

NATIONAL CERTIFIED TESTING LABORATORIES

8350 PARKLINE BLVD SUITE 320 • ORLANDO, FLORIDA 32809 • TELEPHONE (407) 240-1356
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 www.nctlinc.com

November 24, 2004

Altech Panel Systems
 1 Johnson Street, Suite 118
 Cartersville, GA 30120

RE: STRUCTURAL TEST RESULTS SUMMARY

Mr. Jerry Radford:

On November 23, 2004, tests were conducted by our laboratory on Altech Panel Systems' 16 Gauge Composition Wall Panel System in accordance with the ASTM E283, E331, E330, and E1886/1996 Test Methods.

Test Method	Title of Test	Test Results
ASTM E283	Air Infiltration	
	1.57 psf (25 mph)	Pass
	6.24 psf (50 mph)	Pass
ASTM E331	Water Resistance	
	5.0 gph/ft ² WTP= 15 psf	Pass
ASTM E330	** Uniform Load Structural	
	* 75 psf exterior * 75 psf interior	Pass Pass
ASTM E1886	Cycle Test	Pass
ASTM E1996	Impact Test	Pass

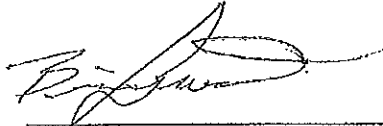
** No glass breakage or permanent damage causing the unit to be inoperable.

The specimen tested met the performance criteria for the above referenced specifications.

A full report containing the details of the above referenced tests are forthcoming at the time of this letter.

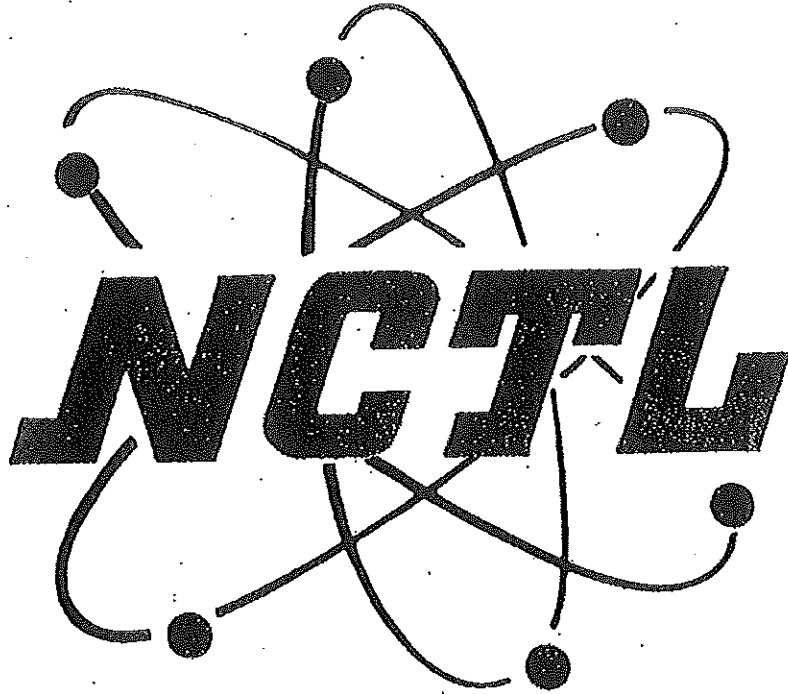
If you have any questions, please contact me at your convenience.

Sincerely,
NATIONAL CERTIFIED TESTING LABORATORIES

A handwritten signature in black ink, appearing to read "Brian Guertin", written over a horizontal line.

Brian Guertin
Manager of Testing Services

Ref: NCTL-210-3064-1, 2



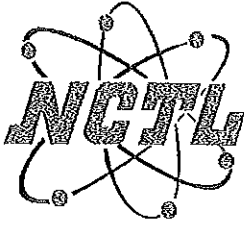
Altech Panel System

STRUCTURAL PERFORMANCE TEST REPORT

**Altech Panel System's
Aluminum Composite Wall Panel System 152.5" x 108.5"**

NCTL-210-3064-1A

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NCTL Report No: 210-3064-1A
TEST DATE: 11/22/04
REPORT DATE: 01/11/05

NCTL Certification No: 03-0514.11

Test Requested By - Altech Panel System.
1 Johnson Street Suite 118
Cartersville, GA 30120

Tests Conducted - ASTM E283-91, Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls and Doors Under Specified Pressure Differences Across the Specimen. ASTM E330-90, Test Method for Structural Performance of Exterior Windows, Curtain Walls and doors by Uniform Static Air Pressure Difference. ASTM E331-93, Test Method for Water Penetration of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference. ASTM E1996-03 Performance of Exterior Windows, Glazed Curtain Walls, Doors and Storm Shutters Impacted by Windborne Debris in Hurricanes. ASTM E1886-02 Performance of Exterior Windows, Curtain Walls, Doors and Storm Shutters Impacted by Missiles and Exposed to Cyclic Pressure Differentials.

Design Pressures:

Specimen 1	+ 50 .0 psf Positive	-50 .0 psf Negative
Specimen 2	+ 50 .0 psf Positive	-50 .0 psf Negative
Specimen 3	+ 50 .0 psf Positive	-50.0 psf Negative
Specimen 4	+ 50 .0 psf Positive	-50.0 psf Negative

LARGE MISSILE DATA: 2 x 4 Southern Yellow Pine (S4S)
Length: 8'2"
Weight: 9 lbs.
Velocity: 34 mph - 50 ft. per second

DESCRIPTION OF UNIT:

Model Designation - Aluminum Composite Wall Panel System

Overall Size - 152.5" wide x 108.5" high.

Configuration - XX
X

PROFESSIONALS IN THE SCIENCE OF TESTING

[Handwritten signature and date]
11/21/05

X

MATERIAL CHARACTERISTICS:

Main Frame Construction - The main frame was constructed from 16ga steel stud framing. The first stud was located 8" from left side and 16" on center thereafter. Each stud was fasten to the track at the top and bottom with # 12 x 1" Tek screw front and back. There were three (3) 4mm aluminum composite panels measuring Top panel 120.0" wide x 48.0" high. Bottom panel 120.0" wide x 60.0" high. Side panel 32.0" wide x 108.5". All caulk joints measured 1/2" wide. An Aluminum extrusion die # ALTP-1 measuring the full length of the sill was attached to each stud with # 12 x 1.5" Tex screws. Each panel had a 1.0" return. The top and bottom panels had an aluminum extrusion die # ALTP-3 attached to the return on all four sides with thirty nine (39) # 8 x .750 Phillips flat head self-drilling screws. The side panel had an aluminum extrusion die # ALTP-3 attached to the return on all four sides with thirty six (36) # 8 x .750 Phillips flat head self-drilling screws See drawing attached. Horizontal between top and bottom panels located on each stud there was a bracket measuring 3" x 3" die # ALTP-2 each bracket was attached to the stud with one (1) # 12 x 1.5" hex head screw.

Vertical between top and bottom and side panels on the stud there was ten (10) brackets measuring 3" x 3" die # ALTP-2 located 4.0", 17.5", 32.5", 44.75", 51.25", 65.75", 81.25", 92.0", 103.5" and 106.0" measuring from top to bottom each bracket was attached to the stud with one (1) # 12 x 1.5" hex head screw all the panels interlock into the brackets. The head and both sides were attached to the studs with .125" x 1.25" 6063-T5 aluminum flat bar with # 12 X 1.5" Tex screws located both sides 4.0", 14.0", 27.0", 38.5", 50.5", 62.5", 74.5", 86.5", 97.0" and 106.0" measuring from top to bottom. Located in the head 9.0", 27.5", 41.5", 58.75", 83.25", 110.75", 126.75", 133.75", 142.25", 150.25" and 161.25" measuring from left to right.

Glazing - N/A.

Glazing Material - N/A

Weather-stripping - N/A

Hardware - N/A

Weepholes - N/A

Reinforcement - There was two (2) 3/4" x 3-1/2" boards fastens to the back of the specimen located 36.0" and 72.0" down and attached to each stud with # 12 x 1.5" Tex screws.

Sealant - The unit was sealed to the wooden test buck on the perimeter and joints with Dow Corning 795 Silicone Building Sealant.

INSTALLATION: The specimen was tested in a 2" 12" PT wooden test buck. The specimen was anchored with fifty (50) # 12 x 1.5" Tex screws see drawing attached.

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TEST RESULTS

AIR INFILTRATION TEST

Air Infiltration Tests were conducted in accordance with ASTM E 283-91

Specimen # 1

	<u>Measured</u>	<u>Allowable</u>
Air at 1.57 psf	0.006 cfm/ft ²	0.3 cfm/ft ²
Air at 6.24 psf	0.002 cfm/ft ²	0.3 cfm/ft ²

WATER INFILTRATION TEST

Water Infiltration Test was conducted in accordance with ASTM E 331-93

Specimen # 1

WTP= 15.0 psf load duration 15 minutes No water penetration over sill

STATIC AIR PRESSURE TEST

Static Tests were conducted in accordance with ASTM E 330-84

Specimen #1

<u>Design Load</u>		<u>Time (Sec.)</u>		<u>psf Load</u>		<u>Measured Def.</u>		<u>Allowed Perm. Set</u>	
+ 50.0 psf, -50.0 psf									
<u>Positive Loads</u>									
1/2 Test		30		37.50					
Design		30		50.00					
Test		30		75.00	Loc#1	0.039"		0.480"	
					Loc#2	0.017"		0.432"	
<u>Negative Loads</u>									
1/2 Test		30		37.50					
Design		30		50.00					
Test		30		75.00	Loc#1	0.028"		0.480"	
					Loc#2	0.011"		0.432"	

- Loc # 1 Maximum Allowable Permanent Set (0.4% of 120.0" span) = 0.480"
- Loc # 2 Maximum Allowable Permanent Set (0.4% of 108.0" span) = 0.432"
- Loc # 1 Maximum allowable Deflection (L/180 of 120.0" span) = 0.685"
- Loc # 2 Maximum allowable Deflection (L/180 of 108.0" span) = 0.617"

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LARGE MISSILE IMPACT TEST

Impact tests were conducted in accordance with ASTM E1996-03.

Specimens # 2

	Loc # 3 X	Loc# 4	X
Loc#1 X	Loc# 2 X		

- Location # 1 Bottom left corner of Panel*
- Location # 2 Mid-span of bottom Panel*
- Location # 3 Mid-span of Horizontal Scheme*
- Location # 4 Mid-span of Vertical Scheme*

Description of specimens after impact test:

All impacts rejected the missile impact without allowing penetration. Upon completion of testing the specimen meet the requirements of ASTM E 1996-03

Specimens # 3

	Loc # 3 X	Loc# 4	X
Loc#1 X	Loc# 2 X		

- Location # 1 Bottom left corner of Panel*
- Location # 2 Mid-span of bottom Panel*
- Location # 3 Mid-span of Horizontal Scheme*
- Location # 4 Mid-span of Vertical Scheme*

Description of specimens after impact test:

All impacts rejected the missile impact without allowing penetration. Upon completion of testing the specimen meet the requirements of ASTM E 1996-03

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1/21/05

LARGE MISSILE IMPACT TEST Con.t
Specimens # 4

	Loc # 3 X	Loc# 4 X
Loc#1 X	Loc# 2 X	

- Location # 1 Bottom left corner of Panel
- Location # 2 Mid-span of bottom Panel
- Location # 3 Mid-span of Horizontal Scheme
- Location # 4 Mid-span of Vertical Scheme

Description of specimens after impact test:
 All impacts rejected the missile impact without allowing penetration. Upon completion of testing the specimen meet the requirements of ASTM E 1996-03

CYCLE TEST

Cycle test were conducted in accordance with ASTM E1886-02

Specimen 2

Design Load psf + 50.0 psf - 50.0 psf

<u>Range of test</u>	<u>Actual load psf</u>		<u># of cycles</u>	<u>cycles/min</u>
<u>Positive loads</u>				
+ .2 - .5	10.0	25.0	3500	40
+ .0 - .6	0.00	30.0	300	40
+ .5 - .8	25.0	40.0	600	40
+ .3 - 1.0	15.0	50.0	100	40

<u>Range of test</u>	<u>Actual load psf</u>		<u># of cycles</u>	<u>cycles/min</u>
<u>Negative loads</u>				
- .3 - 1.0	15.0	50.0	50	40
- .5 - .8	25.0	40.0	1050	40
- .0 - .6	00.0	30.0	50	40
- .2 - .5	10.0	25.0	3350	40

9000 cycles completed

Description of specimens after cycle: Specimens showed no resultant failure or duress.

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 11/21/05

Criteria 7.1.1 With no tear formed longer than (5") or no opening formed through which a (3") diameter solid sphere can freely pass. Upon completion of testing the specimen meet the requirements of ASTM E 1886-02

CYCLE TEST Con,t

Specimen 3

Design Load psf + 50.0 psf - 50.0 psf

<u>Range of test</u>	<u>Actual load psf</u>		<u># of cycles</u>	<u>cycles/min</u>
<u>Positive loads</u>				
+ .2 - .5	10.0	25.0	3500	40
+ .0 - .6	0.00	30.0	300	40
+ .5 - .8	25.0	40.0	600	40
+ .3 - 1.0	15.0	50.0	100	40

<u>Range of test</u>	<u>Actual load psf</u>		<u># of cycles</u>	<u>cycles/min</u>
<u>Negative loads</u>				
- .3 - 1.0	15.0	50.0	50	40
- .5 - .8	25.0	40.0	1050	40
- .0 - .6	00.0	30.0	50	40
- .2 - .5	10.0	25.0	3350	40

9000 cycles completed

Description of specimen after cycle: Specimen showed no resultant failure or duress.

Criteria 7.1.1 With no tear formed longer than (5") or no opening formed through which a (3") diameter solid sphere can freely pass. Upon completion of testing the specimen meet the requirements of ASTM E 1886-02

Specimen 4

Design Load psf + 50.0 psf - 50.0 psf

<u>Range of test</u>	<u>Actual load psf</u>		<u># of cycles</u>	<u>cycles/min</u>
<u>Positive loads</u>				
+ .2 - .5	10.0	25.0	3500	40
+ .0 - .6	0.00	30.0	300	40
+ .5 - .8	25.0	40.0	600	40
+ .3 - 1.0	15.0	50.0	100	40

<u>Range of test</u>	<u>Actual load psf</u>		<u># of cycles</u>	<u>cycles/min</u>
<u>Negative loads</u>				
- .3 - 1.0	15.0	50.0	50	40
- .5 - .8	25.0	40.0	1050	40
- .0 - .6	00.0	30.0	50	40
- .2 - .5	10.0	25.0	3350	40

9000 cycles completed

W. J. [Signature]
1/26/65

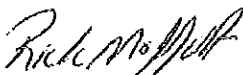
Description of specimens after cycle: Specimens showed no resultant failure or duress. Criteria 7.1.1 With no tear formed longer than (5") or no opening formed through which a (3") diameter solid sphere can freely pass. Upon completion of testing the specimen meet the requirements of ASTM E 1886-02

**Note: There were no stiffers used in the panels for testing.*

Observers -

- Mr. Brain Guertin (NCTL)*
- Mr. Daniel Ocasio (NCTL)*
- Mr. Ricky Moffett (NCTL)*
- Mr. Jerry L. Radford (Altech Panel Systems)*
- Mr. Gerry Ferrera (P.E.)*

Dade County Witness: None Present



Rick Moffett
Laboratory Technician



Christopher Bennett
Division Manager

Disclaimer: This test report was prepared by National Certified Testing Laboratory (NCTL), for the exclusive use of the above named client; it does not constitute certification of this product. The results are for that particular specimen tested and does not imply the quality of similar or identical products manufactured or installed from specifications identical to the tested product. NCTL is a testing lab and assumes that all information provided by the client is accurate and does not guarantee or warranty any product tested or installed.

11/21/05

Laboratory Compliance Letter

Notification No: NCTL - 04015

Laboratory Certification No: 03-0514.11

To Whom It May Concern,

On November 11th 2004 Altech Panel Systems started testing at National Certified Testing Laboratories in Orlando, FL. All tests were performed in full accordance with all Dade County requirements with no deviations.

Test Report No.
NCTL 210-3064-1

Product Series Description
Aluminum Composite Wall Panel

NATIONAL CERTIFIED TESTING LABORATORIES

Gerald J. Ferrara, P.E.
200 West Wisconsin Avenue
Deland, Florida 32720
(386) 734-8792
(386) 734-8692 - FAX

[Handwritten Signature]
1/21/05