REPORT SUMMARY:

REPORT #
T23-107

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

SERIES & PRODUCT TYPE:
450-T THERMALLY BROKEN ALUMINUM FIXED WINDOW

CONFIGURATION
O

FRAME SIZE
1524.00 mm x 2438.40 mm (60.00" x 96.00")

SPECIFICATION
NAFS - North American Fenestration Standard/specification for windows, doors, and skylights AAMA/WDMA/CSA 101/I.S.2/A440:22

CSA A440S1:19 Canadian Supplement to AAMA/WDMA/CSA 101/I.S.2/A440

PRIMARY DESIGNATOR
CLASS CW-PG60 1524.00 x 2438.40 mm (60.00 x 96.00 in) Type: FW

TEST COMPLETION DATE
December 12, 2023

REPORT DATE
December 26, 2023

Phone: 909.477.4343 Fax: 909.477.4348 Web: www.ftltesting.com

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/A440:22
3.2 CSA A440S1:19 Canadian Supplement to AAMA/WDMA/CSA 101/I.S.2/A440
3.3 ASTM F 588-14 Forced Entry Resistance Tests for Windows
3.4 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 CW-PG60 1524.00 x 2438.40 mm (60.00 x 96.00 in) Type: FW

5.0 Sample Submitted:
5.1 Product Type: THERMALLY BROKEN ALUMINUM FIXED WINDOW
5.2 Series: 450-T
5.3 Configuration: O
5.4 Product Dimensions:

	Millimeters	Inches
Total Frame:	1524.00 x 2438.40	60.00 x 96.00
Fixed DLO:	1457.45 x 2371.85	57.38 x 93.38

5.5 Glass and Glazing:

IGU Thickness	*Spacer Size*	*Interior Lite*	*Exterior Lite*	*Glazing method*
1.0" overall wide	0.63"	3/16" Annealed	3/16" Annealed	Outside glazed onto hollow bulb vinyl. A sealant bead was applied parallel to the bulb vinyl 6" each way at each corner. Rubber setting blocks 3/8" high were set at quarter points on the sill under the glass. Aluminum glazing stop applied full perimeter on the outside of the IGU. Each stop contained a strip of hollow bulb vinyl.

5.6 Weepage:

Drainage Method	*Size*	*Quantity*	*Location*
Weep notch	1" x 3/16"	One (1) at each end	Two outer sill legs were notched. The sill glazing stop retainer legs were noteched in line with each sill weep notch.

5.7 Pressure balancing: None

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5.8 Weather-stripping: None other than described under "Glass and Glazing" above.

5.9 Sealants:

Sealant was applied at the following locations:
-Frame corners were sealed full profile.
-Aluminum sill pan was set in sealant to the rough opening and the window sill was set into the sill pan on a bead of sealant.
-All staked locations were sealed.
-Sealant at glazing described under "Glass and Glazing"

5.10 Hardware: None

5.11 Construction:

Location	*Joinery Type*	*Number of Fasteners*	*Fastener Size*
Frame corners	Mitered, keyed with two keys, and staked.	N/A	N/A

5.12 Reinforcement: None

5.13 Installation:

Location on frame	*Anchor type*	*Spacing*
The rough opening was constructed with 2" x 6" lumber doubled on all four sides. The window was fastened to it with screws through the nail on fins full perimeter.	#8 x 1.5" PFH	6.5" from each end and 16" on center.

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.

8.3.2 – Air Infiltration (ASTM E283-19)

Test Description	Results	Allowed	Comments
75 Pa differential pressure	0.20 L/s*m²	1.0 L/s*m²	
1.57 psf differential pressure	0.04 cfm/ft²	0.20 cfm/ft²	
The tested specimen exceeds the performance levels specified in AAMA/WDMA/CSA 101/I.S.2/A440 for air leakage resistance.			
The tested specimen meets Canadian Supplement CSA A440S1:19 Fixed level for air leakage resistance.			

8.3.2 – Air Exfiltration (ASTM E283-19)

Test Description	Results	Allowed	Comments
75 Pa differential pressure	0.20 L/s*m²	1.0 L/s*m²	
1.57 psf differential pressure	0.04 cfm/ft²	0.20 cfm/ft²	
The tested specimen exceeds the performance levels specified in AAMA/WDMA/CSA 101/I.S.2/A440 for air leakage resistance.			
The tested specimen meets Canadian Supplement CSA A440S1:19 Fixed level for air leakage resistance.			

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

Test Description	Results	Allowed	Comments
DP60 - 440 Pa (9.19 psf)	No water penetration	No water penetration	

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8.3.4.2 – Uniform Load Deflection at Design Pressure (ASTM E330-14)

Test Description	Results	Allowed	Comments
DP60 - 2880 Pa (60.15 psf)Pos	0.00 mm (0.00")	2.29 mm (0.09")	1
DP60 - 2880 Pa (60.15 psf)Neg	0.00 mm (0.00")	2.29 mm (0.09")	1

8.3.4.3 – Uniform Load Structural at 1.5 x Design Pressure (ASTM E330-14)

Test Description	Results	Allowed	Comments
OL for DP60 - 4320 Pa (90.23 psf)Pos	0.00 mm (0.00")	1.27 mm (0.05")	1
OL for DP60 - 4320 Pa (90.23 psf)Neg	0.00 mm (0.00")	1.27 mm (0.05")	1

8.3.5 – Forced Entry Resistance (ASTM F588-17 & CAWM 301-90(1995))

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

ADDITIONAL TESTING:

8.3.2 – Air Infiltration (ASTM E283-19) at 6.27 psf pressure differential

Test Description	Results	Allowed	Comments
300 Pa differential pressure	0.70 L/s*m²	1.0 L/s*m²	
6.27 psf differential pressure	0.14 cfm/ft²	0.20 cfm/ft²	
The tested specimen exceeds the performance levels specified in AAMA/WDMA/CSA 101/I.S.2/A440 for air leakage resistance.			

8.3.2 – Air Exfiltration (ASTM E283-19)

Test Description	Results	Allowed	Comments
300 Pa differential pressure	0.35 L/s*m²	1.0 L/s*m²	
6.27 psf differential pressure	0.07 cfm/ft²	0.20 cfm/ft²	
The tested specimen exceeds the performance levels specified in AAMA/WDMA/CSA 101/I.S.2/A440 for air leakage resistance.			

Comment #1 – Deflection measurement taken from the 16" distance between two window anchor screws..
Testing was witnessed by: Jim Cruz with FTL.

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For a complete description of the tested sample, refer to the attached three (3) pages consisting of bill of materials, cross section drawings, and die 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 die 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 12, 2023

REPORT DATE: December 26, 2023

Pete Cruz - Test Engineer

Jim Cruz - Laboratory Manager

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TEST SPECIMEN DESCRIPTIONS

1. SERIES / MODEL: Series 450-T
2. PRODUCT TYPE: AWNING, CASEMENT, FIXED.

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 FLORIDA BUILDING CODE.

SPECIFICATIONS

1. AAMA/WDMA/CSA 101/I.S.2/A440
2. A440 S1 (CANADIAN SUPPLEMENT)

PAGE # / DETAIL #

CORNERS CONSTRUCTION

1.SERIES 450-T

1.1. MITERED, WELD ALONG INNER MITER, AND CRIMPED AT THE OUTER CORNERS. SEE BOM ITEM 19 & 20.

ANCHOR SCHEDULE

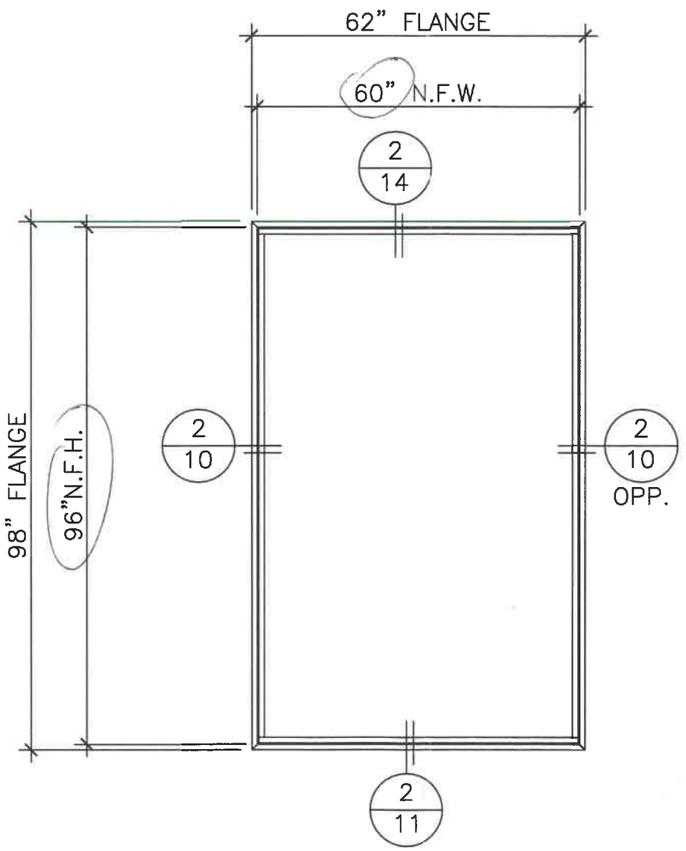
1. OPENING TYPE (SUBSTRATE): 2X-- WOOD FRAME, STEEL STUD, CONCRETE
2. FRAME: NO. 10 SCREW, 8" FROM END, 16" O.C. MAX.
   MINIMUM EMBEDMENT: 1 1/2"
   MINIMUM EDGE DISTANCE: 3/4"

GLAZING : SEE PAGE 3

*FRAME ANCHOR REQUIREMENTS TABLE

OPENING TYPE (SUBSTRATE)	FRAME TO OPENING FASTENER TYPE	MINIMUM EMBEDMENT	MINIMUM EDGE DIST.
2X_ WOOD FRAME OR BUCK	(1) NO. 8 SMS SCREW	1 1/2"	3/4"
MIN. 18 GA. 33 KSI STEEL STUD	(1) NO. 8 SMS SCREW	FULL	3/8"
CMU/CONCRETE	(2) 3/16" CONCRETE SCREWS	1 1/4"	2 5/8"

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



5 O-PROJECTED
Series 450-T
QTY: 1
GLASS: 1"; 5mm, A.S., 5mm-T

NOTES:
1. NAIL-ON FRAME

SPEC 5: A440

FENESTRATION TESTING LAB
REPORT NO: T23-107
DATE: 12/26/23

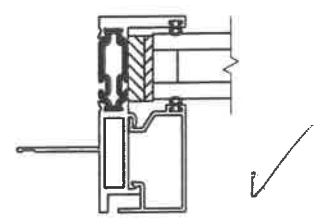
COMMENTS | DRAWN BY | DATE | REVISIONS

DRAWN BY: CJ
DATE: 12/7/23
JOB NUMBER: 566766

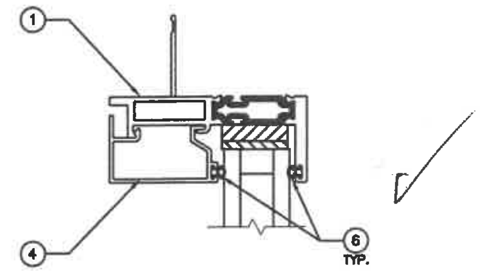
NOTES: PROJECT #:
CUSTOMER: FLEETWOOD WINDOWS AND DOORS
JOB NAME: 450-T TESTING

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

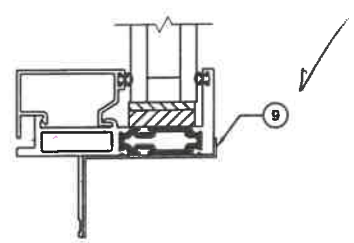
SCALE : N.T.S.
DRAWING NO. : (1)
SHEET : 1 OF 3



10 FIXED JAMB
SCALE: FULL SIZE



14 FIXED HEAD
SCALE: FULL SIZE



11 FIXED SILL
SCALE: FULL SIZE

FENESTRATION TESTING LAB
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REVISIONS	DATE	DRAWN BY	COMMENTS

DRAWN BY: CJ
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FLEETWOOD WINDOWS & DOORS
1 FLEETWOOD WAY
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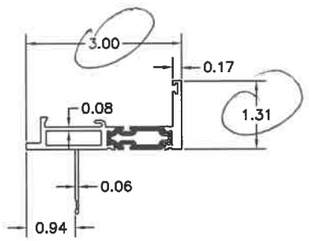
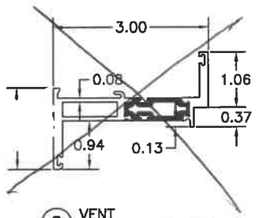
SCALE: N.T.S.
DRAWING NO.: (2)
SHEET: 2 OF 3

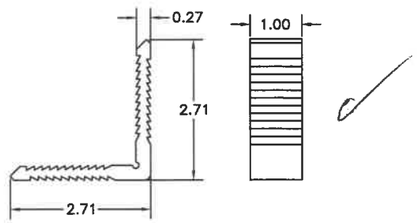


1 FRAME

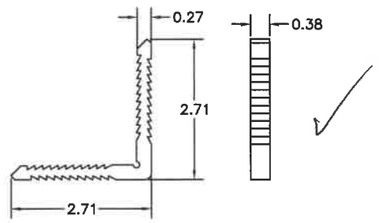


2 VENT

4 1" FIXED GLASS STOP



19 1" CORNER KEY

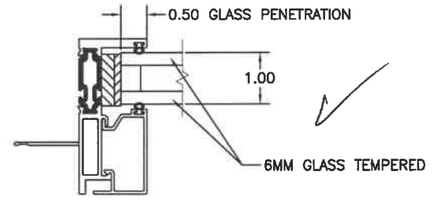


20 3/8" CORNER KEY

BILL OF MATERIALS

ITEM NO.	FWID	PART DESCRIPTION	VENDOR NAME	VENDOR PART NO.
		EXTRUSIONS		
1	4501	FRAME	SIERRA	905749 –905750
2	4502	VENT	SIERRA	905751 – 905752
4	4507	1" FIXED GLASS STOP	SIERRA	905757
		HARDWARE		
9	–	SILLPAN		
19	05P04–1	1" CORNER KEY	MERIT	5230
20	26228	3/8" CORNER KEY	D&B	259–001

GLAZING DETAILS



G1 GLAZING DETAIL

FENESTRATION TESTING LAB
REPORT NO: T23-107
DATE: 12/26/23

COMMENTS	DRAWN BY	DATE	REVISIONS

DRAWN BY: CJ
DATE: 12/7/23
JOB NUMBER: 595766

NOTES:
PROJECT #:
CUSTOMER: FLEETWOOD WINDOWS AND DOORS
JOB NAME: 450-T TESTING

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

SCALE : N.T.S.
DRAWING NO. : (3)
SHEET : 3 OF 3