SKY-BRITE (patented)

'WINDOWS TO THE SKY"

CFR
Translucent Panel

Note:
It is the users responsibility to ensure that the installation and use of all light transmitting panels comply with State, Federal and OSHA regulations and laws, including, but not limited to, guarding all light transmitting panels with screens, fixed standard railings, or other acceptable safety controls that prevent fall-through.

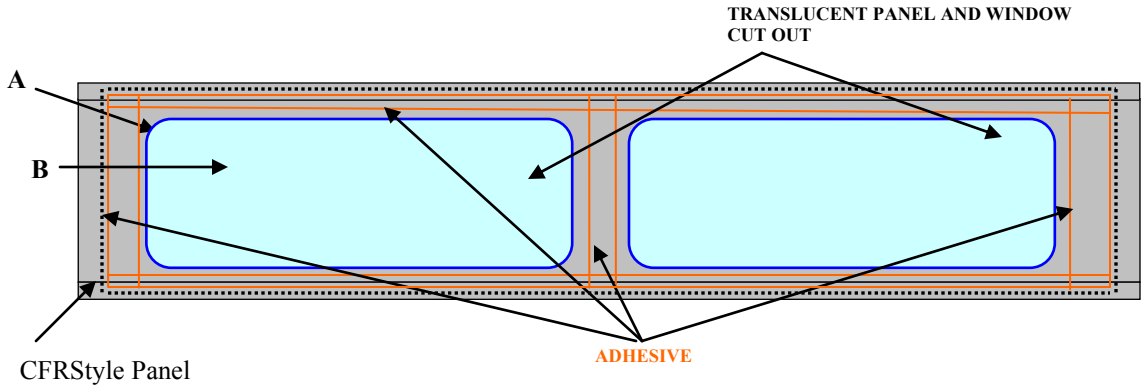
SKY-BRITE is a design that encompasses the essentials of light transmitting panels for metal building construction.

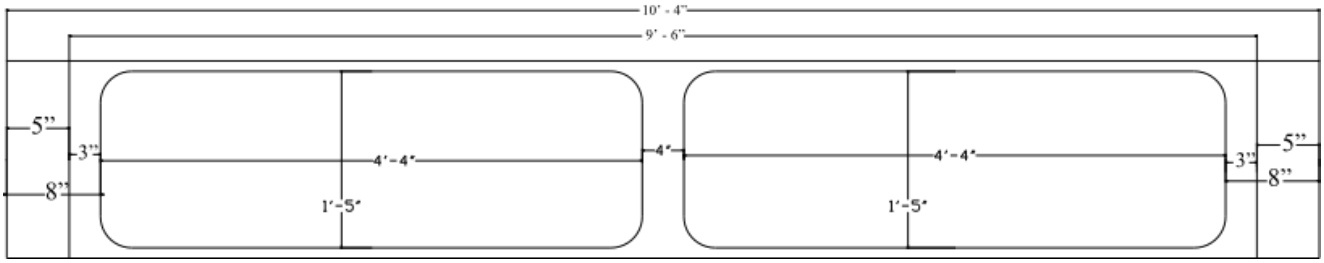
The primary problem with previous systems has been the requirement for using mechanical fastening for the assembly of units to be compatible with the metal on a roof and the translucent matrix needed to transmit light through the unit. This mechanical fastening caused the unit to have multiple penetrations that were potential leaks. No matter how diligent a manufacturer is in their manufacturing of an assembly, there are always the simple laws of Physics to overcome. One law is simply that if there is a place for water to go it will find it because it is the nearest thing to a perfect solvent that exists. Another simple premise is that unlike objects always expand and contract at different rates and like objects with different mass will expand and contract at different levels. Previously, systems always had multiple penetrations for rivets, which gave avenues for leaks. In addition there was the coefficient of linear expansion of the Metal side rail, rivet, rivet spline, washer, light transmitting media (fiberglass, acrylic, polycarbonate etc.), mastic, and support channels.

SKY-BRITE is built using only three different products with no penetrations and sufficient lapping to allow for complete perimeter sealing. The SKY-BRITE is an assembly that consists of a customer's metal panel with precision windows cut out, a translucent light transmitting panel and a very high tech bonding system that allows for free movement of the metal panel and the translucent panel. These translucent panels are designed to conform to the metal panel so as to alleviate any possibility of water penetration. The sides have a three-inch barrier, the ends have a two-inch barrier and the center has a bonding area the size of the cross support. We then finish the system by applying a second adhesive to the inner perimeter of the window cut outs.

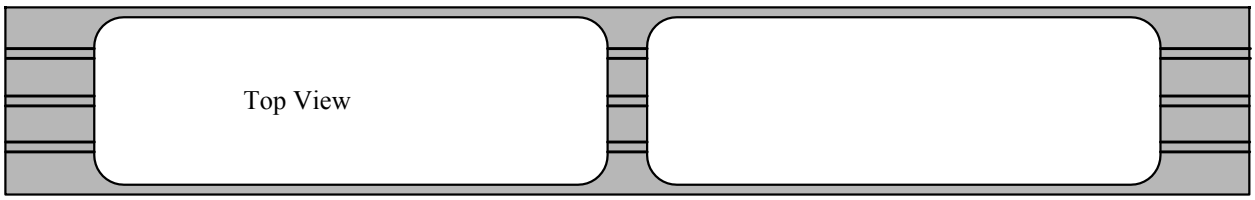
SKY-BRITE is built as an insulated system and a non-insulated system. The benefit of the insulated system is primarily dedicated to stop condensation from migrating from the top sheet to the bottom panel.

SKY-BRITE does not require the reinforcement channels that older systems require. This is the result of the proprietary design of the laminated system.





Standard Dimensions



Top View

SKY-BRITE PATENTED

SKY-BRITE is designed with concern for several inherent problems that the metal building industry has had to deal since the readmission of standing seam roofing to the market that we reside in today. Following, you will find the reasons why SKY-BRITE will replace the panels that are used today simply because it is a better approach.

A The metal panel is cut only where the light is needed and there is adequate room on either end of the panel to lap metal to metal (**A**.) as well as the accommodation of the locks to be attached on either side, unobstructed, metal to metal**.**

B. The fiberglass panel (B.) shown outlined by the dotted line is a complete panel bonded to the bottom of the metal panel by our proprietary **adhesive**.

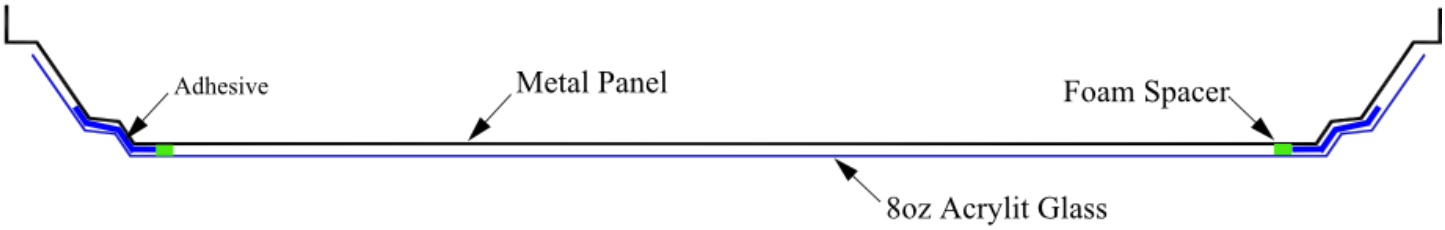
C. There is no need for UL90 reinforcing channels that always get in the way during installation, because the strength of the system is adequate without them.

D. The last but far from being the least important is that there are no fasteners, penetrations for them or any other way for these panels to leak. All areas are double or triple sealed to protect against water penetration.

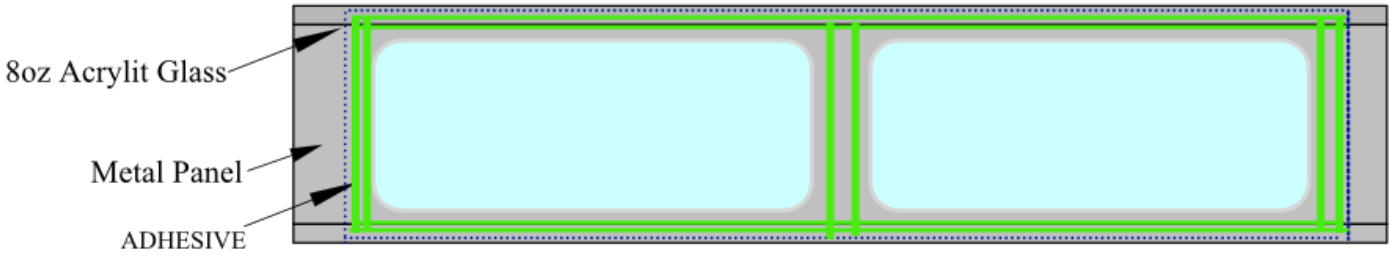
Note:
It is the users responsibility to ensure that the installation and use of all light transmitting panels comply with State, Federal and OSHA regulations and laws, including, but not limited to, guarding all light transmitting panels with screens, fixed standard railings, or other acceptable safety controls that prevent fall-through.

F&F Assemblies PO Box 279 1720 Hwy 190 West Oakhurst, TX 77359 Phone: 936-377-3611

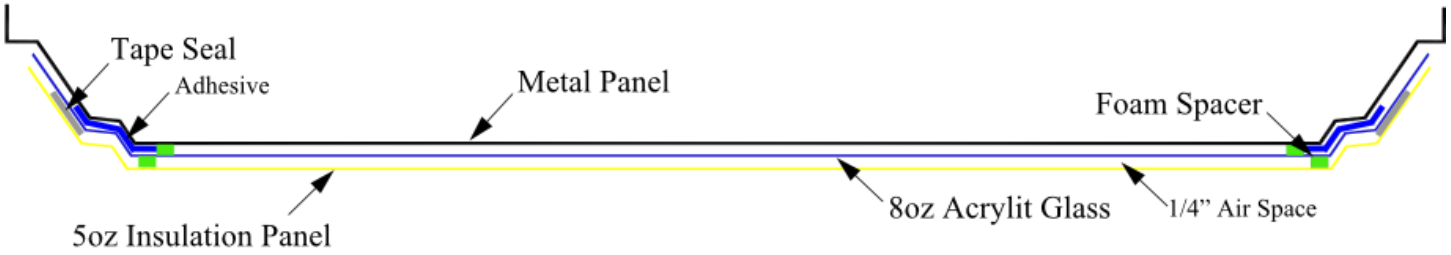
Non-Insulated Sky-Brite



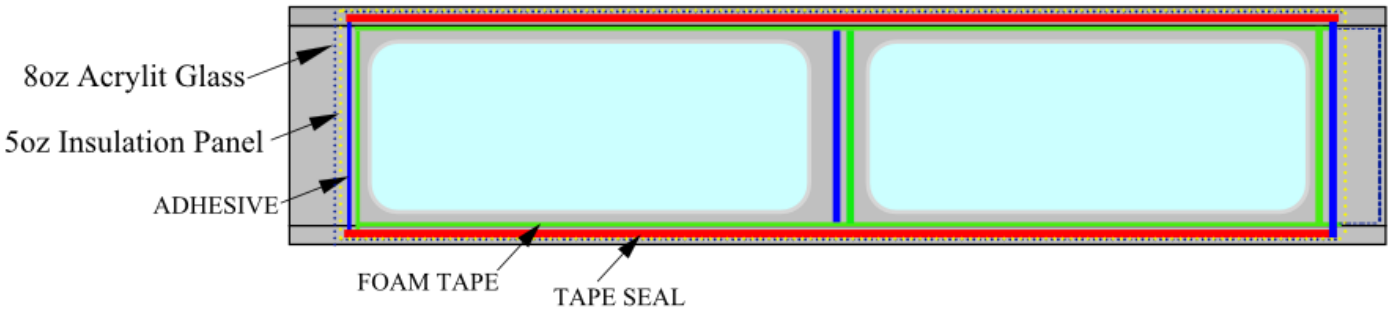
BOTTOM VIEW



Insulated Sky-Brite



BOTTOM VIEW



Note:
It is the users responsibility to ensure that the installation and use of all light transmitting panels comply with State, Federal and OSHA regulations and laws, including, but not limited to, guarding all light transmitting panels with screens, fixed standard railings, or other acceptable safety controls that prevent fall-through.

F&F Assemblies PO Box 279 1720 Hwy 190 West Oakhurst, TX 77359 Phone: 936-377-3611

TECHNICAL DATA SHEET

GLASTEEL Acrylit GC HIGH STRENGTH FIBERGLASS PANELS

FOR LAMINATION TO THE CFR LIGHT PANEL

Product Description: Consisting of an 8 OZ. 100 % Acrylic Translucent Panel
Woven Roving Strand combined with chopped strand Matrix Fiberglass Reinforcement

PHYSICAL PROPERTIES

Property	ASTM STD.	Typical Values
TENSILE STRENGTH	D-638	25,772 psi.
TENSILE MODULUS	D-638	1.52 X10^6 psi
FLEXURAL STRENGTH	D-790	24,306 psi.
FLEXURAL STRENGTH	D-790	0.79 X10^6 psi.
COMPRESSIVE STRENGTH	D-695	28905 psi.
SELF-IGNITION TEMPERATURE	D-1929	GREATER THAN 650^0 F.
SMOKE DENSITY	E-84	<450
COMPRESSIVE MODULUS	D-695	105 x 10^6 psi
BURNING RATE	D-635	<2.5 in / min.
UNIFORM BUILDING CODE		
CLASSIFICATION	D-635	CC2
BARCOL HARDNESS	D-2583	40-50
LIGHT TRANSMISSION	D-1494	55-60
U FACTOR/ SINGLE SHEET	NFRC 102-2004	1.08 BTU / Hr ft^2 F
U FACTOR/ DOUBLE SHEET (1 8oz & 1 5oz Fiberglass Panel)	NFRC 102-2004	.61 BTU / Hr ft^2 F
R FACTOR/ SINGLE SHEET	Calculated	0.92592593
R FACTOR/ DOUBLE SHEET (1 8oz & 1 5oz Fiberglass Panel)	Calculated	1.6393443
LINEAR THERMAL EXPANSION	D-638	1.9 X 10^{-5} in./in./^{0}F
BEARING STRENGTH	D-953	24.8 ksi (3.889
WATER ABSORBTION	D-570	0.25% @72^{0}F / 72hrs.
SOLAR HEAT GAIN/ SINGLE SHEET	NFRC 201-2004	0.45
SOLAR HEAT GAIN / DOUBLE SHEET (1 8oz & 1 5oz Fiberglass Panel)	NFRC 201-2004	0.35
SOLAR ABSORBANCE	E-903	77.73
REFLECTANCE AND EMMITANCE	E-1371 / E-1918	.58 / .91
IZOD IMPACT	D-4812	18.59 Ft-lb / in^2
LUMINEOUS TRANSMITTANCE / SINGLE SHEET	D1003-07	77.18%
LUMINEOUS TRANSMITTANCE / DOUBLE SHEET (1 8oz & 1 5oz Fiberglass Panel)	D1003-07	60% Calculated
HAZE	D1003-07	112.78%

Tolerances:

PANEL WEIGHT----------+/- 10%
RIB HEIGHT----------+/- 1/16th
LENGTH---------- --- +/- 1/8th
WIDTH----------+/- 1/8th
SQUARENESS----------+/- 1/8th

Codes and Approvals:
ASTM D-3841 — **SPECIFICATIONS FOR GLASS FIBER-REINFORCED POLYMERS**
Plastic Panels "UL90" — **Recognized Component File (#R5214)**

Florida Approved

FL31660-R2

24” CFR Roof Panel with Sky-Brite Light Transmitting Inserts

Negative Design Loads (psf)

SPAN	1592 Test Load	Design Load
2.50	100.00	50.00
3.00	93.00	46.50
3.50	86.00	43.00
4.00	79.00	39.50
4.50	72.00	36.00
5.00	**65.00**	**32.50**

Notes:

Panel: Sky-Brite Light Transmitting material in Nucor CFR Roof Panel.
Roof Panel Material: Nucor CFR 24 Ga. 24” Wide 3” trapezoidal rib with Vise-Lock seam.
Sky-rite Material: 8 oz Acrylit$_{GC}$ Woven Roving Fiberglass.
The above loads were derived from uplift tests done in accordance with ASTM E-1592
All values were interpolated from tests performed at spans of 2’ 6”and 5’-0
Test results are highlighted.
Design Load contains a 2.0 factor of safety per AISI ’01

Note:
It is the users responsibility to ensure that the installation and use of all light transmitting panels comply with State, Federal and OSHA regulations and laws, including, but not limited to, guarding all light transmitting panels with screens, fixed standard railings, or other acceptable safety controls that prevent fall-through.

F&F Assemblies PO Box 279 1720 Hwy 190 West Oakhurst, TX 77359 Phone: 936-377-3611

F & F ASSEMBLIES, INC.

SKY-BRITE WARRANTY

Specific Use Warranty *"ONE Year Limited Commercial Warranty"*

This warranty applies to F & F Assemblies' proprietary SKY-BRIGHT Patent Pending produced with smooth surface both sides sold for the express use as Light Transmitting panels for roofing applications for pre-engineered buildings for Commercial, Industrial and Agricultural use.

This warranty specifically precludes any attachments to the light transmitting panel including insulated panel assemblies.

WARRANTY COVERAGE

F&F Assemblies offers to commercial users /owners /buyers for resale only, a commercial warranty on SKY-BRIGHT Patent Pending panel assemblies for a period of ONE (1) year from the date of purchase that the panels will meet the following:

1. **Be manufactured with quality adhesives, Polyester or Acrylit fiberglass and other necessary chemistry**
2. **Be produced to uniform standards for thickness and weight**
3. **Be produced to configuration standards as set forth by Building Manufacturer.**
4. **Meet all requirements set out by ASTM D3841-86 (Specification for standard fiberglass panel construction).**
5. **Contain Acrylit$_{GC}$ (If Specified) with a warranty against yellowing or fiberbloom and minimum loss of light transmission of not more than 8% over the ten year period (Glass warranted by Glasteel directly).**
6. **This warranty, *on assembly only*, is for repair or replacement of assembly only, at the discretion of F & F Assemblies management only.**
7. **This warranty is negated by any miss-handling or the incorrect installation in a manner other than that specifically set out by the metal building manufacturer, for which this assembly is designed.**
8. **This warranty is exclusive to light transmitting panel assemblies and does not cover any losses incurred as a result of failure of these light panel systems and excludes labor or other replacement costs other than the SKY-BRITE assembly itself.**
9. **Snow Loading- Roof snow accumulations in excess of specified project design loading criteria can cause significant distress to the Light Panel Assembly. Since the density of snow varies depending upon weather conditions during and after a snow fall, it is not possible to determine a single value for the allowable height of snow that a building can safely support. In addition, the underlying snow density increases due to melting from the building heat loss and as water is absorbed from the melting snow above. As weather and temperature changes continue, ice may build up under the snow layers, further increasing the building roof loading intensity. This ice build up also causes additional water back-up on the roof deck. The most severe condition occurs when rain falls on a roof system already loaded by snow. In this case, the snow absorbs the rain water, and loads can approach the weight of water (62.4 pounds per cubic foot, or 5.2 pounds per inch of depth). This condition must be monitored with extreme caution. F & F Assemblies will not be responsible for any damage related to this issue.**
10. **Repair or replacement of product claimed to be defective, is to be determined at the sole descretion of F&F assemblies.**