Fenestration Testing Laboratory, Inc.
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REPORT SUMMARY

REPORT SPECIFICATION
North American Fenestration Standard/specification for windows, doors, and skylights AAMA/WDMA/CSA 101/I.S.2/A440-11, AAMA 450-10 Voluntary Performance Rating Method of Mulled Fenestration Assemblies & Canadian Supplement A440S1-09

REPORT #
T15-086

TESTED FOR
Fleetwood Windows and Doors
1 Fleetwood Way
Corona, CA 92879

PRODUCT TYPE
Fixed Window (Aluminum Thermally Broken)

SERIES
250-T

CONFIGURATION
O/O/O mulled to O/O/O

PERFORMANCE GRADE
PG 35
Individual Rating: FW - CW 35
Mulled Fenestration Rating: CW 35
Applied Rating: CW 35

PRIMARY DESIGNATOR
Class CW - PG35: Size tested 3064 mm x 2438.4 mm (~120.63" x 96") - Type FW*
Reference should be made to specimen Report No. T15-085 for gateway size compliance.

Secondary Designator
Canadian Air Infiltration / Exfiltration = Fixed Level

TEST COMPLETION DATE
11/19/15

REPORT DATE
11/30/2015

Reference should be made to Report No. T15-086 for complete test specimen description and data.

1.0 Tested For: Fleetwood Windows and Doors
1 Fleetwood Way
Corona, CA 92879

2.0 Purpose:
The purpose of this report is to present the testing methods employed and the test results obtained during the performance testing of one (1) Aluminum fixed window described in paragraph 5.0 of this report.

3.0 Test References:

3.1 AAMA 450-10 Voluntary Performance Rating Method of Mulled Fenestration Assemblies

3.2 AAMA 450-10 Voluntary Performance Rating Method of Mulled Fenestration Assemblies

3.3 Canadian Supplement A440S1-09

4.0 Compliance Statement: The test results in paragraph 6.0 indicate that the test sample described in paragraph 5.0 of this report met the performance requirements of the above specifications for the performance grade shown in 4.1 below.

4.1 Primary Designator:
Class CW - PG35: Size tested 3064 mm x 2438.4 mm (~120.63" x 96") - Type FW
Reference should be made to specimen Report No. T15-085 for gateway size compliance.

5.0 Sample Submitted

5.1 Product Type: Fixed Window (Aluminum Thermally Broken)

5.2 Series/Model: 250-T

5.3 Configuration O/O/O mulled to O/O/O

5.4 Test Sample Provider: Fleetwood Windows and Doors

5.5

Product Size:	Millimeters	Inches
Frame:	3064 mm x 2438.4 mm	~120.63" x 96"
Fixed window - Top and Bottom Row DLO	1425.7 mm x 733.6 mm	~56.13" x 28.88"
Fixed window - Center Row DLO	1425.7 mm x 752.6 mm	~56.13" x 29.63"
Individual window size	1524 mm x 2438.4 mm	~60" x 96"

5.0 Sample Submitted (Continued)

5.6 Glass and Glazing

Glass Type	Spacer Type	Interior Lite	Exterior Lite	Glazing Method
1" Overall	0.5" wide metal Spacer	1/4" annealed	1/4" annealed	All lites were outside glazed onto hollow bulb vinyl full perimeter and onto silicone 6" each way at the corners. Snap-in glazing stop was applied full perimeter on the exterior. The glass stop contained a strip of hollow bulb vinyl. Setting blocks applied under each lite near each end.

5.7 Weepage

Draining Method	Size	Quantity	Location
Weep slot	1" x 0.18"	2	One at each end of each lite on the sill outside face. One at each end of each horizontal TDL mullion. The glass stop was notched in line with each weep.

5.8 Weatherstripping

Type:	Quantity	Location
Hollow bulb vinyl - Large	1 strip	On the glazing stops facing in (see "Glazing")
Hollow bulb vinyl - Mini	1 strip	On the frame inside leg facing out (see "Glazing")
Hollow bulb vinyl - Mini	4 strip	On the vertical mullion - seal to mating jambs

5.9 Hardware

Type:	Quantity	Location
N/A	N/A	N/A

5.0 Sample Submitted (Continued)

5.10 Construction

Location	Joinery Type	Number of Fasteners
All frame corners	Keyed, staked and welded	None
TDL - Integral Horizontal Mullions	Welded to Jamb and Vertical Mullion	None
Vertical Mullion	Mechanical	8 Total (4 per mating jamb; on one side starting at 6" and then 24" O.C.; on the other side starting at 18" and then 24" O.C.)
The window was set in a sill pan with 0.5" vertical leg on three sides.		
The frame and TDL integral mullion were thermally broken with a 1/4" debridged width.		

5.11 Reinforcement

Location	Material
N/A	N/A

5.12 Sealant

Location
All frame corners and TDL integral mullion butt joints full profile
Full perimeter of the sill pan vertical leg to the frame
Vertical Mullion - Full length on inside and outside to each mating jamb. Sealed at top and bottom ends.
All TDL mullions - Full length on top side of thermal break; covered thermal break

5.13 Installation

The test specimen was installed into a 2" x 8" wooden rough opening.

Location on frame	Anchor type	Spacing
Head, jambs, and sill	#8 x 1.25" PFH screw applied through the nail-on fin.	6" from each corner and 12" on center in the field.

REPORT #T15-086

6.0 Test Procedures and Results: All testing procedures were conducted in accordance with the performance requirements of the test specifications referenced in paragraph 3.0 of this report. (Laboratory conditions during test were 23.8 degrees Celsius (75 degrees Fahrenheit))

9.3.2 - Air Leakage (ASTM E 283-04)(2012) **Infiltration**

Test Pressure	Results	Allowed
75 Pa	0.00 L/s*sq.m	1.5 L/s*sq.m
1.57 psf	0.00 cfm/sq.ft.	0.30 cfm/sq.ft.

The tested specimen meets (or exceeds) the performance levels specified in AAMA/WDMA/CSA 101/I.S.2/A440-11 and Canadian Supplement A440S1-09 for air leakage resistance.

Optional Performance Testing (Air)

Canadian (only) Air Infiltration/exfiltration levels

9.3.2 - Air Leakage (ASTM E 283-04)(2012) **Infiltration - Canada**

75 Pa	0.00 L/s*sq.m	0.20 L/s*sq.m
1.57 psf	0.00 cfm/sq.ft.	0.04 cfm/sq.ft.

9.3.2 - Air Leakage (ASTM E 283-04)(2012) **Exfiltration - Canada**

75 Pa	0.00 L/s*sq.m	0.20 L/s*sq.m
1.57 psf	0.00 cfm/sq.ft.	0.04 cfm/sq.ft.

Note: Canadian air infiltration/exfiltration = Fixed Level

Additional air testing at 300 Pa (6.27 psf) {Canadian AW Class at Fixed level}

9.3.2 - Air Leakage (ASTM E 283-04)(2012) **Infiltration**

300 Pa	0.0 L/s*sq.m	0.20 L/s*sq.m
6.27 psf	0.0 cfm/sq.ft.	0.04 cfm/sq.ft.

9.3.2 - Air Leakage (ASTM E 283-04)(2012) **ex-filtration**

300 Pa	0.05 L/s*sq.m	0.20 L/s*sq.m
6.27 psf	0.01 cfm/sq.ft.	0.04 cfm/sq.ft.

REPORT #T15-086

9.3.3 **Water Penetration** (ASTM E 547-00) (2009)

Test Pressure	Results	Allowed	Comments
580 Pa (12.11 psf)	Pass	No Leakage	Note 1

9.3.4.2 **Uniform Load Deflection at Design Pressure** (ASTM E 330-14)

Test Pressure & Direction	Results	Allowed	Comments
1680 Pa (35.09 psf) Pos	13.71 mm (~0.54 In.)	13.92 mm (~0.55 In.)	L/175
-1680 Pa (-35.09 psf) Neg	13.20 mm (~0.52 In.)	13.92 mm (~0.55 In.)	L/175

9.3.4.3 **Uniform load Structural Performance (Overload/Proof Load)** (ASTM E 330-14)

Test Pressure & Direction	Results	Allowed	Comments
2520 Pa (52.63 psf) Pos	0.76 mm (~0.03 In.)	7.32 mm (~0.288 In.)	0.3%
-2520 Pa (-52.63 psf) Neg	0.51 mm (~0.02 In.)	7.32 mm (~0.288 In.)	0.3%

Note 1 - The window manufacturer opted to start water testing a level exceeding the gateway test pressure for the CW class.

9.3.5 **ASTM F 588 - Forced Entry Resistance Test for Windows**

Test	Test	Allowed	Result
1.2.4 Type 'D' Fixed Window Assemblies			
A2.7.1	A2.1	Passed	No Entry
A2.7.3	A2.1	Passed	No Entry

9.3.5 **CAWM 301 - 90 Forced Entry Resistance Test for Windows**

Test	Test	Allowed	Result
2.4.5 Type 'V' Fixed Window Assemblies			
5.4.1	A	Passed	No Entry
5.4.2	B	Passed	No Entry

For a complete description of the tested sample refer to the attached 7 pages consisting of the bill of materials, cross section drawings, and individual die drawings. This report is complete only when all of the above referenced drawings and bill of materials are attached.

Cross section drawings and die drawings of frame members are on file and have been compared to the sample submitted. Test sample sections, drawings and a copy of this report will be retained at the test laboratory for four years.

This test report may not be modified in any way without the written consent of Fenestration Testing Laboratory.

The preceding test results relate only to the tested specimen and were obtained by using the applicable test methods listed in sections 3.0 and 6.0 above. This report does not constitute certification of this product or an endorsement by this laboratory. It is the property of the client named in section 1.0 above. Certification can only be granted by an approved administrator and/or validator.

Date Testing Completed: November 18, 2015

Date Report Completed: November 30, 2015

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