

NATIONAL CERTIFIED TESTING LABORATORIES

1464 GEMINI BOULEVARD • ORLANDO, FLORIDA 32837
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STRUCTURAL PERFORMANCE TEST REPORT

Report No: NCTL-210-2315-1
Test Date: 03-16-00
Report Date: 03-28-00
Expiration Date: 03-31-01

Client: AAA Aluminum Stamping, Inc.
511 Leonard Boulevard
Leigh Acres, FL 33971

Test Specimen: AAA Aluminum Stamping, Inc.'s Series "1000" Horizontal Sliding Window
"Type XO" (HS-C40) (74 by 63)

Test Specification: AAMA/NWWDA 101/I.S. 2-97 Voluntary Specifications for Aluminum
Prime Windows and Sliding Glass Doors."

TEST SPECIMEN DESCRIPTION

General: The test specimen was a type "XO" horizontal sliding aluminum prime window measuring 6'2" wide by 5'3" high overall. The interior active panel measured 3'1" wide by 5'0-1/4" high. The fixed lite was glazed to the frame members, providing a viewing area of 2'11" wide by 4'11-5/8". Frame and panel members were not thermally broken. One (1) metal cam-type sweep lock was located at 18-1/2" from each end of the interior active meeting stile. The keepers were extruded onto the exterior fixed meeting stile at the lock positions. A metal roller/plastic housing was located at each end of the active panel bottom rails. The frame was of double screw coped mitered corner construction. The active panel was of single screw butt-type corner construction. The fixed meeting stile was fastened to the head and sill with one (1) screw.

Installation Fasteners: The frame was mounted to the test buck using twelve (12) (# 8 x 1") pan head screws (see fastener diagram).

Glazing: Both active and fixed panels were exterior glazed using 3/16" annealed glass with an adhesive back-bedding and extruded aluminum glazing bead.

Weatherstrip: Double strips of center fin weatherstrip (0.200" high) were located at active panel exterior and interior face of each top and bottom rails. Single strips of bulb-vinyl weatherstrip was located at active panel jamb stile. Single strips of bulb-vinyl weatherstrip were located at each main frame jamb.

Weeps: One (1) weep hole measuring 1-1/4" x 1/4" was located at 8", 36" from each end of the exterior sill face. One (1) weep hole measuring 1-1/4" x 1/4" was located at 8", 36" from each end of the center leg track.

Interior & Exterior Surface Finish: White painted aluminum.

PROFESSIONALS IN THE SCIENCE OF TESTING

Sealant: The jamb/sill corners were sealed with a small-joint sealant.

Insect Screen: An insect screen measuring 3'0-7/8" wide by 5'0" high was of butt-type corner construction with plastic corner keys. The screen employed fiberglass mesh cloth with a hollow vinyl spline, two (2) pull tabs and two (2) jamb retainer springs.

Fasteners: Test specimen was mounted in a wood buck using twelve (12) (# 8 x 1") pan head screws (see fastener diagram).

TEST RESULTS

<u>Paragraph No.</u>	<u>Title of Test</u>	<u>Measured</u>	<u>Allowed</u>
**2.2.2.5.1	Operating Force		
	Right active panel in motion	8 lbs. max.	25 lbs. max.
	Left active panel in motion	9 lbs. max.	25 lbs. max.
**2.2.2.5.2	Deglazing Test		
	Active Panel		
	Meeting Rail (70#)	7.2% (0.027")	< 100%
	Bottom Rail (70#)	5.6% (0.004")	< 100%
	Left Stile (50#)	8.8% (0.038")	< 100%
	Right Stile (50#)	7.7% (0.029")	< 100%
**2.1.2	Air Infiltration		
	1.57 psf (25 mph)	0.21 cfm/ft ²	0.30 cfm/ft ²
2.13	Water Resistance - (5.0 gph/ft ²)		
	WTP = 4.50 psf	No Entry	No Entry
2.1.4.2	Uniform Load Structural		
	45.0 psf Exterior	0.028"	0.242"
	45.0 psf Interior	0.049"	0.242"

OPTIONAL PERFORMANCE

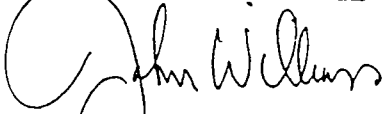
4.3	* Water Resistance - (5.0 gph/ft ²)		
	WTP = 6.00 psf	No Entry	No Entry
4.4.2	Uniform Load Structural		
	60.0 psf Exterior	0.038"	0.242"
	60.0 psf Interior	0.061"	0.242"

TEST COMPLETED: 03-16-00

This test specimen meets the performance criteria levels specified in Table 2.1 of AAMA/NWWDA 101/I.S. 2-97. The listed results were secured by using the designated test methods and indicate compliance with the performance requirements of the referenced specifications paragraphs for the (HS-C40) (74 by 63) product designation.

Detailed drawings were available for laboratory records and compared to the test specimen at the time of this report. A copy of this report along with representative sections of the test specimen will be retained by NCTL for a period of four (4) years. The results obtained apply only to the specimen tested.

NATIONAL CERTIFIED TESTING LABORATORIES, INC.


JOHN WILLIAMS
Laboratory Manager


4/20/06

JW/ld

Test Report NCTL-210-2315-1
 Design Pressure: +40.0/-40.0 PSF

Test Size: 74" X 63"
 Glazing: 3/16" Annealed Glass
 Configuration: 1/1

Width>>	26 1/2	30	37	42	48	53 1/8	60	63	75
Heights									
24	366.3	327.0	292.0	270.4	241.4	239	239	239	239
30	270.2	241.2	215.4	199.4	178.1	176.3	176.3	176.3	176.3
36	223.6	199.7	178.3	165.1	147.4	145.9	130.3	126.5	122.8
42	190.5	170.1	151.9	140.6	125.6	124.3	111.0	99.1	93.5
48	157.0	140.2	125.2	111.7	99.8	98.8	88.2	78.8	74.3
50 5/8	129.8	115.9	103.4	92.4	82.5	81.6	72.9	65.1	61.4
60	113.2	101.1	90.2	80.6	71.9	71.2	63.6	56.8	53.6
63	84.5	75.5	67.4	60.2	53.7	53.2	47.5	42.4	40.0

Limitations

The above are Structural Designs from Comparitive Analysis and have not been capped by water resistance or glass thickness. The Positive Pressure for water Resistance should be capped at 60 PSF. The ASTM-1300 Glass Chart must be used to comply with the pressues for each product.

Test Report and results from these charts indicate compliance with ANSI/AAMA/NWDA 101/I.S.2-97.

CENTRAL FLORIDA B.O.A.F.

MANUFACTURER NAME:

FLESHER WINDOW

MASTER FILE # 3

John Filigone
 11/16/02

FLESHER WINDOWS
DBA AAA ALUMINUM

Glass Design Pressure
Resistance - ASTM 1300
Horizontal Roller Window

Maximum Allowable PSF Design Load								
Commodity	Glass	Glass	SSB	DSB	3/16"	1/4"	DSB	3/16"
Size	Width	Height	Glass	Glass	Glass	Glass	Temp	Temp
12	7 5/8	23 5/8	132	209	209	209	835	835
13	7 5/8	35 1/2	115	207	209	209	477	835
14	7 5/8	47 3/4	81	124	209	209	345	835
15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
H32	11 1/8	23 5/8	72.1	126	209	209	503	835
H33	11 1/8	35 1/2	53.5	99.2	209	209	397	835
H34	11 1/8	47 3/4	48.2	89.9	209	209	360	835
H35	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
22	16 5/8	23 5/8	59.9	82.5	172	209	330	688
23	16 5/8	35 1/2	N/A	52.7	121	179	211	486
24	16 5/8	47 3/4	N/A	42.2	101	149	169	404
25	16 5/8	60 1/8	N/A	N/A	92.7	138	153	371
32	24 11/16	23 5/8	N/A	66	114	157	264	458
33	25 11/16	35 1/2	N/A	45.6	76.7	102	182	307
34	26 11/16	47 3/4	N/A	N/A	55.2	78.7	126	221
35	27 11/16	60 1/8	N/A	N/A	46	66.7	93.4	184

Design Pressures were calculated using the top lite of the product being the larger glass
 Design Pressures were calculated using "Comprehensive Glass Design V 1.2" software
 Design Pressures may exceed Comparative Analysis and Product Testing
 The lowest pressure of the two must be used to find the correct pressure

ASTM-1300
Aug-1-2002

CENTRAL FLORIDA B.O.A.F.

MANUFACTURER NAME:

FLESHER WINDOW

MASTER FILE # 3



Maximum Allowable PSF Design Load								
Modular Size	Glass Width	Glass Height	SSB Glass	DSB Glass	3/16" Glass	1/4" Glass	DSB Temp	3/16" Temp
2020	10	21 1/4	89.8	158	209	209	633	835
2030	10	33 1/4	68.7	126	209	209	504	835
2040	10	45 1/4	61.4	114	209	209	455	835
2050	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
3020	16	21 1/4	68.6	95.4	198	209	382	793
3030	16	33 1/4	39.9	59.1	134	197	236	537
3040	16	45 1/4	N/A	46.6	112	167	187	447
3050	16	57 1/4	N/A	41.4	101	150	146	404
4020	22	21 1/4	56.2	77.8	139	200	311	557
4030	22	33 1/4	38.2	50.7	89.3	127	203	357
4040	22	45 1/4	N/A	35	67.3	96.3	140	269
4050	22	57 1/4	N/A	N/A	56.7	82.6	104	227
5020	28	21 1/4	45.6	61.5	110	156	246	456
5030	28	33 1/4	N/A	46.1	74.8	97.1	184	305
5040	28	45 1/4	N/A	N/A	53.3	71.6	135	218
5050	28	57 1/4	N/A	N/A	41.3	57.1	99.5	170
6020	34	21 1/4	N/A	49.8	90.2	130	196	361
6030	34	33 1/4	N/A	40.2	64	82.5	161	256
6040	34	45 1/4	N/A	N/A	48.9	61.2	123	195
6050	34	57 1/4	N/A	N/A	38	48	97.5	152
7020P	39	21 1/4	N/A	41.9	79.6	115	168	319
7030P	39	33 1/4	N/A	N/A	56.9	73.3	144	227
7040P	39	45 1/4	N/A	N/A	45.8	55.9	111	183
7050P	39	57 1/4	N/A	N/A	36.6	44.3	90.4	147
8020P	45	21 1/4	N/A	35.7	71.4	102	143	286
8030P	45	33 1/4	N/A	N/A	49.5	62.5	125	198
8040P	45	45 1/4	N/A	N/A	41.8	51.5	98.6	167
8050	45	57 1/4	N/A	N/A	N/A	41.7	80.2	139

Design Pressures were calculated using the top lite of the product being the larger glass
 Design Pressures were calculated using "Comprehensive Glass Design V 1.2" software
 Design Pressures may exceed Comparative Analysis and Product Testing
 The lowest pressure of the two must be used to find the correct pressure

ASTM-1300
Aug-1-2002

CENTRAL FLORIDA B.O.A.F.

MANUFACTURED FILE:

FLESHER WINDOW

MASTER FILE # 3

John J. Flynn
11/16/02

Flesher Windows Inc.
 DBA AAA Aluminum
 Lehigh Acres Florida

Series 1000 S.H. Mullion
 Design Pressure Chart
 Horizontal Design

Ref: Elevation 1 Detail A

Window Call Size	Window Dimensions	1 x 2 x 1/8 2/2 Fasteners	1 x 2 x 1/8 4/4 Fasteners	1 x 3 x 1/4 2/2 Fasteners	1 x 3 x 1/4 4/4 Fasteners	1 x 4 x 1/4 4/4 Fasteners
12 + HC	19 1/8 x 35 9/16	785.52	1374.66	785.52	1374.66	1374.66
13 + HC	19 1/8 x 47 15/16	609.61	1066.82	609.61	1066.82	1066.82
14 + HC	19 1/8 x 60 3/16	481.79	843.13	481.79	843.13	843.13
15 + HC	19 1/8 x 72 9/16	405.65	709.89	405.65	709.89	709.89
16 + HC	19 1/8 x 84 9/16	238.48	417.34	238.48	417.34	417.34
H32 + HC	26 1/2 x 39 1/4	484.82	848.44	484.82	848.44	848.44
H33 + HC	26 1/2 x 51 5/8	382.98	670.22	382.98	670.22	670.22
H34 + HC	26 1/2 x 63 7/8	313.99	549.48	313.99	549.48	549.48
H35 + HC	26 1/2 x 76 1/4	269.90	472.33	269.90	472.33	472.33
H36 + HC	26 1/2 x 88 1/4	219.26	383.71	219.26	383.71	383.71
22 + HC	37 x 44 1/2	255.35	446.86	255.35	446.86	446.86
23 + HC	37 x 56 7/8	236.39	413.68	236.39	413.68	413.68
24 + HC	37 x 69 1/8	198.70	347.73	198.70	347.73	347.73
245 + HC	37 x 76 1/2	184.85	323.49	184.85	323.49	323.49
25 + HC	37 x 81 1/2	169.57	296.75	169.57	296.75	296.75
26 + HC	37 x 93 1/2	154.44	270.27	154.44	270.27	270.27
32 + HC	53 1/8 x 52 1/2	128.62	128.62	137.62	192.67	292.86
33 + HC	53 1/8 x 64 7/8	116.75	116.75	124.95	174.94	265.90
34 + HC	53 1/8 x 77 1/8	110.11	110.11	117.82	164.94	250.72
345 + HC	53 1/8 x 84 1/2	105.79	105.79	113.20	158.47	240.88
35 + HC	53 1/8 x 89 1/2	102.74	102.74	109.93	153.90	233.93
36 + HC	53 1/8 x 101 1/2	92.51	92.51	98.99	138.58	205.10

Note: Per Fl. Building Code 2001 Design Pressures are 1.5 x the Design Load of the windows.

CENTRAL FLORIDA B.O.A.F.

MANUFACTURER NAME:

Flesher Windows Inc.

MASTER FILE # 2

John J. Lyman
 11/16/02

Flesher Windows Inc.
 DBA AAA Aluminum
 Lehigh Acres Florida

Series 1000 S.H. Mullion
 Design Pressure Chart
 Vertical Design

Ref: Elevation 2
 Details C and D

Window Call Size	Window Dimensions	1 x 2 x 1/8 2/2 Fasteners	1 x 2 x 1/8 3/4 Fasteners	1 x 3 x 1/8 2/2 Fasteners	1 x 3 x 1/8 3/4 Fasteners	1 x 4 x 1/8 4/4 Fasteners
12	19 1/8 X 26	315.35	640.16	357.29	725.30	834.09
13	19 1/8 X 38 3/8	200.53	407.08	222.19	451.05	518.70
14	19 1/8 X 50 5/8	113.26	172.16	161.86	246.03	282.93
15	19 1/8 X 63	110.53	116.06	125.09	131.34	224.60
16	19 1/8 X 75	64.98	68.23	87.51	91.89	141.50
H32	26 1/2 X 26	246.10	499.58	278.61	565.58	650.42
H33	26 1/2 X 38 3/8	147.87	300.18	166.92	338.85	389.67
H34	26 1/2 X 50 5/8	106.08	161.24	119.74	182.00	209.31
H35	26 1/2 X 63	80.51	84.54	91.16	95.72	163.68
H36	26 1/2 X 75	48.19	50.60	65.48	68.75	105.88
22	37 X 26	202.66	411.40	229.66	466.21	536.14
23	37 X 38 3/8	114.20	231.83	129.39	262.66	302.06
24	37 X 50 5/8	79.80	121.30	90.41	137.42	158.04
245	37 X 58	70.02	86.82	79.04	98.01	132.31
25	37 X 63	45.45	47.72	68.46	71.88	110.70
26	37 X 75	37.64	39.52	47.79	50.18	77.28
32	53 1/8 X 26	178.65	362.66	202.41	410.89	472.53
33	53 1/8 X 38 3/8	92.68	188.14	105.01	213.17	245.15
34	53 1/8 X 50 5/8	61.17	92.98	69.30	105.34	121.14
345	53 1/8 X 58	52.37	64.94	59.35	73.59	99.35
35	53 1/8 X 63	46.28	57.39	51.81	54.40	88.13
36	53 1/8 X 75			38.70	40.64	70.45

Note: Per Fl. Buildig Code 2001 Design Pressures are 1.5 x the Design Load of the windows.

CENTRAL FLORIDA B.O.A.F.
 MANUFACTURER NAME:
Flesher Windows Inc.
 MASTER FILE # 2

Paul Johnson
 11/16/02

Flesher Windows Inc.
 DBA AAA Aluminum
 Lehigh Acres Florida

Series 1000 S.H. Mullion
 Design Pressure Chart
 Twin Horizontal Design

Ref: Elevation 3 Detail A

Window Call Size	Window Dimensions	1 x 2 x 1/8 2/2 Fasteners	1 x 2 x 1/8 3/4 Fasteners	1 x 3 x 1/4 2/2 Fasteners	1 x 3 x 1/4 3/4 Fasteners	1 x 4 x 1/4 4/4 Fasteners
TW12 + HC	38 1/4 X 45 1/8	142.61	249.57	142.61	249.57	285.22
TW13 + HC	38 1/4 X 57 1/2	133.39	233.43	133.39	233.43	266.78
TW14 + HC	38 1/4 X 69 3/4	113.89	199.31	113.89	199.31	227.78
TW15 + HC	38 1/4 X 82 1/8	89.67	156.92	89.67	156.92	179.34
TW16 + HC	38 1/4 X 94 1/8	82.34	144.10	82.34	144.10	164.68
TWH32 + HC	53 X 52 1/2	79.02	118.53	123.27	165.18	183.67
TWH33 + HC	53 X 64 7/8	70.54	105.81	110.04	147.46	163.96
TWH34 + HC	53 X 77 1/8	66.17	99.26	103.23	138.32	153.81
TWH35 + HC	53 X 89 1/2	59.98	89.97	93.57	125.38	139.42
TWH36 + HC	53 X 101 1/2	54.76	82.14	85.43	114.47	127.28
TW22 + HC	74 X 63			57.61	77.20	129.62
TW23 + HC	74 X 75 3/8			50.03	67.04	112.57
TW24 + HC	74 X 87 5/8			47.27	63.34	106.36
TW245 + HC	74 X 95			46.31	62.06	104.20
TW25 + HC	74 X 100			45.02	60.33	101.30
TW26 + HC	74 X 112			42.89	57.47	96.50
TW32 + HC	106 1/4 X 79 1/8					62.51
TW32 + HC	106 1/4 X 91 1/2					55.05
TW34 + HC	106 1/4 X 103 3/4					49.93
TW345 + HC	106 1/4 X 111 1/8					48.17
TW35 + HC	106 1/4 X 116 1/8					46.44
TW36 + HC	106 1/4 X 128 1/8					45.33

Note: Per Fl. Buildig Code 2001 Design Pressures are 1.5 x the Design Load of the windows.

CENTRAL FLORIDA B.O.A.E.
 MANUFACTURER NAME:
Flesher Windows Inc.
 MASTER FILE # 2

Phil Flesher
 11/16/02

Flesher Windows Inc.
 DBA AAA Aluminum
 Lehigh Acres Florida

Series 1000 S.H. Mullion
 Design Pressure Chart
 Vertical to Horizontal Design

Ref: Elevation 3
 Detail B

Window Call Size	Window Dimensions	1 x 2 x 1/8 2/2 Fasteners	1 x 2 x 1/8 3/4 Fasteners	1 x 3 x 1/8 2/2 Fasteners	1 x 3 x 1/8 3/4 Fasteners	1 x 4 x 1/8 4/4 Fasteners
12	19 1/8 X 26	225.25	457.26	255.21	518.08	595.79
13	19 1/8 X 38 3/8	140.08	284.36	158.71	322.18	370.51
14	19 1/8 X 50 5/8	102.59	208.26	115.62	234.71	269.91
15	19 1/8 X 63	80.60	109.62	91.31	124.18	212.35
16	19 1/8 X 75	61.60	64.68	83.34	87.51	134.76
H32	26 1/2 X 26	175.65	356.57	199.01	403.99	464.59
H33	26 1/2 X 38 3/8	105.23	213.62	119.23	242.04	278.34
H34	26 1/2 X 50 5/8	75.49	153.24	85.53	173.63	199.67
H35	26 1/2 X 63	58.73	79.87	66.54	90.49	154.75
H36	26 1/2 X 75	46.10	48.41	62.36	65.48	100.84
22	37 X 26	144.76	293.86	164.04	333.00	382.95
23	37 X 38 3/8	81.57	165.59	92.42	187.61	215.75
24	37 X 50 5/8	57.00	115.71	64.58	131.10	150.76
245	37 X 58	49.83	86.70	56.46	98.24	132.62
25	37 X 63	43.49	59.15	49.97	67.96	104.66
26	37 X 75			45.51	47.79	73.59
32	53 1/8 X 26	127.61	259.05	144.58	293.50	337.52
33	53 1/8 X 38 3/8	66.20	134.39	75.01	152.27	175.11
34	53 1/8 X 50 5/8	43.69	88.69	49.50	100.49	115.56
345	53 1/8 X 58	37.41	65.09	42.39	73.76	99.57
35	53 1/8 X 63		47.36	37.82	52.19	84.55
36	53 1/8 X 75				38.74	70.45

Note: Per Fl. Buildg Code 2001 Design Pressures are 1.5 x the Design Load of the windows.

MASTERS FILE # 2
 Flesher Windows Inc.

John Higgins
 11/16/02

FLESHER WINDOWS INC.

511 LEONARD BLVD.

LEHIGH ACRES FLA.33972

239-369-9696

239-369-2412 FAX

ENGINEERING AND
INSTALLATION DETAILS

AAMA CERTIFICATION

2002

ORANGE COUNTY
APPROVAL

JAMES J. FLESHER, OWNER/PRESIDENT

ALAN D. GAINES, GENERAL MANAGER