REPORT SUMMARY

REPORT #
T20-117

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

SERIES & PRODUCT TYPE
Edge | f | - THERMALLY BROKEN ALUMINUM FIXED WINDOW with Butt Glazed Center
(Additional Testing with Vertical Fin)

CONFIGURATION
OO

FRAME SIZE
3657.60 mm x 3048.00 mm (144.00" x 120.00")

SPECIFICATION
NAFS - North American Fenestration Standard/specification for windows, doors, and skylights
AAMA/WDMA/CSA 101/I.S.2/A440-17

PRIMARY DESIGNATOR
CLASS LC-PG30 3657.60 x 3048.00 mm (144.00 x 120.00 in) Type: FW

TEST COMPLETION DATE
December 2, 2021

REPORT DATE
April 9, 2021

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) THERMALLY BROKEN ALUMINUM FIXED WINDOW described in paragraph 4.0 of this report.

3.0 Test References:
3.1 NAFS - North American Fenestration Standard/specification for windows, doors, and skylights AAMA/WDMA/CSA 101/I.S.2/A440-17
3.2 ASTM F 588-17 Forced Entry Resistance Tests for Windows
3.3 CAWM 301-90(1995) Forced Entry Test for Windows (CMBSO 1-79)

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 CLASS LC-PG30 3657.60 x 3048.00 mm (144.00 x 120.00 in) Type: FW

5.0 Sample Submitted:
5.1 Product Type: THERMALLY BROKEN ALUMINUM FIXED WINDOW
5.2 Series: Edge | f |
5.3 Configuration: OO
5.4 Product Dimensions:

	Millimeters	Inches
Total Frame:	3657.60 x 3048.00	144.00 x 120.00
Fixed DLO (both):	1771.65 x 2921.00	69.75 x 115.00

5.5 Glass and Glazing: Applies to both IGU's

IGU Thickness	*Spacer Width*	*Interior Lite*	*Exterior Lite*	*Glazing method*
1.25" overall wide	0.5"	10 mm Tempered	10 mm Tempered	Outside glazed onto EPDM bulb vinyl. Setting blocks 0.75" high were set at quarter points on the sill of each IGU. Aluminum glazing stop was applied full perimeter on the outside. The two IGU's were silicone butt glazed at the center vertical fin on the interior side of the window. The fin was adhered to the inside of the IGUs with double side adhesive "Thermalbond Foam Spacer" structural silicone on the interior and exterior between IGU's.

5.6 Weepage:
The sill fit into an aluminum "Arche-Duct" pan drain system with inside and outside vertical legs 1.45" high and ends legs 2.44" high. The pan drain contained three weeps in two configuration. The window passed in both configurations as shown in the drawings.
Configuration #1 – Three ½" NPT couplers coming out the outside face of the pan.
Configuration #2 – Three 1" NPT couplers draining down the bottom of the pan.
For each configuration, the weeps were located as follows:
One weep hole 7-15/16" from each end and one at midspan.

5.6 Weepage: (Continued)

The window sill contained a ¼" diameter vertical weep 7-3/4" from each end and 60" on center in the field. The three sill legs extending down to the pan were notched 1" x ¼" in line with the pan weeps.

5.7 Pressure balancing: None

5.8 Weather-stripping:

Type	*Quantity*	*Location*
Foam-filled bulb vinyl	Two (2) strips	Sill – one on the outside face, and one on the inside face that sealed to the pan.

5.9 Sealants:

Sealant was applied at the following locations: -The glass was bonded to the center vertical fin on the interior on each side of the fin and on the exterior the space between IGUs was filled with structural silicone. -The frame corners were sealed full profile. -The sill to pan end dam legs were sealed inboard perimeter. -The pan vertical upturn leg at each end forming the end dams was formed by bending the pan ends 90 degrees. The resulting vertical joints were sealed full length. -Fasteners for the vertical fin were set in sealant.

5.10 Hardware: None

5.11 Construction:

Location	*Joinery Type*	*Number of Fasteners*	*Fastener Size*
Frame corners	Mechanically joined	Two (2) per corner	#10 x 1" PHP Screw
Vertical fin to head and sill	Mechanically joined	Four (4) screws at each end	#10 x 1" PHP Screw
The sill and head inside glazing legs were integral to their respective extrusions. The jamb inside glazing legs were formed by inserting a snap-in aluminum stop into the jamb inboard channel.			
The frame sat in the pan that retained the sill on all four sides.			

5.12 Reinforcement:

Material	*Part #*	*Location*
2" x 0.5" Aluminum bar	FW1223	Fin hollow full length

5.13 Installation:

Location on frame	*Anchor type*	*Spacing*
The window frame jambs and head were fastened to the 2" x 8" wooden rough opening.	#8 x 2.5" PFH	Jambs - 6" from each end and 24" on center from each end for a total of six (6). Head – 6" from each end and two more 24" on center. Also, one 6" each way from the center line, and one more 6" on center; there were ten (10) total screws anchoring the head.
The sill pan was supported in the rough opening by blocking the sill pan which would normally be recessed in the substrate.		

6.0 - Test procedures and results: All testing procedures were performed in accordance with the performance requirements of the test specifications referenced in paragraph 3.0 of this report. The number preceding each test listed below refers to the corresponding section in the NAFS.

9.3.2 – Air Infiltration (ASTM E283-04(2012)) – With weeps per Configuration #1 – ½" NPT

Test Description	Results	Allowed	Comments
75 Pa differential pressure	0.15 L/s*m²	1.5 L/s*m²	1
1.57 psf differential pressure	0.03 cfm/ft²	0.30 cfm/ft²	1
The tested specimen meets the performance levels specified in AAMA/WDMA/CSA 101/I.S.2/A440 for air leakage resistance.			

9.3.2 – Air Infiltration (ASTM E283-04(2012)) - With weeps per Configuration #2 – 1" NPT down

Test Description	Results	Allowed	Comments
75 Pa differential pressure	0.10 L/s*m²	1.5 L/s*m²	1
1.57 psf differential pressure	0.02 cfm/ft²	0.30 cfm/ft²	1
The tested specimen meets the performance levels specified in AAMA/WDMA/CSA 101/I.S.2/A440 for air leakage resistance.			

9.3.3 – Water Penetration (ASTM E547-00(2016)) (with and without fin)

Test Description	Results	Allowed	Comments
DP30 - 220 Pa (4.59 psf)	No water penetration	No water penetration	2

9.3.4.2 – Uniform Load Deflection at Design Pressure (ASTM E330-14) (without fin)

Test Description	Results	Allowed	Comments
DP30 - 1440 Pa (30.08 psf)Pos	0.00 mm (0.00")	Report only	3
DP30 - 1440 Pa (30.08 psf)Neg	0.00 mm (0.00")	Report only	3

9.3.4.3 – Uniform Load Structural at 1.5 x Design Pressure (ASTM E330-14) (without fin)

Test Description	Results	Allowed	Comments
OL for DP30 - 2160 Pa (45.11 psf)Pos	0.00 mm (0.00")	2.54 mm (0.10")	3
OL for DP30 - 2160 Pa (45.11 psf)Neg	0.00 mm (0.00")	2.54 mm (0.10")	3

9.3.5 – Forced Entry Resistance (ASTM F588-14 & CAWM 301-90(1995))

Test Description	Results	Allowed	Comments
ASTM F588 Type D and CAWM 301 Type V	No Entry	No Entry	5

Additional Testing:

9.3.2 – Air Infiltration (ASTM E283-04(2012)) – With weeps per Configuration #1 – ½" NPT

Test Description	Results	Allowed	Comments
300 Pa differential pressure	0.20 L/s*m²	1.5 L/s*m²	1
6.27 psf differential pressure	0.04 cfm/ft²	0.30 cfm/ft²	1
The tested specimen meets the performance levels specified in AAMA/WDMA/CSA 101/I.S.2/A440 for air leakage resistance.			

9.3.2 – Air Infiltration (ASTM E283-04(2012)) - With weeps per Configuration #2 – 1" NPT down

Test Description	Results	Allowed	Comments
300 Pa differential pressure	0.20 L/s*m²	1.5 L/s*m²	1
6.27 psf differential pressure	0.04 cfm/ft²	0.30 cfm/ft²	1
The tested specimen meets the performance levels specified in AAMA/WDMA/CSA 101/I.S.2/A440 for air leakage resistance.			

9.3.3 – Water Penetration (ASTM E547-00(2016))

Test Description	Results	Allowed	Comments
DP40 - 290 Pa (6.06 psf)	No water penetration	No water penetration	2

9.3.4.2 – Uniform Load Deflection at Design Pressure (ASTM E330-14) (With fin)

Test Description	Results	Allowed	Comments
DP30 - 1440 Pa (30.08 psf)Pos	27.94 mm (1.10")	Report only	4
DP30 - 1440 Pa (30.08 psf)Neg	37.08 mm (1.46")	Report only	4

9.3.4.3 – Uniform Load Structural at 1.5 x Design Pressure (ASTM E330-14) (With fin)

Test Description	Results	Allowed	Comments
OL for DP30 - 2160 Pa (45.11 psf)Pos	1.02 mm (0.04")	11.68 mm (0.46")	4
OL for DP30 - 2160 Pa (45.11 psf)Neg	1.52 mm (0.06")	11.68 mm (0.46")	4

Comment #1 – Air infiltration passed with and without the fin at 1.57 psf and at 6.27 psf.
Comment #2 - Fixed window did not have an insect screen. Water penetration passed with and without the fin up to 6.06 psf.
Comment #3 – Deflection measurement with the fin removed were taken from frame jamb between fasteners 24" apart.
Comment #4 – Deflection measurement taken from vertical fin.
Comment #5 – FER per ASTM F588 passed grade 10.
Testing was witnessed by: Corey Jones with Fleetwood and Jim Cruz with FTL.

For a complete description of the tested sample, refer to the attached three (3) pages consisting of bill of materials, cross section drawings, and individual part drawings. This report is complete only when all the above referenced bill of materials and drawings are attached.

The bill of materials, cross section drawings, and individual part drawings of frame and sash members are on file and have been compared to the sample submitted. Test sample sections, bill of materials, 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, Inc. (FTL).

The preceding test results relate only to the tested specimen and were obtained by using the applicable test methods listed in section 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.

TEST COMPLETION DATE: December 2, 2020

REPORT DATE: April 9, 2021

Pete Cruz - Test Engineer

Jim Cruz - Laboratory Manager

TABLE OF CONTENTS

TEST SPECIMEN

1. SERIES / MODEL: EDGE | f |
2. PRODUCT TYPE: FIXED WINDOW WITH SUB-SILL

GENERAL NOTES

1. BUCKING OPENINGS & BUCKING FASTENERS MUST BE PROPERLY DESIGNED & INSTALLED TO TRANSFER LOADS TO THE STRUCTURE AND TO BE REVIEWED BY BUILDING OFFICIAL.
2. ALL HARDWARE & FASTENERS SHALL BE IN ACCORDANCE WITH THESE DRAWINGS & MAY NOT VARY UNLESS SPECIFICALLY MENTIONED ON THE DRAWINGS.
3. MATERIALS, INCLUDING BUT NOT LIMITED TO STEEL SCREWS, THAT COME INTO CONTACT WITH OTHER DISSIMILAR MATERIALS SHALL MEET THE REQUIREMENTS OF AAMA AND BUILDING CODE.

SPECIFICATIONS

1. AAMA/WDMA/CSA 101/I.S.2/A440-11; A440 S1-09 (CANADIAN SUPPLEMENT) - (NON-IMPACT GLAZING)

CORNERS CONSTRUCTION

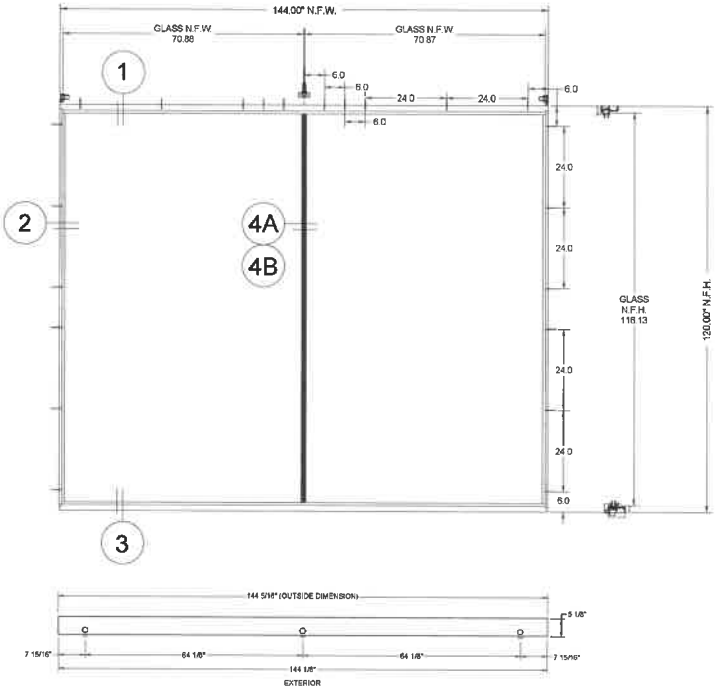
1. FRAME CORNER: THE HEAD AND SILL ARE BUTTED TO THE JAMBS AND ATTACHED WITH SCREWS.

GLAZING

G1: 1.25": CLEAR 10mm-T, 0.50 AIR, CLEAR 10mm-T

*FRAME ANCHOR REQUIREMENTS TABLE		
OPENING TYPE (SUBSTRATE)	FRAME TO OPENING FASTENER TYPE	MINIMUM EMBEDMENT
2X_ WOOD FRAME OR BUCK	(1) NO. 8 SMS SCREW	1 1/2"
MIN. 18 GA. 33 KSI STEEL STUD	(1) NO. 8 SMS SCREW	FULL
CMU/CONCRETE	(2) 3/16" CONCRETE SCREWS	1 1/4"

(1) SMS SCREWS
(2) CONCRETE SCREWS SHALL BE 3/16" ITW TAPCON



W/OUT FIN

AIR INFILTRATION TABLE		
RATE	TYPE	READING
LOW	INFILTRATION	
	EXFILTRATION	
HIGH	INFILTRATION	
	EXFILTRATION	

WATER PRESSURE TABLE
PRESSURE (PSF)

DESIGN PRESSURE TABLE			
MAX 2 LITE N.F.W.	MAX N.F.H.	DESIGN PRESSURE (PSF)	
		POSITIVE	NEGATIVE
144"	120"		

FIN W/ ALUM. INSERT

AIR INFILTRATION TABLE		
RATE	TYPE	READING
LOW	INFILTRATION	
	EXFILTRATION	
HIGH	INFILTRATION	
	EXFILTRATION	

WATER PRESSURE TABLE
PRESSURE (PSF)

DESIGN PRESSURE TABLE			
MAX 2 LITE N.F.W.	MAX N.F.H.	DESIGN PRESSURE (PSF)	
		POSITIVE	NEGATIVE
144"	120"		

FENESTRATION TESTING LAB
REPORT NO: T20-117
DATE: 4/9/21

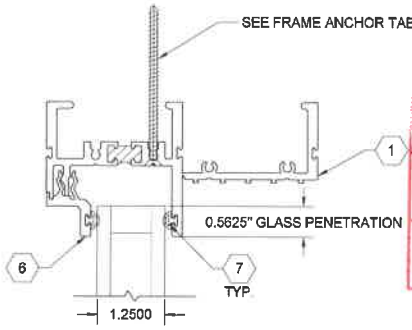
COMMENTS | DRAWN BY | DATE | REVISIONS
DATE: 12/1/20
DRAWN BY: CJ
JOB NUMBER:
MATERIAL: EDGE | f |
CUSTOMER: FW
JOB NAME: EDGE | f | Cost

FLEETWOOD WINDOWS & DOORS
1 FLEETWOOD WAY
CORONA, CA 92879
www.fleetwoodusa.com

SCALE : 3/4" = 1'
DRAWING NO. : 1
SHEET : 1 OF 3

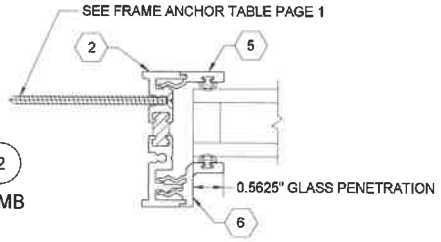
HEAD

1



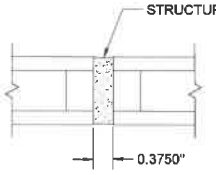
FENESTRATION TESTING LAB
REPORT NO: T20-117
DATE: 4/9/21

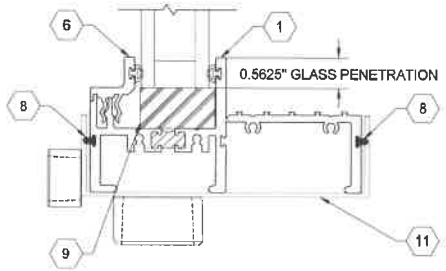
ITEM NO.	FLEETWOOD PART NO.	PART DESCRIPTION	VENDOR NAME	VENDOR PART NO.
		ALUMINUM EXTRUSIONS		
1	Ef0001	HEAD / SILL	SIERRA	700785
2	Ef0002	JAMB	SIERRA	700786
3	Ef0003	FIN	SIERRA	700787
4	FW1223	0.5"x2" ALUMINUM	NUCOR	-
		GLASS WEDGES		
5	Ef0004	JAMB WEDGE	SIERRA	-
6	Ef0006	1.25" GLASS WEDGE	SIERRA	906494
		MISCELLANEOUS		
7	25031	LARGE BULB VINYL (EPDM)	TREMCO	TX19638E
8	25189	Q-LON FOAM SEAL	SCHLEGEL	Q225T190
9	26829	SETTING BLOCK	RYKO	R11639
10	26806	THERMALBOND FOAM SPACER	SECON RUBBER	V2108
11	-	ARCHE-DUCT	LINDBLADE	CUSTOM



2
JAMB

4A
BUTT JOINT





3
SILL

2 SETTING BLOCKS PER LITE, ONLY AT THE SILL.

4B
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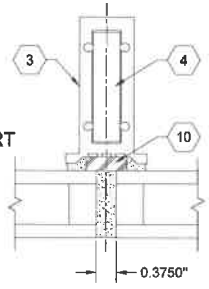
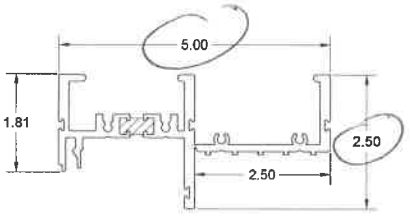


COMMENTS | DRAWN BY | DATE | REVISIONS | DRAWN BY: CJ | DATE: 12/1/20 | JOB NUMBER: | MATERIAL: EDGE | F | | CUSTOMER: FW | JOB NAME: EDGE | F | Cert

FLEETWOOD WINDOWS & DOORS
1 FLEETWOOD WAY
CORONA, CA 92879
www.fleetwoodusa.com

SCALE : 1" = 1"
DRAWING NO. : 2
SHEET : 1 OF 3



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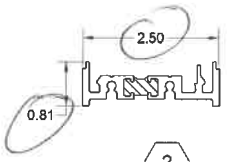
HEAD



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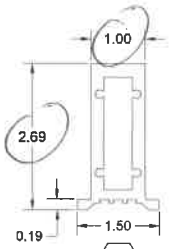
JAMB



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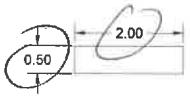

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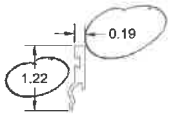
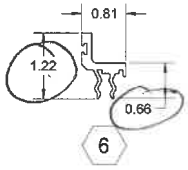
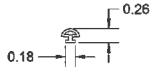


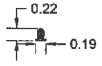
5
JAMB WEDGE



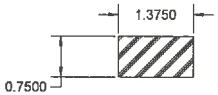
6
1.25" GLASS WEDGE



7
LARGE BULB VINYL

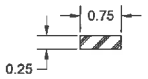


8
Q-LON FOAM SEAL

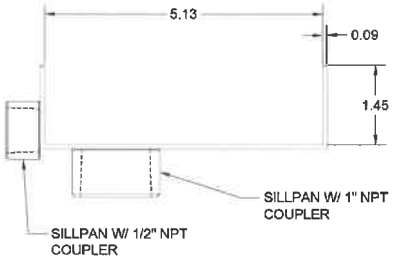


9
SETTING BLOCK

ITEM NO.	FLEETWOOD PART NO.	PART DESCRIPTION	VENDOR NAME	VENDOR PART NO.
		ALUMINUM EXTRUSIONS		
1	Ef0001	HEAD / SILL	SIERRA	700785
2	Ef0002	JAMB	SIERRA	700786
3	Ef0003	FIN	SIERRA	700787
4	FW1223	0.5"x2" ALUMINUM	NUCOR	-
		GLASS WEDGES		
5	Ef0004	JAMB WEDGE	SIERRA	-
6	Ef0006	1.25" GLASS WEDGE	SIERRA	906494
		MISCELLANEOUS		
7	25031	LARGE BULB VINYL (EPDM)	TREMCO	TX19638E
8	25189	Q-LON FOAM SEAL	SCHLEGEL	Q225T190
9	26829	SETTING BLOCK	RYKO	R11639
10	26806	THERMALBOND FOAM SPACER	SECON RUBBER	V2108
11	-	ARCHE-DUCT	LINDBLADE	CUSTOM



10
THERMALBOND FOAM SPACER



10
ARCHE-DUCT
(PAN DRAIN SYSTEM)

FENESTRATION TESTING LAB
REPORT NO: T20-117
DATE: 4/9/21

COMMENTS | DRAWN BY | DATE | REVISIONS | DATE: 12/1/20 | DRAWN BY: CJ | JOB NUMBER: | MATERIAL: EDGE | f | CUSTOMER: FW | JOB NAME: EDGE | f | Cert

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SCALE: 1" = 1"
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SHEET: 1 OF 3