

**STRUCTURAL TEST REPORT**

Rendered to:

TUBELITE ARCHITECTURAL PRODUCTS  
P.O. Box 118  
Reed City, Michigan 49677Report No: ATI-7007N  
Test Date: 12/04/89  
Report Date: 12/12/89  
Revised Report Date: 12/22/89**SERIES/MODEL:** Versa-Therm**TYPE:** Store Front Window System**OVERALL SIZE:** 10' 3" wide by 5' 0" high**GLASS SIZE:** 4' 11-3/4" wide by 4' 9-5/8" high**GLASS SIZE:** (2) 4' 11-3/4" wide by 2' 4-1/2" high**FINISH:** Anodized bronze aluminum**GLAZING SIZES:** Large end lite: 4' 11-3/4" wide by 4' 9-5/8" high  
Upper end lite: 4' 11-3/4" wide by 2' 4-1/2" high  
Lower end lite: 4' 11-3/4" wide by 2' 4-1/2" high**GLAZING:** Utilized 1.00" thick insulating glass consisting of two 0.250" thick annealed sheets with a metal spacer. All three glass lites were supported at 1/4 points with 4" wide glazing blocks positioned on top of 6" wide extruded aluminum chairs. Glass was exterior set against a EPDM gasket. An exterior snap-on pressure plate containing an EPDM gasket was secured to the main frame with plastic clips spaced approximately 10" on center.**FRAME CONSTRUCTION:** The framing system consisted of two vertical jambs, one vertical mullion, one intermediate horizontal mullion, plus head and sill members. All corner construction contained butted and sealed corners fastened using two 1" long #10 pan head screws per corner. Head and sill members were continuous the width of the mock-up with a vertical mullion located at the center line. An intermediate horizontal mullion divided one half of the mock-up into an upper and lower section at the center line. Vertical exterior tubular pressure plates were continuous the height of the mock-up. Five horizontal pressure plates, two at the head, two at the sill, and one at the horizontal mullion, were also positioned at the exterior. Sixteen 1/4" diameter perimeter anchors secured the mock-up to the rough opening. See the attached sketch for anchor locations. Two 1-1/2" wide break metal end dams with 1" by 2" legs were positioned at the corners of the mock-up.

A snap-in place plastic water diverter was located at the top edge of the lower insulated glass unit.

# 28.18 Versa-Therm Framing



<u>DRAINAGE:</u>	<u>Quantity</u>	<u>Location</u>
1-1/2" wide by 1/2" slot	3	Exterior vertical leg of sill member at each vertical mullion/jamb

- SEALANT:** Dow Corning 795 Silicone
1. All frame corners.
  2. Break metal end dams.
  3. Exterior perimeter.

**TEST METHODS:**

Air Infiltration - ASTM E283 - "Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors". Testing was conducted at 1.56 psf (25 mph) static air pressure and 6.24 psf (50 mph) static air pressure.

Water Resistance - ASTM E331 - "Water Penetration of Exterior Windows, Curtain Walls, and Doors by Uniform Air Pressure Difference". Testing was conducted at 12 psf for 15 minutes. Water was applied to the specimen at a rate of 5 gal/hr/ft<sup>2</sup>.

Structural Performance - ASTM E330 - "Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference". Load deflection measurements were made at 20, 30, and 40 psf positive and 20, 30, and 40 psf negative after a 50% preload.

**TEST SEQUENCE:**

- Test #1: Air Infiltration at 1.56 psf.
- Test #2: Air Infiltration at 6.24 psf.
- Test #3: Static water resistance at 12.0 psf.
- Test #4: Preload at 10 psf positive.
- Test #5: Uniform load deflection at 20 psf.
- Test #6: Preload at 10 psf negative.
- Test #7: Uniform load deflection at 20 psf.
- Test #8: Preload at 15 psf positive.
- Test #9: Uniform load deflection at 30 psf.
- Test #10: Preload at 15 psf negative.
- Test #11: Uniform load deflection at 30 psf.
- Test #12: Preload at 20 psf positive.
- Test #13: Uniform load deflection at 40 psf.
- Test #14: Preload at 20 psf positive.
- Test #15: Uniform load deflection at 40 psf.

**TEST RESULTS**

<u>TITLE OF TEST</u>	<u>MEASURED</u>	<u>ALLOWED</u>
Air Infiltration		
@ 1.56 psf (25 mph)	<0.01 cfm/ft <sup>2</sup>	0.06 cfm/ft <sup>2</sup>
@ 6.24 psf (50 mph)	0.01 cfm/ft <sup>2</sup>	0.06 cfm/ft <sup>2</sup>

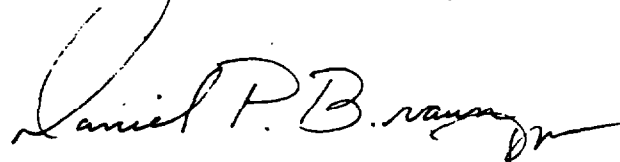
**TEST RESULTS:** (Continued)

<u>TITLE OF TEST</u>	<u>MEASURED</u>	<u>ALLOWED</u>
Static Water Resistance @ 12 psf (69 mph)	No uncontrolled leakage	No uncontrolled leakage
Uniform Load Deflections*		
20 psf positive		See Table 1
20 psf negative		See Table 1
30 psf positive		See Table 2
30 psf negative		See Table 2
40 psf positive		See Table 3
40 psf negative		See Table 3

\*See sketch for dial indicator locations.

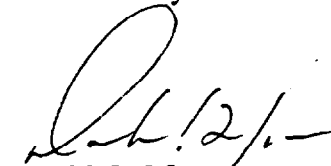
Detailed drawings of the test specimen and a copy of this report will be retained by ATI for a period of four years. The above results were secured by using the designated test methods and they indicate compliance with the performance requirements of the above referenced specification. This report does not constitute certification of this product which may only be granted by the certification program administrator.

ARCHITECTURAL TESTING, INC.



Daniel P. Braun  
General Manager  
North Central Regional Office

Reviewed by:



David G. Moyer  
Director of Testing Services

DPB:sdb

7007N

SUMMARY OF THERMAL PERFORMANCE TEST REPORT ATI-7006

TUBELITE ARCHITECTURAL PRODUCTS

Test Date: 12/01/89

SERIES/MODEL: Versa-Therm Store Front System

TYPE: Aluminum Two-Lite Fixed Window

OVERALL SIZE: 7'-0" wide by 8'-0" high

FINISH: All aluminum was anodized brown

GLAZING: Both lites utilized 1.00" thick insulating glass, fabricated from two 1/4" thick clear annealed sheets and a metal spacer system, that was exterior glazed using an exterior EPDM fixed gasket and an interior EPDM fixed gasket.

TEST PROCEDURE: The condensation resistance factor (CRF) was determined in accordance with AAMA Specification 1503.1-1988; the thermal transmittance coefficient (U) was determined in general accordance with ASTM C236-87 and AAMA 1503.1-1988 under the following conditions:

- |  |      |   |
|--|------|---|
| 1. Average warm side ambient temperature                             | 68.0 | F |
| 2. Average cold side ambient temperature                             | 18.0 | F |
| 3. 15 mph dynamic wind applied to test specimen exterior.            |      |   |
| 4. 0.0 inches H <sub>2</sub> O static pressure drop across specimen. |      |   |

TEST RESULTS:

- |                                   |    |   |
|-----------------------------------|----|---|
| 1. Average frame temperature (FT) | 50 | F |
| 2. Average glass temperature (GT) | 45 | F |

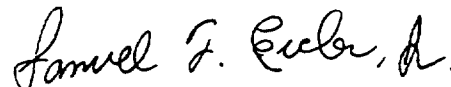
THERMAL PERFORMANCE RATINGS:

- |   |      |
|---|------|
| 1. Condensation resistance factor - Frame (CRF <sub>f</sub> )   | 64   |
| Condensation resistance factor - Glass (CRF <sub>g</sub> )  | 55   |
| 2. Thermal transmittance due to conduction (U <sub>c</sub> )<br>(U values expressed in BTU/HR·FT <sup>2</sup> ·F) | 0.56 |

The test results indicate compliance with a CRF Class C55 and a U-Class U60 per AAMA 1504.88 standard (on the size as reported).

Reference should be made to Report ATI-7006 for complete test description and data.

ARCHITECTURAL TESTING, INC.



Samuel F. Eveler, Jr.  
Technician

**TABLE #1**

**UNIFORM LOAD DEFLECTION**

**20 PSF POSITIVE**

**20 PSF NEGATIVE**

<u>DIAL</u> <u>INDICATOR</u>	<u>MEASURED</u>	<u>NET</u> <u>DEFLECTION</u>	<u>MEASURED</u>	<u>NET</u> <u>DEFLECTION</u>	<u>ALLOWABLE</u>
1	0.18"		0.17"		
2	0.28"	0.165"	0.22"	0.095"	0.324"
3	0.05"		0.08"		
4	0.26"		0.08"		
5	0.05"	0.095"	0.06"	-0.060"	0.336"

TABLE #2

UNIFORM LOAD DEFLECTION

30 PSF POSITIVE

30 PSF NEGATIVE

<u>DIAL</u>	<u>MEASURED</u>	<u>NET</u>	<u>MEASURED</u>	<u>NET</u>	<u>ALLOWABLE</u>
<u>INDICATOR</u>		<u>DEFLECTION</u>		<u>DEFLECTION</u>	
1	0.38"		0.27"		
2	0.55"	0.295	0.26"	0.060"	0.324"
3	0.13"		0.13"		
4	0.51"		0.16"		
5	0.10"	0.185"	0.11"	-0.025"	0.336"

**TABLE #3**

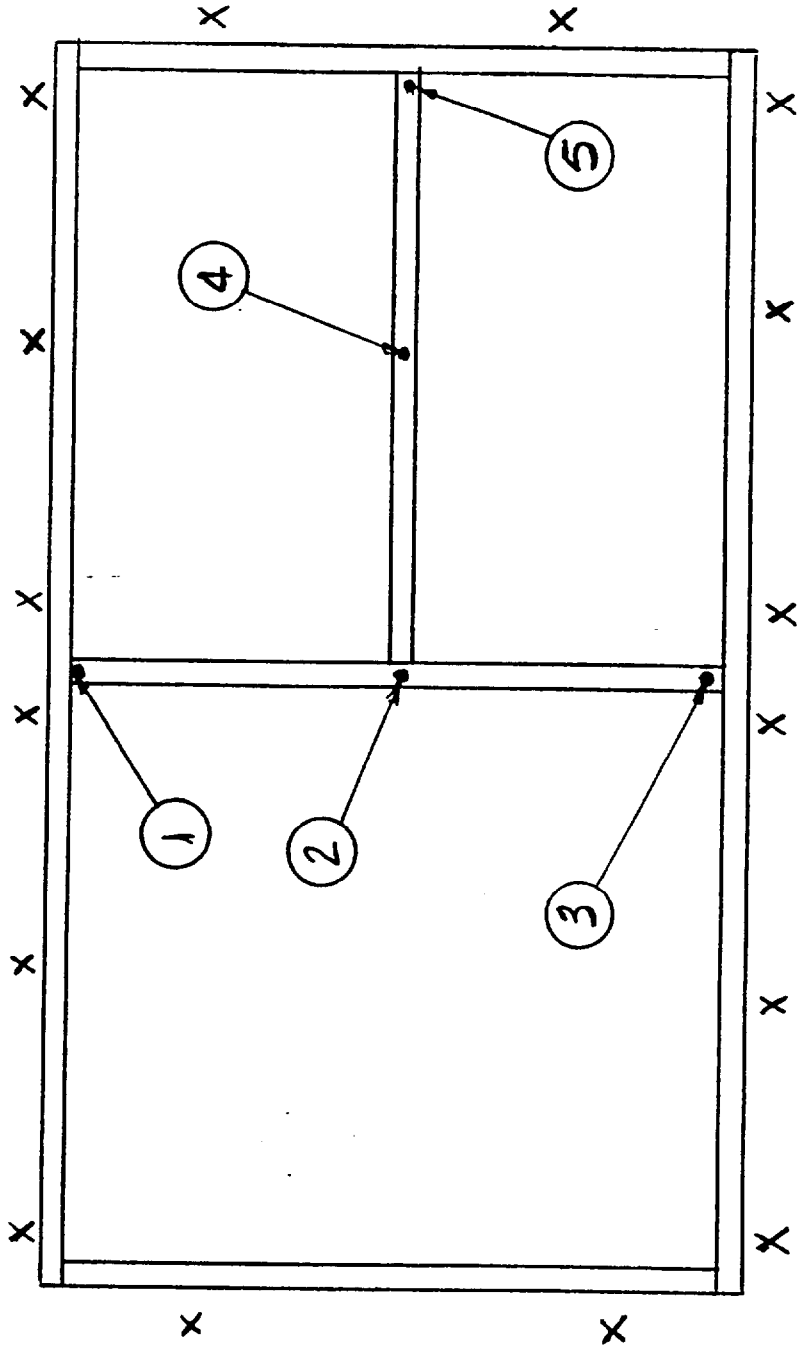
**UNIFORM LOAD DEFLECTION**

**40 PSF POSITIVE**

**40 PSF NEGATIVE**

<u>DIAL</u>	<u>MEASURED</u>	<u>NET</u>	<u>MEASURED</u>	<u>NET</u>	<u>ALLOWABLE</u>
<u>INDICATOR</u>		<u>DEFLECTION</u>		<u>DEFLECTION</u>	
1	0.48"		0.27"		
2	0.68"	0.355"	0.28"	0.070"	0.324"
3	0.17"		0.15"		
4	0.68"		0.18"		
5	0.15"	0.265"	0.13"	-0.025"	0.336"

28.24  
VersaTherm Framing



X - INDICATES LOCATION OF ANCHORS  
VIEW FROM INTERIOR

PRODUCT	PROJECT	CODE	IDENT	REV.
DIAL INDICATOR LOCATIONS	7007N	TF	ID	0

COMPANY		NOTES:		REV.	DATE	DESCRIPTION	BY
ARCHITECTURAL TESTING INC.		TUBELITE		0	12/12/09	ISSUED	JD
SHEET	OF						
-	-						