Kalwall®

Since 1955

CSI: 08 45 23

High-Performance, Translucent Wall and Skyroof® Systems

South Bend Regional Airport, South Bend, IN; Architect: Ken Hercęg & Associates, Inc.; Photo by Abstract Photography, Inc.

Jeff Smith Photography

What Kalwall is...

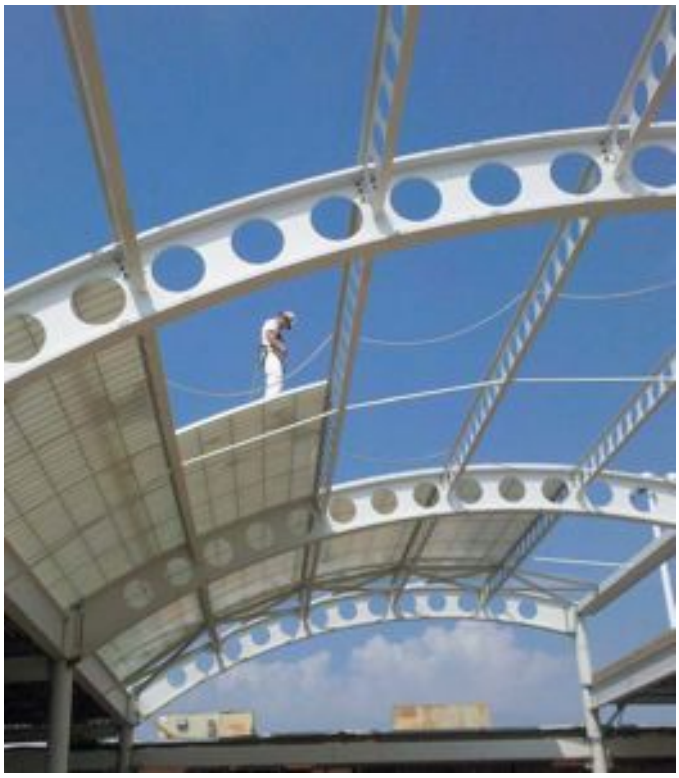
The most highly insulating daylighting system in the world!

The primary element of the Kalwall System is a flat or curved, structural composite sandwich panel formed by permanently bonding specially formulated, fiberglass-reinforced translucent faces to a grid core constructed of interlocked, structural aluminum/composite, thermally broken I-beams.

The natural thermal properties of the sandwich panel can deliver increased energy performance by the inclusion of translucent fiberglass "batts" or aerogel during the manufacturing process and by specifying a fully thermally broken grid core. U-value options range from .29 to .05 (1.57 to .28 W/m²K) by NFRC for the 2¾" (70 mm) thick panels and .15 or .08 (.83/.45 W/m²K) for 4" (100 mm) thick panels.

Kalwall panels are installed with the efficient, proven Clamp-tite™ aluminum system.

BMW Wolverhampton, West Midlands, UK; MDG Architects; Photo by Daniel Hopkins



South Bend Regional Airport, South Bend, IN; Architect: Ken Herceg & Associates, Inc.

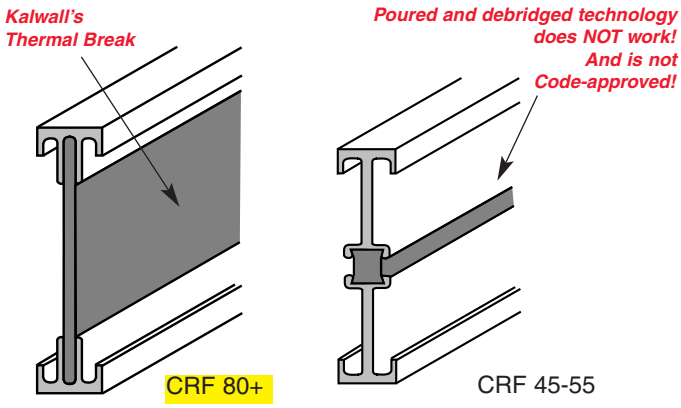
A Highly Insulated Structural Unit...

Outstanding load capacity and structural integrity!

This is NOT possible with competitive systems!

Superior Structural Thermal Break Composite Grid Core

- 2⅝" (68 mm) I-beam • 1¾" (44 mm) Non-conductive break
- 4" (100 mm) I-beam • 3⅞" (98 mm) Non-conductive break
- Stronger than aluminum • Passes fire testing to 1200°F
- Superior insulation in panels — U-values as low as .05 (.30 W/m²K)
- Stops condensation — CRF 80+



Sustainable... LEED® Contributor

Buckley Army Aviation Support Facility, Aurora, CO; Architect: CH2M Hill; Ron Johnson Photography

University of Alabama Student Recreation Center, Tuscaloosa, AL
Architect: TMP Associates, Inc.; Curtis Photographics

Crocker Art Museum, Sacramento, CA; Gwathmey Siegel & Associates Architects
Bruce Damonte Photography

8 Daylighting Systems...

Wall Systems

- Structural Sandwich Panels up to 5' x 20' (1.5 m x 6 m), 2¾" (70 mm) or 4" (100 mm) thick are secured to building with simple, Clamp-tite™ aluminum extrusions. System seals panel/panel and building, allowing for expansion/contraction and proper weepage to channel any moisture to building exterior.
- May be either flat or curved sandwich panels.
- Controlled, natural daylight combined with finely tuned thermal and solar controls.

ATFP Compliant

Unitized Curtainwall

- Sandwich panels, operating/fixed windows, louvers, even opaque panels, factory unitized.
- Provide rapid installation and permanent weather seal, unlike most stick-built, "frame and glaze" components that are all field-assembled.
- Delivered to the job site in large preassembled units up to 5' x 35' (1.5 m x 10.7 m) and larger.

The Single-source Solution!

Window Replacement

Chris Cunningham Photography

- Kalwall heavy-duty Window Replacement Systems – like our prefabricated Curtainwall Systems – are factory-assembled into easily managed building units.
- Kalwall provides optimum performance-controlled daylighting and still allows for fulfillment of vision/ventilation requirements.
- Vandal, graffiti, and impact resistance add up to minimal maintenance expenses with Kalwall.

Standard Unit Skylights

- 2¾" (70 mm) and 4" (100 mm) thick flat Skylights up to 5' x 20' (1.5 m x 6 m).
- 2¾" (70 mm) Pyramids from 4' (1.2 m) square up to 20' (6 m) square.
- 2¾" (70 mm) Geo-Roof® units in 17 standard-sized units from 8' to 24' diameter (2.4 m to 7.3 m).
- Available knocked down or prefabricated.

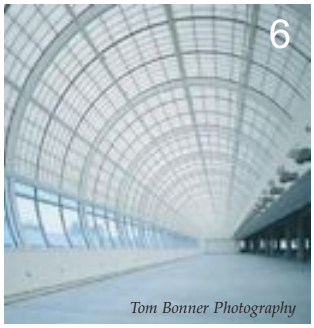
OSHA Compliant

Endless Possibilities

Pre-engineered Skylights

- Centerline self-supporting ridges with 20˚, 27˚, 33˚, 45˚, slope to 24' (7.3 m); 2¾" (70 mm) or 4" (100 mm)
- Kalcurve® 180˚, Low-Profile 90˚ in 1' (300 mm) curb width increments, to 25' (7.6 m).
- Lightweight – less than 3 lbs. per square foot (16 kg/m²) means sub-structure may be minimized. Only thrust-bearing curbs designed to accommodate local live, snow and wind load designs are required.

Custom Skyroof® Skylights



- Sandwich Panel Systems over sub-structure designed and installed by others.
- Flat, curved or combination for design versatility and consistent with all Kalwall Systems.
- Easy, fast installation, coupled with large-sized panels to speed installations.
- 2¾" (70 mm) or 4" (100 mm) possible

GREEN — LEED®

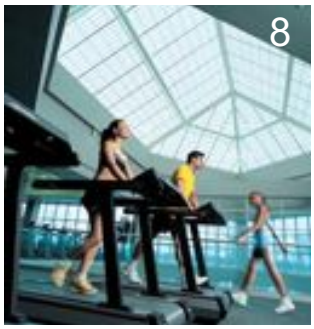
Walkways & Canopies

- Combinations of sandwich panels and framing components.
- Standard modular walkways.

NEW!

- Fully pre-engineered canopies and walkways, including aluminum structure, are now available!

Clearspan™ Skyroofs



- Taking Kalwall to another dimension... aluminum box beams and Kalwall panels form monolithic, structural enclosures.
- Design control, fabrication, delivery and complete installation with single-source responsibility!
- Installations completed in weeks – not months – due to component standard-izations and CAD technology.
- Complete buildings, including Pool Enclosures, featuring built-in non-corrosion and moisture resistance.

Shoji grid variation

Verti-Kal™ grid panels

Tuckerman grid panels

Pre-engineered panel units allow for exceptionally rapid installation, leakproof performance and superior system integrity.

Panel Units are factory assembled complete with options such as louvers, fixed or operable windows. Also hurricane-resistant windows to TAS and ASTM standards.

High-performance, Euro-style fixed and operating Kalwall windows with Euro-groove, multi-point locking for maximum safety and security.

Designing Panel-Unit Walls

COMPONENTS

Factory-unitized in many combinations up to 5' wide x 35' high (1.5 m x 10.7 m) depending on shipping and handling limitations. Panel-units ready for installation with no additional finishing. Panel-units eliminate superfluous structure required with most other systems.

LOUVERS – WALL SYSTEMS

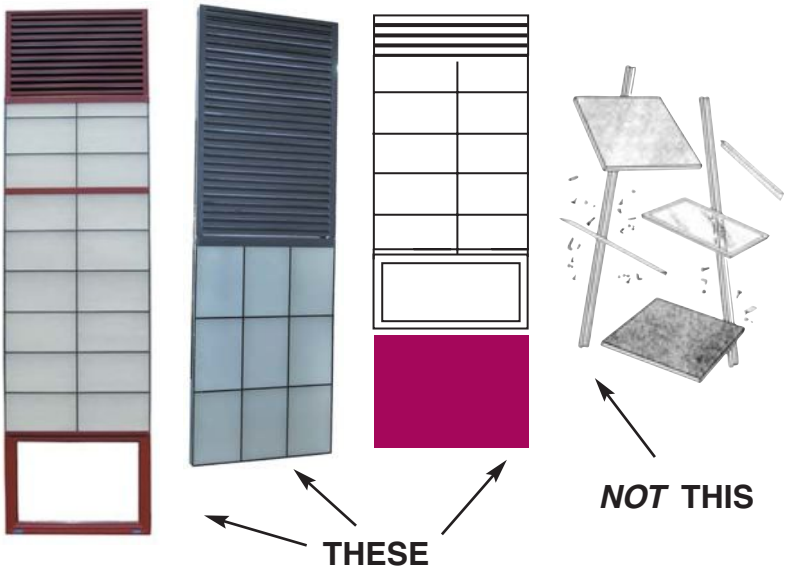
Specify Kalwall fixed-blade louver as required, up to 5' (1.5 m) wide.

THERMAL BREAK SASH

Kalwall-manufactured, projecting sash for top performance up to 5' wide x 4'6" high (1.5 m x 1.4 m). Fixed and egress units also available. Glazing of all types, 1" (25 mm) thick glazing panels available; factory-installed, if specified. Performance options to AAMA/ANSI PI AW-90.

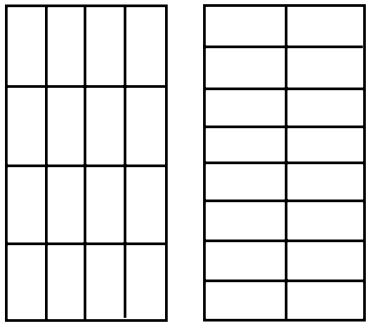
OPAQUE PANELS

Sandwich panel construction with fiberglass, aluminum or other faces can be combined in the same system for aesthetic value or to fine-tune energy performance.



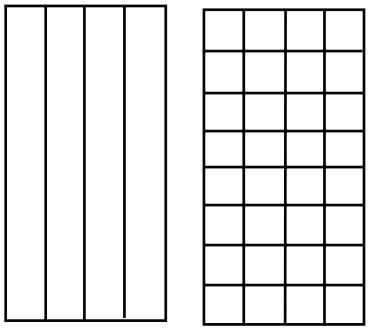
TRANSLUCENT PANEL OPTIONS

STANDARD GRIDS



SHOJI REVERSE SHOJI

SOME COMMON OPTIONAL GRIDS



VERTI-KAL TUCKERMAN

STANDARD PANEL SIZES

Width — 4' and 5' (1.2 m and 1.5 m), other widths up to 5' (1.5 m) are optional.

Length — 3' to 20' (.9 to 6.1 m) standard, 16' (4.9 m) maximum for skyroofs.

Thickness — 4" (100 mm), 2¾" (70 mm). 1⁹⁄₁₆" (40 mm) and 1" (25 mm) for window glazing only.

STANDARD GRID DESIGNS

Nominal grid size — 12" x 24" (300 mm x 600 mm) standard; 8" x 20" (200 mm x 500 mm) optional for flat and curved panels.

OPTIONAL GRID DESIGNS

Other designs and grid sizes available. Please note that spans will vary with different grid patterns. Consult factory.

INSTALLATION

QUICK, LOW-COST, TROUBLE-FREE

Kalwall factory pre-assembled interconnected structural components form rigid, modular units which replace the heavy mullions and floating panels of other curtainwalls.

The unique, pre-engineered construction and extreme structural strength of the components permit the largest panel-unit wall sections to be quickly and efficiently installed.

METAL FINISHES

The installation system is available in mill finish or Kalwall Corrosion Resistant Finish, a high-performance coating that meets AAMA 2604, 2605 optional. The finish is highly resistant to acids, alkalis, salt, industrial and moisture-laden atmospheres.

TRANSLUCENT COLORS

White and Crystal are standard but other colors are available. The Kal-tint series and pebble finish are options. Colored translucent insulation inserts are available in an endless palette of colors.

Merry Hill Shopping Centre, Brierley Hill
INC Design Associates, Architects

Wall/Panel-Unit Wall System Details

For 2¾" (70 mm) vertically oriented panels.

These are standard Clamp-tite™ details. Systems for other conditions, e.g., horizontally oriented, concealed fastener, Kalcurve®, Explosion Venting or Blast Resisting, are similar, but do contact Kalwall for specifics. High-performance coatings in Kalwall Corrosion Resistant Finish are standard. CAD versions of these details and more are available at www.kalwall.com.

KALWALL SPAN TABLE — 4' (1200 mm) MODULE
Maximum Allowable Clearspan

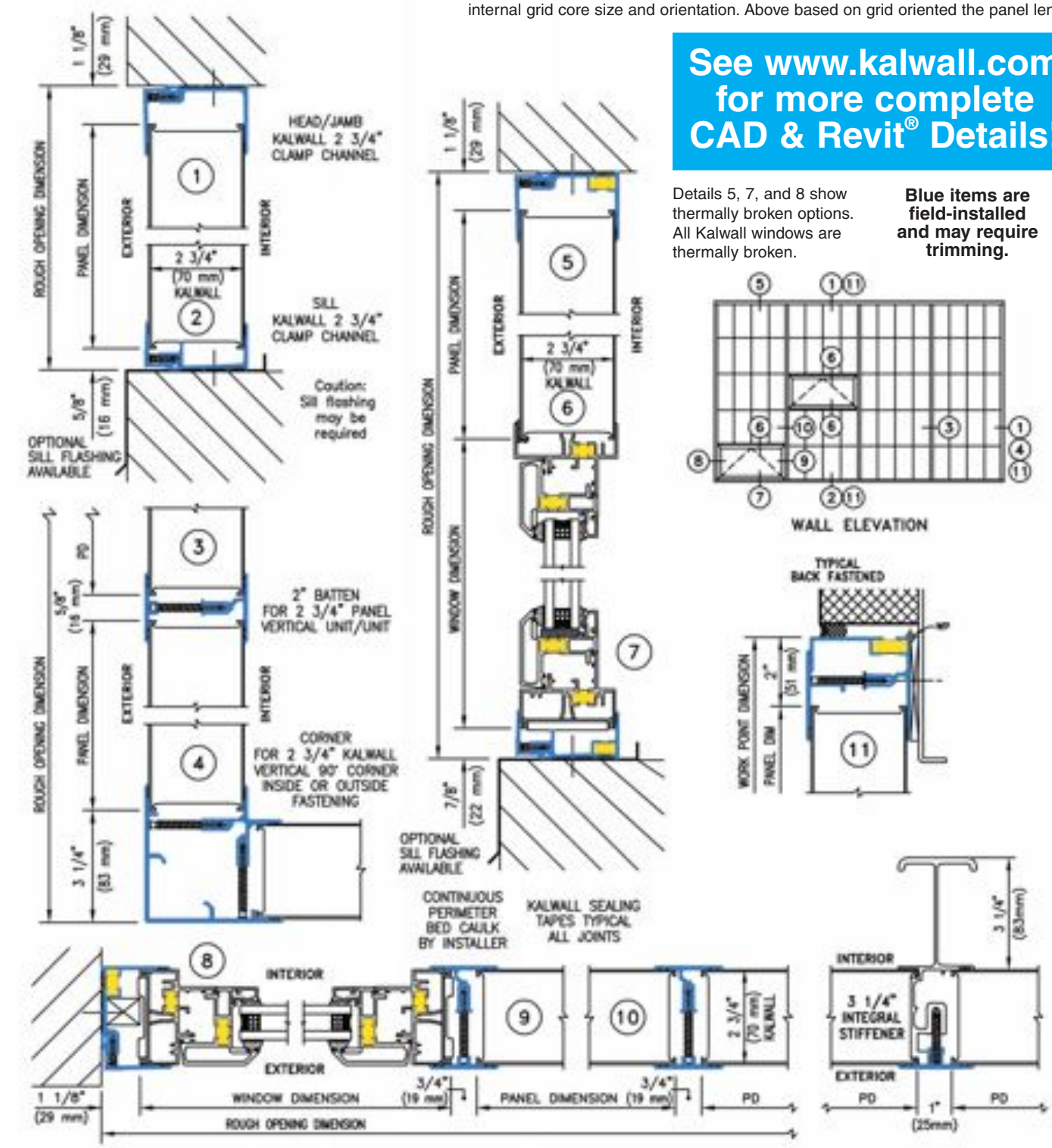
	Translucent Panel	Panel Unit Wall Mid-span Joint	Nominal Grid Size
2" (51 mm) Batten	12'-7" (3835 mm)	9'-2" (2794 mm)	12" x 24" (300 mm x 600 mm)
2¾" (70 mm) ST+ #4SSSE	16'-2" (4927 mm)	13'-1" (3987 mm)	12" x 24" (300 mm x 600 mm)
3¼" (83 mm) IS-H	19'-7" (5970 mm)	17'-11" (5461 mm)	12" x 24" (300 mm x 600 mm)
Silhouette Stiffener	24'-6" (7467 mm)	23'-4" (7112 mm)	12" x 24" (300 mm x 600 mm)

Clearspan at 25 p.s.f. (1.2 kPa) wind pressure, L/60 minimum. Spans based on engineering data and tests. Others possible. CAUTION! Spans will vary with panel internal grid core size and orientation. Above based on grid oriented the panel length.

See www.kalwall.com for more complete CAD & Revit® Details!

Details 5, 7, and 8 show thermally broken options. All Kalwall windows are thermally broken.

Blue items are field-installed and may require trimming.



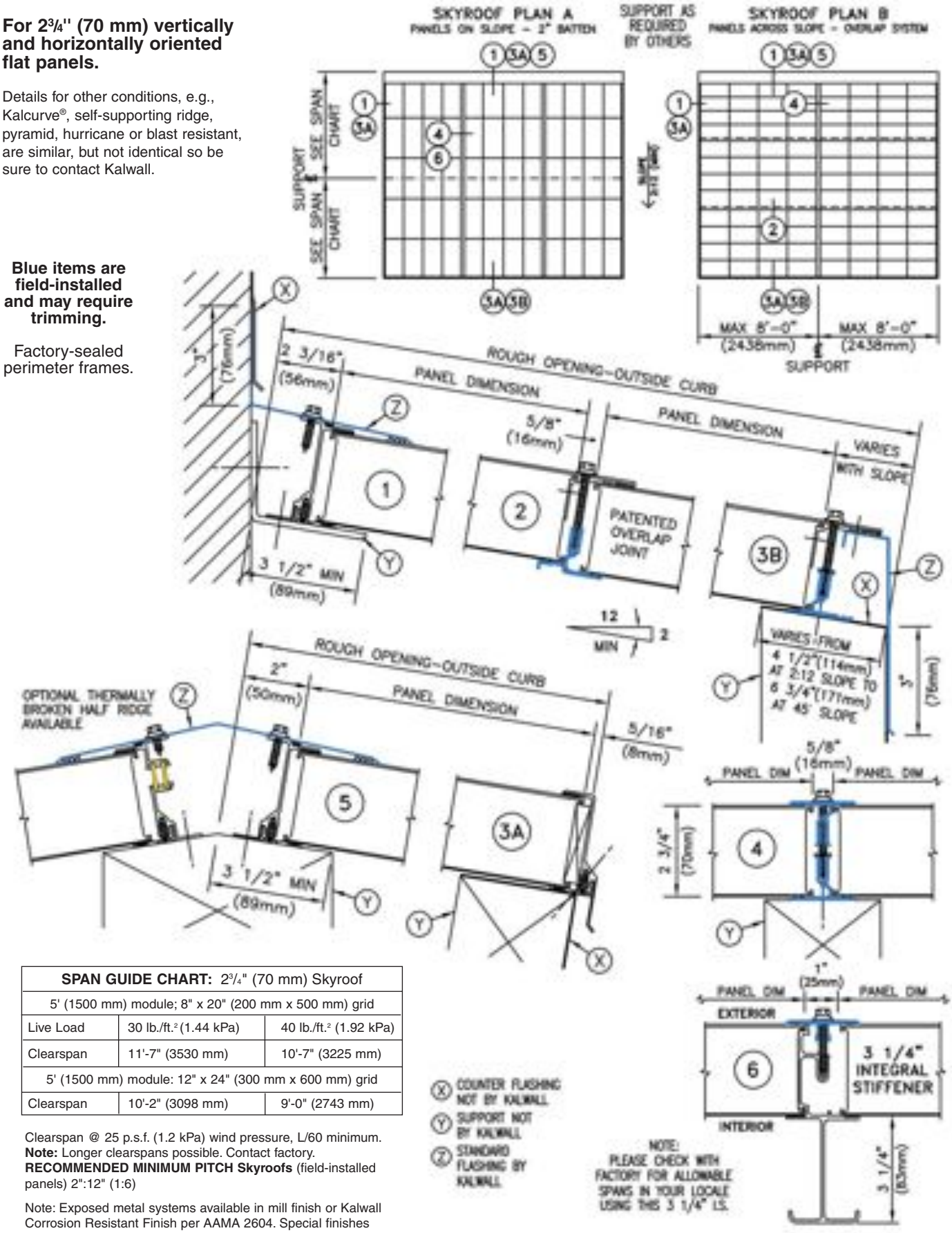
Shed/Supported Ridge Skyroof® Details

For 2¾" (70 mm) vertically and horizontally oriented flat panels.

Details for other conditions, e.g., Kalcurve®, self-supporting ridge, pyramid, hurricane or blast resistant, are similar, but not identical so be sure to contact Kalwall.

Blue items are field-installed and may require trimming.

Factory-sealed perimeter frames.



SPAN GUIDE CHART: 2¾" (70 mm) Skyroof		
5' (1500 mm) module; 8" x 20" (200 mm x 500 mm) grid		
Live Load	30 lb./ft.² (1.44 kPa)	40 lb./ft.² (1.92 kPa)
Clearspan	11'-7" (3530 mm)	10'-7" (3225 mm)
5' (1500 mm) module: 12" x 24" (300 mm x 600 mm) grid		
Clearspan	10'-2" (3098 mm)	9'-0" (2743 mm)

Clearspan @ 25 p.s.f. (1.2 kPa) wind pressure, L/60 minimum.
Note: Longer clearspans possible. Contact factory.
RECOMMENDED MINIMUM PITCH Skyroofs (field-installed panels) 2":12" (1:6)

Note: Exposed metal systems available in mill finish or Kalwall Corrosion Resistant Finish per AAMA 2604. Special finishes available as options.

Dynamic Daylighting
with incredible thermal performance.

Panel options as low as
U-value .05 (0.28 W/m^2)
with 20% diffuse light transmission!

Imagine this Museum-Quality Daylighting™ with thermal performance that also delivers such far superior energy efficiency!

Daylighting Analysis

Take the unpredictability out of your site-specific designs.

Visit ***www.daylightmodeling.com***

Light Transmittance 12%
30-foot room height.
Radiance Illuminance for Sept. 21, 12pm
Average value for space is 625 lux
Location: Northwest North America

Technical Summary

Kalwall is a composite sandwich; various combinations are possible and test data should be interpreted from this point of view. Contact us for further clarification. Listed below are the light transmissions, solar heat gain coefficients, and U-factors for some Kalwall panel face sheet combinations. Others are available. Highlighted values indicate thermally broken panels.

FACE SHEET COMBINATIONS		% LIGHT TRANSMISSION 2¾" (70 mm) thick panels note 1					SOLAR HEAT GAIN COEFFICIENT @0° ∠ note 3				
EXTERIOR COLOR	INTERIOR COLOR	0.53 "U"	0.29 /0.23 "U" note 2	0.22 /0.14 "U" note 2	0.18 /0.10 "U" note 2	0.05 "U" note 2	0.53 "U"	0.29 /0.23 "U" note 2	0.22 /0.14 "U" note 2	0.18 /0.10 "U" note 2	0.05 "U" note 2
Greenish Blue	White	25	14	5	3	12	0.50	0.23	0.14	0.10	0.19
Aqua	White	29	17	6	4	13	0.45	0.24	0.14	0.10	0.21
Rose	White	30	18	6	4	14	0.46	0.24	0.15	0.10	0.21
Ice Blue	White	35	20	8	6	18	0.54	0.28	0.17	0.12	0.26
White	White	20	15	8	5	14	0.38	0.23	0.15	0.11	0.18
Crystal	White	35	20	12	8	20	0.52	0.28	0.17	0.13	0.25
Crystal	Crystal	50	30	15	10	NA	0.65	0.33	0.18	0.13	NA

Kalwall 100™

Kalwall 4" (100 mm) thick panels

NEW Kalwall 100™ Panels for even greater energy performance!

FACE SHEET COMBINATIONS		% LIGHT TRANSMISSION			SOLAR HEAT GAIN COEFFICIENT		
EXTERIOR COLOR	INTERIOR COLOR	0.55 "U"	0.15 "U"	0.08 "U"	0.55 "U"	0.15 "U"	0.08 "U"
White	White	20	12	5	0.38	0.06	NA
Crystal	White	35	14	7	0.52	0.08	0.04
Crystal	Crystal	50	17	8	0.65	0.10	0.07

U-value SI conversion: 1.0 W/m²K = 0.176 Btu/hr/ft²/°F

1. Approximate values by ASTM E-972. Light transmission values over 30% not recommended for most applications.
2. Panel U-values include grid by NFRC 100 or 102. Certified system U-values vary depending on framing.
3. Shading Coefficient (SC) is equal to 1.15 times the Solar Heat Gain Coefficient (SHGC).

NFRC CERTIFIED SYSTEMS: Kalwall systems provide the best overall U-values as low as .10 (.56 W/m²K)! With light transmission up to 20%. Includes perimeter system.

BOND STRENGTH: Panels and adhesives are tested according to the stringent requirements of "Criteria for Sandwich Panels" issued by ICC (International Code Council). ES-AC177. Before specifying alternates, insist on actual field proof of bond integrity over a 20-year period.
Caution is urged in accepting look-alikes as equivalents.

WEIGHT: Most panels and systems weigh under 3 p.s.f. (14.65 kg/m²).

FIRE TESTS: Although some Kalwall panels contain combustible binder resins (ignition temperature greater than 800°F), they will withstand a 1200°F flame for one hour with no flame penetration; pass the Class "A" Burning Brand Test (ASTM E-108), or UL 790 listed Class A Roof system. All interior faces are CC-1 by ASTM D-635. Optional flame-spread/smoke developed ratings by UL 723 tunnel tests, including Class A. Kalwall is listed by: ICC #PFC-1705 and ATI-CCRR-0173; British Standard 476, Parts 3, 6, 7. NFPA 268 – Radiant Panel Test-Exterior Walls.

Whenever reference is made to fire tests, the numerical rating is not intended to reflect hazards presented by this or any other material under actual fire conditions.

IMPACT: The shatterproof standard superweathering exterior face will withstand 70 ft.-lbs. (81J) impact. Optional extra-hi-impact faces will withstand 230 ft.-lbs. (311J) impact by UL 972; also small and large missile; resistance even higher.

Kalwall Since 1955 +

U = 0.05 Panel, R-20

with... Lumira aerogel

The World's Most Powerful Daylighting System!

DoD and GSA ANTI-TERRORISM COMPLIANT!

UFC 4-010-01

BLAST-RESISTANT CONSTRUCTION

SPECIAL APPROVALS & LISTINGS:

- FM Explosion Venting Walls standard 4440
- FM Wall and Roof Systems standards 4881 and 4471
- Hurricane-Resistant Systems
- NFRC Certified Products Listing
- UL Listings for Class A Roof System and Faces
- UFC 4-010-01 DoD Anti-Terrorism Specifications
- ETA-07/0244 Wall Systems

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

Since 1955

Kalwall®

ICC-ES and ATI CCRR listed for quality assurance and IBC compliance

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

Louis Walker Middleton - Heritage Court, Olympia, WA MSGS Architects; Doug Walker Photo

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