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ATLNC 0809.02-05

Report Date: 08/18/05

Test Dates: 08/09/05 - 08/12/05

ATLNC Certification # 03-0210.02

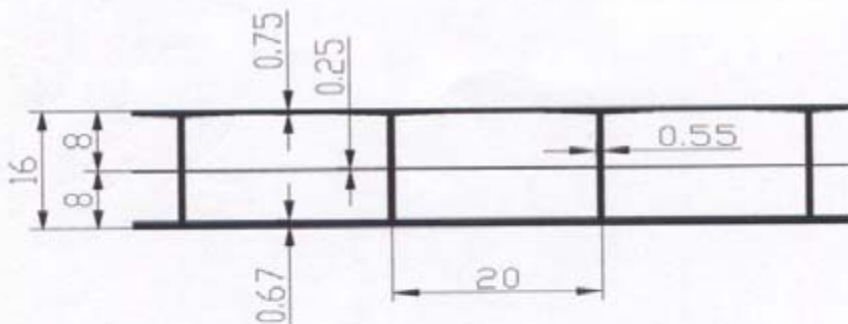
Test Requested By: Ward Ogle
Polygal Inc.
9405A D. Ducks Lane
Charlotte, N.C. 28273
Phone 704-588-3800 Fax 704-588-7400

Test Standards: FBC-2004 - TAS 201, 202, 203
2003 ICC, IRC, IBC
ASTM E 1886-02, E 1996-02
ASTM E 330-02

Test Conditions: 80-85 degrees F

Design Pressures: Specimens A1, B, C, +45, -45

Description of product tested: Specimens A1, B, C 6' x 8' 16mm thick triple wall polycarbonate sheets with an extruded aluminum channel on perimeter as shown in Polygal drawing number PI0808.



Polygal SG 16mm

Configuration: Specimens A1, B

Head Wood Sill Wood Jambs Wood

Specimen C

Head Solid Concrete Sill Solid Concrete Jambs Solid Concrete

Description of Unit:

Specimen A1, B, C, D: 6' x 8' 16mm triple walled polycarbonate panel. The sheet perimeter was mounted in a 2" x 1/2" x .063" aluminum channel butt jointed at corners. The specimens were fastened to the test bucks with 3/8-16 x 1-1/4" bolts with washers or 3/8-16 x 2" threaded rod with washers and wing nuts inserted into wood or concrete Sammies at the head and sill located from left to right 1-1/2", 3", 15", 27", 39", 51", 63", 69", 70-1/2" and on each jamb from top to bottom 1-1/2", 10-1/2", 22-1/2", 34-1/2", 46-1/2", 58-1/2", 70-1/2", 82-1/2", 93-1/2".

Screws and method of attachment

Type	Location	Specimen
1-1/2" Concrete Sammies for 3/8" rod	Head, Sill, Jambs	A1, B
3" Wood Sammies for 3/8" rod	Head, Sill, Jambs	C
3/8" -16 x 1-1/4" bolts	Head, Sill, Jambs	A1, B, C
3/8" -16 x 2" Threaded Rod / Wing Nuts	1 at each end of channels	A1, B, C

STATIC AIR PRESSURE
TAS 202, ASTM E 330-97

**Specimen A1
Design Loads**

+45psf, -45psf

Range of tests

Positive loads

Design Test

Time Seconds	Load psf	Max.	Perm.	Recovery
30	45	3-1/4"	3/8"	88.5%
30	67.5	4-1/16"	7/16"	90%

Range of tests

Negative loads

Design Test

Time Seconds	Load psf	Max.	Perm.	Recovery
30	45	4-9/16"	1/16"	99%
30	67.5	5-5/8"	1/8"	98%

Note: Specimen A failed. Fasteners were added to jambs and tested as A1 successfully.

Impact
Large Missile

TAS 201, ASTM-E 1996-97 / 02

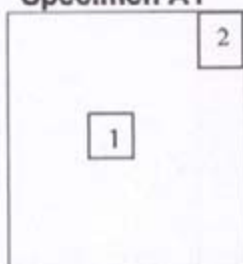
Type and weight of missile: Missile level D - #2 Southern Pine 2 x 4, Length 96" and 9lbs. All corner shots were impacted away from structural supports.

Note:

X measurement from left edge of specimen.

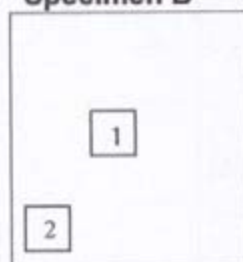
Y measurement from bottom edge of specimen.

Specimen A1



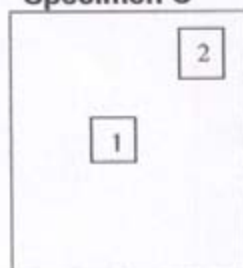
Impact No.	Speed FT. / Sec.	X Meas.	Y Measure
1	50	36-1/2"	48"
2	50	62-1/2"	88"

Specimen B



Impact No.	Speed FT. / Sec.	X Meas.	Y Meas.
1	50	34-1/2"	48"
2	50	7"	7"

Specimen C



Impact No.	Speed FT. / Sec.	X Meas.	Y Meas.
1	50	36-1/2"	48"
2	50	88"	87-1/2"

Note: No penetration or ruptures occurred.

Impact Deflections

	A1		B		C	
	Max Def.	Perm. Set	Max Def.	Perm. Set	Max Def.	Perm. Set
1)	3-5/8"	1/8"	3-5/16"	1/8"	2-7/8"	7/16"
2)	2-1/2"	1/16"	2-3/8"	1/4"	1-7/8"	1/16"

Cyclical Test

TAS 203, ASTM E 1996-97 / 02

Specimens:

Design Loads: + 45 - 45psf

Range of test Positive loads	Actual Load psf	# of cycles	Cycles per minutes	A1		B		C	
				max def	perm set	max def	perm set	max def	perm set
.2 - .5	9 - 23	3500	57	2-5/8"		2"		1-11/16"	
0 - .6	0 - 27	300	57	2-7/8"		2-5/16"		1-15/16"	
.5 - .8	23 - 36	600	56	3-1/4"		2-11/16"		2-3/16"	
.3 - 1.0	14 - 45	100	56	3/5/8"		3-3/16"		2-1/2"	
1.3	58.5	1	1	4-3/16"	5/16"	3-9/16"	3/8"	2-13/16"	3/8"

Range of test Negative loads	Actual Load psf	# of cycles	Cycles per minutes	A1		B		C	
				Max def	perm set	max def	perm set	max def	perm set
.3 - 1.0	14 - 45	50	56	4-15/16"		4-7/8"		4-5/8"	
.5 - .8	23 - 36	1050	56	4-9/16"		4-7/16"		4-1/2"	
0 - .6	0 - 27	50	56	4-1/4"		4-1/4"		4-7/16"	
.2 - .5	9 - 23	3350	57	4"		4-1/16"		4-5/16"	
1.3	58.5	1		5-3/8"	3/8"	5-5/16"	5/16"	5-1/4"	3/16"

Cycles Completed 9002

Description of specimens after test:

Specimens showed no resultant failure or distress after cyclical test.

Note: 2 mil polyethylene film was used for the Static Air Pressure Test; it is the opinion of the undersigned that it had no influence on the results of the test.

Observers-

Tony Sivore / ATL
Eddie Ashe, Lynell Crowe, Keith Owen, / ATL
David W. Johnson, P.E.
Ward Ogle / Polygal

Keith Owen, Lab Manager
American Test Lab, Inc.

Keith Owen
8/18/05

All Tests Witnessed and Certified by:

David Johnson P. E.
1656 Calvert Rd.
Brevard, NC 28712
Florida P.E. # 00061915

Engineer Seal And Signature

David Wesley Johnson
8/18/05

Certificate of Independence: The witnessing engineer has no financial interest in American Test Lab of North Carolina, Polygal Inc. or their parts vendors. Witnessing engineer is in complete compliance of Florida Statue 9B-72, Section 72.110.

Disclaimer:

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