

Report No. ETC 01-741-11008.0
 DC Notification Number ETC 01051
 Date: September 13, 2001
 ETC Certification # 99-0416.01
 Test Start Date: June 21, 2001
 Test End Date: June 22, 2001

Test Requested By: THERMA-TRU CORP
 1687 Woodlands Drive
 Maumee, Ohio 43537
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 Phone 219.868.5811
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Tests Conducted: PA 202 (with no deviations)

Design Pressures - Specimens 1, 2 & 3 (PA 202) Out-swing + 55.0 psf. - 55.0 psf.
 Specimen 4 (PA 202) In-swing + 55.0 psf. - 55.0 psf.

Section 1 - DESCRIPTION OF SERIES:

Model Designation – “Fiber Classic” Series Opaque Fiberglass Swing Door

Overall Size:

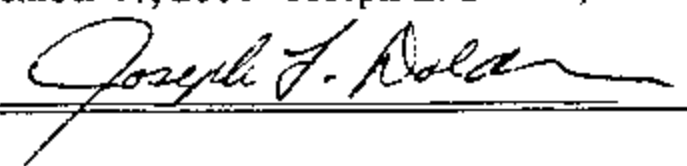
Specimens 1, 2 & 3 Out-swing Bumper Threshold - 105.5 in. W x 80.5 in. H x 4.5625 in. D
 Specimens 4 In-swing Self-adjusting Threshold – 105.5 in. W x 82.0 in. H x 4.5625 in. D

Configuration: All Specimens (OXXO)

No. & Size of Doors:

All Specimens 1 active leaf - 36.0 in. wide x 79.25 in. high x 1.68 in. thick
 1 inactive leaf w/astragal – 36.625 in. wide x 79.25 in. high x 1.68 in. thick
 Out-swing - 2 fixed sidelite panels - 13.9375 in. wide x 79.0 in. high x 1.68 in. thick
 In-swing - 2 fixed sidelite panels - 13.9375 in. wide x 79.25 in. high x 1.68 in. thi

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Signature: 

Section 2 - MATERIAL CHARACTERISTICS:**Frame and Door & Sidelite Material:** Finger jointed pine jambs and fiberglass panels.**Frame Construction -**

The head jambs and side jambs are finger jointed pine measuring 4.565 in. x 1.17 in.. The head jamb and side jambs are mortised, butted and joined using (3) 0.5 in. crown x 2 in. 16 ga. wire staples at each end. The following thresholds were tested, specimens 1, 2 & 3 - Therma-Tru Aluminum Out-swing Bump measuring 4.615 in. x .837 in. and attached to the jamb with (2) 0.5 in. crown x 2.5 in. 16 ga. wire staples at each end. Specimens 1, 2 and 3 were affixed with an add-on high dam sill that increased the height of the original bump threshold to 1.875 in. at the inner most plane of the frame system (the high dam threshold was made from a piece of pine and added to the standard bump threshold to increase the height). Specimen 4 used a Therma-Tru self-adjusting In-swing saddle threshold (Alum/Wood/Vinyl) measuring 5.75 in. x 1.548 in. and attached to the jamb with (2) 0.5 in. crown x 2.5 in. 16 ga. wire staples at each end. The hinge jambs were mortised to receive (6 total, 3 each side) Therma-Tru 4.0 in. x 4.0 in. self-locating hinges located at 9.25 in., 38.5 in. and 67.75 in. from the top of the doorjamb on each hinge jamb.

The sidelite head jamb, sill jamb and side jambs are finger-jointed pine measuring 4.565 in. x 1.17 in.. The four jamb pieces were assembled as a box construction when used in the out-swing configuration. The head jamb, sill jamb and side jambs are mortised, butted and joined using (3) 0.5 in. crown x 2 in. 16 ga. wire staples at each corner butt joint. The inswing model utilized a (Alum/Wood/Vinyl) saddle inswing threshold measuring 5.75 in. x 1.548 in. and attached to the jamb with (2) 0.5 in. crown x 2.5 in. 16 ga. wire staples at each end. Each of the sidelite jamb sets was secured to the doorjamb with (6) # 8 x 2.5 in. Phillips flat head wood screws located at 6.0 in., 19.75 in., 33.5 in., 47.25 in., 61.0 in. and 74.75 in. from the top of the head jamb through the doorstop into the sidelite jamb and into the sidelite

Panel Construction -

The door panel skins are constructed from 0.070 in. thick sheet molding compound (SMC). The interior cavity of each door is filled with 1.9 lbs. density BASF polyurethane foam. The face sheets are adhesively bonded to the wood stiles and rails. The latch stile measures 1.54 in. thick x 1.20 in. wide laminated veneered lumber including the 0.235 in. pine cap and the hinge stile measures 1.54 in. thick x 1.20 in. wide finger jointed pine. The top rail measures 1.54 in. thick x 0.837 in. high wood composite and the bottom rail measures 1.54 in. thick x 1.21 in. high wood composite. The bottom rail is kerfed to receive a door sweep (the sweep is used on in-swing models only). The hinge stile was mortised at 8.375 in., 37.625 in. and 66.875 in. from the top of the door panel to receive (3) Therma-Tru 4.0 in. x 4.0 in. butt type hinges. The latch stile was reinforced with a wood lock block measuring 2.375 in. wide x 14.0 in. long x 1.54 in. thick and located at 35.6875 in. from the top of the door panel. The inactive door panel was affixed with an extruded aluminum astragal (6060 T6 alloy) kerfed to receive weather-stripping. The astragal has integral extruded channels to receive (2) cold rolled steel rods at the top and (2) cold rolled steel rods at the bottom. The rods are 0.312 in. in diameter x 8.0 in. long. The bolts extended 2.0 in. past the end of the astragal providing approximately 1.875 in. of engagement into the head and sill of the frame system. The astragal is attached to the inactive door panel with (9) # 8 x 1.0 in. Phillips pan head wood screws, located at 1.0 in., 3.0 in., 5.0 in., 18.25 in., 40.5 in., 59.25 in., 74.25 in., 76.25 in., and 78.25 in. from the top.

Section 2 - MATERIAL CHARACTERISTICS Cont.:**Sidelite Construction -**

The sidelite sash skins are constructed from 0.070 in. thick sheet molding compound (SMC). The interior cavity of each door is filled with 1.9 lbs. density BASF polyurethane foam. The face sheets are adhesively bonded to the wood stiles and rails. The side stiles measure 1.54 in. thick x 0.67 in. wide finger jointed pine. The top & bottom finger-jointed pine rails measure 1.54 in. thick x 0.57 in. high. The sidelite sashes were secured to the wood jambs with (12) # 8 x 2.0 in. Phillips flathead wood screws, (4) on each vertical side jamb located at 13.5 in., 31.0 in., 48.5 in. and 66.0 in. from the top and (2) on each of the head and sill jambs located at 4.0 in. from each end. The sash was stopped in with a nominal 3/8 in. cove molding around the perimeter. The cove molding was secured using 1.0 in. x 0.04 in. diameter wire brads at 2.0 in. from each end a maximum of 12.0 in. on center. The in-swing model used an extruded vinyl boot that was attached to the bottom of the sidelite sash with (3) # 6 x 1.0 in. Phillips pan head wood screws 2.0 in. from each end and (1) in the center.

Glazing:

Specimens 1 & 2 - 2 sashes each consisting of the Therma-Tru BTS Lip Lite
 left sash - (0.5 in. insulated glass - 0.125 in. tempered glass - 0.25 in. air space - 0.125 in. tempered glass)
 right sash - (0.125 in. tempered glass)

Specimen 3 - 2 sashes each consisting of the Therma-Tru TCM Lip Lite
 left sash - (0.5 in. insulated glass - 0.125 in. tempered glass - 0.25 in. air space - 0.125 in. tempered glass)
 right sash - (0.125 in. tempered glass)

Specimen 4 - 2 sashes each consisting of the Therma-Tru Flush Glazing
 left sash - (0.5 in. insulated glass - 0.125 in. tempered glass - 0.25 in. air space - 0.125 in. tempered glass)
 right sash - (1.0 in. insulated glass - 0.125 in. tempered glass - 0.75 in. air space - 0.125 in. tempered glass)

Glazing Method:

Specimens 1 & 2 - BTS Lip lite OA size is 8.5 in. wide x 65.375 in. wide secured with (14) # 6 x 1.75 in. long tek screws spaced as follows, top and bottom rail at the center of span, side stiles from the top down at 3.0 in., 14.75 in., 26.5 in., 38.25 in., 50.5 in. and 62.25 in.. The frames were sealed with silicone caulking to the sidelite panel and to the glass.

Specimen 3 - TCM Lip lite OA size is 9.85 in. wide x 65.85 in. wide secured with (16) # 6 x 1.5 in. long tek screws spaced as follows, top and bottom rail at 2.125 in. from each end, side stiles from the top down at 5.5 in., 16.5 in., 27.5 in., 38.375 in., 49.375 in. and 60.375 in.. The frames were sealed with silicone caulking to the sidelite panel and to the glass.

Specimen 4 - Integral Flush Glazed - The sidelite sash face panels are molded to receive the insulated Glass. The glass is attached to the sidelite face sheets with silicone glazing compound.

Daylight Opening:

Specimens 1 & 2 - BTS lip lite - 5.75 in. x 62.625 in.
 Specimen 3 - TCM lip lite - 7.125 in. x 63.0 in.
 Specimen 4 - Integral flush glazed - 7.0 in. x 64.9375 in.

Section 2 - MATERIAL CHARACTERISTICS Cont.:**Weather-stripping:**

All Specimens Head Jamb 1 pc Therma-Tru long reach foam compression weather-strip.
 Hinge Jambs 1 pc Therma-Tru short reach foam compression weather-strip.
 Astragal 1 pc Therma-Tru long reach foam compression weather-strip.
 Corner pad seals 3 - 1 at each hinge jamb and astragal at threshold

Specimens 1, 2 & 3 At threshold 1 row Therma-Tru long reach foam compression weather-strip

Specimen 4 - Therma-Tru vinyl fixed door bottom sweep.

Hardware:

All Specimens

- (1) Kwikset 700 Series Latch bolt (ANSI Grade II) at 44.0 in. from top of panel
 (The strike plate was attached through the astragal with (2) #8 x 2.5 in. PFH WS.)
- (1) Kwikset 700 Deadbolt (ANSI Grade II) at 38.5 in. from top of panel
 (The strike plate was attached through the astragal with (2) #8 x 2.5 in. PFH WS.)
- (6) Therma-Tru 4 in. butt type hinges
 (The hinge was fastened to the door panel with (4) #10 x 0.75 in. PFH WS and fastened to the jamb with (3) #10 x 0.75 in. PFH WS and (1) # 10 x 2.0 in. PFH WS.)

Weepholes: None**Muntins:** None**Reinforcement:** None**SEALANT:** Latex caulking as needed to seal unit into rough opening.**ADDITIONAL DESCRIPTION:**

All specimens were installed in a wood test buck.

Section 3 - INSTALLATION:**Screws and Method of Attachment:**

Specimens 1, 2, 3 & 4 used the following screw types and numbers to secure the frame system into the test buck.

40 - # 8 x 2.5 in. Flat Head Phillips wood screws.

(28) - (14) head & (14) sill from the left side of the test specimen the screws are located at 3.0 in., 10.0 in., 13.0 in., 18.75 in., 21.75 in., 34.5 in., 50.0 in., 56.0 in., 71.5 in., 84.0 in., 87.0 in., 93.0 in., 96.0 in. and 102.5 in..

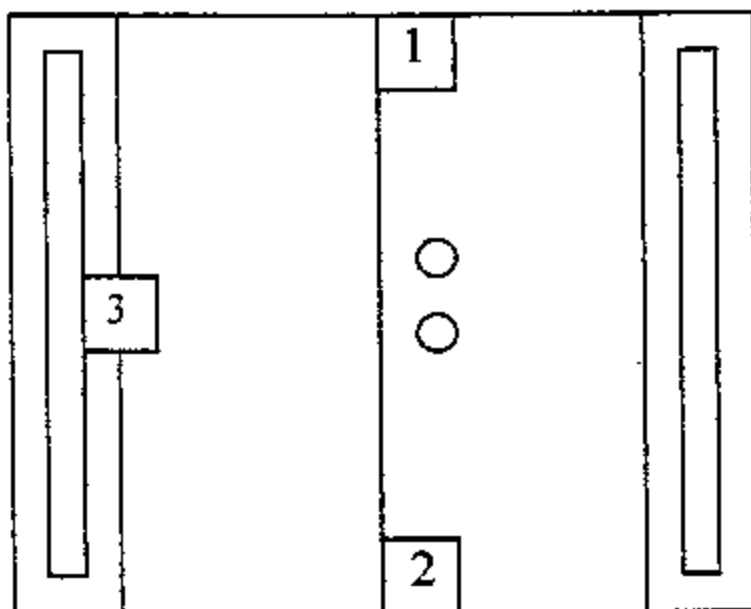
(12) - (6 ea sidelite jamb) from the top down on the left side of the test specimen the screws are located at 6.0 in., 19.75 in., 33.5 in., 47.25 in., 61.0 in. and 74.0 in..

Section 4 - SEQUENCE OF TESTS PERFORMED:

Test Sequence: PA 202

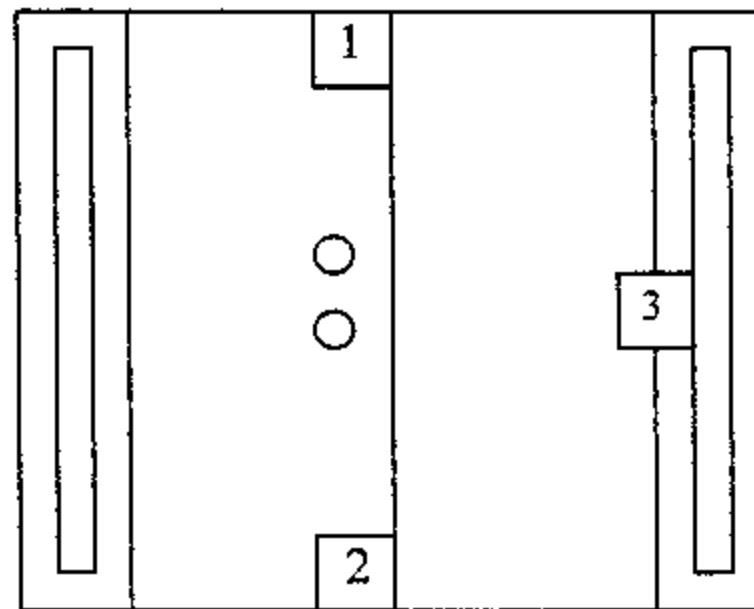
1. Air Infiltration
2. 1/2 Test Pressure Positive
3. Design Pressure Positive
4. 1/2 Test Pressure Negative
5. Design Pressure Negative
6. Water Infiltration Positive Direction
7. Full Test Pressure Positive
8. Full Test Pressure Negative
9. Forced Entry

Deflection Gauges set at location #1, #2 & #3



O X X O

Out-swing



O X X O

In-swing

Deflection was measured with two (3) Aerospace 2.0 in. dial indicators: location # 1-SN 213848, location # 2-SN 213233 and location # 3-SN 213701.

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

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

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

Forced Entry Tests were conducted in accordance with DCBCCD PA202-94

Florida Registered Professional Engineers Review: Reg. # 42929, September 17, 2001 - Joseph L. Dolden, P.E.

Signature: *Joseph L. Dolden*

Test Results:

Specimen 1: Out-swing (OXXO)

AIR INFILTRATION

Air at 1.57 psf	Actual	Allowable
	0.09 CFM/SQ FT	0.34 CFM/SQ FT

WATER INFILTRATION

Water @ 2.86 psf (15% of 19.0 psf) for 15 min. No water penetration over sill.
(Achieved with standard aluminum out-swing bump threshold.)

Water @ 8.25 psf (15% of 55.0 psf) for 15 min. No water penetration over sill.
(Achieved with add-on riser to the standard aluminum out-swing bump threshold. This test was conducted at the conclusion of the 2.86 psf test.)

Note: The water tests were conducted after the required half and design loads and before full test loads.

STATIC AIR PRESSURE

Design Loads + 55.0 psf, - 55.0 psf. (Out-swing)

Range of test	time	actual load	deflection	perm. set
Positive loads	(seconds)	psf		
1/2 Test	30	41.25		
Design	30	55.00	Mullion (3) 0.396 in.	
Test	30	82.50		Mullion (3) 0.155 in. Door T (1) 0.117 in. Door B (2) 0.255 in.

Range of test	time	actual load	deflection	perm. set
Negative loads	(seconds)	psf		
1/2 Test	30	41.25		
Design	30	55.00	Mullion (3) 0.322 in.	
Test	30	82.50		Mullion (3) 0.217 in. Door T (1) 0.170 in. Door B (2) 0.090 in.

Loc 3 - Max. allowable perm. set at completion of design load (0.4% of span) .004 x 80.5 in.= 0.447
 Loc 1 & 2 -Max. allowable perm. set at completion of test load (0.4% of span) .004 x 79.25 in.= 0.317 in.
 Loc 3 - Max. allowable perm. set at completion of test load (0.4% of span) .004 x 80.5 in.= 0.322 in.

FORCED ENTRY

<u>Size</u>	<u>Time</u>	<u>Result</u>
Active Panel 36.0 in. W x 79.25.in. H	30 seconds	(Door remained locked & shut and was operable at the completion of the test.)

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Signature: 

Test Results: Cont.**Specimen 2: Out-swing (OXXO)****AIR INFILTRATION**

Air at 1.57 psf	Actual	Allowable
	0.27 CFM/SQ FT	0.34 CFM/SQ FT

WATER INFILTRATION

Water @ 2.86 psf (15% of 19.0 psf) for 15 min. No water penetration over sill.
(Achieved with standard aluminum out-swing bump threshold.)

Water @ 8.25 psf (15% of 55.0 psf) for 15 min. No water penetration over sill.
(Achieved with add-on riser to the standard aluminum out-swing bump threshold. This test was conducted at the conclusion of the 2.86 psf test.)

Note: The water tests were conducted after the required half and design loads and before full test loads.

STATIC AIR PRESSURE**Design Loads + 55.0 psf, - 55.0 psf. (Out-swing)**

Range of test	time	actual load	deflection	perm. set
Positive loads	(seconds)	psf		
1/2 Test	30	41.25		
Design	30	55.00	Mullion (3) 0.157 in.	
Test	30	82.50		Mullion (3) 0.012 in. Door T (1) 0.048 in. Door B (2) 0.059 in.

Range of test	time	actual load	deflection	perm. set
Negative loads	(seconds)	psf		
1/2 Test	30	41.25		
Design	30	55.00	Mullion (3) 0.240 in.	
Test	30	82.50		Mullion (3) 0.220 in. Door T (1) 0.079 in. Door B (2) 0.243 in.

Loc 3 - Max. allowable perm. set at completion of design load (0.4% of span) .004 x 80.5 in.= 0.447
Loc 1 & 2 -Max. allowable perm. set at completion of test load (0.4% of span) .004 x 79.25 in.= 0.317 in.
Loc 3 - Max. allowable perm. set at completion of test load (0.4% of span) .004 x 80.5 in.= 0.322 in.

FORCED ENTRY

	<u>Size</u>	<u>Time</u>	<u>Result</u>
Active Panel	36.0 in. W x 79.25.in. H	30 seconds	(Door remained locked & shut and was operable at the completion of the test.)

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Signature: 

Test Results: Cont.

Specimen 3: Out-swing (OXXO)

AIR INFILTRATION

Air at 1.57 psf	Actual	Allowable
	0.08 CFM/SQ FT	0.34 CFM/SQ FT

WATER INFILTRATION

Water @ 2.86 psf (15% of 19.0 psf) for 15 min. No water penetration over sill.
(Achieved with standard aluminum out-swing bump threshold.)

Water @ 8.25 psf (15% of 55.0 psf) for 15 min. No water penetration over sill.
(Achieved with add-on riser to the standard aluminum out-swing bump threshold. This test was conducted at the conclusion of the 2.86 psf test.)

Note: The water tests were conducted after the required half and design loads and before full test loads.

STATIC AIR PRESSURE

Design Loads + 55.0 psf, - 55.0 psf. (Out-swing)

Range of test	time	actual load	deflection	perm. set
Positive loads	(seconds)	psf		
1/2 Test	30	41.25		
Design	30	55.00	Mullion (3) 0.350 in.	
Test	30	82.50		Mullion (3) 0.023 in. Door T (1) 0.112 in. Door B (2) 0.133 in.

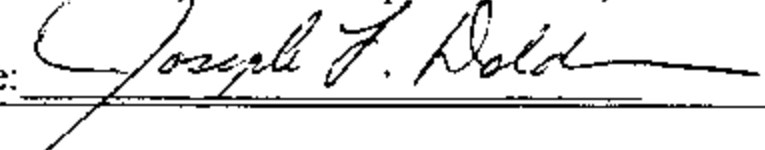
Range of test	time	actual load	deflection	perm. set
Negative loads	(seconds)	psf		
1/2 Test	30	41.25		
Design	30	55.00	Mullion (3) 0.312 in.	
Test	30	82.50		Mullion (3) 0.301 in. Door T (1) 0.065 in. Door B (2) 0.113 in.

Loc 3 - Max. allowable perm. set at completion of design load (0.4% of span) .004 x 80.5 in.= 0.447
 Loc 1 & 2 -Max. allowable perm. set at completion of test load (0.4% of span) .004 x 79.25 in.= 0.317 in.
 Loc 3 - Max. allowable perm. set at completion of test load (0.4% of span) .004 x 80.5 in.= 0.322 in.

FORCED ENTRY

	<u>Size</u>	<u>Time</u>	<u>Result</u>
Active Panel	36.0 in. W x 79.25.in. H	30 seconds	(Door remained locked & shut and was operable at the completion of the test.)

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Signature: 

Test Results: Cont.**Specimen 4: In-swing (OXXO)****AIR INFILTRATION**

Air at 1.57 psf	Actual	Allowable
	0.03 CFM/SQ FT	0.34 CFM/SQ FT

WATER INFILTRATION

Water @ 2.86 psf for 15 min. No water penetration over sill.

(Achieved with standard self adjusting aluminum in-swing threshold and door sweep.)

Note: The water test was conducted after the required half and design loads and before full test loads.

STATIC AIR PRESSURE**Design Loads + 55.0 psf, - 55.0 psf. (Out-swing)**

Range of test	time	actual load	deflection	perm. set
Positive loads	(seconds)	psf		
1/2 Test	30	41.25		
Design	30	55.00	Mullion (3) 0.135 in.	
Test	30	82.50		Mullion (3) 0.017 in. Door T (1) 0.144 in. Door B (2) 0.110 in.

Range of test	time	actual load	deflection	perm. set
Negative loads	(seconds)	psf		
1/2 Test	30	41.25		
Design	30	55.00	Mullion (3) 0.344 in.	
Test	30	82.50		Mullion (3) 0.079 in. Door T (1) 0.171 in. Door B (2) 0.162 in.

Loc 3 - Max. allowable perm. set at completion of design load (0.4% of span) .004 x 80.5 in. = 0.447

Loc 1 & 2 -Max. allowable perm. set at completion of test load (0.4% of span) .004 x 79.25 in. = 0.317 in.

Loc 3 - Max. allowable perm. set at completion of test load (0.4% of span) .004 x 80.5 in. = 0.322 in.

FORCED ENTRY

	<u>Size</u>	<u>Time</u>	<u>Result</u>
Active Panel	36.0 in. W x 79.25.in. H	30 seconds	(Door remained locked & shut and was operable at the completion of the test.)

Section 5 - DRAWINGS TO BE SUBMITTED:

1. L2151 sheets 1 through 13 of 13
2. Laboratory Anchoring sketches

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.

Observers:

Steve Kepler -- Project Scientist, THERMA-TRU Corp.
Rick Wright -- Consultant, R.W. Building Consultants, Inc.

Dade County Witness:

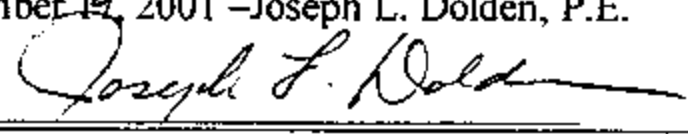
Not present

All Tests Witnessed by:

Wendell Haney, P.E.
Arthur Murray, ETC Laboratories
Bill Yanda, ETC Laboratories

cc: THERMA-TRU CORP. (3)
Rick Wright (3)
File (1)

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Signature: 

Conditions, Terms, and General Notes Regarding These Tests

The product tested has been compared to the detailed drawings, bill of materials and fabrication information supplied by the client so named herein. Our analysis, which includes dimensional and component description comparisons, indicate the tested product and engineering information supplied by the client "Are Equivalent". The report and representative samples will be retained for four years from the date of initial test.

These test results were obtained by employing all requirements of the designated test methods with no deviations. The test results and specimen supplied for testing are in compliance with the referenced specifications.

The test results are specific to the product tested by this laboratory and of the sample supplied by the client named herein, and they relate to no other product either manufactured by the client, a Fabricator of the client or of installed field performance.

This report does not constitute an AAMA, NWWDA or Dade County certified product under the certification programs of these organizations. The program administrator of these programs and organizations may only grant product certification.

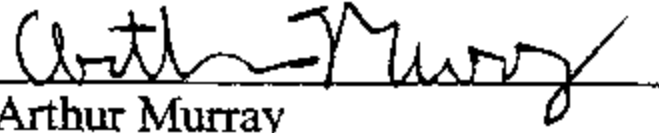
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For ETC Laboratories


Bill Yanda
Test Technician


Arthur Murray
Laboratory Manager
Wind Engineering Laboratory

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Signature: 