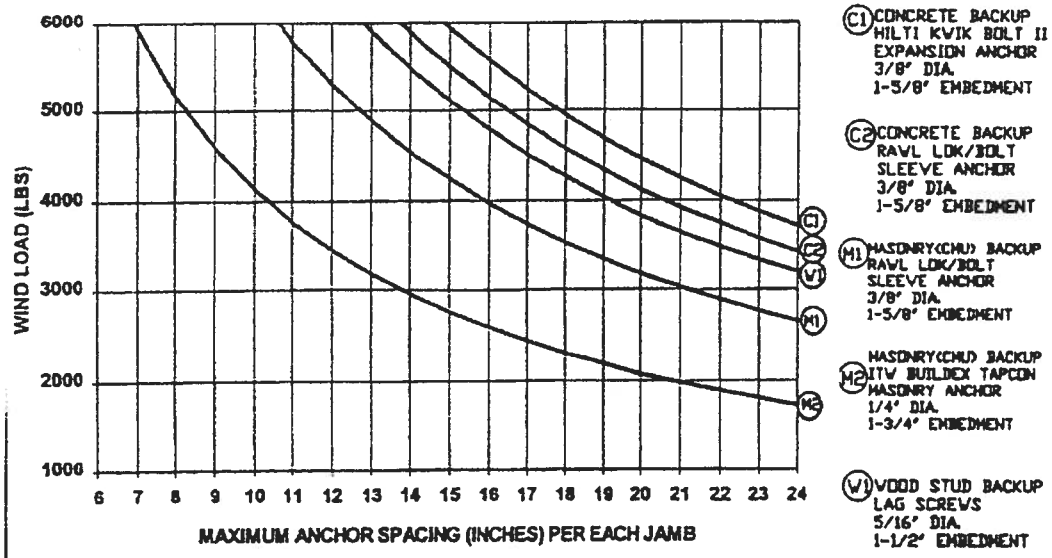
WIND LOAD vs ANCHOR SPACING



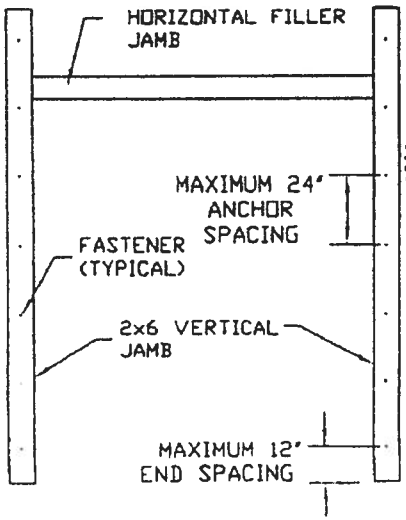
DESIGN LOAD (LBS/FT²) X GARAGE DOOR AREA(WIDTH-FT X HEIGHT-FT) = WIND LOAD(LBS)

EXAMPLE

30 LBS/FT² X (16 FT WIDE X 8 FT HIGH) = 3840 LBS

- C1 USE 22" SPACING
- C2 USE 21" SPACING
- W1 USE 19" SPACING
- M1 USE 16" SPACING
- M2 USE 10" SPACING

SEE NOTE 11 FOR ADDITIONAL REQUIRED 2X6 WOOD JAMB ANCHORS



NORTH CAROLINA PROFESSIONAL SEAL PE No. 024280 ENGINEER NASER R KEYVAN

3/8/2002

NASER R KEYVAN 5377 STATE OF FLORIDA PROFESSIONAL ENGINEER

2x6 JAMB TO SUPPORTING STRUCTURE ATTACHMENT

2x6 PRESSURE TREATED (GRADE #2 OR BETTER SOUTHERN PINE) WOOD JAMB SHALL BE ANCHORED TO BUILDING WOOD FRAME, GROUTED AND REINFORCED CONCRETE MASONRY UNIT (CMU) WALLS OR COLUMNS, OR REINFORCED CONCRETE COLUMNS.

NOTES:

1) ALL DOOR OPENING SURROUNDING STRUCTURE TO BE DESIGNED BY REGISTERED ENGINEER OR ARCHITECT WITH DUE CONSIDERATION GIVEN TO INSTALLATIONS USING CENTER 'HURRICANE' POSTS.

2) ALL DOOR OPENING STRUCTURE AND FASTENERS TO COMPLY WITH ALL APPLICABLE CODES INCLUDING SBCCI 'STANDARD FOR HURRICANE RESISTANT RESIDENTIAL CONSTRUCTION: SSTD 10,' CURRENT EDITION.

3) ALL FASTENERS TO BE INSTALLED IN STRICT ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS, INSTRUCTIONS AND RECOMMENDATIONS.

4) WOOD FRAME BUILDINGS: STUDS AT EACH SIDE OF DOOR OPENING SHALL BE PROPERLY DESIGNED, CONNECTED, ANCHORED AND SHALL CONSIST OF A MINIMUM OF THREE (3) LAMINATIONS OF 2X6 PRESSURE TREATED SOUTHERN PINE (#2 GRADE OR BETTER) WALL STUDS CONTINUOUS FROM FOOTING TO DOUBLE TOP PLATE.

5) REINFORCED CMU OR CONCRETE: 2X6 WOOD JAMB SHALL BE ANCHORED TO SOLIDLY GROUTED AND REINFORCED CONCRETE MASONRY UNIT (CMU) WALLS OR COLUMNS, OR REINFORCED CONCRETE COLUMNS. ANCHOR SPACING AND EMBEDMENT IS BASED ON CONCRETE MASONRY UNITS COMPLYING WITH ASTM C90 WITH A MINIMUM NET AREA COMPRESSIVE STRENGTH OF 2150 PSI; GROUT WITH A MINIMUM COMPRESSIVE STRENGTH OF 2000 PSI; REINFORCED CONCRETE COLUMNS WITH A MINIMUM COMPRESSIVE STRENGTH OF 2500 PSI.

6) EMBEDMENTS LISTED ARE THE MINIMUM ALLOWABLE EMBEDMENTS.

7) ANCHORS FOR CONCRETE AND CONCRETE MASONRY UNITS (CMU) SHALL HAVE A MINIMUM 3" EDGE DISTANCE FROM ALL EDGES OF CONCRETE OR CONCRETE MASONRY UNITS. ANCHORS FOR CONCRETE AND CMU SHALL HAVE A MINIMUM SPACING OF 3-3/4"

8) LAG SCREWS SHALL BE CENTERED IN ONE OF THE 1-1/2" DIMENSION FACES OF THE TRIPLE 2X6 WALL STUDS.

9) WASHERS ARE REQUIRED ON ALL FASTENERS.

10) THE WIND LOAD VS. ANCHOR SPACING CHART IS FOR A MAXIMUM DOOR SIZE OF 18' X 8' AT A MAXIMUM 42 PSF DESIGN WIND LOAD.

11) FOR THE UPPER THREE INDIVIDUAL STEEL JAMB BRACKETS, BRACKETS SHALL BE CENTERED BETWEEN THE TWO CLOSEST 2X6 WOOD JAMB ANCHORS. IF THE STEEL JAMB BRACKET IS NOT CENTERED BETWEEN THE TWO CLOSEST 2X6 WOOD JAMB ANCHORS, ADD AN ADDITIONAL 2X6 WOOD JAMB ANCHOR NEAR THAT STEEL BRACKET TO INSURE THAT THE LOAD FROM THE STEEL BRACKET IS EQUALLY TRANSFERRED TO TWO WOOD JAMB ANCHORS.

GADCO®

GENERAL AMERICAN DOOR COMPANY
5050 BASELINE ROAD
MONTGOMERY, IL 60538

SCALE NONE	APPROVED BY	DRAWN BY DV
DATE 8-30-99		REVISED

DESCRIPTION: JAMB TO STRUCTURE ATTACHMENT FOR WIND LOADED GARAGE DOORS

	MASTER DRAWING NUMBER	DRAWING NUMBER
	A10560	

Test Results

The results are tabulated as follows:

Title of Test - Test Method	Results	Allowed
Air Infiltration per ASTM E 283-91		
@ 0.56 psf (15 mph)	0.15 cfm/ft^2	0.30 cfm/ft^2
@ 1.57 psf (25 mph)	0.29 cfm/ft^2	0.30 cfm/ft^2
Water Resistance per ASTM E 547-96 (with and without screen)		
WTP = 5.25 psf	No leakage	No leakage
Uniform Load Structural per ASTM E 330-97 (Measurements reported were taken on the meeting rail) (load held for 33 seconds)		
@ 47.0 psf (exterior)	0.010"	0.24" max.
@ 47.0 psf (interior)	0.015"	0.24" max.

Note: No end measurements were taken on the member measured. The measurements stated above include displacement as well as bending. Only permanent sets were recorded, not deflection measurements. This statement applies to all uniform load tests performed.

Uniform Load Structural per ASTM E 330-97 (Measurements reported were taken on the meeting rail) (load held for 10 seconds)		
@ 70.5 psf (exterior)	0.060"	0.24" max
@ 70.5 psf (interior)	0.040"	0.24" 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:

Scott D. Kramer
Technician

SDK:nlb/baw
01-36060.02

Allen N. Reeves, P.E.
Director – Engineering Services

28 MARCH 2002

ALLEN N. REEVES
CERTIFICATE
NO. 12[illegible]
STATE OF
FLORIDA
PROFESSIONAL ENGINEER

28-2160

TAMKO ROOFING PRODUCTS

January 31, 2002

TO: OUR FLORIDA CUSTOMERS:

Effective February 1, 2002, the following TAMKO shingles, as manufactured at TAMKO's Tuscaloosa, Alabama, facility, comply with ASTM D-3161, Type I modified to 110 mph. Testing was conducted using four nails per shingle. These shingles also comply with Florida Building Code TAS 100 for wind driven rain.

- Glass-Seal AR
- Elite Glass-Seal AR
- ASTM Heritage 30 AR (formerly ASTM Heritage 25 AR)
- Heritage 40 AR (formerly Heritage 30 AR)
- Heritage 50 AR (formerly Heritage 40 AR)

All testing was performed by Florida State certified independent labs.

Please direct all questions to TAMKO's Technical Services Department at 1-800-641-4691.

TAMKO Roofing Products, Inc.

MI HOME PRODUCTS

- PRIME ALUMINUM WINDOWS -

INSTALLATION INSTRUCTIONS FOR "NAIL FIN" PRODUCTS

MI Home Products 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.

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 before any and all 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"**. Install load bearing shim adjacent to each anchor. Use shim where space exceeds 1/16".

4. Flash over head and caulk outside perimeter in accordance with code requirements and good installation practices.

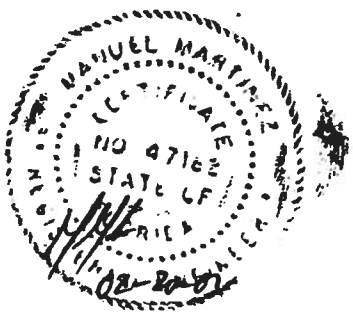
5. Fill voids between frame and construction with loose batten type insulation or non-expanding aerosol foam specifically formulated for windows and doors to eliminate drafts. The use of expanding aerosol type insulating foam, which can bow the frame, waives all stated warranties.

6. Remove plaster, mortar, paint and any other debris that may have collected on the unit and make sure that sash/vent tracks and interlocks are also clear. 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 as you would you automobile.

CAUTION -

MI Home Products 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. MI Home Products window products are not provided with safety glazing unless specifically ordered with such. Many laws and codes require safety glazing near doors, bathtubs, and shower enclosures. Also be aware of emergency egress code requirements.

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

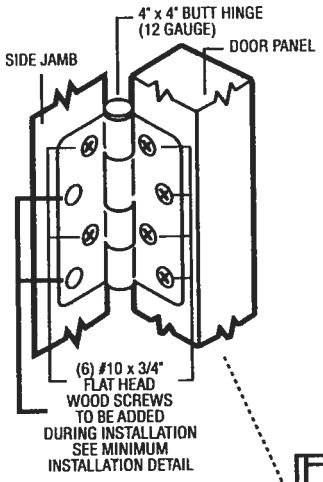


XX
Unit

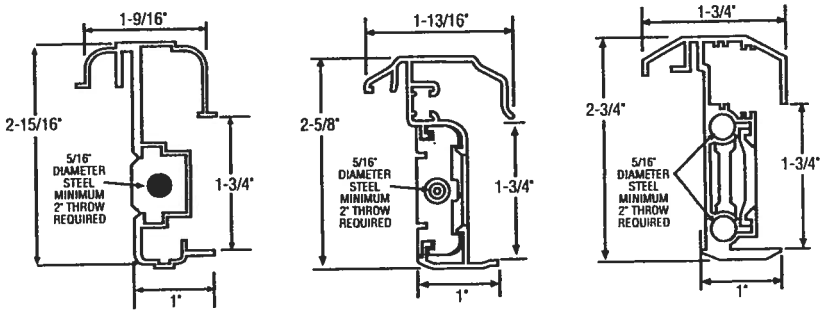
MAD-WL-MA0002-02

INSWING UNIT WITH DOUBLE DOOR

TYPICAL HINGE ATTACHMENT

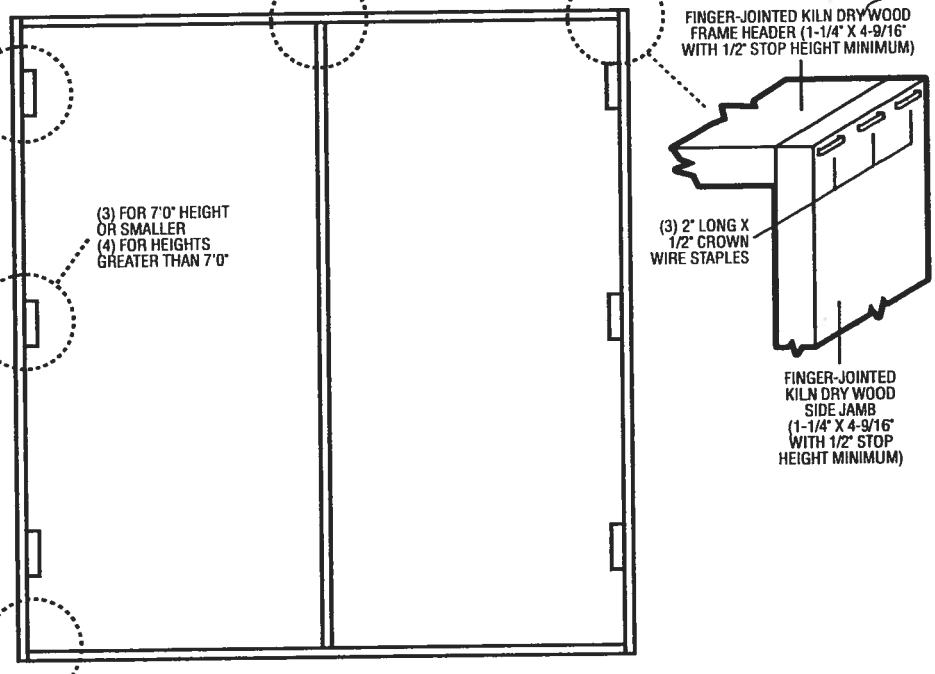


TYPICAL ASTRAGAL PROFILES

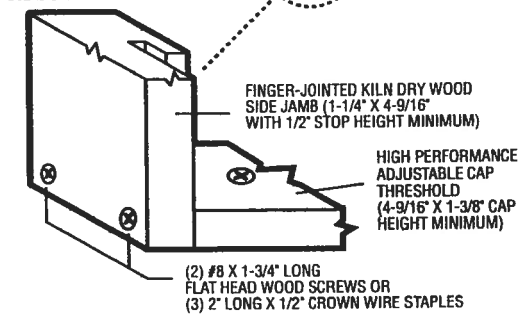


ALUMINUM EXTRUDED ASTRAGAL (0.06" MINIMUM WALL THICKNESS) WITH ADDED REINFORCEMENT INSERTS AT TOP EXTENSION BOLT, BOTTOM EXTENSION BOLT AND CYLINDERICAL/DEADBOLT LATCHING LOCATIONS. ATTACH WITH #8 X 1" PAN HEAD SCREWS – LOCATE 1" FROM EACH END MINIMUM AND 22" O.C. MAXIMUM.

TYPICAL HEADER & SIDE JAMB ATTACHMENT



TYPICAL THRESHOLD & SIDE JAMB ATTACHMENT



Warnock Hersey

Test Data Review Certificate #3026447A; #3026447B; #3026447C and COP/Test Report Validation Matrix #3026447A-001, 002, 003; #3026447B-001, 002, 003; #3026447C-001, 002, 003 provides additional information - available from the ITS/WH website (www.etlsemko.com), the Masonite website (www.masonite.com) or the Masonite technical center.

June 17, 2002

Test Specimen Description: (Continued)

Hardware:

Description	Quantity	Location
Plastic tilt latches	4	Ends of interior meeting rail
Metal pivot bars	4	Ends of the bottom rails
Metal sweep lock	2	Midspan of interior meeting rail
Metal keeper	2	Midspan of fixed meeting rail
Sash stops	4	One per jamb
Block and tackle balance system	4	One per jamb
Spring loaded latch pins	2	6" from ends of screen top rail

Drainage:

Description	Quantity	Location
Sloped sill		Sill
1/4" wide by 3/16" high weepslot	4	Ends of exterior vertical sill leg

Installation: The test unit was installed into the 2" x 8" nominal Spruce-Pine-Fir #2 wood test buck utilizing the integral nailing fin and 1" roofing nails. Five per top, bottom, and sides of the nail fin were evenly spaced. The nail fin was bedded in a silicone sealant.

ALLEN N. REEVES
CERTIFICATE
NO. 18334
STATE OF
FLORIDA
PROFESSIONAL ENGINEER

Allen N. Reeves
28 MARCH 2002

Test Specimen Description: (Continued)

Finish: All aluminum was painted white.

Glazing Details: Both the active sash and fixed lites utilized 5/8" thick insulating glass fabricated from two sheets of 3/32" thick clear annealed glass and a desiccant filled metal spacer system. The active sash were channel glazed with a flexible wedge gasket. The fixed lites were interior glazed, back bedded with single sided adhesive foam tape and held-in-place with PVC snap-in glazing beads.

Weatherstripping:

Description	Quantity	Location
0.270" backed by 0.190" high polypile with center fin	1 Row	Fixed meeting stile
3/8" high vinyl wrapped foam bulb	1 Row	Bottom rail
0.187" backed by 0.250" high polypile with center fin	2 Rows	Stiles
1/4" high polypile dust plug	2 Rows	Ends of bottom rail, top of each stile

Frame Construction: Frame was constructed of extruded aluminum members and all corners were coped, butted, sealed, and fastened with two screws per corner. The fixed meeting rail was attached to the jambs with a plastic clip and two screws per end.

Mullion Construction: The mullion was constructed of an extruded aluminum member. It was fastened to the head and sill with four screws per end. All screw heads were sealed as well as the butt joint at the sill.

Sash Construction: The sash were constructed of extruded aluminum members and all corners were coped, butted, and fastened with one screw per corner.

Screen Construction: The screen was constructed of rolled aluminum members and the corners were keyed. The screen mesh was held-in-place with a flexible spline.

ALLEN N. REEVES
CERTIFICATE
NO. 1[illegible]
STATE OF FLORIDA
PROFESSIONAL ENGINEER

Allen N. Reeves
28 MARCH 2002

Architectural Testing

STRUCTURAL TEST REPORT

Rendered to:

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

Report No: 01-36060.02
Test Date: 11/04/99
Report Date: 03/26/02
Expiration Date: 11/04/03

Project Summary: Architectural Testing, Inc. (ATI) was contracted to perform tests on a Series/Model 650, twin aluminum single hung window at MI Home Products' test facility in Elizabethville, Pennsylvania. Test specimen description and results are reported herein.

Test Specification The test specimen was evaluated in accordance with the following:

ASTM E 283-91, *Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen*

ASTM E 330-97, *Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference*

ASTM E 547-96, *Standard Test Method for Water Penetration of Exterior Windows, Curtain Walls, and Doors by Cyclic Static Air Pressure Differential*

Test Specimen Description:

Series/Model: 650

Type: Twin Aluminum Single Hung Window

Overall Size: 5' 10-1/4" wide by 5' 0" high

Active Size (2): 2' 8-3/4" wide by 2' 6-1/4" high

Fixed Daylight Opening Size (2): 2' 6- 1/4" wide by 2' 3" high

Screen Size (2): 2' 7-3/4" wide by 2' 4-1/4" high

ALLEN N. REEVES
CERTIFICATE
NO. 19359
STATE OF FLORIDA
PROFESSIONAL ENGINEER

Allen N. Reeves
28 MARCH 2002

130 Derry Court
York, PA 17402-9405
phone: 717.764.7700
fax: 717.764.4129
www.archtest.com

STRUCTURAL TEST REPORT SUMMARY

Rendered to:

MI HOME PRODUCTS, INC.

SERIES/MODEL: 650
TYPE: Twin Aluminum Single Hung Window

Title of Test	Results
Overall Design Pressure	35.0 psf
Operating Force	18 lb max.
Air Infiltration	0.29 cfm/ft^2
Water Resistance	5.25 psf
Structural Test Pressure	70.5 psf

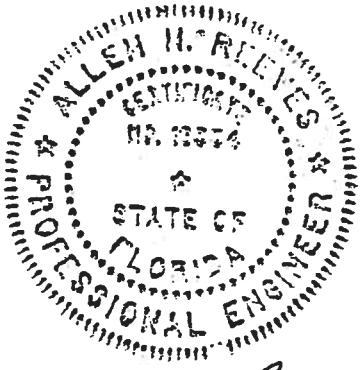
Reference should be made to Report No. 01-36060.02 for complete test specimen description and data.

For ARCHITECTURAL TESTING, INC.

Scott D. Kramer

Scott D. Kramer, Technician

SDK:nlb/baw



Allen H. Riley
28 MARCH 2002

DOCUMENT CONTROL ADDENDUM #01-37589.00

Current Issue Date: 06/06/02

Report No.: 01-37589.01

Requested by: Scott Gill, MI Home Products, Inc.
Purpose: AAMA/NWWDA 101/I.S.2-97 testing on Series/Model 450, aluminum single hung window.
Issued Date: 09/11/00
Comments: Certification copy to John Smith at Associated Laboratories, Inc.

Report No.: 01-37589.02

Requested by: William Emley, MI Home Products, Inc.
Purpose: Revised Report No. 01-37589.01.
Issued Date: 06/06/02
Comments: Added Series/Model 650/850. Florida P.E. seal required on report Certification copy to John Smith at Associated Laboratories, Inc.

Allen N. Reuss
26 JUNE 2002

Test Results:

Paragraph	Title of Test - Test Method	Results	Allowed
Test Specimen #1: Gateway Performance Specimen H-C30 54 x 90 (Continued)			
Optional Performance			
4.3	Water Resistance (ASTM E 547) (with and without screen) WTP = 5.25 psf	No leakage	No leakage
Test Specimen #2: H-C40 52 x 72*			
Optional Performance			
4.3	Water Resistance (ASTM E 547 and ASTM E 331) (with and without screen) WTP = 6.0 psf	No leakage	No leakage
	Uniform Load Deflection (ASTM E 330) (Measurements reported were taken on the fixed meeting rail) (Loads were held for 33 seconds)		
	@ 47.0 psf (positive)	0.04"	0.30" max.
	@ 47.0 psf (negative)	0.03"	0.30" max.
	Uniform Load Structural (ASTM E 330) (Measurements reported were taken on the fixed meeting rail) (Loads were held for 10 seconds)		
	@ 70.5 psf (positive)	0.07"	0.21" max.
	@ 70.5 psf (negative)	0.04"	0.21" 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

Allen N. Reeves, P.E.
Director - Engineering Services
24 JUNE 2002

MAH:baw
01-37589.02

Test Results:

Paragraph	Title of Test - Test Method	Results	Allowed
Test Specimen #1: Gateway Performance Specimen H-C30 54 x 90 (Continued)			
2.1.4.2	Uniform Load Structural (ASTM E 330-97) (Measurements reported were taken on the fixed meeting rail) (Loads were held for 10 seconds)		
	@ 45.0 psf (positive)	0.03"	0.21" max
	@ 45.0 psf (negative)	0.04"	0.21" max
2.2.1.6.2	Deglazing Test (ASTM E 987-88) In operating direction at 70 lbs		
	Meeting rail	0.06"/12%	0.50"/100%
	Bottom rail	0.06"/12%	0.50"/100%
	In remaining direction at 50 lbs		
	Left stile	0.06"/12%	0.50"/100%
	Right stile	0.06"/12%	0.50"/100%
2.1.8	Forced Entry Resistance (ASTM F 588-97)		
	Type: A Grade: 10		
	Lock Manipulation Test	No entry	No entry
	Test A1 thru A5	No entry	No entry
	Test A7	No entry	No entry
	Lock Manipulation Test	No entry	No entry

Allen M. Reuss
28 JUNE 2002

Test Specimen Description: (Continued)

Hardware:

Description	Quantity	Location
Plastic snap latch	1	Midspan of bottom rail
Block and tackle balance system	2	One per jamb
Plastic tilt latch	2	One on each end of sash meeting rail
Metal pivot bar	2	One on each end of bottom rail

Drainage: Sloped sill

Reinforcement: No reinforcement.

Installation: The test unit was installed into the nominal 2" x 8" Spruce-Pine-Fir #2 wood test buck utilizing the nailing fin secured with 1" long galvanized roofing nails, 6" from each corner and every 18" on center. The nailing fin was also bedded in polyurethane. The exterior perimeter was blind stopped with wood members and secured with #8 x 3" screws every 24" on center.

Test Results:

The results are tabulated as follows:

Paragraph	Title of Test - Test Method	Results	Allowed
Test Specimen #1: Gateway Performance Specimen H-C30 54 x 90			
2.2.1.6.1	Operating Force	20 lbs	45 lbs max
	Air Infiltration (ASTM E 283) @ 1.57 psf (25 mph)	0.27 cfm/ft^2	0.30 cfm/ft^2 max.
	Water Resistance (ASTM E 547) (with and without screen) WTP = 4.5 psf	No leakage	No leakage
2.1.4.1	Uniform Load Deflection (ASTM E 330-97) (Measurements reported were taken on the fixed meeting rail) (Loads were held for 33 seconds)		
	@ 35.0 psf (positive)	0.27"	0.30" max.
	@ 35.0 psf (negative)	0.73"*	0.30" max.

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

Allen M. Rees
28 JUNE 2002

Test Specimen Description: (Continued)

Test Specimen #2: H-C40 52 x 72*

Overall Size: 4' 4-1/4" wide by 6' 0" high

Active Sash Size: 4' 2" wide by 3' 0-1/2" high

Fixed Daylight Opening Size: 3' 11-1/2" wide by 2' 9-1/2" high

Screen Size: 4' 0" wide by 2' 11" high

The following descriptions apply to all specimens.

Finish: All aluminum was painted.

Glazing Details: The lites utilized 5/8" thick sealed insulating glass units fabricated from two sheets of 3/32" clear annealed glass and an intercept™ spacer system. The sash was channel glazed with a flexible gasket. The fixed lite was interior glazed onto single-sided adhesive foam tape and secured with extruded PVC glazing beads.

Weatherstripping:

Description	Quantity	Location
0.210" high by 0.270" backed polypile with center fin	1 Row	Fixed meeting rail
0.250" high by 0.187" backed polypile with center fin	2 Rows	Stiles
0.300" diameter by 0.187" backed foam filled vinyl bulb gasket	1 Row	Bottom rail
0.400" high by 1/2" square polypile dust plug	4	One on each sash corner

Frame Construction: Series/Model 450 frame was constructed of thermally broken extruded aluminum with coped, butted and sealed corners. The fixed meeting rail was constructed of an extruded aluminum member with coped, butted and sealed ends fastened with two #8 x 1/4" screws. Series/Model 650 frame was constructed of extruded aluminum. Series/Model 850 frame was constructed of thermally broken extruded aluminum members.

Sash Construction: The Series/Model 450 sash members were constructed of thermally broken extruded aluminum members with coped, butted and sealed corners fastened with one #8 x 1-1/4" screw. Series/Model 650 sash was constructed of extruded aluminum. Series/Model 850 sash was constructed of extruded aluminum.

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

Allen M. Reeves
28 JUNE 2002

Architectural Testing

TEST REPORT

Rendered to:

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

Report No: 01-37589.02
Test Date: 06/15/00
Thru: 06/29/00
Report Date: 06/06/02
Expiration Date: 06/29/04

Project Summary: Architectural Testing, Inc. (ATI) was contracted by MI Home Products, Inc. to witness performance testing on two Series/Model 450/650/850, aluminum single hung windows at their facility in Elizabethville, Pennsylvania. The samples tested successfully met the performance requirements for the following ratings: Test Specimen #1: H-C30 54 x 90; Test Specimen #2: H-C40 52 x 72*.

General Note: An asterisk (*) next to the performance grade indicates that the size tested for optional performance was smaller than the Gateway test size for the product type and class.

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

Type: Aluminum Single Hung Window

Test Specimen #1: Gateway Performance Specimen H-C30 54 x 90 rating

Overall Size: 4' 6-1/2" wide by 7' 6-1/2" high

Active Sash Size: 4' 4" wide by 3' 9-3/4" high

Fixed Daylight Opening Size: 4' 1-1/2" wide by 3' 6-1/2" high

Screen Size: 4' 2-1/4" wide by 3' 8-1/2" high

130 Derry Court
York, PA 17402-9405
phone: 717.764.7700
fax: 717.764.4129
www.archtest.com

Allen N. Reuss
28 JUNE 2002

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

Rendered to:

MI HOME PRODUCTS, INC.

SERIES/MODEL: 450/650/850
TYPE: H-C30 54 x 90; H-C40 52 x 72*

	Summary of Results	
Title of Test	**Test Specimen #1**	**Test Specimen #2**
AAMA Rating	H-C30 54 x 90	H-C40 52 x 72*
Uniform Load Deflection Test Pressure	35.0 psf	47.0 psf
Operating Force	20 lb max.	N/A
Air Infiltration	0.27 cfm/ft^2	N/A
Water Resistance Test Pressure	5.25 psf	6.0 psf
Uniform Structural Load Test Pressure	45.0 psf	70.5 psf
Deglazing	Passed	N/A
Forced Entry Resistance	Grade 10	N/A

Reference should be made to ATI Report No. 01-37589.02 for complete test specimen description and data.

Allen N. Reuss
24 JUNE 2002

Test Results: (Continued)

Paragraph	Title of Test - Test Method	Results	Allowed
	Optional Performance		
4.3	Water Resistance (ASTM E 547-00) (with and without screen) WTP = 5.25 psf	No leakage	No leakage
	Uniform Load Deflection (ASTM E 330-97) (Measurements reported were taken on the mullion) (Loads were held for 52 seconds)		
	@ 35.3 psf (positive)	0.46"*	0.41" max
	@ 47.2 psf (negative)	0.67"*	0.41" max

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

	Uniform Load Structural (ASTM E 330-97) (Measurements reported were taken on the mullion) (Loads were held for 10 seconds)		
	@ 53.0 psf (positive)	0.03"	0.29" max
	@ 52.5 psf (negative)	0.02"	0.29" max

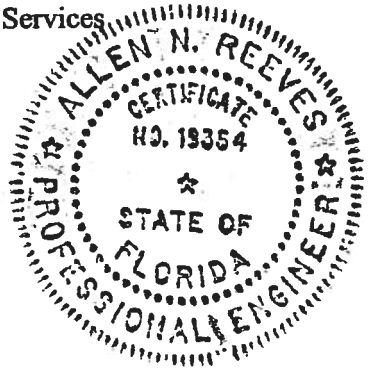
Detailed drawings, representative samples of the test specimen, and a copy of this report will be retained by ATI for a period of four years. The above results were secured by using the designated test methods and they indicate compliance with the performance requirements of the above referenced specification. 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:nlb
01-41641.01

Allen N. Reeves, P.E.
Director - Engineering Services
7 JUNE 2002



Test Results: (Continued)

Paragraph	Title of Test - Test Method	Results	Allowed
2.1.4.1	Uniform Load Deflection (ASTM E 330-97) (Measurements reported were taken on the mullion) (Loads were held for 52 seconds)		
	@ 15.0 psf (positive)	0.15"	0.41" max.
	@ 15.0 psf (negative)	0.29"	0.41" max.
2.1.4.2	Uniform Load Structural (ASTM E 330-97) (Measurements reported were taken on the mullion) (Loads were held for 10 seconds)		
	@ 22.5 psf (positive)	0.01"	0.29" max.
	@ 22.5 psf (negative)	0.01"	0.29" max.
2.2. .6.2	Deglazing Test (ASTM E 987-88) In operating direction at 70 lbs		
	Right sash, meeting rail	0.12"/25%	0.50"/100%
	Right sash, bottom rail	0.12"/25%	0.50"/100%
	Middle sash, meeting rail	0.12"/25%	0.50"/100%
	Middle sash, bottom rail	0.12"/25%	0.50"/100%
	Left sash, meeting rail	0.12"/25%	0.50"/100%
	Left sash, bottom rail	0.12"/25%	0.50"/100%
	In remaining direction at 50 lbs		
	Right sash, right stile	0.06"/12%	0.50"/100%
	Right sash, left stile	0.06"/12%	0.50"/100%
	Middle sash, right stile	0.06"/12%	0.50"/100%
	Middle sash, left stile	0.06"/12%	0.50"/100%
	Left sash, right stile	0.06"/12%	0.50"/100%
	Left sash, left stile	0.06"/12%	0.50"/100%
2 .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

Allen N. Reeves
7 JUNE 2002

ALLEN N. REEVES CERTIFICATE NO. 15854 STATE OF FLORIDA PROFESSIONAL ENGINEER