AAMA 1503-09 THERMAL PERFORMANCE
TEST REPORT

Rendered to:

CR LAURENCE CO., INC.

SERIES/MODEL: 900 Terrace Door
TYPE: Swinging Door with Frame

Summary of Results			
Thermal Transmittance (U-Factor)			0.45
Condensation Resistance Factor - Frame (CRF_f)			63
Condensation Resistance Factor - Glass (CRF_g)			69
Unit Size:		37-5/8" x 82-3/8"	
Layer 1:	1/4"	Clear	
Gap:	0.52"	A1-D: Aluminum Spacer	100% Air*
Layer 2:	1/4"	PPG Solarban 70XL (e=0.018*, #3)	

Reference must be made to Report No. D7556.02-301-46, dated 06/24/15 for complete test specimen description and data.

AAMA 1503-09 THERMAL PERFORMANCE TEST REPORT

Rendered to:

CR LAURENCE CO., INC.
2100 East 38th Street
Vernon, California 90058

Report Number:	D7556.02-301-46
Test Date:	08/15/14
Report Date:	06/24/15

Test Sample Identification:

Series/Model: 900 Terrace Door

Type: Swinging Door with Frame

Test Sample Submitted by: Client

Test Procedure: The condensation resistance factor (CRF) and thermal transmittance (U) were determined in accordance with AAMA 1503-09, *Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections*

1. Average warm side ambient temperature	69.78 F
2. Average cold side ambient temperature	0.03 F
3. 15 mph dynamic wind applied to test specimen exterior.	
4. 0.0" $\pm$0.04" static pressure drop across specimen.	

Test Results Summary:

1. Condensation resistance factor - Frame (CRF_f)	63
Condensation resistance factor - Glass (CRF_g)	69
2. Thermal transmittance due to conduction (U)	0.45
(U-factors expressed in Btu/hr·ft^2·F)	

Test Sample Description:

Frame:

Material:	AT (0.53"): Aluminum with Thermal Breaks - All Members		
Size:	37-5/8" x 82-3/8"		
Daylight Opening:	N/A	**Glazing Method:**	N/A
Exterior Color:	Grey	**Exterior Finish:**	Anodized
Interior Color:	Grey	**Interior Finish:**	Anodized
Corner Joinery:	Square Cut / Screws / Sealed		

Panel:

Material:	AT (0.53"): Aluminum with Thermal Breaks - All Members		
Size:	36-3/8" x 79-1/4"		
Daylight Opening:	28-1/2" x 71-1/2"	**Glazing Method:**	Interior
Exterior Color:	Grey	**Exterior Finish:**	Anodized
Interior Color:	Grey	**Interior Finish:**	Anodized
Corner Joinery:	Mitered / Corner Keys / Sealed		

Glazing Information:

Layer 1:	1/4"	Clear	
Gap:	0.52"	A1-D: Aluminum Spacer	100% Air*
Layer 2:	1/4"	PPG Solarban 70XL (e=0.018*, #3)	
Gas Fill Method:		N/A*	
Desiccant:		Yes	

**Stated per Client/Manufacturer*
N/A Non-Applicable

Test Sample Description: (Continued)

Weatherstripping:

Description	Quantity	Location
Hollow vinyl bulb gasket	1 Row	All members of the frame.
Foam-filled vinyl bulb gasket	1 Row	All members of the panel.

Hardware:

Description	Quantity	Location
Hinge	3	Hinge jamb/stile.

Drainage:

Drainage Method	Size	Quantity	Location
Weephole	1-3/4" x 1/4"	2	Center sill leg.
Weephole	1-3/4" x 1/4"	1	Sill face.

Test Duration:

1. The environmental systems were started at 14:03 hours, 08/14/14.

2. The thermal performance test results were derived from 03:04 hours, 08/15/14 to 07:04 hours, 08/15/14.

Condensation Resistance Factor (CRF):

The following information, condensed from the test data, was used to determine the condensation resistance factor:

T_h	=	Warm side ambient air temperature	69.78 F
T_c	=	Cold side ambient air temperature	0.03 F
FT_p	=	Average of pre-specified frame temperatures (14)	44.48 F
FT_r	=	Average of roving thermocouples (4)	37.73 F
W	=	$[(FT_p - FT_r) / (FT_p - (T_c + 10))] \times 0.40$	0.078
FT	=	$FT_p(1-W) + W (FT_r)$ = Frame Temperature	43.95 F
GT	=	Glass Temperature	47.89 F
CRF_g	=	Condensation resistance factor – Glass	69
		$CRF_g = (GT - T_c) / (T_h - T_c) \times 100$	
CRF_f	=	Condensation resistance factor – Frame	63
		$CRF_f = (FT - T_c) / (T_h - T_c) \times 100$	

The CRF number was determined to be 63 (on the size as reported). When reviewing this test data, it should be noted that the frame temperature (FT) was colder than the glass temperature (GT) therefore controlling the CRF number. Refer to the 'CRF Report' page and the 'Thermocouple Location Diagram' page of this report.

Thermal Transmittance (U_c):

T_h	=	Average warm side ambient temperature	69.78	F
T_c	=	Average cold side ambient temperature	0.03	F
P	=	Static pressure difference across test specimen	0.00	psf
		15 mph dynamic perpendicular wind at exterior		
Nominal sample area			21.52	ft^2
Total measured input to calorimeter			762.48	Btu/hr
Calorimeter correction			89.27	Btu/hr
Net specimen heat loss			673.21	Btu/hr
U	=	Thermal Transmittance	0.45	$Btu/hr \cdot ft^2 \cdot F$

Glazing Deflection:

	Panel
Edge Gap Width	0.52"
Estimated center gap width upon receipt of specimen in laboratory (after stabilization)	0.48"
Center gap width at laboratory ambient conditions on day of testing	0.48"
Center gap width at test conditions	0.38"

The sample was inspected for the formation of frost or condensation, which may influence the surface temperature measurements. At the conclusion of the test, a layer of condensation was present on the sill, bottom half of each jamb, and the bottom rail of the panel.

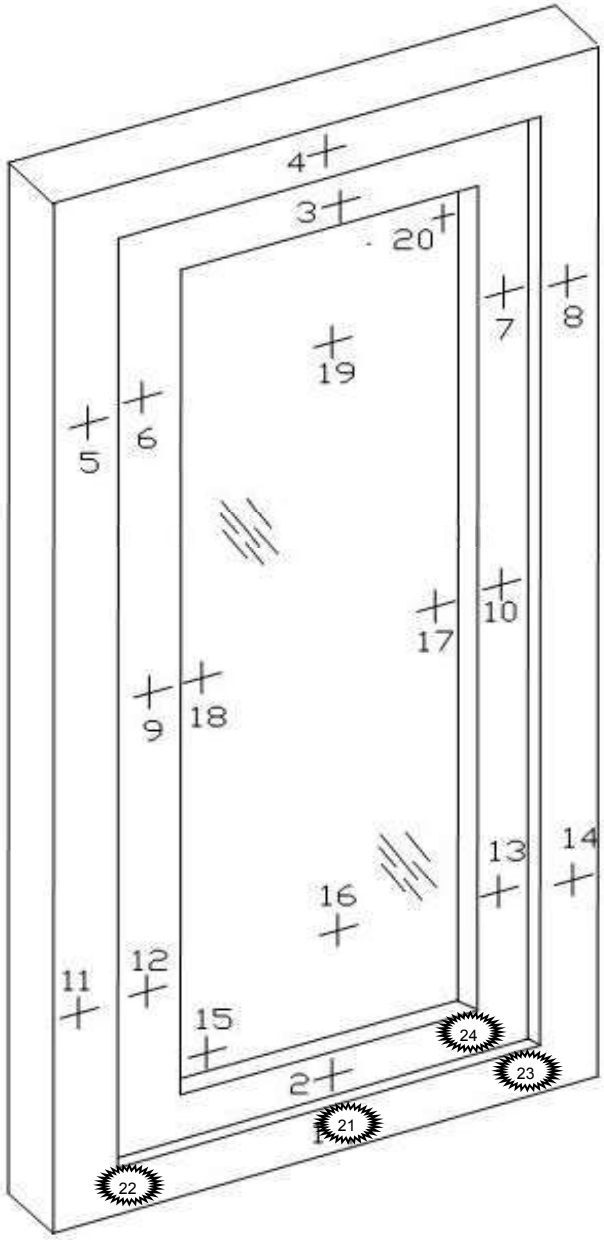
Prior to testing the specimen was sealed with silicone on the interior side and checked for air infiltration per Section 9.3.4.

Required annual calibrations for the Architectural Testing Inc. 'thermal test chamber' (ICN 004287) in Fresno, California were last conducted in April 2014 in accordance with Architectural Testing Inc. calibration procedure. A CTS Calibration verification was performed May 2014. A Metering Box Wall Transducer and Surround Panel Flanking Loss Characterization was performed June 2014.

CRF Report

Time:	05:04	05:34	06:04	06:34	07:04	AVERAGE
Pre-specified Thermocouples - Frame						
1	37.95	37.99	37.94	38.02	38.00	37.98
2	42.35	42.26	42.34	42.36	42.46	42.35
3	51.93	51.78	51.79	51.64	51.63	51.75
4	47.98	47.89	48.01	48.08	48.08	48.01
5	45.02	45.11	45.06	45.19	45.23	45.12
6	47.06	47.08	47.08	47.08	47.04	47.07
7	48.07	48.09	48.06	48.10	48.06	48.07
8	45.37	45.42	45.35	45.45	45.46	45.41
9	44.97	45.06	45.04	45.10	45.13	45.06
10	44.59	44.59	44.60	44.63	44.64	44.61
11	40.31	40.28	40.31	40.33	40.23	40.29
12	43.06	43.10	43.06	43.16	43.03	43.08
13	43.52	43.51	43.41	43.44	43.50	43.48
14	40.30	40.31	40.40	40.50	40.75	40.45
FT_P	44.46	44.46	44.46	44.51	44.52	44.48
Pre-specified Thermocouples - Glass						
15	36.75	36.77	36.76	36.67	36.63	36.71
16	55.51	55.52	55.54	55.49	55.58	55.53
17	46.44	46.39	46.57	46.57	46.52	46.50
18	44.87	44.86	44.87	44.98	44.98	44.91
19	55.78	55.72	55.77	55.75	55.76	55.75
20	47.90	47.82	48.02	47.85	48.05	47.93
GT	47.87	47.85	47.92	47.89	47.92	47.89
Cold Point (Roving) Thermocouples						
21	37.95	37.99	37.94	38.02	38.00	37.98
22	37.59	37.63	37.67	37.66	37.66	37.64
23	36.51	36.56	36.54	36.79	36.58	36.60
24	38.81	38.84	38.26	38.82	38.87	38.72
FT_R	37.71	37.76	37.60	37.82	37.78	37.73
W	0.08	0.08	0.08	0.08	0.08	0.08
FT	43.93	43.94	43.91	43.99	43.99	43.95
Warm Side - Room Ambient Air Temperature						
	69.77	69.71	69.75	69.84	69.83	69.78
Cold Side - Room Ambient Air Temperature						
	0.03	0.03	0.03	0.03	0.03	0.03
CRF_f	63	63	63	63	63	63
CRF_g	69	69	69	69	69	69

Thermocouple Location Diagram



Cold Point Locations

21. 37.98
22. 37.64
23. 36.60
24. 38.72

Architectural Testing, Inc. will service this report for the entire test record retention period. Test records that are retained such as detailed drawings, datasheets, representative samples of test specimens, or other pertinent project documentation will be retained by Architectural Testing, Inc. for the entire test record retention period. The test record retention end date for this report is August 15, 2018.

This report does not constitute certification of this product nor an opinion or endorsement by this laboratory. It is the exclusive property of the client so named herein and relates only to the specimen tested. This report may not be reproduced, except in full, without the written approval of Architectural Testing, Inc.

For ARCHITECTURAL TESTING, INC.

Digitally Signed by: William Smeds

William Simon Smeds
Technician

Digitally Signed by:Kenny C. White

Kenny C. White
Laboratory Manager
Individual-In-Responsible-Charge

WSS:ss
D7556.02-301-46

Attachments (pages): This report is complete only when all attachments listed are included.
Appendix-A: Drawings (17)

IAS ACCREDITED	Architectural Testing, Inc. is accredited by the International Accreditation Service (IAS) under the specific test methods listed under lab code TL-144, in accordance with the recognized International Standard ISO/IEC 17025:2005. The laboratory's accreditation or test report in no way constitutes or implies product certification, approval, or endorsement by IAS.

Revision Log

Rev. #	Date	Page(s)	Revision(s)
0	06/24/15	All	Original Report Issue. Work requested by Mr. Ronald Wooten of CR Laurence Co., Inc.

This report produced from controlled document template ATI 00025(c), revised 03/14/2013.

Appendix A: Drawings

900 Terrace Door

Part Name	Part Number
Sash-Exterior	HE300
Sash-Interior	HI300
Bottom Rail-Exterior	BE030
Head-Exterior	HE450
Head-Interior	HI450
Threshold-Exterior	HE454
Threshold-Interior	HI454
Jamb-Exterior	JE450
Jamb-Interior	JI450
Glass Stop	WN429
Wedge Gasket	NP-127
Bulb Gasket	NP-257
Bulb Gasket	WH342

Architectural Testing

Report #: D7556.01

Date: 09/17/2014

Verified by:

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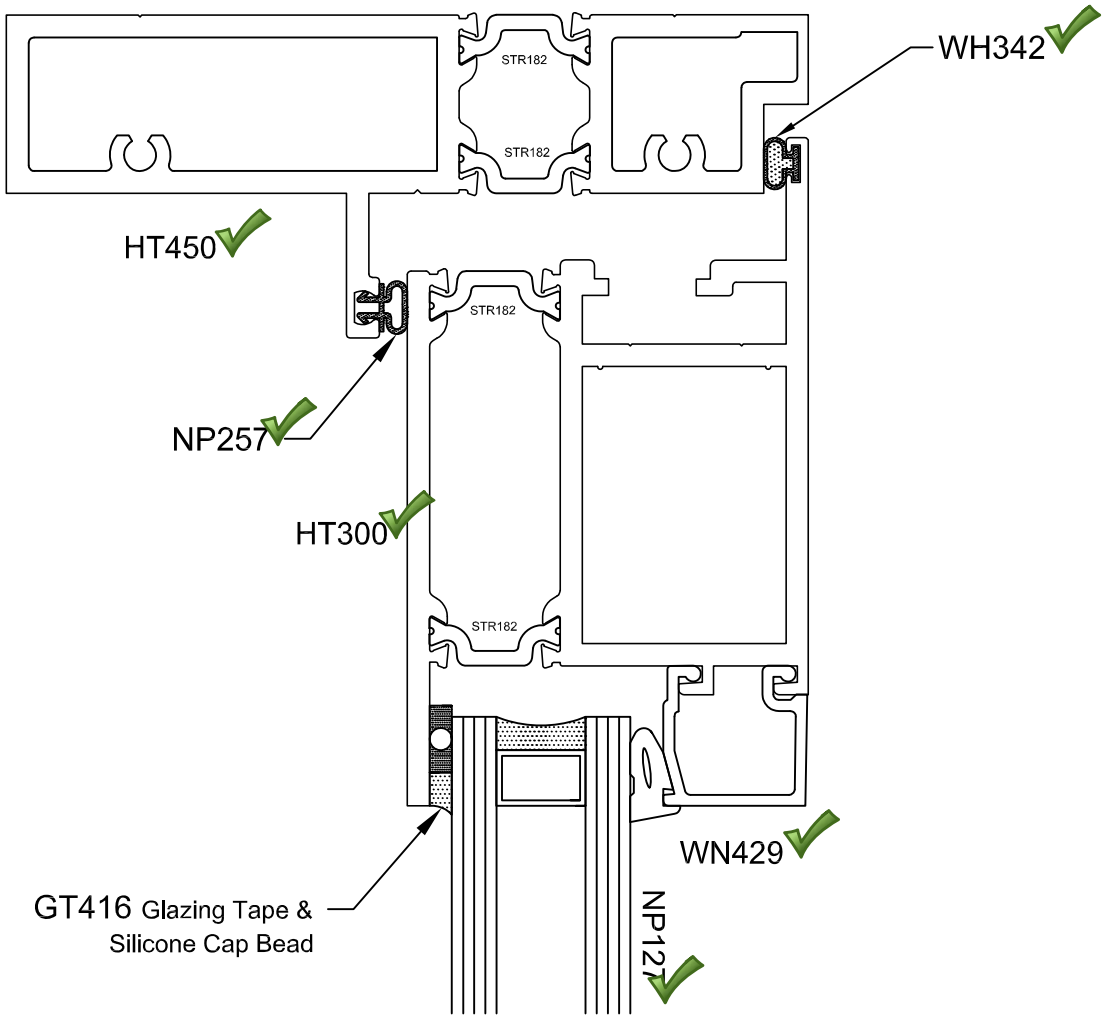

900 TERRACE DOOR
HEAD
IN SWING

HT450 / HT300 / WN429

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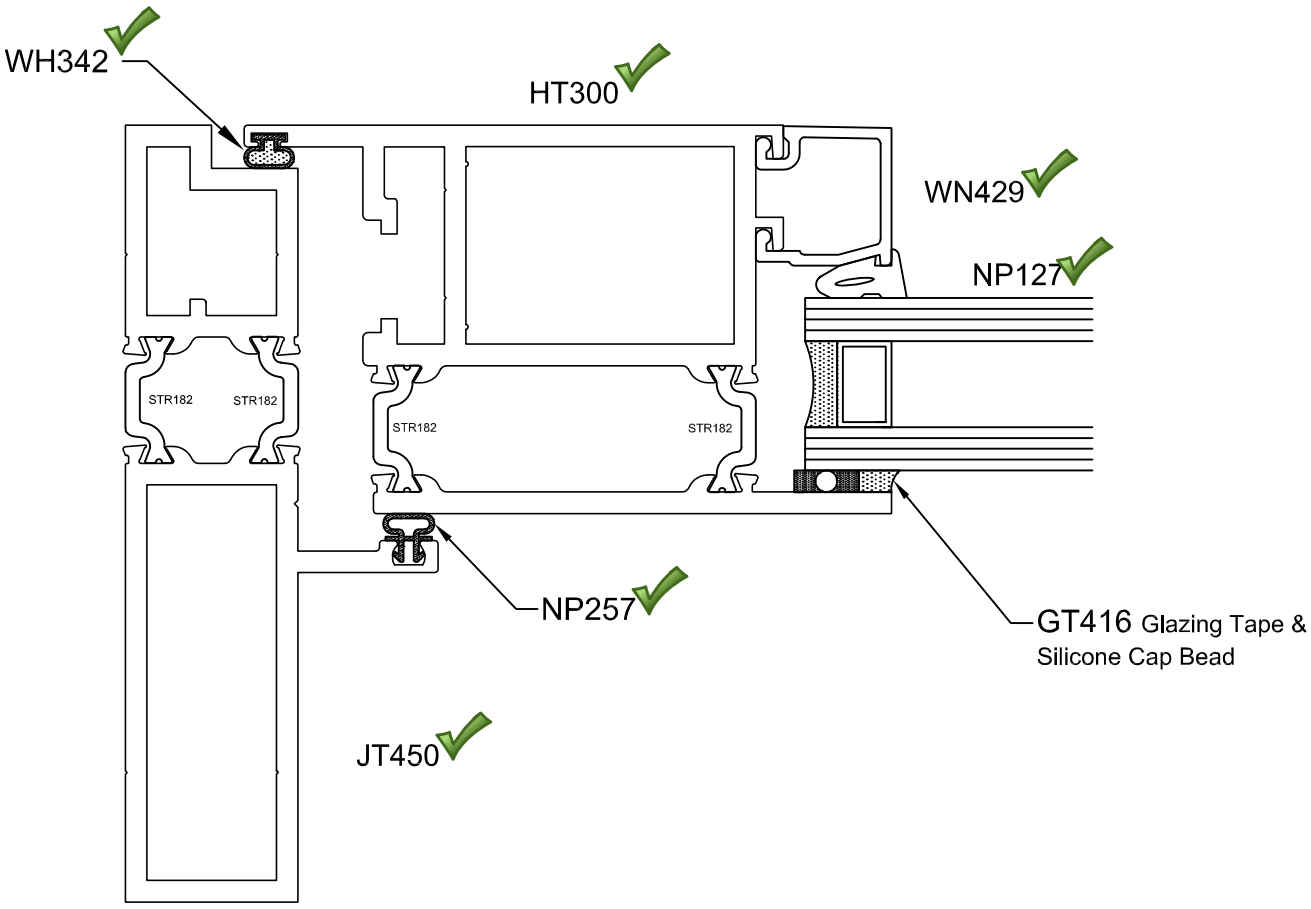

900 TERRACE DOOR
JAMB
IN SWING

JT450 / HT300 / WN429

Architectural Testing

Report #:	D7556.01
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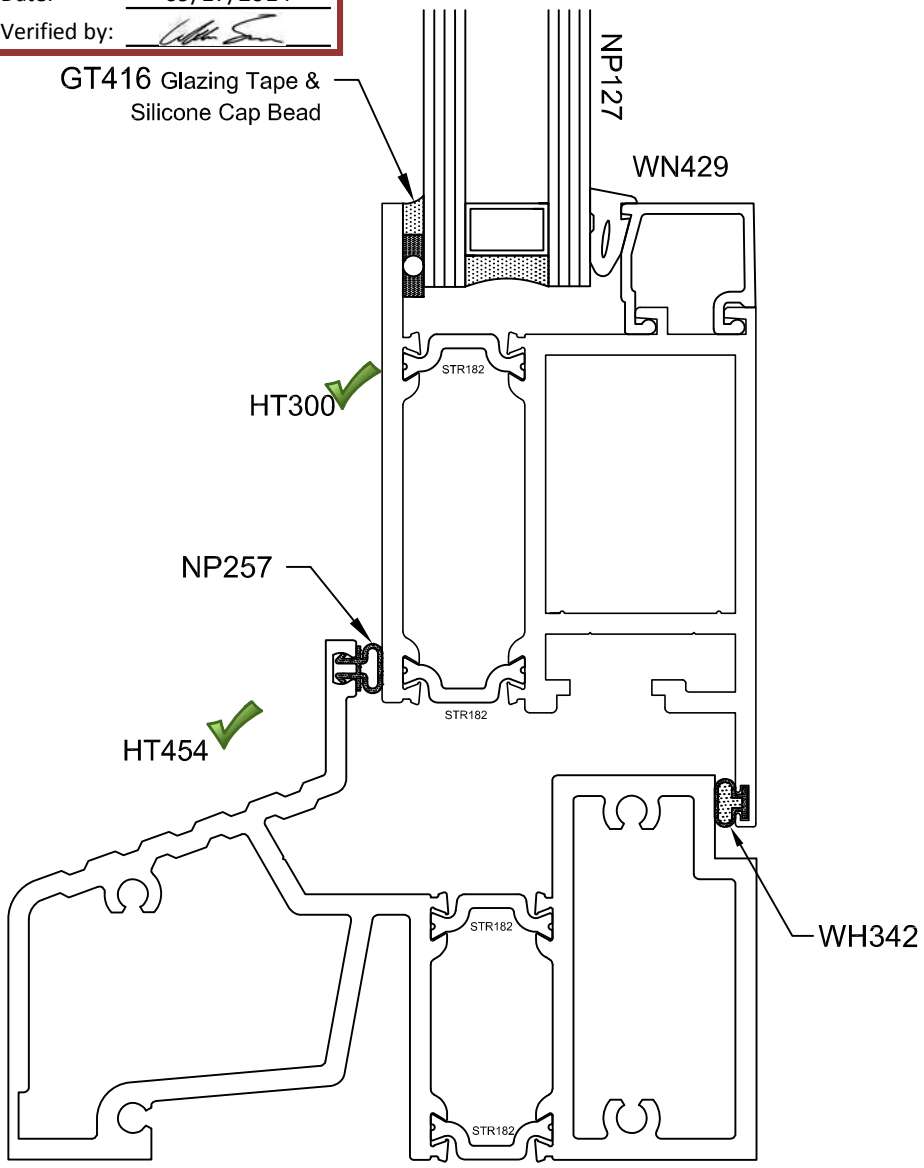

900 TERRACE DOOR SILL IN SWING

HT454 / HT300 / WN429