NOW .05U

Photo by Philippe Baumann

LEED
LEADERSHIP IN ENERGY & ENVIRONMENTAL DESIGN

LEED® v3 2009 Checklist

How can Kalwall contribute to green design and the LEED rating system?

- Kalwall roof systems provide solar reflectance levels sufficient to reduce urban heat islands, thus reducing air conditioning costs and lowering pollution levels.
- Eliminates direct-beam nighttime illumination from leaving the building.
- Helps achieve minimum energy performance ratings and can contribute to optimized energy performance as a highly insulated light-transmitting system.
- Kalwall contains ± 20% post-consumer/pre-consumer recycled content. A Clearspan™ Skyroof® from Structures Unlimited, Inc., can contain ± 30% post-consumer/pre-consumer recycled content.
- Kalwall can contribute to the individual occupant control of ventilation by providing operable windows in panel unit walls and window replacement systems.
- Kalwall wall and roof systems provide daylighting without direct sunlight penetration, eliminating the need for exterior shading devices and interior light shelves. Visit *DaylightModeling.com*
- Kalwall can provide line-of-sight vision glazing by incorporating fixed or operable windows in wall systems and by incorporating glass gable areas and glass clerestories in roof applications.

Kalwall is involved in many LEED-certified projects:

American Honda Corporation (Gold), Gresham, OR; **Barnard Environmental Magnet School** (Gold), New Haven, CT; **Boulder Community Hospital**, Boulder, CO; **Bowdoin College – Watson Arena (Certified)**, Brunswick, ME; **Bozeman Library**, Bozeman, MT; **Buckeye Central School (Gold)**, New Washington, OH; **Clearview Elementary School** (Gold), Hanover, PA; **Detroit Lions Headquarters and Training Facility**, Dearborn, MI; **Doyle Conservation Center** (Gold), Leominster, MA; **East Valley Bus Depot - Maintenance** (Gold), Tempe, AZ; **Eco Works at Southlake Technology Park, Phase 1**, Lenexa, KS; **element Hotel** (Gold), Lexington, MA; **EPS South East Division** (Gold), Edmonton, AB; **Harvard University's Blackstone Office** (Platinum), Cambridge, MA; **Inland Empire Utilities Agency** (Platinum), Chino, CA; **JohnsonDiversey, Inc. (Gold)**, Sturtevant, WI; **Lewis and Joan Platt East Palo Alto Family YMCA** (Gold), Palo Alto, CA; **Lexington Medical Center**, Lexington, SC; **Longwood University Student & Wellness Center** (Gold), Farmville, VA; **JW Marriott Resort (Certified)**, San Antonio, TX; **Miley Achievement Center**, Las Vegas, NV; **Navy Federal Credit Union** (Gold), Pensacola, FL; **Missoula Federal Credit Union (Platinum)**, Missoula, MT; **Monsanto Company's Nidus Center for Scientific Enterprise** (Gold), Creve Coeur, MO; **North Spokane YMCA (Gold)**, Spokane, WA; **OSHA Lab Science Building**, Salt Lake City, UT; **Patagonia Distribution Center** (Gold), Reno, NV; **Pratt & Whitney Building "G" (Silver)**, East Hartford, CT; **Renaissance Academy (Gold)**, Virginia Beach, VA; **Shangri La Botanical Gardens** (Platinum), Orange, TX; **Sidwell Friends School** (Platinum), Bethesda, MD; **Steelcase Wood Furniture Manufacturing Plant**, Caledonia, MI; **The School of the Future** (Gold), Philadelphia, PA; **USAF Physical Fitness Center**, Barksdale AFB, LA; **Weather Forecast Office**, Caribou, ME; **Yale Sculpture Gallery** (Platinum), New Haven, CT and more.

Since 1955 Kalwall®

Structures Unlimited, Inc.
Energy-Efficient Skylights & Pool Enclosures

Kalwall Corporation and Structures Unlimited, Inc., are strategic partners.

Green Building Rating System Project Checkli

Possible LEED® v3 2009 Point Contribution

	Sustainable Sites		**26** Points
☐	Prereq 1	**Construction Activity Pollution Prevention**	Required
☐	Credit 1	**Site Selection**	1
☐	Credit 2	**Development Density & Community Connectivity**	5
☐	Credit 3	**Brownfield Redevelopment**	1
☐	Credit 4	**Alternative Transportation**	1 to 12
☐	Credit 5	**Site Development**	1 to 2
☐	Credit 6	**Stormwater Design**	1 to 2
☐	Credit 7.1	**Heat Island Effect**, Non-Roof	1
✓	Credit 7.2	**Heat Island Effect**, Roof	1
✓	Credit 8	**Light Pollution Reduction**	1
	Water Efficiency		**10** Points
☐	Prereq 1	**Water Use Reduction**	Required
☐	Credit 1	**Water Efficient Landscaping**	2 to 4
☐	Credit 2	**Innovative Wastewater Technologies**	2
☐	Credit 3	**Water Use Reduction**	2 to 4
	Energy & Atmosphere		**35** Points
☐	Prereq 1	**Fundamental Commissioning of the Building Energy Systems**	Required
✓	Prereq 2	**Minimum Energy Performance**	Required
☐	Prereq 3	**Fundamental Refrigerant Management**	Required
☐	Credit 1	**Optimize Energy Performance**	1 to 19
✓		12% New Building or 8% Existing Building Renovations	1
✓		14% New Building or 10% Existing Building Renovations	1
✓		16% New Building or 12% Existing Building Renovations	1
✓		18% New Building or 14% Existing Building Renovations	1
✓		20% New Building or 16% Existing Building Renovations	1
✓		22% New Building or 18% Existing Building Renovations	1
✓		24% New Building or 20% Existing Building Renovations	1
✓		26% New Building or 22% Existing Building Renovations	1
✓		28% New Building or 24% Existing Building Renovations	1
✓		30% New Building or 26% Existing Building Renovations	1
✓		32% New Building or 28% Existing Building Renovations	1
✓		34% New Building or 30% Existing Building Renovations	1
✓		36% New Building or 32% Existing Building Renovations	1
✓		38% New Building or 34% Existing Building Renovations	1
✓		40% New Building or 36% Existing Building Renovations	1
✓		42% New Building or 38% Existing Building Renovations	1
✓		44% New Building or 40% Existing Building Renovations	1
✓		46% New Building or 42% Existing Building Renovations	1
✓		48% New Building or 44% Existing Building Renovations	1
☐	Credit 2	**On-Site Renewable Energy**	1 to 7
✓		1% Renewable Energy	1
✓		3% Renewable Energy	1
✓		5% Renewable Energy	1
✓		7% Renewable Energy	1
✓		9% Renewable Energy	1
✓		11% Renewable Energy	1
✓		13% Renewable Energy	1
☐	Credit 3	**Enhanced Commissioning**	2
☐	Credit 4	**Enhanced Refrigerant Management**	2
☐	Credit 5	**Measurement & Verification**	3
☐	Credit 6	**Green Power**	2

Sustainable Sites

Credit 7.2 – Heat Island Effect, Roof (1 point)

"Use roofing materials with a solar reflectance index (SRI) … for a minimum of 75% of the roof's surface."

Steep-sloped roof > 2:12	29 SRI

Depending on design configurations, the Kalwall panel meets SRI requirements listed in ASTM E1980, ASTM E408 and ASTM E903 to reduce Heat Island Effect for roofs.

Sustainable Sites

Credit 8 – Light Pollution Reduction (1 point)

"All openings in the envelope with a direct line of sight to any nonemergency luminaries must have shielding (… for a resultant transmittance of less than 10% between 11 p.m. and 5 a.m.). Meeting … ANSI/ASHRAE/IESNA Standard 90.1-2007 …"

Without the need for additional shielding, Kalwall's light-diffusing characteristics can reduce light transmittance to less than 10%, preventing direct-beam illumination from leaving the building interior.

Energy & Atmosphere

Prerequisite 2 – Minimum Energy Performance (prerequisite)

"Demonstrate a 10% improvement in building performance rating for new buildings or a 5% improvement for major renovations. Calculate the baseline building performance … Appendix G of ANSI/ASHRAE/IESNA Standard 90.1-2007… using a computer simulation model …"

Kalwall is the most highly insulating, diffuse-light-transmitting system available. With insulating values up to and exceeding R-20 (.05 U), conductive winter heat loss is kept to a minimum. Additionally, Kalwall's low solar heat gain coefficient (SHGC), as low as .05, significantly reduces summer heat gain, greatly reducing tonnage requirements for air conditioning systems, while lowering utility bills. Daylight Modeling is available from Kalwall.

Energy & Atmosphere

Credit 1 – Optimize Energy Performance (up to 19 points)

"Demonstrate a percentage improvement in the proposed building performance rating compared to the baseline building performance rating … according to Appendix G of ANSI/ASHRAE/IESNA Standard 90.1-2007…"

Kalwall provides superior winter and summer energy efficiency while transmitting diffuse daylight.

Energy & Atmosphere

Credit 2 – On-Site Renewable Energy, 1% to 13% (up to 7 points)

"Use on-site renewable energy systems to offset building energy cost. Calculate project performance … as a percentage of the building annual energy cost (1%, 3%, 5%, 7%, 9%, 11% or 13%) … "

Since the 1950s, Kalwall has been involved with both passive and active solar technologies. Kalwall's window systems, as well as skylights from Structures Unlimited, Inc., can accept BIPV panels.

Materials & Resources

Credit 1.1 – Building Reuse-Maintain Existing Walls, Floors and Roof (up to 4 points)

"Maintain the existing building structure … and envelope (the exterior skin and framing, excluding window assemblies and non-structural roofing material) … upgrade components that would improve energy and water efficiency such as windows…"

The thermal performance of Kalwall translucent window, skylight and curtainwall system replacements can result in over 500% more energy efficiency than insulated glass by reducing solar heat gain and saving on HVAC costs.

Materials & Resources

Credit 3 – Materials Reuse (up to 2 points)

"Use salvaged, refurbished or reused materials, the sum of which constitutes at least 5% or 10%, based on cost, of the total value of materials on the project."

Kalwall panels may be reused or refurbished. The design of the Kalwall Clamp-tite™ framing system allows for removal of the entire window, curtainwall or skylight. These panel systems may then be installed in similar applications.

Materials & Resources

Credit 4 – Recycled Content, 10% or 20% (post-consumer + ½ pre-consumer) (up to 2 points)

st For New Construction & Major Renovations

from Kalwall and Structures Unlimited Products

Materials & Resources			**14** Points
☐	Prereq 1	**Storage & Collection of Recyclables**	Required
☑	Credit 1.1	**Building Reuse-Maintain Existing Walls, Floors, and Roof**	1 to 4
☐	Credit 2	**Construction Waste Management**	1 to 2
☑	Credit 3	**Materials Reuse**	1 to 2
☑	Credit 4	**Recycled Content**, 10% (post-consumer + 1/2 pre-consumer)	1
☑		**Recycled Content**, 20% (post-consumer + 1/2 pre-consumer)	1
☐	Credit 5	**Regional Materials**, 10% Extracted, Processed & Manufactured Regionally	1
☐		**Regional Materials**, 20% Extracted, Processed & Manufactured Regionally	1
☐	Credit 6	**Rapidly Renewable Materials**	1
☐	Credit 7	**Certified Wood**	1
Indoor Environmental Quality			**15** Points
☐	Prereq 1	**Minimum Indoor Air Quality (IAQ) Performance**	Required
☐	Prereq 2	**Environmental Tobacco Smoke (ETS) Control**	Required
☐	Credit 1	**Outdoor Air Delivery Monitoring**	1
☐	Credit 2	**Increased Ventilation**	1
☐	Credit 3	**Construction IAQ Management Plan**	1 to 2
☐	Credit 4	**Low-Emitting Materials**	1 to 4
☐	Credit 5	**Indoor Chemical & Pollutant Source Control**	1
☐	Credit 6.1	**Controllability of Systems**, Lighting	1
☑	Credit 6.2	**Controllability of Systems**, Thermal Comfort	1
☑	Credit 7.1	**Thermal Comfort**, Design	1
☐	Credit 7.2	**Thermal Comfort**, Verification	1
☑	Credit 8.1	**Daylight & Views**, Daylight	1 to 2
☑	Credit 8.2	**Daylight & Views**, Views	1
Innovation & Design			**6** Points
☑	Credit 1	**Innovation in Design**: Provide Specific Title	1 to 5
☐	Credit 2	**LEED® Accredited Professional**	1
Regional Priority Credits			**4** Points
☐	Credit 1	**Regional Priority Credit**	1 to 4

Certified 40-49 points **Silver** 50-59 points **Gold** 60-79 points **Platinum** 80+ points

Photo by James Steinkamp

Photo by James Borchuck

"Use materials with recycled content such that the sum of post-consumer recycled content plus one-half of the pre-consumer content constitutes at least 10% or 20%, based on cost, of the total value of the materials in the project."

A typical Kalwall system contains ± 20% post-consumer/pre-consumer recycled content, primarily in the aluminum extrusions used in fabricating the Kalwall panels and in the aluminum Clamp-tite™ installation system. Structures Unlimited's clearspan skylights and pool enclosures have an even greater recycled content, 30% or more, due to the aluminum box beam structure inherent to these systems.

Indoor Environmental Quality

Credit 6.2 – Controllability of Systems (1 point)

"Provide individual comfort controls for 50% (minimum) of the building occupants to enable adjustments to meet individual needs and preferences. Operable windows may be used in lieu of controls …"

Kalwall wall and window replacement systems can have project-in and project-out windows for fresh air ventilation.

Indoor Environmental Quality

Credit 7.1 – Thermal Comfort, Design (1 point)

"Design … building envelope to meet the requirements of ASHRAE Standard 55-2004 … Thermal Comfort Conditions for Human Occupancy."

Unlike traditional glazing material, Kalwall's thermally broken technology all but eliminates undesirable thermal gain and loss. It also prevents condensation that builds up when exterior and interior temperatures vary.

Indoor Environmental Quality

Credit 8.1 – Daylight & Views, Daylight (up to 2 points)

"Option 1: Demonstrate, through computer simulation, that 75% or more of all regularly occupied spaces achieve daylight illuminance levels of a minimum of 10 footcandles (fc) and a maximum of 500 fc in a clear sky condition on September 21 at 9 a.m. and 3 p.m."

A computerized daylight modeling analysis is available to assist in achieving proper footcandle levels within a building. The daylight simulation (RADIANCE) shows compliance with LEED daylighting requirements. Annual Daylight Autonomy levels can also be shown, using real-world weather files for project location. Both methods show the impact of daylight design on any building space.

Visit **DaylightModeling.com**

"Option 2: Provide sunlight redirection and/or glare control devices to ensure daylight effectiveness."

Kalwall's unique translucent systems diffuse sunlight and transmit controlled daylighting into any building **without** shadows, glare or hotspots and without the need for external solar controls or internal shelves, blinds and/or curtains.

Indoor Environmental Quality

Credit 8.2 – Daylight and Views, Views (1 point)

"Achieve a direct line-of-sight to the outdoor environment via vision glazing ... for building occupants in 90% of all regularly occupied areas."

Kalwall wall panels, curtainwall and window replacement systems can easily and effectively integrate fixed and operable windows glazed with glass for connection to the outdoors. Skylights from Structures Unlimited, Inc. can integrate fixed-glass panels as well as operable roof systems for natural ventilation.

Kalwall is a green product!

- ✓ Listed in the GreenSpec® Directory.
- ✓ Kalwall is a Life Cycle product. Aluminum recycling is part of everyday life. Once ground up, FRP sheets can be recycled and the resulting powder used as filler in other products.
- ✓ Does not contain environmentally un-friendly PVC plastic.
- ✓ Insulation options that do not contain urea formaldehyde.
- ✓ Requires an absolute minimum of maintenance.


Photo by Christopher Bova, Bernier, Carr & Assoc.

Kalwall is a green company!

- ✓ Recycles 100% of aluminum scrap.
- ✓ Reduces VOC emissions through the use of water-based primer.
- ✓ Recrecycles acetone cleaners.
- ✓ Reuses cooling process water through the utilization of water chillers.
- ✓ Several manufacturing facilities use alternative fuels and/or solar heating/daylighting.
- ✓ Allows no Environmental Tobacco Smoke (ETS). All buildings are designated non-smoking.
- ✓ Three manufacturing facilities are on municipal bus route for workers who use public transportation.
- ✓ Practices building reuse.
- ✓ Utilizes heat recovery unit on flat-sheet line.
- ✓ Preserves the natural surroundings of facilities.
- ✓ Paper, cardboard and wood used in packaging is recycled.
- ✓ Utilizes thermal oxidizer for FRP face sheet manufacturing process, virtually eliminating air pollutants associated with the process.
- ✓ Practices post-consumer recycling.


Photo by: NAC|Architecture

www.usgbc.org

The site of the U.S. Green Building Council.
Administrators of the LEED green building rating system.

www.buildinggreen.com

Publishers of Environmental Building News and the GreenSpec Directory.


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