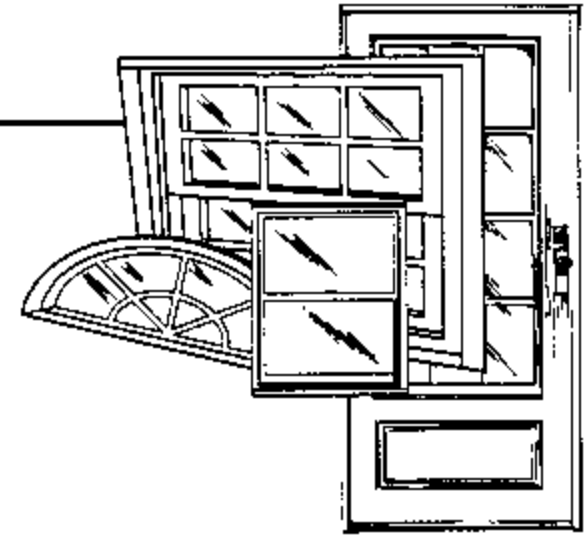


# CERTIFIED TESTING LABORATORIES

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**Report No.:** CTLA716WA

DC Not. No.: 01022

Date: June 21, 2001

CTL Certification # 99-0105.02

Test Dates: June 1, 2001

**Test Requested By -** Galaxy Window & Door  
1900 N. Andrews Ave. Ext.  
Unit A  
Pompano Beach, Fl 33069  
Phone 954.978.2400      Facsimile 954.978.2403

**Tests Conducted:** PA201, PA202 & PA 203 (with no deviations)

## Design Pressures:

Specimen 1 (PA 202)	Fixed Frame Vinyl Window	+ 75.0 psf. - 80.0 psf.
Specimen 2 (PA 202)	Radius Top Fixed Frame Vinyl Window	+ 75.0 psf. - 80.0 psf.
Specimen 3 (PA 201 / 203)	Radius Top Fixed Frame Vinyl Window	+ 60.0 psf. - 65.0 psf.

## (1) DESCRIPTION OF SERIES

**Model Designation** "Tropical Force Series" Extruded Vinyl Fixed Frame Window

**Overall Size:** Specimen 1 (Frame) 58.0" wide x 76.00" high x 3.25" deep  
Specimens 2 & 3 (Frame) 76.0" wide x 37.125" high x 3.25" deep

**Configuration:** Specimens 1, 2 & 3 0

**No. & Size of Sash:** None

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**(2) MATERIAL CHARACTERISTICS**

**Frame Material:** Extruded Vinyl Lineals by P H Tech Inc.

**Frame Construction:**

The 3.25" wide x 1.846" high frame is constructed from rigid PVC lineals. The outer wall is a maximum 0.083" and the inner cavity walls are a maximum 0.044" thickness. The frame utilizes rigid PVC block measuring 0.175" thick x 1.053" wide x 2.221" long glued to the frame for reinforcement at each anchor location. On Specimen 1 the lower exterior cavity on both horizontal and vertical frames are reinforced with a continuous steel channel measuring 0.508" wide x 0.375" high with 0.058" wall thickness and terminated a minimum of 0.25" from each end (specimens 2 and 3, the radius top unit due to construction restraints does not have any steel reinforcement within the frame members). The corners are mitered and fusion welded.

**Glazing:**

**Glazing Material –**

All Specimens

15/32" (0.472") Sentry Glass Plus Tempered Glass Laminated by Dlubak  
(0.125" ext. side temp – 0.045" PVB – 0.007" PET – 0.045" PVB – 0.250" int. side temp)  
As stated by the manufacturer.

**Note:**

1. Exterior layer of glass was stepped back 1/2" around perimeter to allow for direct glazing of interlayer to the appropriate frame members.
2. Glazing Bug (Permanent Identification) verified prior to testing.

**Glazing Method -**

Exterior wet glazed with Pecora 896 as stated by the manufacturer, 0.5" bite on glass, 0.079" thick average area of silicone. Interior side of glass glazed with extruded PVC glass stop (no. 2 in BOM, 0.675" high x 0.902" deep). The interior stop was friction fit into the fixed frame without sealants.

<b><u>Daylight Opening:</u></b>	Specimen 1	54.0" wide x 72.75" high
	Specimens 2 & 3	72.3125" wide x 36.265" high

**(Reinforcement:**

<b>Specimen 1</b>	Four (4)	Main frame reinforcement-The lower exterior cavities on both horizontal and vertical frame are reinforced with a continuous steel channel measuring 0.508" wide x 0.375" high with 0.058" wall thickness and terminated a minimum of 0.25" from each end.
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	Thirty (30)	Rigid PVC block measuring 0.175" thick x 1.053" wide x 2.221" long glued to the main frame for reinforcement at each anchor location.
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<b>Specimens 2&amp;3</b>	Twenty two (22)	Rigid PVC block measuring 0.175" thick x 1.053" wide x 2.221" long glued to the main frame for reinforcement at each anchor location.
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**3) INSTALLATION:**

**Screws and Method of Attachment:**

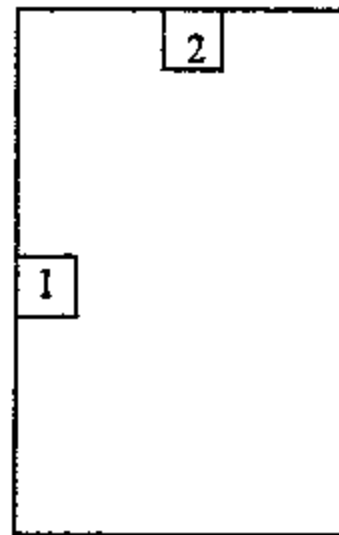
- Specimen 1 -** Thirty (30) #10 x 1.25 Phillips pan head screws
- Head Frame -** Six (6) located left to right @ 6.0", 15.125", 24.25", 33.375", 42.5" and 51.625".
- Vertical Frames -** Nine (9) each vertical located from the top down @ 6.0", 14.0", 22.0", 30.0", 38.0", 46.0", 54.0" 62.0" and 70.0".
- Sill Frame -** Six (6) located left to right @ 6.0", 15.125", 24.25", 33.375" and 42.5" and 51.625".
- Specimens 2 & 3 -** Twenty two (22) #10 x 1" Phillips pan head screws.
- Sill Frame -** Seven (7) located left to right @ 5.0", 17.0", 29.0", 41.0", 53.0", 65.0", and 70.0".
- Radius Top -** Fifteen (15) from left side 5.0" from each end and 8.0" on center thereafter.

**(4) SEQUENCE OF TESTS PERFORMED:**

**Test Sequence: PA 202**

**Deflection Gauge Locations**

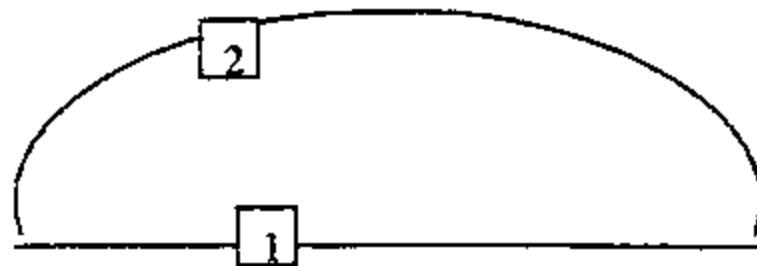
1. Air Infiltration
2. 1/2 Test Pressure Positive
3. 1/2 Test Pressure Negative
4. Design Pressure Positive
5. Design Pressure Negative
6. Water Infiltration Positive Direction
7. Full Test pressure Positive
8. Full Test Pressure Negative



**O**

**Specimen 1**

**O**



**Specimens 2 & 3**

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*Handwritten date: 7/19/01*

Deflection was measured with two (2) CDI 5" dial indicators: location #1-SN 971649614 and location #2-SN 002644132. The dial indicators were placed mid-span between the fasteners.

**AIR INFILTRATION**

Air Infiltration Tests were conducted in accordance with DCBCCD PA 202-94

Air at 1.57 psf		Actual	Allowable
Specimen 1	Fixed Frame	0.0 CFM/SQ FT	0.34 CFM/SQ FT
Specimen 2	Fixed Frame	0.0 CFM/SQ FT	0.34 CFM/SQ FT

**WATER INFILTRATION TEST**

Water Infiltration Test was conducted in accordance with DCBCCD PA 202 – 94

(Conducted after 1/2 test and design loads were performed in positive and negative directions.)

Specimen 1	Fixed Frame	Water @ 15.0 psf for 15 min.	Result: Passed
Specimen 2	Fixed Frame	Water @ 15.0 psf for 15 min.	Result: Passed

No water penetration was observed.

**STATIC AIR PRESSURE TESTS**

Static Tests were conducted in accordance with DCBCCD PA 202-94

**Specimen 1      Fixed Frame**

**Design Loads      + 75.0 psf, - 80.0 psf.**

Range of test	time	actual load	deflection	perm. set
Positive loads	(seconds)	psf		
1/2 Test	30	*60.00		
Design	30	*90.00		
Test	30	112.50	(1) 0.098" (2) 0.095"	0.030" 0.011"

Range of test	time	actual load	deflection	perm. set
Negative loads	(seconds)	psf		
1/2 Test	30	*65.00		
Design	30	*97.50		
Test	30	120.00	(1) 0.113" (2) 0.071"	0.018" 0.008"

Location (1) - Max. allowable Perm. Set after test load (0.4% of 9.125" span) = 0.0365".

Location (2) - Max. allowable Perm. Set after test load (0.4% of 8.0" span) = 0.032".

\* The 1/2 test and design loads listed exceed the proscribed protocol requirements and the set criteria was within the allowable limits at these loads.

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**Static Air Pressure Test Con't.**

**Specimen 2      Fixed Frame**

**Design Loads      + 75.0 psf, - 80.0 psf.**

Range of test	time	actual load	deflection	perm. set
Positive loads	(seconds)	psf		
1/2 Test	30	*60.00		
Design	30	*90.00		
Test	30	112.50	(1) 0.089" (2) 0.129"	0.007" 0.011"
Range of test	time	actual load	deflection	perm. set
Negative loads	(seconds)	psf		
1/2 Test	30	*65.00		
Design	30	*97.50		
Test	30	120.00	(1) 0.048" (2) 0.116"	0.002" 0.029"

Location (1) - Max. allowable Perm. Set after test load (0.4% of 8.0" span) = 0.032.  
 Location (2) - Max. allowable Perm. Set after test load (0.4% of 8.0" span) = 0.032.

The 1/2 test and design loads listed exceed the proscribed protocol requirements and the set criteria was within the allowable limits at these loads.

**FORCED ENTRY TEST**

Not Required on Fixed Units

**IMPACT TEST - LARGE MISSILE**

Impact tests were conducted in accordance with DCBCCD PA 201-94.

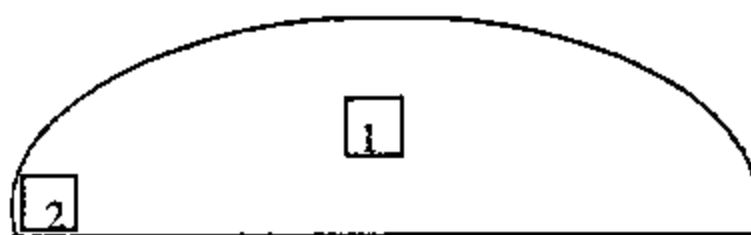
**Note:**

X measurement from left edge of test specimen.  
 Y measurement from top edge of test specimen.

Type and weight of missile: # 2 Southern Yellow Pine 2 x 4, Length approx. 89-1/4" & 9 lb.

**Specimen 3**

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 7/19/01

**Impact Large Missile Con'**

**Specimen 3      **Fixed Frame Window****

Impact No.	Impact Loc.	Speed Ft/Sec.	X Meas.	Y Meas.
1.	1	50.0	38.0"	20.5"
2.	2	50.1	9.0"	9.0"

None of the impacts penetrated the specimens and the specimens remained locked.

**FATIGUE LOADING TEST**

Cycle tests were conducted in accordance with DCBCCD PA 203

**Specimen 3      **Fixed Frame Window****

**Design Load**      + 60.0 psf, -65.0 psf

<u>Range of test</u>	<u>actual load psf</u>		<u># of cycles</u>	<u>cycles/min</u>
<b>Positive loads</b>				
+2 - .5	12	30	3500	55
+0 - .6	0	36	300	55
+5 - .8	30	48	600	55
+3 - 1.0	18	60	100	55

**Negative Loads**

<u>Range of test</u>	<u>actual load psf</u>		<u># of cycles</u>	<u>cycles/min</u>
-.3 - 1.0	19.5	65	50	55
-.5 - .8	32.5	52	1050	55
-.0 - .6	0	39	50	55
-.2 - .5	13	32.5	3350	55

9000 cycles completed

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7/19/01*

**(5) DRAWINGS TO BE SUBMITTED:**

Submittal drawings numbered as listed and marked with the CTL stamp are a part of this report.

1. L2132 sheets 1 through 6
2. L2133 sheets 1 through 6
3. CTLA-716WA sheets 1 through 2

**Comment:** Nominal 2 mil polyethylene film was used to seal against air leakage during structural loads. The film was used in a manner that did not influence the test results.

**Remarks:** The results obtained and reported apply only to the specimens tested.

Detailed drawings were available for laboratory records and comparison to the test specimen at the time of this report. A copy of this report along with representative sections of the test specimen will be retained by CTL for a period of ten (10) years. The results obtained apply only to the specimen tested.

This test report does not constitute certification of this product, but only that the above test results were obtained using the designated test methods and they indicate compliance with the performance requirements (paragraphs as listed) of the above referenced specifications.

CTL assumes that all information provided by the client is accurate and that the physical and chemical properties of the components are as stated by the manufacturer.

*[Handwritten Signature]*  
7/29/10

**Observers:**

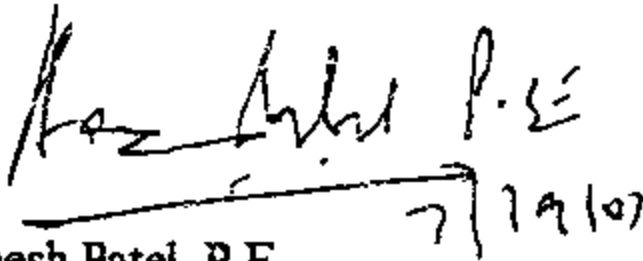
Paul Gatto – Galaxy Window & Door  
Chris Gould – Galaxy Window & Door  
Rick Wright – R.W. Building Consultants, Inc., Consultant

**Dade County Witness:**

Not present

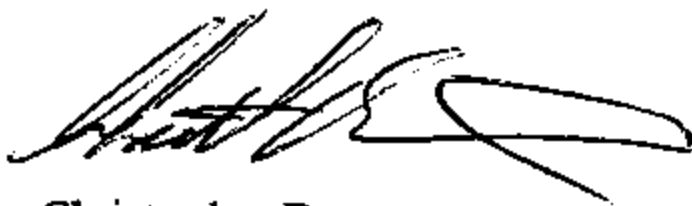
**All Tests Witnessed by:**

Ramesh Patel, P.E.  
Chris Bennett, CTL  
Ted Scanlon, CTL



Ramesh Patel, P.E.  
Florida Reg. # 20224

Certified Testing Laboratories, Inc.



Christopher Bennett  
Laboratory Manager  
Architectural Division

Cc: Galaxy Window & Door (4)  
Rick Wright (2)  
Ramesh Patel (1)  
File