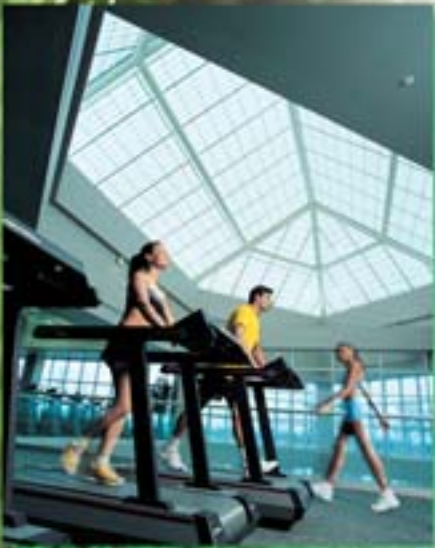


LEED® v3 2009 Checklist

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



NOW .05U



- 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 and can contribute to optimized energy performance as a highly insulated light-transmitting system.
- Kalwall contains $\pm 20\%$ post-consumer/pre-consumer recycled content. A Clearspan Skyroof™ from Structures Unlimited, Inc., can contain $\pm 40\%$ 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; Bozeman Library, Bozeman, MT; 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; 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; Miley Achievement Center, Las Vegas, NV; Navy Federal Credit Union (Gold), Pensacola, FL; Monsanto Company's Nidus Center for Scientific Enterprise (Gold), Creve Coeur, MO; OSHA Lab Science Building, Salt Lake City, UT; Patagonia Distribution Center (Gold), Reno, NV; 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 strategic partner Structures Unlimited, Inc.



ICC-ES
Listed
PFC 1705



Green Building Rating System Project Checklist

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.”

Utilizing the white exterior face sheet, and depending on design configurations, the Kalwall panel meets emissivity requirements 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.



Possible LEED® v3 2009 Point Contribution

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

Materials & Resources

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

“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, up to 40% or more, due to the aluminum box beam structure inherent to these systems.

Materials & Resources

Credit 5 – Regional Materials, 10% or 20% Extracted, Processed & Manufactured Regionally (up to 2 points)

“Use building materials or products that have been ... manufactured within 500 miles of the project site for a minimum of 10% or 20%, based on cost, of the total materials value. If only a fraction of a product or material is extracted, harvested, or recovered and manufactured locally, then only that percentage (by weight) can contribute to the regional value.”

For New Construction & Major Renovations

Points from Kalwall Products

Materials & Resources

14 Points

<input type="checkbox"/>	Prereq 1	Storage & Collection of Recyclables	Required
<input type="checkbox"/>	Credit 1	Building Reuse	1 to 4
<input type="checkbox"/>	Credit 2	Construction Waste Management	1 to 2
<input type="checkbox"/>	Credit 3	Materials Reuse	1 to 2
<input checked="" type="checkbox"/>	Credit 4	Recycled Content, 10% (post-consumer + 1/2 pre-consumer)	1
<input checked="" type="checkbox"/>	Credit 4	Recycled Content, 20% (post-consumer + 1/2 pre-consumer)	1
<input checked="" type="checkbox"/>	Credit 5	Regional Materials, 10% Extracted, Processed & Manufactured Regionally	1
<input checked="" type="checkbox"/>	Credit 5	Regional Materials, 20% Extracted, Processed & Manufactured Regionally	1
<input type="checkbox"/>	Credit 6	Rapidly Renewable Materials	1
<input type="checkbox"/>	Credit 7	Certified Wood	1

Indoor Environmental Quality

15 Points

<input type="checkbox"/>	Prereq 1	Minimum Indoor Air Quality (IAQ) Performance	Required
<input type="checkbox"/>	Prereq 2	Environmental Tobacco Smoke (ETS) Control	Required
<input type="checkbox"/>	Credit 1	Outdoor Air Delivery Monitoring	1
<input type="checkbox"/>	Credit 2	Increased Ventilation	1
<input type="checkbox"/>	Credit 3	Construction IAQ Management Plan	1 to 2
<input type="checkbox"/>	Credit 4	Low-Emitting Materials	1 to 4
<input type="checkbox"/>	Credit 5	Indoor Chemical & Pollutant Source Control	1
<input type="checkbox"/>	Credit 6.1	Controllability of Systems, Lighting	1
<input checked="" type="checkbox"/>	Credit 6.2	Controllability of Systems, Thermal Comfort	1
<input checked="" type="checkbox"/>	Credit 7.1	Thermal Comfort, Design	1
<input type="checkbox"/>	Credit 7.2	Thermal Comfort, Verification	1
<input checked="" type="checkbox"/>	Credit 8.1	Daylight & Views, Daylight	1 to 2
<input checked="" type="checkbox"/>	Credit 8.2	Daylight & Views, Views	1

Innovation & Design

6 Points

<input checked="" type="checkbox"/>	Credit 1	Innovation in Design: Provide Specific Title	1 to 5
<input type="checkbox"/>	Credit 2	LEED® Accredited Professional	1

Regional Priority Credits

4 Points

<input type="checkbox"/>	Credit 1	Regional Priority Credit	1 to 4
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Certified 40-49 points **Silver** 50-59 points **Gold** 60-79 points **Platinum** 80+ points



Kalwall panels and the Structures Unlimited, Inc. self-supporting aluminum structures are manufactured in Manchester, New Hampshire. A 500 mile-radius includes the states of Maine, Massachusetts, New Hampshire, Vermont, Rhode Island, Connecticut, New York, Pennsylvania, New Jersey, Delaware, Maryland, Virginia and Washington DC. Determination of extraction, processing and manufacturing percentage of each system will be made at time of fabrication.

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. Operable roof panels in a Structures Unlimited, Inc. system, bring in outside air.

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 25 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.

Kalwall is a **green** company!

- ✓ Recycles 100% of aluminum scrap.
- ✓ Reduces VOC emissions through the use of water-based primer.
- ✓ Recycles 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.

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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