Residential System Sizing Calculation

Summary

William & Bonnie Robbins
418 SW Hilltop Terrace
Fort White, FL 32038-

Project Title:
Robbins Residence

Code Only
Professional Version
Climate: North

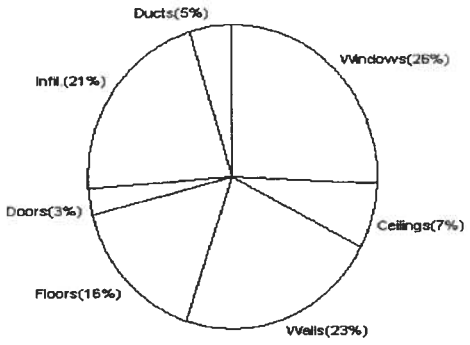
9/9/2005

Location for weather data: Gainesville - Defaults: Latitude(29) Temp Range(M)					
Humidity data: Interior RH (50%) Outdoor wet bulb (77F) Humidity difference(51gr.)					
Winter design temperature	31	F	Summer design temperature	93	F
Winter setpoint	70	F	Summer setpoint	75	F
Winter temperature difference	39	F	Summer temperature difference	18	F
Total heating load calculation	**43849**	**Btuh**	**Total cooling load calculation**	**41324**	**Btuh**
Submitted heating capacity	48000	Btuh	Submitted cooling capacity	48000	Btuh
Submitted as % of calculated	109.5	%	Submitted as % of calculated	116.2	%

WINTER CALCULATIONS

Winter Heating Load (for 3236 sqft)

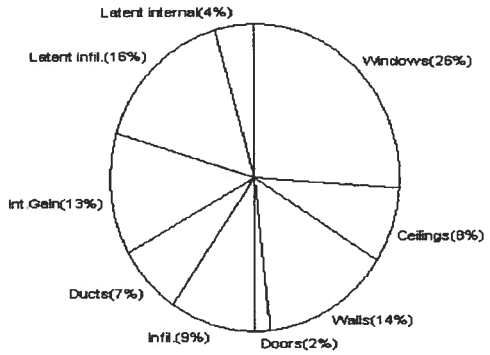
Load component			Load	
Window total	403	sqft	11414	Btuh
Wall total	3992	sqft	9875	Btuh
Door total	80	sqft	1260	Btuh
Ceiling total	2321	sqft	3017	Btuh
Floor total	219	ft	6920	Btuh
Infiltration	216	cfm	9273	Btuh
Subtotal			**41761**	**Btuh**
Duct loss			2088	Btuh
TOTAL HEAT LOSS			**43849**	**Btuh**



SUMMER CALCULATIONS

Summer Cooling Load (for 3236 sqft)

Load component			Load	
Window total	403	sqft	10913	Btuh
Wall total	3992	sqft	5779	Btuh
Door total	80	sqft	798	Btuh
Ceiling total	2321	sqft	3296	Btuh
Floor total			0	Btuh
Infiltration	189	cfm	3745	Btuh
Internal gain			5400	Btuh
Subtotal(sensible)			**29932**	**Btuh**
Duct gain			2993	Btuh
Total sensible gain			**32925**	**Btuh**
Latent gain(infiltration)			6560	Btuh
Latent gain(internal)			1840	Btuh
Total latent gain			**8400**	**Btuh**
TOTAL HEAT GAIN			**41324**	**Btuh**



EnergyGauge® System Sizing based on ACCA Manual J.
PREPARED BY:
DATE: 9-9-05

System Sizing Calculations - Winter

Residential Load - Component Details

William & Bonnie Robbins
418 SW Hilltop Terrace
Fort White, FL 32038-

Project Title:
Robbins Residence

Code Only
Professional Version
Climate: North

Reference City: Gainesville (Defaults) Winter Temperature Difference: 39.0 F

9/9/2005

Window	Panes/SHGC/Frame/U	Orientation	Area X	HTM=	Load
1	2, Clear, Metal, DEF	N	75.0	28.3	2122 Btuh
2	2, Clear, Metal, DEF	N	72.0	28.3	2038 Btuh
3	2, Clear, Metal, DEF	N	13.3	28.3	377 Btuh
4	2, Clear, Metal, DEF	N	5.0	28.3	142 Btuh
5	2, Clear, Metal, DEF	W	30.0	28.3	849 Btuh
6	2, Clear, Metal, DEF	S	12.0	28.3	340 Btuh
7	2, Clear, Metal, DEF	S	72.0	28.3	2038 Btuh
8	2, Clear, Metal, DEF	S	16.0	28.3	453 Btuh
9	2, Clear, Metal, DEF	S	54.0	28.3	1528 Btuh
10	2, Clear, Metal, DEF	S	54.0	28.3	1528 Btuh
	Window Total		403		11414 Btuh
Walls	Type	R-Value	Area X	HTM=	Load
1	Frame - Exterior	13.0	2325	3.1	7208 Btuh
2	Frame - Adjacent	13.0	1667	1.6	2667 Btuh
	Wall Total		3992		9875 Btuh
Doors	Type		Area X	HTM=	Load
1	Wood - Exter		60	17.9	1076 Btuh
2	Wood - Adjac		20	9.2	184 Btuh
	Door Total		80		1260Btuh
Ceilings	Type	R-Value	Area X	HTM=	Load
1	Under Attic	30.0	2321	1.3	3017 Btuh
	Ceiling Total		2321		3017Btuh
Floors	Type	R-Value	Size X	HTM=	Load
1	Slab-On-Grade Edge Insul	0	219.0 ft(p)	31.6	6920 Btuh
	Floor Total		219		6920 Btuh
Infiltration	Type	ACH X	Building Volume	CFM=	Load
	Natural	0.40	32360(sqft)	216	9273 Btuh
	Mechanical			0	0 Btuh
	Infiltration Total			216	9273 Btuh

Totals for Heating	**Subtotal**	**41761 Btuh**
	Duct Loss(using duct multiplier of 0.05)	**2088 Btuh**
	Total Btuh Loss	**43849 Btuh**

Key: Window types (SHGC - Shading coefficient of glass as SHGC numerical value or as clear or tint)
(Frame types - metal, wood or insulated metal)
(U - Window U-Factor or 'DEF' for default)
(HTM - ManualJ Heat Transfer Multiplier)
Key: Floor size (perimeter(p) for slab-on-grade or area for all other floor types)

Manual J Summer Calculations

Residential Load - Component Details (continued)

William & Bonnie Robbins
418 SW Hilltop Terrace
Fort White, FL 32038-

Project Title:
Robbins Residence

Code Only
Professional Version
Climate: North

9/9/2005

Totals for Cooling	**Subtotal**	**29932**	**Btuh**
	Duct gain(using duct multiplier of 0.10)	**2993**	**Btuh**
	Total sensible gain	**32925**	**Btuh**
	Latent infiltration gain (for 51 gr. humidity difference)	**6560**	**Btuh**
	Latent occupant gain (8 people @ 230 Btuh per person)	**1840**	**Btuh**
	Latent other gain	**0**	**Btuh**
	TOTAL GAIN	**41324**	**Btuh**

Key: Window types (SHGC - Shading coefficient of glass as SHGC numerical value or as clear or tint)
(U - Window U-Factor or 'DEF' for default)
(InSh - Interior shading device: none(N), Blinds/Daperies(B) or Roller Shades(R))
(ExSh - Exterior shading device: none(N) or numerical value)
(Ornt - compass orientation)

System Sizing Calculations - Summer

Residential Load - Component Details

William & Bonnie Robbins
418 SW Hilltop Terrace
Fort White, FL 32038-

Project Title:
Robbins Residence

Code Only
Professional Version
Climate: North

Reference City: Gainesville (Defaults) Summer Temperature Difference: 18.0 F

9/9/2005

Window	Type		Overhang		Window Area(sqft)			HTM		Load	
	Panes/SHGC/U/InSh/ExSh	Ornt	Len	Hgt	Gross	Shaded	Unshaded	Shaded	Unshaded		
1	2, Clear, DEF, N, N	N	1.5	6	75.0	0.0	75.0	22	22	1650	Btuh
2	2, Clear, DEF, N, N	N	1.5	7	72.0	0.0	72.0	22	22	1584	Btuh
3	2, Clear, DEF, N, N	N	10	6.66	13.3	0.0	13.3	22	22	293	Btuh
4	2, Clear, DEF, N, N	N	10	3	5.0	0.0	5.0	22	22	110	Btuh
5	2, Clear, DEF, N, N	W	1.5	8	30.0	0.0	30.0	22	72	2160	Btuh
6	2, Clear, DEF, N, N	S	1.5	6	12.0	12.0	0.0	22	37	264	Btuh
7	2, Clear, DEF, N, N	S	1.5	7	72.0	36.0	36.0	22	37	2124	Btuh
8	2, Clear, DEF, N, N	S	1.5	5	16.0	16.0	0.0	22	37	352	Btuh
9	2, Clear, DEF, N, N	S	8.5	7	54.0	54.0	0.0	22	37	1188	Btuh
10	2, Clear, DEF, N, N	S	8.5	7	54.0	54.0	0.0	22	37	1188	Btuh
	Window Total				403					10913	Btuh

Walls	Type	R-Value	Area	HTM	Load	
1	Frame - Exterior	13.0	2325.0	1.7	4046	Btuh
2	Frame - Adjacent	13.0	1667.0	1.0	1734	Btuh
	Wall Total		3992.0		5779	Btuh

Doors	Type	Area	HTM	Load	
1	Wood - Exter	60.0	10.0	599	Btuh
2	Wood - Adjac	20.0	10.0	200	Btuh
	Door Total	80.0		798	Btuh

Ceilings	Type/Color	R-Value	Area	HTM	Load	
1	Under Attic/Dark	30.0	2321.0	1.4	3296	Btuh
	Ceiling Total		2321.0		3296	Btuh

Floors	Type	R-Value	Size	HTM	Load	
1	Slab-On-Grade Edge Insulation	0.0	219.0 ft(p)	0.0	0	Btuh
	Floor Total		219.0		0	Btuh

Infiltration	Type	ACH	Volume	CFM=	Load	
	Natural	0.35	32360	189.1	3745	Btuh
	Mechanical			0	0	Btuh
	Infiltration Total			189	3745	Btuh

Internal gain	Occupants	Btuh/occupant		Appliance	Load	
	8	X 300	+	3000	5400	Btuh

CAPITOL
WINDOWS AND DOORS

- Series 165 Single Hung and Fixed Windows
- Series 650 Single Hung and Fixed Windows
- Series 168 Horizontal Slider and Fixed Windows
- Series 680 Horizontal Slider and Fixed Windows

NOTE: SEE INDIVIDUAL TEST REPORT(S) FOR DP RATINGS AND MAXIMUM ALLOWABLE SIZES.

INSTALLATION INSTRUCTIONS FOR "APPROVED FOR FLORIDA" ALUMINUM FIN WINDOWS

Capitol Windows & Doors appreciates your recent purchase of a maintenance free prime window, which will not rust, rot, mildew, or warp. This is a quality product that left our factory in good condition – proper handling and installation are just as important as good design and workmanship. Please follow these recommendations to allow this product to complete its function.

1 Handle units one at a time in the closed and locked position and take care not to scratch frame or glass or to bend the nailing fin. Place a continuous bead of caulk on the back side of nail fin (mounting flange).

2. Set unit plumb and square into opening and make sure that there is 3/16" ± 1/16" clearance around the frame. Fasten unit into opening in the closed and locked position, making sure that fasteners are screwed in straight in order to avoid twisting or bowing of the frame. Make sure that sill is straight and level. Check operation of unit frequently as fasteners are set.

3. Use # 8 sheet metal or wood screws with a minimum of 1" penetration into the framing (stud). Place first screws (two at each corner) 3" from end of fin. For positive and negative DPs (design pressures) up to 35, do not exceed 24" spacing of additional screws. For DPs from 35.1 to 50, do not exceed 18" spacing.

4. Caulk entire perimeter of fin to mounting surface joint and caulk over screw heads.
Note: this step can be eliminated if 4" wide adhesive type flashing is used (sill 1st., jambs 2nd., head 3rd.).

5. Fill voids between frame and construction with loose batten type insulation or non-expanding aerosol foam specifically formulated for windows and doors to eliminate drafts. The use of expanding aerosol type insulating foam, which can bow the frame, waives all stated warranties.

6. Remove plaster, mortar, paint, and debris that has collected on the unit and make sure that sash/vent tracks and interlocks are also clean. Do not use abrasives, solvents, ammonia, vinegar, alkaline, or acid solutions for clean-up, especially with insulated glass units as their use could cause chemical breakdown of the glass seal. Take care not to scratch glass; scratches severely weaken glass and it could eventually break from thermal expansion and contraction. Clean units with water and mild detergent.

- CAUTION -

Capitol Windows & Doors or its representatives are unable to control and cannot assume responsibility for the selection and placement of their products in a building or structure in a manner required by laws, statutes, and/or building codes. The purchaser is solely responsible for knowledge of and adherence to the same. BetterBilt window products are not provided with safety glazing unless specifically ordered with such. Many laws and codes require safety glazing (tempered glass) near doors, bathtubs, and shower enclosures. Also be aware of other code requirements such as emergency egress and structural / energy performance.

Corporate Headquarters:
M.I. Home Products
650 West Market St.
Gratz, PA 17030-0370
(717) 365-3300

www.mihp.com

STEVEN M. URICH
CERTIFICATE
No. 57795
STATE OF
FLORIDA
PROFESSIONAL ENGINEER

#t221
July 29, 2003

Rev. 7-24-03

AAMA/NWWDA 101/I.S.2-97
TEST REPORT

Rendered to:

MI HOME PRODUCTS, INC.

SERIES/MODEL: 450/650/850 Drop In Glazing
TYPE: Aluminum Single Hung Window

Title	Summary of Results
AAMA Rating	H-LC30 53 x 90
Operating Force	24 lb max.
Air Infiltration	0.11 cfm/ft²
Water Resistance Test Pressure	6.75 psf
Uniform Load Deflection Test Pressure	+32.8 psf -47.2 psf
Uniform Load Structural Test Pressure	+49.2 psf -70.8 psf
Deglazing	Passed
Forced Entry Resistance	Grade 10

Reference should be made to ATI Report No. 01-42487.01 for complete test specimen description and data.

Architectural Testing

AAMA/NWWDA 101/I.S.2-97 TEST REPORT

Rendered to:

MI HOME PRODUCTS, INC.
P.O. Box 370
650 West Market Street
Gratz, Pennsylvania 17030-0370

Report No: 01-42487.01
Test Date: 08/14-02
And: 08/15-02
Report Date: 10/02/02
Expiration Date: 08/15/06

Project Summary: Architectural Testing, Inc. (ATI) was contracted by MI Home Products, Inc. to perform tests on a Series Model 450/650/850 Drop In Glazing, aluminum single hung window at their facility in Elizabethville, Pennsylvania. The sample tested successfully met the performance requirements for a H-LC 30 53 x 90 rating.

Test Specification: The test specimen was evaluated in accordance with AAMA/NWWDA 101/I.S.2-97, *Voluntary Specifications for Aluminum, Vinyl (PVC) and Wood Windows and Glass Doors*.

Test Specimen Description:

Series/Model: 450/650/850 Drop In Glazing

Type: Aluminum Single Hung Window

Overall Size: 4' 3-1/8" wide by 5' 5-5/8" high

Interior Sash Size: 4' 2-3/4" wide by 3' 8-7/8" high

Fixed Daylight Opening Size: 4' 0" wide by 3' 5-3/8" high

Screen Size: 4' 0-3/4" wide by 3' 8-3/4" high

Finish: The unit was white.

Glazing Details: The specimen utilized 5/8" thick, sealed insulating glass constructed from two sheets of 3.32" lites, clear annealed glass and a metal reinforced butyl spacer system. The lites were interior glazed against double-sided adhesive foam tape and secured with PVC snap in glazing beads.

[illegible]

Test Specimen Description (Continued)

Weatherstripping:

Description	Quantity	Location
0.190" high by 0.187" polypile with center fin	1 Row	Fixed meeting rail interlock
0.190" high by 0.187" polypile with center fin	2 Rows	Interior sash stiles
1/4" vinyl foam-filled bulb seal	1 Row	Interior sash bottom rail
5/8" wide by 7/8" long polypile plug	4 Pieces	Interior sash, all corners

Frame Construction: The frame was constructed of extruded aluminum. Each corner was coped, butted, sealed, and fastened with two #8 x 1" screws per corner through the head and sill into jamb screw boss. End caps were utilized on the ends of the meeting rail and secured with two 1-1/4" screws per cap. Meeting rail was then secured to the frame utilizing two 1-1/4" screws.

Sash Construction: The sash was constructed of extruded aluminum. Each corner was coped, butted, and fastened with one #8 x 1-1/4" screw per corner.

Screen Construction: The screen was constructed of roll-formed aluminum with keyed corners. The fiberglass mesh was secured with a flexible spline.

Hardware:

Description	Quantity	Location
Metal cam lock	2	Interior sash, 6-1/2" from top rail ends
Spring-loaded coil balance	2	One per jamb
Plastic tilt latch	2	Interior sash top rail ends
Metal tilt latch pin	2	Interior sash bottom rail ends
Screen spring-loaded retainer pin	2	6-3/4" from rails on stiles

Test Specimen Description: (Continued)

Drainage: Sloped sill.

Reinforcement: No reinforcement was utilized.

Installation: The specimen was installed into a #2 2 x 8 Spruce-Pine-Fir wood buck. #8 x 1-5/8" drywall screws were placed 3" from corners and 15" on center around nailing fin. Polyurethane was used as a sealant around the exterior perimeter.

Test Results:

The results are tabulated as follows:

Paragraph	Title of Test - Test Method	Results	Allowed
2.2.1.6.1	Operating Force	24 lbs	35 lbs max.
2.1.2	Air Infiltration (ASTM E 283-91) @ 1.57 psf (25 mph)	0.11 cfm/ft²	0.3 cfm/ft² max.

Note #1 – The tested specimen meets the performance levels specified in AAMA/NWWDA 101/I.S. 2-97 for air infiltration.

2.1.3	Water Resistance (ASTM E 547-00) (with and without screen) WTP = 3.75 psf	No leakage	No leakage
2.1.4.1	Uniform Load Deflection (ASTM E 330-97) (Measurements reported were taken on the meeting rail) (Loads were held for 52 seconds) @ 25.0 psf (positive) @ 25.0 psf (negative)	0.04"* 0.54"*	0.29" max. 0.29" max.

*Exceeds L/175 for deflection, but meets all other test requirements.

2.1.4.2	Uniform Load Structural (ASTM E 330-97) (Measurements reported were taken on the meeting rail) Loads were held for 10 seconds) @ 37.5 psf (positive) @ 37.5 psf (negative)	0.04" 0.03"	0.20" max. 0.20" max.

Test Results:

Paragraph	Title of Test - Test Method	Results	Allowed
2.2.1.6.2	Deglazing Test (ASTM E 987-88)		
	In operating direction at 70 lbs		
	Interior sash meeting rail	0.12" 25%	0.500" 100%
	Interior sash bottom rail	0.12" 25%	0.500" 100%
	In remaining direction at 50 lbs		
	Interior sash right stile	0.06" 12%	0.500" 100%
	Interior sash left stile	0.06" 12%	0.500" 100%
2.1.8	Forced Entry Resistance (ASTM F 588-97)		
	Type: A Grade: 10		
	Lock Manipulation Test	No entry	No entry
	Test A1 through A5	No entry	No entry
	Test A7	No entry	No entry
	Lock Manipulation Test	No entry	No entry
Optional Performance			
4.3	Water Resistance (ASTM E 547-00) (with and without screen) WTP = 6.75 psf	No leakage	No leakage
4.4.1	Uniform Load Deflection (ASTM E 330-97) (Measurements reported were taken on the meeting rail) (Loads were held for 33 seconds)		
	@ 32.8 psf (positive)	0.85"*	0.29" max.
	@ 47.2 psf (negative)	0.87"*	0.29" max.
4.4.2	Uniform Load Structural (ASTM E 330-97) (Measurements reported were taken on the meeting rail) (Loads were held for 10 seconds)		
	@ 49.2 psf (positive)	0.09"	0.20" max.
	@ 70.8 psf (negative)	0.13"	0.20" max.

**Exceeds L/175 for deflection, but meets all other test requirements*

Detailed drawings, representative samples 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. This report may not be reproduced except in full without the approval of Architectural Testing.

For ARCHITECTURAL TESTING, INC:

Mark A. Hess
Technician

Allen N. Reeves, P.E.
Director - Engineering Services
11 October 2002

MAH:mlb
01-42487.01

AAMA/NWWDA 101/I.S.2-97
TEST REPORT SUMMARY

Rendered to:

MI HOME PRODUCTS, INC.

SERIES/MODEL: 650
TYPE: Aluminum Picture Window

Title of Test	Results
Rating	F-R45 60 x 80
Operating Design Pressure	+45.0 psf -47.2 psf
Air Infiltration	0.04 cfm/ft²
Water Resistance	8.25 psf
Structural Test Pressure	+67.5 psf -70.8 psf
Forced Entry Resistance	Grade 10

Results based on Architectural Testing, Inc. Report No. 01-13501.01 dated 03/26/02 for complete test specimen description and data.

Tested for MI HOME PRODUCTS, INC.

Mark A. Richmond

Allen N. Reeves
1 APRIL 2002

Architectural Testing

AAMA/NWWDA 101/I.S.2-97 TEST REPORT

Rendered to:

MI HOME PRODUCTS, INC.
650 West Market Street
P.O. Box 370
Gratz, Pennsylvania 17030-0370

Report No: 01-41135.01
Test Date: 03/07/02
Report Date: 03/26/02
Expiration Date: 03/07/06

Project Summary: Architectural Testing, Inc. (ATI) was contracted by MI Home Products, Inc. to perform tests on Series Model 650, aluminum picture window at their facility located in Elizabethville, Pennsylvania. The samples tested successfully met the performance requirements for a R-R15 90 x 80 rating.

Test Specification: The test specimen was evaluated in accordance with AAMA/NWWDA 101/I.S.2-97, *Voluntary Specifications for Aluminum, Vinyl (PVC) and Wood Windows and Glass Doors*.

Test Specimen Description:

Series/Model: 650

Type: Aluminum Picture Window

Overall Size: 5'-0" wide by 6'-8" high

Daylight Opening Size: 4'-9 1/2" wide by 6'-5 1/4" high

Finish: All aluminum was white

Glazing Details: The test specimen utilized 7/8" thick, sealed insulating glass constructed with two sheets of 3/16" thick clear annealed glass and a metal reinforced spacer system. The glass was interior glazed against double-sided adhesive foam tape and secured with aluminum snap-in glazing beads.

Allen N. Reese
1 APR 2002

Test Specimen Description: (Continued)

Frame Construction: The frame was constructed of extruded aluminum with coped, butted, and sealed corners fastened with two #8 x 1" screws through the head and sill into each jamb screw boss.

Reinforcement: No reinforcement was utilized.

Installation: The test specimen was installed into a 2 x 8 #2 Spruce-Pine-Fir wood test buck. #8 x 2-1/2" installation screws were utilized 18" on center around the interior perimeter. Polyurethane was utilized to seal the exterior.

Test Results:

The results are tabulated as follows.

Paragraph	Title of Test - Test Method	Results	Allowed
2.1.2	Air Infiltration (ASTM E 283-91)		
	@ 1.57 psf (25 mph)	0.04 cfm/ft²	0.3 cfm/ft² max.

Note #1: *The tested specimen meets the performance levels specified in AAMA/NWWDA 101/I.S. 2-97 for air infiltration.*

2.1.3	Water Resistance (ASTM E 547-00)		
	WTP = 2.86 psf	No leakage	No leakage
2.1.4.1	Uniform Load Deflection (ASTM E 330-97)		
	(Measurements reported were taken on the jamb)		
	(Loads were held for 33 seconds)		
	@ 25.9 psf (positive)	0.01"	0.41" max.
	@ 34.7 psf (negative)	0.02"	0.41" max.
2.1.4.2	Uniform Load Structural (ASTM E 330-97)		
	(Measurements reported were taken on the jamb)		
	(Loads were held for 10 seconds)		
	@ 38.9 psf (positive)	0.01"	0.29" max.
	@ 52.1 psf (negative)	0.01"	0.29" max.

Allen B. Reeves
[illegible] 2002

Test Results: (Continued)

Paragraph	Title of Test - Test Method	Results	Allowed
2.1.8	Forced Entry Resistance (ASTM F 588-97)		
	Type: D Grade: 10		
	Hand and Tool Manipulation Test	No entry	No entry
Optional Performance			
4.3	Water Resistance (ASTM E 547-00) WTP – 8.25 psf	No leakage	No leakage
4.4.1	Uniform Load Deflection (ASTM E 330-97) (Measurements reported were taken on the jamb) (Loads were held for 33 seconds)		
	@ 45.0 psf (positive)	0.02"	0.41" max.
	@ 47.2 psf (negative)	0.02"	0.41" max.
4.4.2	Uniform Load Structural (ASTM E 330-97) (Measurements reported were taken on the jamb) (Loads were held for 10 seconds)		
	@ 67.5 psf (positive)	0.01"	0.29" max.
	@ 70.8 psf (negative)	0.02"	0.29" max.

Detailed drawings, representative samples 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.

For ARCHITECTURAL TESTING, INC:

Mark A. Hess
Technician

MAH:ab
01-41135.01

Allen N. Reeves, P.E.
Director - Engineering Services
1 APRIL 2002

Architectural Testing

ANSI/AAMA/NWWDA 101/I.S.2-97
TEST REPORT

Rendered to:

MI WINDOWS AND DOORS, INC

SERIES/MODEL: 420/430/440
PRODUCT TYPE: Aluminum Sliding Glass Door

Title	Summary of Results		
	Test Specimen #1	**Test Specimen #2**	**Test Specimen #3**
Rating	SGD-R25 182 x 96	SGD-R35 182 x 80	SGD-R40 144 x 96
Operating Force	17 lbf max.	17 lbf max.	N/A
Air Infiltration	0.23 cfm/ft^2	0.27 cfm/ft^2	N/A
Water Resistance Test Pressure	3.75/6.0/9.0 psf	6.0 psf	N/A
Uniform Load Deflection Test Pressure	±35.0 psf	±35.0 psf	+40.0 psf/-40.1 psf
Uniform Load Structural Test Pressure	±37.5 psf	±52.5 psf	+60.0 psf/-60.2 psf
Forced Entry Resistance	Grade 10	Grade 10	N/A

Reference should be made to ATI Report No. 52112.01-122-47 for complete test specimen description and data.

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Architectural Testing

ANSI/AAMA/NWWDA 101/I.S.2-97 TEST REPORT

Rendered to:

MI WINDOWS AND DOORS, INC
P.O. Box 370
Gratz, Pennsylvania 17030-0370

Report No.:	52112.01-122-47
Revision 1:	09/13/04
Test Dates:	06/30/04
Through:	08/12/04
Report Date:	08/30/04
Expiration Date:	07/02/08

Project Summary: Architectural Testing, Inc. (ATI) was contracted by MI Windows and Doors, Inc. to witness testing on three Series/Model 420/430/440, aluminum sliding glass doors at MI Windows and Doors, Inc. test facility in Elizabethville, Pennsylvania. The samples tested successfully met the performance requirements for the following ratings: Test Specimen #1: SGD-R25 182 x 96; Test Specimen #2: SGD-R35 182 x 80; Test Specimen #3: SGD-R40 144 x 96. Test specimen description and results are reported herein.

Test Specification: The test specimens were evaluated in accordance with ANSI/AAMA/NWWDA 101/I.S.2-97, *Voluntary Specifications for Aluminum, Vinyl (PVC) and Wood Windows and Glass Doors.*

Test Specimen Description:

Series/Model: 420/430/440

Product Type: Aluminum Sliding Glass Door

Test Specimen #1: SGD-R25 182 x 96 (XXO)

Overall Size: 15' 1-3/4" wide by 8' 0" high

Active Door Panel Size (2): 5' 0-1/2" wide by 7' 11" high

Fixed Door Panel Size: 5' 1" wide by 7' 11" high

Screen Size: 5' 0-3/8" wide by 7' 11" high

Overall Area: 121.2 ft^2

Reinforcement: The active and fixed interlocking stile utilized a steel U-shaped reinforcement (Drawing #9917525). The fixed intermediate jamb utilized a steel reinforcement (Drawing #9917520).

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Test Specimen Description: (Continued)

Test Specimen #2: SGD-R35 182 x 80 (OXX)

Overall Size: 15' 1-3/4" wide by 6' 8" high

Active Door Panel Size (2): 5' 0-1/2" wide by 6' 7" high

Fixed Door Panel Size: 4' 8-7/8" wide by 6' 2-5/8" high

Screen Size: 5' 0-3/8" wide by 6' 7" high

Overall Area: 101 ft^2

Reinforcement: No reinforcement was utilized.

Test Specimen #3: SGD-R40 144 x 96 (XOX)

Overall Size: 12' 0" wide by 8' 0" high

Active Door Panel Size: 3' 8-1/4" wide by 7' 10-1/2" high

Fixed Door Panel Size (2): 3' 8-3/4" wide by 7' 6-1/2" high

Screen Size: 3' 11-1/2" wide by 7' 11-3/8" high

Overall Area: 96 ft^2

Reinforcement: The active and fixed interlocking stile utilized a steel U-shaped reinforcement (Drawing #9917525). The fixed intermediate jamb utilized a steel reinforcement (Drawing #9917520). The interlock utilized an aluminum reinforcement (Drawing #SECT4237).

The following descriptions apply to all specimens.

Finish: All aluminum was white.

Glazing Details: All glazing consisted of a single sheet of 3/16" thick clear tempered glass that was channel glazed with a wrap around rubber gasket.

Test Specimen Description: (Continued)

Weatherstripping:

Description	Quantity	Location
0.187" backed by 0.270" high polypile with center fin	2 Rows	Stiles

Frame Construction: The frame was constructed of extruded aluminum. Corners were coped, butted, sealed, and fastened with two #8 by 5/8" screws.

Door Panel Construction: The door panels were constructed of extruded aluminum members. Corners were coped, butted, and fastened with one 1/4" by 3/4" screw at the bottom and two #8 by 3/4" screws at the top.

Screen Construction: The screen was constructed of extruded aluminum members. Corners were coped, butted, and fastened with one 1/4" by 3/4" and one #8 by 1" screw at the bottom and one #8 by 1" screw at the top.

Hardware:

Description	Quantity	Location
Locking handle	1	44" from active panel bottom
Roller assembly	2	3" from bottom rail ends
Screen locking handle	1	46" from screen bottom rail

Drainage:

Description	Quantity	Location
Sloped sill	1	Sill

Installation: The units were installed into a #2 Spruce-Pine-Fir wood test buck. The units were fastened to the test buck with two rows of #8 by 1-1/4" screws, 8" from each end and 23" on center. The exterior perimeter was sealed with silicone.

Test Results:

The results are tabulated as follows:

Paragraph	Title of Test - Test Method	Results	Allowed
Test Specimen #1: SGD-R25 182 x 96 (XXO)			
2.2.1.6.1	Operating Force	17 lbf	20 lbf max.
	Breakaway force	24 lbf	30 lbf max.
2.1.2	Air Infiltration per ASTM E 283		
	1.57 psf (25 mph)	0.23 cfm/ft^2	0.3 cfm/ft^2 max.

Note #1: *The tested specimen meets the performance levels specified in ANSI/AAMA/NWWDA 101/I.S.2-97 for air infiltration.*

2.1.3	Water Resistance per ASTM E 547		
	(with and without screen)		
	2.86 psf	No leakage	No leakage
2.1.4.1	Uniform Load Deflection per ASTM E 330		
	(Deflections reported were taken on the meeting rail)		
	(Loads were held for 52 seconds)		
	15.0 psf (positive)	0.56"	See Note #2
	15.0 psf (negative)	0.57"	See Note #2

Note #2: *The Uniform Load Deflection test is not a requirement of ANSI/AAMA/NWWDA 101/I.S.2-97 for this product designation. The deflection data is recorded in this report for special code compliance and information only.*

2.1.4.2	Uniform Load Structural per ASTM E 330		
	(Permanent sets reported were taken on the meeting stile)		
	(Loads were held for 10 seconds)		
	22.5 psf (positive)	0.02"	0.30" max.
	22.5 psf (negative)	0.03"	0.30" max.
2.2.1.6.2	Deglazing Test per ASTM E 987		
	In operating direction - 70 lbs		
	Locking stile	0.12"/24%	0.50"/100%
	Interlock stile	0.12"/24%	0.50"/100%

Test Results: (Continued)

Paragraph	Title of Test - Test Method	Results	Allowed
Test Specimen #1: SGD-R25 182 x 96 (XXO) (Continued)			
2.2.1.6.2	Deglazing Test per ASTM E 987 In remaining direction - 50 lbs		
	Top rail	0.06"/12%	0.50"/100%
	Bottom rail	0.06"/12%	0.50"/100%
2.1.8	Forced Entry Resistance per ASTM F 842		
	Type: A	Grade: 10	
	Lock Manipulation Test	No entry	No entry
	Test A1 through A6	No entry	No entry
	Lock Manipulation Test	No entry	No entry
Optional Performance			
4.3	Water Resistance per ASTM E 547 (with and without screen) 3.75 psf	No leakage	No leakage
4.3	Water Resistance per ASTM E 547 (with and without screen) (with sill riser) 6.0 psf	No leakage	No leakage
4.3	Water Resistance per ASTM E 547 (with and without screen) (with 2-5/8" Dade County sill extension) 9.0 psf	No leakage	No leakage
4.4.1	Uniform Load Deflection per ASTM E 330 (Deflections reported were taken on the meeting stile) (Loads were held for 10 seconds)		
	35.0 psf (positive)	2.98"	See Note #2
	35.0 psf (negative)	2.52"	See Note #2

Test Results: (Continued)

Paragraph	Title of Test - Test Method	Results	Allowed
	Test Specimen #1: SGD-R25 182 x 96 (XXO) (Continued)		
4.4.2	Uniform Load Structural per ASTM E 330 (Permanent sets reported were taken on the meeting stile) (Loads were held for 10 seconds)		
	37.5 psf (positive)	0.20"	0.36" max.
	37.5 psf (negative)	0.19"	0.36" max.
	Test Specimen #2: SGD-R35 182 x 80 (OXX)		
2.2.1.6.1	Operating Force	17 lbf	20 lbf max.
	Breakaway force	21 lbf	30 lbf max.
2.1.2	Air Infiltration per ASTM E 283		
	1.57 psf (25 mph)	0.27 cfm/ft^2	0.3 cfm/ft^2 max.
	Note #1: *The tested specimen meets the performance levels specified in ANSI/AAMA/NWWDA 101/I.S.2-97 for air infiltration.*		
2.1.3	Water Resistance per ASTM E 547 (with and without screen)		
	2.86 psf	No leakage	No leakage
2.2.1.6.2	Deglazing Test per ASTM E 987 In operating direction - 70 lbs		
	Locking stile	0.12"/24%	0.50"/100%
	Interlock stile	0.12"/24%	0.50"/100%
	In remaining direction - 50 lbs		
	Top rail	0.06"/12%	0.50"/100%
	Bottom rail	0.06"/12%	0.50"/100%
2.1.8	Forced Entry Resistance per ASTM F 842		
	Type: A	Grade: 10	
	Lock Manipulation Test	No entry	No entry
	Test A1 through A6	No entry	No entry
	Lock Manipulation Test	No entry	No entry

Test Results: (Continued)

Paragraph	Title of Test - Test Method	Results	Allowed
Test Specimen #2: SGD-R35 182 x 80 (OXX) (Continued)			
Optional Performance			
4.3	Water Resistance per ASTM E 547 (with and without screen) (with sill riser) 6.0 psf	No leakage	No leakage
4.4.1	Uniform Load Deflection per ASTM E 330 (Deflections reported were taken on the meeting stile) (Loads were held for 52 seconds)		
	35.0 psf (positive)	1.28"	See Note #2
	35.0 psf (negative)	1.33"	See Note #2
4.4.2	Uniform Load Structural per ASTM E 330 (Permanent sets reported were taken on the meeting stile) (Loads were held for 10 seconds)		
	52.5 psf (positive)	0.13"	0.30" max.
	52.5 psf (negative)	0.15"	0.30" max.
Test Specimen #3: SGD-R40 144 x 96 (XOX)			
Optional Performance			
4.4.1	Uniform Load Deflection per ASTM E 330 (Deflections reported were taken on the meeting stile) (Loads were held for 52 seconds)		
	40.0 psf (positive)	1.42"	See Note #2
	40.1 psf (negative)	1.28"	See Note #2
4.4.2	Uniform Load Structural per ASTM E 330 (Permanent sets reported were taken on the meeting stile) (Loads were held for 10 seconds)		
	60.0 psf (positive)	0.27"	0.37" max.
	60.2 psf (negative)	0.30"	0.37" max.

Detailed drawings, representative samples of the test specimen, and a copy of this report will be retained by ATI for a period of four years from the original test date. 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. This report may not be reproduced, except in full, without approval of Architectural Testing, Inc.

For ARCHITECTURAL TESTING, INC:

Mark A. Hess vlm

Digitally Signed for: Mark A. Hess by Vicki L. McElwain

Mark Hess
Technician

Digitally Signed by: Steven M. Urich

Steven M. Urich, P.E.
Senior Project Engineer

MH:vlm

MI WINDOWS AND DOORS, INC.

420 / 430 / 440 SERIES ALUMINUM SLIDING GLASS DOOR

COMAPARATIVE ANALYSIS CHART IN DESIGN PRESSURE

STEEL AND ALUMINUM REINFORCING

09/08/2004

SGD ALUM & STL REINF

PANEL WIDTH >>	24	30	36	48
PANEL HEIGHT 80	85	71	62	51
96	69	57	49	40

TEST REPORT NO: ATI-52112.01-122-47
DESIGN PRESSURE ACHIEVED IN TEST: POS. & NEG. 40.0 PSF
WATER TEST PRESSURE:
- 1-3/8 IN. SILL RISER: 3.75 PSF
- 1-7/8 IN. SILL RISER: 6.0 PSF
- 2-5/8 IN. SILL RISER: 9.0 PSF

OVERALL TEST SIZE: 12'-0" X 8'-0" NOMINAL

OVERALL PANEL SIZE: 48 IN. X 96 IN. NOMINAL
GLAZING: SINGLE PC. OF 3/16 IN. THK. TEMPERED GLASS
REINFORCING: STEEL IN INTERLOCKING STILES AND INTERMEDIATE JAMB. ADDITIONAL ALUM. REINFORCING ON EXTERIOR OF OPERATING INTERLOCK STILE.
CONFIGURATION: XOX

LIMITATIONS:
THE ABOVE ARE POSITIVE AND NEGATIVE STRUCTURAL DESIGN LOADS FROM COMPARATIVE ANALYSIS & HAVE NOT BEEN CAPPED BY RESULTS OF WATER PERFORMANCE TESTING.
WHERE LOCAL CODE REQUIRES WATER RESISTANCE TESTING TO PASS A MIN. 15% OF DESIGN PRESSURE, ALLOWABLE POSITIVE DESIGN PRESSURE WOULD BE CAPPED AS FOLLOWS:
- WHERE 1-3/8 IN. SILL RISER IS EMPLOYED POSITIVE DESIGN PRESSURE IS CAPPED AT 25.0 PSF.
- WHERE 1-7/8 IN. SILL RISER IS EMPLOYED POSITIVE DESIGN PRESSURE IS CAPPED AT 40.0 PSF.
- WHERE 2-5/8 IN. SILL RISER IS EMPLOYED POSITIVE DESIGN PRESSURE IS CAPPED AT 60.0 PSF.

PANEL WIDTHS AND HEIGHTS ARE NOMINAL, IN INCHES.

PREPARED BY:
PRODUCT TECHNOLOGY CORPORATION
1150 LOUISIANA AVENUE, SUITE 6
WINTER PARK, FLORIDA 32789
PHONE 407 622-6334 FAX 407 622.6335
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MI WINDOWS AND DOORS, INC.

420 / 430 / 440 SERIES ALUMNUM SLIDING GLASS DOOR

09/08/2004

COMAPARATIVE ANALYSIS CHART IN DESIGN PRESSURE

SGD non-Reinf

PANEL WIDTH >>	24	30	36	48	60
PANEL HEIGHT 80	64	54	47	39	35

TEST REPORT NO: ATI-52112.01-122-47
DESIGN PRESSURE ACHIEVED IN TEST: POS. & NEG. 35.0 PSF
WATER TEST PRESSURE:
- 1-3/8 IN. SILL RISER: 3.75 PSF
- 1-7/8 IN. SILL RISER: 6.0 PSF
- 2-5/8 IN. SILL RISER: 9.0 PSF

OVERALL SIZE TESTED: 15'-0" X 6'-8" NOMINAL
OVERALL PANEL SIZE TESTED: 5'-0" X 6'-8" NOMINAL
GLAZING: SINGLE PC. OF 3/16 IN THICK TEMP. GLASS
REINFORCING: NONE
CONFIGURATION TESTED: XXO

LIMITATIONS:
THE ABOVE ARE POSITIVE AND NEGATIVE STRUCTURAL DESIGN LOADS FROM COMPARATIVE ANALYSIS & HAVE NOT BEEN CAPPED BY RESULTS OF WATER PERFORMANCE TESTING.
WHERE LOCAL CODE REQUIRES WATER RESISTANCE TESTING TO PASS A MIN. 15% OF DESIGN PRESSURE, ALLOWABLE POSITIVE DESIGN PRESSURE WOULD BE CAPPED AS FOLLOWS:
- WHERE 1-3/8 IN. SILL RISER IS EMPLOYED, POSITIVE DESIGN PRESSURE = 25.0 PSF
- WHERE 1-7/8 IN. SILL RISER IS EMPLOYED, POSITIVE DESIGN PRESSURE = 40.0PSF
- WHERE 2-5/8 IN. SILL RISER IS EMPLOYED, POSITIVE DESIGN PRESSURE = 60.0 PSF

PANEL WIDTHS AND HEIGHTS ARE NOMINAL, IN INCHES.

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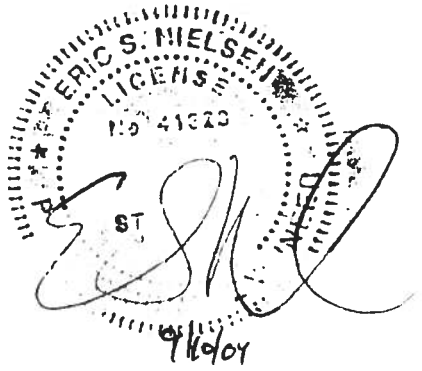

MI WINDOWS AND DOORS, INC.

420 / 430 / 440 SERIES ALUMINUM SLIDING GLASS DOOR | STEEL REINFORCED | 09/08/2004

COMAPARATIVE ANALYSIS CHART IN DESIGN PRESSURE | SGD STL REINF

PANEL WIDTH >>	24	30	36	48	60
PANEL HEIGHT 80	61	51	44	37	33
96	49	41	35	29	25

TEST REPORT NO: ATI-52112.01-122-47
DESIGN PRESSURE ACHIEVED IN TEST: POS. & NEG. 25.0 PSF
WATER TEST PRESSURE:
- 1-3/8 IN. SILL RISER: 3.75 PSF
- 1-7/8 IN. SILL RISER: 6.0 PSF
- 2-5/8 IN. SILL RISER: 9.0 PSF

OVERALL SIZE TESTED: 15'-0" X 8'-0" NOMINAL
OVERALL PANEL SIZE TESTED: 60 IN. X 96 IN. NOMINAL
GLAZING: SINGLE PC. OF 3/16 IN. THK. TEMPERED GLASS
REINFORCING: STEEL IN INTERLOCKING STILES, AND FIXED INTERMEDIATE JAMB
CONFIGURATION TESTED: OXX

LIMITATIONS:
THE ABOVE ARE POSITIVE AND NEGATIVE STRUCTURAL DESIGN LOADS FROM COMPARATIVE ANALYSIS & HAVE NOT BEEN CAPPED BY RESULTS OF WATER PERFORMANCE TESTING.
WHERE LOCAL CODE REQUIRES WATER RESISTANCE TESTING TO PASS A MIN. 15% OF DESIGN PRESSURE, ALLOWABLE POSITIVE DESIGN PRESSURE WOULD BE CAPPED AS FOLLOWS:
- WHERE 1-3/8 IN. SILL RISER IS EMPLOYED, POSITIVE DESIGN PRESSURES ARE CAPPED AT 25.0 PSF.
- WHERE 1-7/8 IN. SILL RISER IS EMPLOYED, POSITIVE DESIGN PRESSURES ARE CAPPED AT 40.0 PSF.
- WHERE 2-5/8 IN. SILL RISER IS EMPLOYED, POSITIVE DESIGN PRESSURES ARE CAPPED AT 60.0 PSF.

PANEL WIDTHS AND HEIGHTS ARE NOMINAL, IN INCHES.

PREPARED BY:
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PHONE 407 622-6334 FAX 407 622.6335
www.ptc-corp.com

Notice of Treatment

Applicator: Florida Pest Control & Chemical Co. (www.flapest .com)
Address: _____
City _____ Phone _____

Site Location: Subdivision _____ # 24046
Lot # _____ Block# _____ Permit # _____
Address _____

Product used	Active Ingredient	% Concentration
☐ Premise	Imidacloprid	0.1%
☐ Termidor	Fipronil	0.12%
☐ Bora-Care	Disodium Octaborate Tetrahydrate	23.0%

Type treatment: ☐ Soil ☐ Wood

Area Treated	Square feet	Linear feet	Gallons Applied

As per Florida Building Code 104.2.6 – If soil chemical barrier method for termite prevention is used, final exterior treatment shall be completed prior to final building approval.

If this notice is for the final exterior treatment, initial this line _____.

_____ Date _____ Time _____ Print Technician's Name

Remarks: _____
_____

Applicator - White Permit File - Canary Permit Holder - Pink

10/05

CERTIFICATE OF OCCUPANCY

COLUMBIA COUNTY, FLORIDA

Department of Building and Zoning Inspection

This Certificate of Occupancy is issued to the below named permit holder for the building and premises at the below named location, and certifies that the work has been completed in accordance with the Columbia County Building Code.

Parcel Number 10-6S-16-03815-153 **Building permit No.** 000024046

Use Classification SFD/UTILITY **Fire:** 16.52

Permit Holder DON REED **Waste:** 24.50

Owner of Building WILLIAM & BONNIE ROBBINS **Total:** 41.02

Location: 418 SW HILLTOP TERRACE

Date: 08/29/2006

Harry Dicks

Building Inspector

POST IN A CONSPICUOUS PLACE
(Business Places Only)