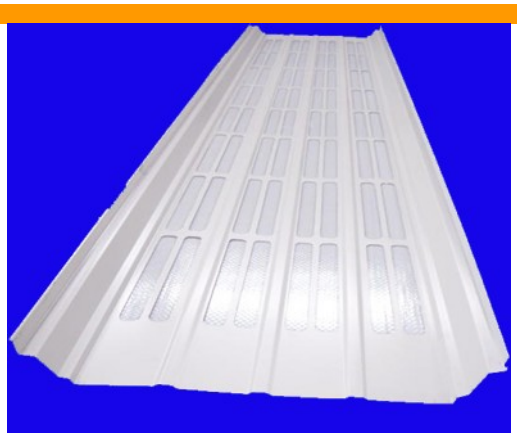
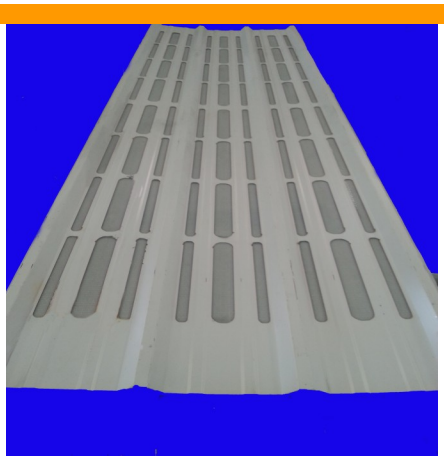
SKY-BRITE GUARD





This product passes the FM4471 Concentrated load test

SKY-BRITE GUARD **PATENTED WITH PATENT PENDING**

PROTECTIVE LIGHT TRANSMISSION PANEL SYSTEM

The SKY-BRITE GUARD protective light transmission panel system is the only combined integrated system designed to meet OSHA GUIDELINE 29 CFR 1910.23 (e) (8):

Skylight screens shall be of such construction and mounting that they are capable of withstanding a load of at least 200 pounds applied perpendicularly at any one area on the screen. They shall also be of such construction and mounting that under ordinary loads or impacts, they will not deflect downward sufficiently to break the glass below them. The construction shall be of grillwork with openings not more than 4 inches long or of slatwork with openings not more than 2 inches wide with length unrestricted.

The SKY-BRITE GUARD system is a laminated two piece construction of steel metal cladding and a high strength light transmitting panel bonded, which adds tremendous strength to the two substrates, thus forming a system with more strength than the original roofing material.
This system installs the same way as a standard roof panel and affords the building erector and owner a secure way to avoid light transmission panel breakage on the building as a result of foot traffic (after the panel is installed securely and fastened according to manufacturer's directions.)

The light transmission is approx. 36% greater than standard light transmission panels because the standard LTP has 55% light transmission. The SKY-BRITE GUARD system has a light transmission of 60% by using Frost color in the system. Light distribution is extraordinary due to this substrate.

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

SKY-BRITE GUARD

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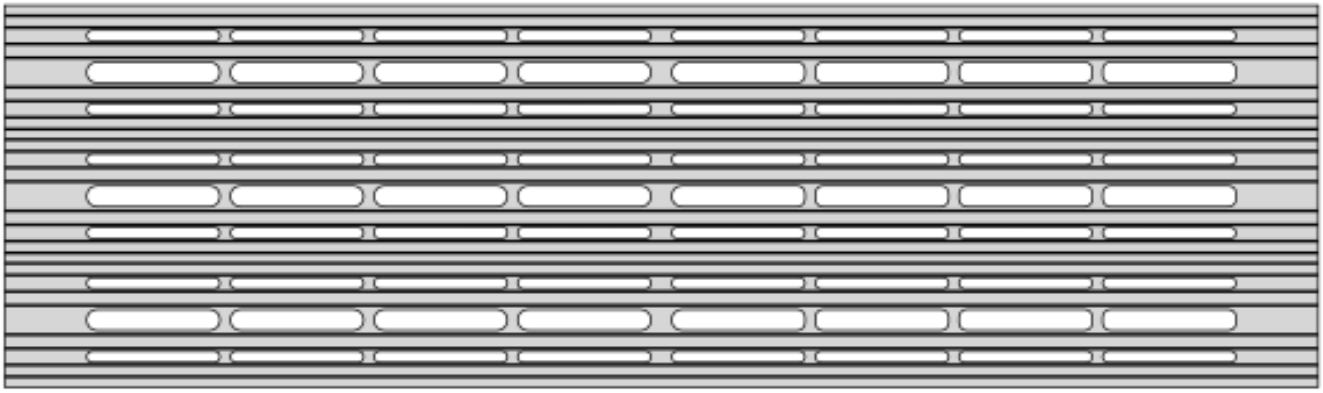
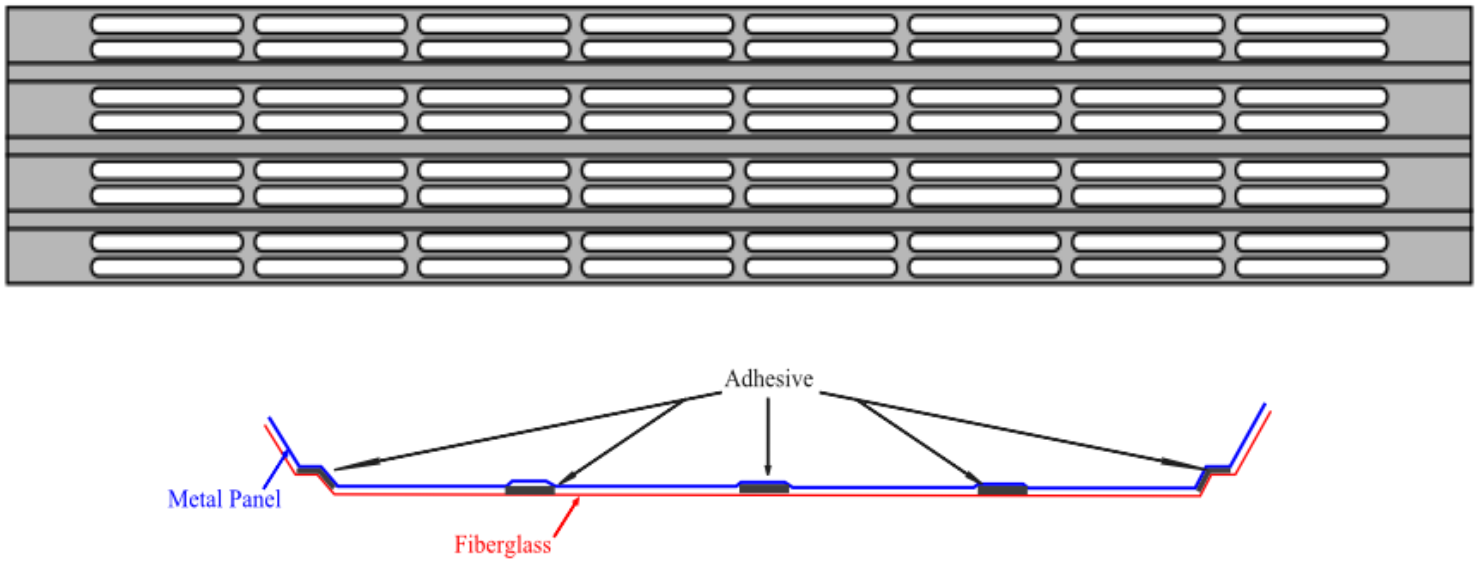
SKY-BRITE R GUARD



BRS SKY-BRITE GUARD



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

Project Number: 143-0392T-10D

PURPOSE:
The purpose of this test is to evaluate the structural performance of the panel when a concentrated load is placed on the panel at mid span.

TEST DATE:
July 17, 2014

TEST SPECIMEN:

Manufacturer: F & F Industries
P.O. Box 209
Oakhurst, Texas 77364

Panel: R Roof Panel, 26ga. 80ksi steel, 36" wide, 1 1/4" tall major rib at 12" O.C. with cutouts. Steel R Panel adhered to 8 oz Acrylit Woven Roving Fiberglass. R panel with G5 HPA Structural Sealant/Adhesive. The steel R panel was formed with A.S.C. machine Tools, Inc. rollformer.

Panel Fastener: #12—14 x 1" HWH SD #2 w/seal washer, 7"-5"-7"-5"-7" fastener pattern
Panel Span: 2 Spans @ 5'-0" O.C.
Panel Length: 10'-8"
Concentrated Load: 200 lbs. on a 3"x 3" area

TESTING APPARATUS:
Mounting Frame: 16 Ga. purlins spaced @ 5'-0" O.C.

Deflection Indicators: Aluminum ruler calibrated to 1/64".

Loading Device: 5 Ton Hydraulic Ram w/ Load Cell.

PROCEDURE:

1. Two panels were attached to purlins with fasteners @ 5'-0" O.C.

2. The woodblocking was placed @ midspan in the pan of one panel and a aluminum ruler was attached to the panel to obtain deflection readings. A zero reading was taken.

3. The hydraulic ram was pushed against the panel to obtain a load of 200 lbs. This was repeated (4) times for a total of (5) times.

4. Delection readings were taken before any load was placed on panel, with 200 lbs, and then after weight was taken off.

Project Number: 143-0164T-14

RESULTS/CONCLUSIONS:

Max Deflections

Test #1: Load Placed on R panel pan at mid span

Test Load	Load Area	Load Location	DEFLECTION READINGS			TEST DEFLECTION	PERMANENT DEFLECTION
			Zero	Test Load	Zero		
200 lbs	3"x3" square	R panel pan mid span of panel	3.3125	4.0000	3.3125	0.6875	0.000

Test #2: Load placed on R panel rib at mid span

Test Load	Load Area	Load Location	DEFLECTION READINGS			TEST DEFLECTION	PERMANENT DEFLECTION
			Zero	Test Load	Zero		
200 lbs	3"x3" square	R panel rib mid span of panel	1.1875	1.8750	1.1875	0.6875	0.000

Test #3: Load placed in R panel cut out on the fiberglass

Test Load	Load Area	Load Location	DEFLECTION READINGS			TEST DEFLECTION	PERMANENT DEFLECTION
			Zero	Test Load	Zero		
200 lbs	3"x3" square	R panel cut out mid span of panel	2.1250	3.0000	2.1250	0.8750	0.000

The maximum deflection of the panel at mid span was 0.875". The panels were inspected during and after the test and NO failures were found.

STATEMENT OF INDEPENDENCE:

Force Engineering & Testing, Inc. or any persons employed by them do not have any financial interest in F & F Assemblies, Inc.

Force Engineering & Testing, Inc. is not owned, operated or controlled by F & F Assemblies, Inc.

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

Project Number: 143-0392T-10D

PURPOSE:
The purpose of this test is to evaluate the structural performance of the panel when a concentrated load is placed on the panel at mid span.

TEST DATE:
March 5, 2011

TEST SPECIMEN:
Manufacturer: F & F Industries
P.O. Box 279
Oakhurst, Texas 77359

Panel: TS-324 24 Ga., 24" wide, 3" tall trapezoidal w/ Sky-Brite Light Transmitting Panel insert, Triple Lock Seam, Building Research Systems, Inc. Rollformer.

Sky-Brite Material- 8 oz Acrylit$_{GC}$ Woven Roving Fiberglass bonded to metal panel with G5 HPA Structural Sealant/Adhesive.

Panel Properties: Fy = 53.3 ksi Steel, 0.026" thickness
(See ASTM E 8 test report in Appendix)
Panel Clip: FC 462 Fixed Clip, 20 Ga. Galv. clip
Clip Fastener: 1/4 –14 x 1-1/4" HWH SD #2, By SFS, (2) per clip
Sky-Brite Spans: 2 Spans @ 5'-0" O.C.
Panel Length: 10'-2"
Concentrated Load: 200 lbs. on a 3"x 3" area

TESTING APPARATUS:
Mounting Frame: 16 Ga. purlins spaced @ 5'-0" O.C.
Deflection Indicators: Aluminum ruler calibrated to 1/64".
Loading Device: 5 Ton Hydraulic Ram w/ Load Cell.

PROCEDURE:

1. Three panels were attached to purlins with fasteners @ 5'-0" O.C.

2. The woodblocking was placed @ midspan in the pan of one panel and a aluminum ruler was attached to the panel to obtain deflection readings. A zero reading was taken.

3. The hydraulic ram was pushed against the panel to obtain a load of 200 lbs. This was repeated (4) times for a total of (5) times.

4. Delection readings were taken before any load was placed on panel, with 200 lbs, and then after weight was taken off.

RESULTS/CONCLUSIONS:

Test #1

Test Load	Load Area	Load Location	DEFLECTION READINGS Zero	Test Load	Zero	TEST DEFLECTION	PERMANENT DEFLECTION
200 lbs	3"x3" square	Mid Span of panel	3.625	3.375	3.625	0.750	0.000

Test #2

Test Load	Load Area	Load Location	DEFLECTION READINGS Zero	Test Load	Zero	TEST DEFLECTION	PERMANENT DEFLECTION
200 lbs	3"x3" square	Mid Span of panel	3.625	3.375	3.625	0.750	0.000

Test #3

Test Load	Load Area	Load Location	DEFLECTION READINGS Zero	Test Load	Zero	TEST DEFLECTION	PERMANENT DEFLECTION
200 lbs	3"x3" square	Mid Span of panel	3.625	3.375	3.625	0.750	0.000

Test #4

Test Load	Load Area	Load Location	DEFLECTION READINGS Zero	Test Load	Zero	TEST DEFLECTION	PERMANENT DEFLECTION
200 lbs	3"x3" square	Mid Span of panel	3.625	3.375	3.625	0.750	0.000

Test #5

Test Load	Load Area	Load Location	DEFLECTION READINGS Zero	Test Load	Zero	TEST DEFLECTION	PERMANENT DEFLECTION
200 lbs	3"x3" square	Mid Span of panel	3.625	3.375	3.625	0.750	0.000

The maximum deflection of the panel at mid span was 0.75". The panels were inspected during and after the test and no failures were found.

STATEMENT OF INDEPENDENCE:

Force Engineering & Testing, Inc. or any persons employed by them do not have any financial interest in F & F Industries.

Force Engineering & Testing, Inc. is not owned, operated or controlled by F & F Industries.

Force Engineering & Testing, Inc.
State of Texas
Reg. # F-4611

11/26/11

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