for the site location), Kalwall was able to show that the intended design had more than 25 fc in the space.

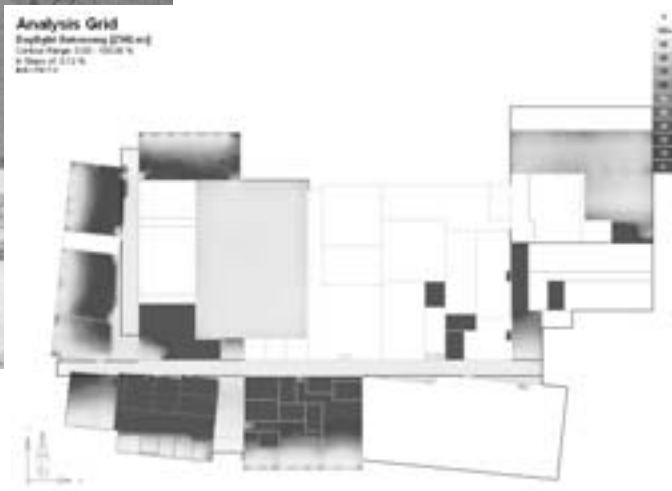
As a result, the architect could understand what light levels he would realize from internal daylight harvesting, borrowing light from top-lit corridors into the adjacent room through clear glazing. "To me, it represents the 'living building' idea," says RDG's Matthew Knutson. "It's alive!" Kalwall's translucent composite structure perfectly diffuses sunlight into museum-quality daylight™ so that shadows, glare, and hotspots are all eliminated.

aerogel, a translucent form of silica aerogel made by Cabot Corporation, comprises 95% air and is the world's lightest and best insulating solid material, which greatly improves the insulation of a variety of fenestration systems. When used in the Kalwall Translucent Wall and Skyroof™ systems, it increased the insulation value to R-20 (U=.05 Btu/hr/ft²/°F or 0.28 W/m²K), better than many solid walls!

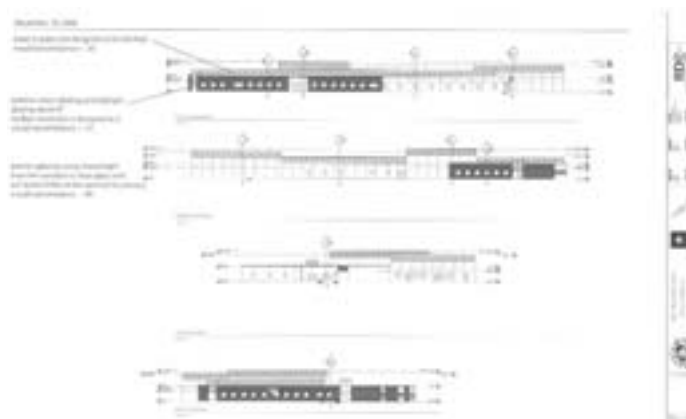
The National Guard has been very satisfied with the results. Gene Macapinlac, the project architect, explains, "We have had great feedback from both the soldiers and local community. They tell us the center is bright, open, and welcoming, providing an excellent space in which to work and train. The Greenlief AFRC, we believe, represents a new standard in Training Center design and function. It supports the U.S. Army's commitment to reducing energy consumption and providing sustainable facilities. The decision to use Kalwall+ Nanogel® translucent windows has reduced their daily use of overhead lighting and promises to be a key component in reducing their year-round HVAC costs."

The U.S. Army is well known for its innovations in defense technology but not usually for its innovations in architecture. Using the Kalwall+ Nanogel system in this facility means the troops get to enjoy all the benefits that natural daylight brings to their health, well-being, and productivity. At the same time, the facility is saving money and energy and, importantly, using materials that are environmentally friendly and recyclable because Kalwall is 100% recyclable by weight and Nanogel aerogel is a Silver Cradle to Cradle® certified material by MBDC.

engineering team generated a daylighting model of the proposed building. Taking into consideration façade orientation as well as room height, size and use, several studies helped define the optimum positioning and size of the translucent windows and skylights to meet the Army's daylighting objectives. The primary mission for this daylight study was to show compliance with the minimum LEED® requirement of 25 foot-candles (fc) in 70% of spaces that are regularly occupied. The traditional



Although the Kalwall system itself is highly insulating, the architects agreed that this could be dramatically improved by introducing Nanogel insulation within the system to help combat the extreme temperatures. Nanogel



NOTHING OLD SCHOOL ABOUT DAYLIGHTING METEA VALLEY HIGH



From the beginning, architects DLR Group designed Metea Valley High School in Aurora, Illinois, to light up education, both literally and figuratively. The sprawling campus with room for 3,000 students is broken down into a handful of more intimate, human-scale learning spaces, called “think tanks”, where interaction with faculty is encouraged. Two interior courtyards, open to the sky, offer fresh air during free periods. Shaped a bit like a bow tie, Metea combines three concepts – mind, in the midsection, and body and soul on either end – to offer students a truly 21st-century school experience.

Lighting up Metea in the literal sense comes largely from the extensive use of Kalwall Translucent Curtainwall throughout the school. Upon coming through the school's main entrance, visitors are struck by the cheerful, airy, daylighted lobby. Controlled daylight also pours into the school's innermost areas, traditionally a structure's darkest, from the courtyards. Kalwall introduces daylight into the vast commons area that serves as the students' lunchroom. In the gymnasium, Kalwall's shadowless, glare-free light enhances ball handling in team events; sunlight does not glance off the shiny court surface. The diffuse-light-transmitting panels also prevent glare off computer screens, easing eyestrain.

Translucent Kalwall admits so much controlled daylight, the school's exterior light harvesting system, which monitors indoor light levels, can actually turn off electric lights in public spaces automatically when they are not needed. The harvesting system alone is expected to save the district over \$21,000 a year in operational costs with a payback of under seven years. And in a dramatic demonstration of Kalwall's superb flexibility, the design includes occasional, narrow, horizontal runs of clear glass – some serving as clerestories – adding visual interest as well as clear views to the outside.

Illinois can get very cold in the winter and quite hot in the summer. At 464,000 square feet, Metea could have been an energy-consumption nightmare, adding significantly to its \$125 million total project cost. But a number of innovations – utilizing Kalwall, demand control ventilation, energy recovery wheels, high-efficiency boilers – will



In addition to the regular rectangular panel, DLR Group chose to include a unique, design variation on the standard shoji or square grid layouts of Kalwall Translucent Systems. Verti-Kal™ panels incorporate internal, continuous supports to provide a vertical emphasis.



The foundation of the academic center begins with the media center. With an emphasis on visual connection and an abundance of natural light, the media center establishes the building's overall spirit of light and circulation. The circulation desk marks the exact midpoint of the building.



The central location of the enclosed courtyards establishes the freedom for students to move outdoors, as well as through the adjacent media center, locker bays, and student resource rooms during free periods while still maintaining a secure school environment.

maintaining a secure school environment.

unique, design variation on the standard shoji or square grid layouts of Kalwall Translucent Systems. The panels incorporate internal, continuous supports to provide a vertical emphasis. As with all Kalwall Translucent Systems, Verti-Kal distributes diffused daylight throughout the school, even on cloudy days, drastically reducing the amount of artificial lighting required and eliminating shadows and glare as well as stark contrasts of light and shade. Verti-Kal can be supplied in panels up to 5 ft. (1.5 m) wide and up to 12 ft. (3.6 m) high, minimizing the number of joints. The unique format creates an entirely different look while still taking advantage of the most highly insulating, diffuse-light-transmitting, structural composite technology.

save Indian Prairie School District 204, the state's fifth largest, thousands of utility dollars annually and pay for themselves in just a few years. In fact, the building's design is targeted to be 19 percent more efficient than ASHRAE 90.1 requires.

Highly insulating Kalwall helps here, too, keeping temperature extremes outside and lessening the need for and cost of heating and cooling. And of course, any school system must concern itself with maintenance costs, and Kalwall excels there as well. The panels are vandal-resistant and self-cleaning; dirt simply washes off with each rainfall.

At Metea Valley High School, the use of two different styles of Kalwall vividly demonstrates its wide range of design options. In addition to the regular rectangular panel, DLR Group chose to include Verti-Kal™, a

After dark, the diffuse, translucent properties of Kalwall contain interior lighting and prevent direct-beam light pollution. Instead, the exterior surface of the building simply glows beautifully, boosting Metea Valley High School's aesthetics and welcoming both students and the surrounding community to a true masterpiece of daylighting.



The large commons area serves as the students' lunchroom during the day and is used for a variety of activities both during and after school. The commons becomes a pre-function space for events held in the 2,400-person capacity gymnasium.

story central atrium allows controlled, natural daylight to flood the space, significantly trimming the expense of artificial lighting. The atrium, the very heart of the school, pumps roughly 1,200 students into the cafeteria, auditorium, main lobby, gymnasium, concession area, school store, and science labs that surround it.

“...Outstanding Design Award from American School & University...”

And in the atrium itself is a career center and more dining space, as well as a cyber café where the Kalwall translucent panels eliminate glare from

computer screens and reduce eyestrain. In addition to the Skyroof, a 1,299-square-foot Kalwall shed canopy shelters the main entrance from sun and rain.

The overall effect was enough to win an Outstanding Design Award from *American School & University* as well as Outstanding Project 2010 recognition from *Learning By Design*. “The daylit building draws students in,” says project designer SFL+A Architects, “and immerses them in their education. The facility is designed to LEED® Silver standards.” Kalwall’s primary contribution to LEED points is in the area of “Energy and Atmosphere”, although it helps earn points in a number of categories. The panels are also lightweight – less than 2 pounds per square foot – and pre-fabricated, which helped SFL+A

design and build the entire school in fewer than 670 days.

Kalwall is also shatterproof, vandal-resistant, and self-cleaning. Any outside grime simply washes off with rainfall, saving the Guilford County Schools additional maintenance costs and thus preserving scarce education dollars. Bringing daylight into any structure offers a number of benefits, including improved health and a heightened sense of well being; in a school setting, studies have also shown measurable improvement in students’ behavior, absenteeism rates, and test scores. There is even evidence to suggest that schoolchildren take greater pride in and care of a daylighted school, a feeling that tends to filter outward into the surrounding community.

EARNED CE COMPLIANCE

Kalwall Corporation’s Building Systems are the first translucent construction products allowed to carry the CE mark. The CE mark indicates a product conforms to EC Directives and may, therefore, be traded freely within the European Union and among certain members of the European Free Trade Association.



Uniquely, Kalwall manufactures its own face sheets for these innovative, translucent, fiberglass/aluminum composite sandwich panel building systems. A special face sheet material was developed by Kalwall, which complies with European standards.

FOR BRONX HOOP SQUAD, BALL HANDLING BETTER UNDER DAYLIGHTING WITH KALWALL

Maybe it was the first-game-of-the-season excitement in the air. Maybe the College of Mount Saint Vincent men’s basketball squad was looking strong against Lehman College. Or maybe, on that November day in 2009, it was the brand new Peter Jay Sharp Athletic and Recreation Center, decked out in a Kalwall Wall Daylighting System and dedicated just hours earlier, that inspired the Dolphins to beat Lehman, 76-71.

The school was founded as the Academy of Mount Saint Vincent, a school for women on Manhattan’s Fifth Avenue, in 1847. By 1974, it was co-educational and had moved to The Bronx. When the college needed a new athletic center, Scotland-based architects RMJM chose to include Kalwall.

Highly insulating Kalwall keeps temperature extremes outside, reducing the need for and cost of heating and cooling. The controlled natural daylight Kalwall brings into the center’s gymnasium also cuts down on electricity usage, as daylight sensors automatically dim or completely turn off artificial lighting when not needed. Kalwall’s shadowless, glare-free light makes ball handling easier in team events. Glare off the shiny court surface



is eliminated. In addition, Kalwall’s sound-dampening properties keep a lid on the din of screaming fans and enthusiastic game announcers.

For the Peter Jay Sharp Athletic and Recreation Center, Kalwall was chosen also for its amazing strength-to-weight ratio and durability. Years of errant basketballs slamming into conventional windows would take their toll, but Kalwall withstands the punishment. In fact, in a toughness test, the athletic director of a different school once hurled rock-hard lacrosse balls at a Kalwall mock-up until he was more than convinced.

Kalwall is also vandal-resistant and self-cleaning; any outside grime simply washes off with rainfall, saving the college additional maintenance costs. At night, interior lighting from the gymnasium makes the exterior surface of the building glow, providing an inviting attraction that draws in students. At the same time, the diffuse, translucent properties of Kalwall eliminate direct-beam light pollution.

Be sure to visit daylightmodeling.com

We can help maximize daylighting’s contribution to your next project!