



## **ASTM E1886 and ASTM E1996 TEST REPORT**

**Report No.:** E8392.02-301-44

**Rendered to:**

FLEETWOOD WINDOWS AND DOORS  
Corona, California

**PRODUCT TYPE:** Sliding Door  
**SERIES/MODEL:** 3070-T

**Test Date(s):** 07/01/15  
**Through:** 08/19/15  
**Report Date:** 12/04/15  
**Revision 6 Date:** 07/13/16  
**Record Retention End Date:** 08/19/19

**1.0 Report Issued To:** Fleetwood Windows & Doors  
1 Fleetwood Way  
Corona, California 92879

**2.0 Test Laboratory:** Architectural Testing, Inc.,  
an Intertek company ("Intertek-ATI")  
2524 East Jensen Avenue  
Fresno, California 93706  
(559) 233-8705

### **3.0 Project Summary:**

**3.1 Product Type:** Sliding Door

**3.2 Series/Model:** 3070-T

**3.3 Compliance Statement:** Results obtained are tested values and were secured by using the designated test method(s). The specimen(s) tested met the performance requirements set forth in the referenced test procedures for a +2640/-2880 Pa (+55.14/-60.15psf) Design Pressure with missile impacts corresponding to Missile Level D and Wind Zone 4.

**3.4 Test Dates:** 07/01/15 - 08/19/15

**3.5 Test Record Retention End Date:** All test records for this report will be retained until August 19, 2019.

**3.6 Test Location:** Intertek-ATI test facility in Fresno, California.

**3.7 Test Specimen Source:** The test specimen(s) was provided by the client. Representative samples of the test specimen(s) will be retained by Intertek-ATI for a minimum of four years from the test completion date.

**3.8 Drawing Reference:** The test specimen drawings have been reviewed by Intertek-ATI and are representative of the test specimen(s) reported herein. Test specimen construction was verified by Intertek-ATI per the drawings located in Appendix B. Any deviations are documented herein or on the drawings.

### 3.0 Project Summary: (Continued)

#### 3.9 List of Official Observers:

<u>Name</u>	<u>Company</u>
Nathan Baker	Fleetwood
Dennis Janzen	Intertek-ATI
Tyler Westerling	Intertek-ATI

#### 4.0 Test Specification(s):

ASTM E1886-13a, *Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials*

ASTM E1996-14a, *Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Windborne Debris in Hurricanes*

#### 5.0 Test Specimen Description:

##### 5.1 Product Sizes:

Overall Area: 22.8 m <sup>2</sup> (243 ft <sup>2</sup> )	Width		Height	
	millimeters	inches	millimeters	inches
Overall size	6,096	240	3,050	120
Panel size	1,590	62-1/2	3,000	118

## 5.0 Test Specimen Description: (Continued)

*The following descriptions apply to all specimens.*

### 5.2 Frame Construction:

Frame Member	Material	Description
Sill	Aluminum	Two piece sill held in place with two rows of #8 Phillips head screws spaced 36" on center in each track.
Sill pan	Stainless Steel	With a 1.93" tall interior leg.
Sill filler	Aluminum	Snapped in place where panels do not slide.
Jamb	Aluminum	With snapped in jamb filler where panel is not engaged.
Head	Aluminum	With snapped in head filler where panel is not engaged.

	Joinery Type	Detail
All corners	Butt	Sealed with silicone and attached with six #10 x 1.5" Phillips pan head sheet metal screws in Head and three #8 x 2" Flat Head Phillips in sill.

### 5.3 Panel Construction:

Panel Member	Material	Description
All	Aluminum	See drawings for details.

	Joinery Type	Detail
All corners	Butt	Sealed with silicone. Top corners fastened with one #10 x 2" Phillips head screw each. Bottom corners fastened with one #10 x 2". Two 1/4-20 x 1" Phillips head screws were fastened into each roller.

## 5.0 Test Specimen Description: (Continued)

### 5.4 Weatherstripping:

Description	Quantity	Location
0.230 polypile with center fin	4	In sill contracting interior and exterior of each panel leg.
Q-lon foam seal	2	Contacting interior and exterior of sill pan from sill vertical face.
0.230 polypile with center fin	2	In head contracting interior and exterior of panel face.
0.290 Polypile with center fin	1	In each pocket interlock extrusion.
0.230 polypile with center fin	2	In interior and exterior meeting stile locking extrusion.
0.290 polypile with center fin	1	In each interlock extrusion.
Q-lon foam seal	1	In interior and exterior of jamb extrusion.
Panel corner air barrier	1	At each exposed panel bottom and top corner.

### 5.5 Glazing: *No conclusions of any kind regarding the adequacy or inadequacy of the glass in any glazed test specimen(s) can be made.*

Glass Type	Glazing	Glazing Method
IG	5mm clear temp/airspace/lami (5mm clear /0.090 SGP/5mm clear)	Channel glazed into frame. Dry glazed at all top and bottom rails and interlocks. Wet glazed at locking vertical stiles only

Location	Quantity	Daylight Opening		Glass Bite
		millimeters	inches	
All Lights	4	1435 x 2845	56-1/2 x 112	5/8

### 5.6 Drainage:

Drainage Method	Size	Quantity	Location
Saw cut across sill across all tracks	1" wide by 3/16" deep	6	6" from each end, 60" spacing.
Bottom drain or side drain	1" NPT	6	8" from each and 60" on center drained into a common 2" diameter manifold with check valve.

## 5.0 Test Specimen Description: (Continued)

### 5.7 Hardware:

Description	Quantity	Location
Rollers, Tandem	2 wheels each panel	Bottom panel rail.
Archetype narrow Lock	1	Locking meeting panel.

### 5.8 Reinforcement:

Drawing Number	Location	Material
37	All small interlock hallows	Aluminum.
38	All small interlock hallows	Aluminum.

### 5.9 Screen Construction: No screen was utilized.

## 6.0 Installation:

The specimen was installed into a Pine wood buck. The rough opening allowed for a 1/4" shim space. The exterior perimeter of the window was sealed with sealant. See drawing on sheet 6 of 9 for installation details.

**7.0 Test Results:** The results are tabulated as follows:

**ASTM E1886, Large**

**Conditioning Temperature:** 18°C (65°F)

**Missile Weight:** 4080 g (9.0 lbs)

**Missile Length:** 2.4 m (8'0")

**Muzzle Distance from Test Specimen:** 5.2 m (17' 0")

**Test Unit #1:** Orientation within  $\pm 5^\circ$  of horizontal

Impact #1: Missile Velocity: 14.9m/s (49.0fps)	
<b>Impact Area:</b>	Center of Pocket Panel
<b>Observations:</b>	Missile hit target area
<b>Results:</b>	Pass

Impact #2: Missile Velocity: 15.0 m/s (49.3 fps)	
<b>Impact Area:</b>	Center of Meeting Panel
<b>Observations:</b>	Missile hit target area
<b>Results:</b>	Pass

Impact #3: Missile Velocity: 15.0 m/s (49.2fps)	
<b>Impact Area:</b>	Lower right hand corner of meeting panel
<b>Observations:</b>	Missile hit target area
<b>Results:</b>	Pass

Impact #4: Missile Velocity: 15.0 m/s (49.1 fps)	
<b>Impact Area:</b>	Lower left corner of pocket panel
<b>Observations:</b>	Missile hit target area
<b>Results:</b>	Pass

Impact #5: Missile Velocity: 15.0 m/s (49.3fps)	
<b>Impact Area:</b>	Center of meeting stile
<b>Observations:</b>	Missile hit target area
<b>Results:</b>	Pass

## 7.0 Test Results: (Continued)

### ASTM E1886, *Large*

**Conditioning Temperature:** 18°C (65°F)

**Missile Weight:** 4080 g (9.0 lbs)

**Missile Length:** 2.4 m (8'0")

**Muzzle Distance from Test Specimen:** 5.2 m (17' 0")

**Test Unit #2:** Orientation within  $\pm 5^\circ$  of horizontal

Impact #1: Missile Velocity: 15.1 m/s (49.5fps)	
<b>Impact Area:</b>	Center of meeting stile
<b>Observations:</b>	Missile hit target area
<b>Results:</b>	Pass

Impact #2: Missile Velocity: 15.1 m/s (49.7 fps)	
<b>Impact Area:</b>	Upport left corner of meeting panel
<b>Observations:</b>	Missile hit target area
<b>Results:</b>	Pass

Impact #3: Missile Velocity: 15.1 m/s (49.7 fps)	
<b>Impact Area:</b>	Center of meeting panel
<b>Observations:</b>	Missile hit target area
<b>Results:</b>	Pass

Impact #4: Missile Velocity: 15.1 m/s (49.5 fps)	
<b>Impact Area:</b>	Top right corner of jamb panel
<b>Observations:</b>	Missile hit target area
<b>Results:</b>	Pass

Impact #5: Missile Velocity: 15.1 m/s (49.7fps)	
<b>Impact Area:</b>	Center of jamb panel
<b>Observations:</b>	Missile hit target area
<b>Results:</b>	Pass



## 7.0 Test Results: (Continued)

### ASTM E1886, Large

**Conditioning Temperature:** 18°C (65°F)

**Missile Weight:** 4080 g (9.0 lbs)

**Missile Length:** 2.4 m (8'0")

**Muzzle Distance from Test Specimen:** 5.2 m (17' 0")

**Test Unit #3:** Orientation within  $\pm 5^\circ$  of horizontal

Impact #1: Missile Velocity: 15.3 m/s (50.1fps)	
<b>Impact Area:</b>	Center of interlock
<b>Observations:</b>	Missile hit target area
<b>Results:</b>	Pass

Impact #2: Missile Velocity: 15.2 m/s (49.8 fps)	
<b>Impact Area:</b>	Center of pocket panel
<b>Observations:</b>	Missile hit target area
<b>Results:</b>	Pass

Impact #3: Missile Velocity: 15.2 m/s (49.9 fps)	
<b>Impact Area:</b>	Bottom right hand corner of pocket panel
<b>Observations:</b>	Missile hit target area
<b>Results:</b>	Pass

Impact #4: Missile Velocity: 15.1 m/s (49.7 fps)	
<b>Impact Area:</b>	Center of jamb panel
<b>Observations:</b>	Missile hit target area
<b>Results:</b>	Pass

Impact #5: Missile Velocity: 15.1 m/s (49.4fps)	
<b>Impact Area:</b>	Bottom right corner of jamb panel
<b>Observations:</b>	Missile hit target area
<b>Results:</b>	Pass

**Note:** See Intertek-ATI Sketch #1 for impact locations.

## 7.0 Test Results: (Continued)

### ASTM E1886, Air Pressure Cycling

**Test Unit #1**

**Design Pressure:** a +2640/-2880 Pa (+55.14/-60.15psf)

#### POSITIVE PRESSURE

Pressure Range (psf)	Number of Cycles	Average Cycle Time (seconds)	Observations
11 to 27.5	3500	1.9	
0 to 33	300	3.8	
27.5 to 44	600	2.1	
16.5 to 55	100	4.1	

#### NEGATIVE PRESSURE

Pressure Range (psf)	Number of Cycles	Average Cycle Time (seconds)	Observations
18 to 60	50	4.7	
30 to 48	1050	2.8	
0 to 36	50	4.1	
12 to 30	3350	3.1	

**Result:** Pass

## 7.0 Test Results: (Continued)

### ASTM E1886, Air Pressure Cycling

#### Test Unit #2

**Design Pressure:** a +2640/-2880 Pa (+55.14/-60.15psf)

#### POSITIVE PRESSURE

Pressure Range (psf)	Number of Cycles	Average Cycle Time (seconds)	Observations
11 to 27.5	3500	1.7	
0 to 33	300	3.7	
27.5 to 44	600	1.6	
16.5 to 55	100	3.4	

#### NEGATIVE PRESSURE

Pressure Range (psf)	Number of Cycles	Average Cycle Time (seconds)	Observations
18 to 60	50	3.7	
30 to 48	1050	1.6	
0 to 36	50	3.4	
12 to 30	3350	1.6	

**Result:** Pass

## 7.0 Test Results: (Continued)

### ASTM E1886, Air Pressure Cycling

**Test Unit #3**

**Design Pressure:** a +2640/-2880 Pa (+55.14/-60.15psf)

#### POSITIVE PRESSURE

Pressure Range (psf)	Number of Cycles	Average Cycle Time (seconds)	Observations
11 to 27.5	3500	1.7	
0 to 33	300	3.2	
27.5 to 44	600	1.7	
16.5 to 55	100	3.5	

#### NEGATIVE PRESSURE

Pressure Range (psf)	Number of Cycles	Average Cycle Time (seconds)	Observations
18 to 60	50	3.5	
30 to 48	1050	1.8	
0 to 36	50	4.6	
12 to 30	3350	1.8	

**Result:** Pass

**General Note:** Upon completion of testing, the specimens met the requirements of Section 7 of ASTM E1996.

## 8.0 Test Equipment:

**Cannon:** Constructed from steel piping utilizing compressed air to propel the missile

**Missile:** 2x4 Southern Pine

**Timing Device:** Electronic Beam Type

**Cycling Mechanism:** Computer controlled centrifugal blower with electronic pressure measuring device

Tape and film were not used to seal against air leakage during structural testing.

Intertek-ATI will service this report for the entire test record retention period. Test records such as detailed drawings, datasheets, representative samples of test specimens, or other pertinent project documentation, will be retained by Intertek-ATI for the entire test record retention period.

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(s) tested. This report may not be reproduced, except in full, without the written approval of Intertek-ATI.

For Intertek-ATI:

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Dennis Janzen  
Technician

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Tyler Westerling, P.E.  
Senior Project Engineer

TW:ss

Attachments (pages): This report is complete only when all attachments listed are included.

Appendix A: Sketches (2)

Appendix B: Drawings (9)

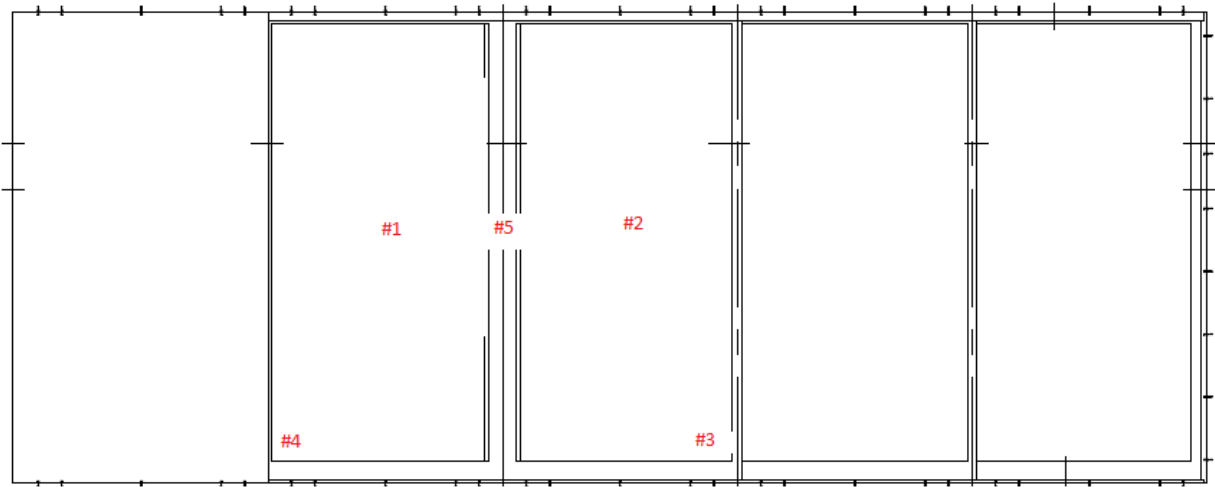
## Revision Log

<b>Rev. #</b>	<b>Date</b>	<b>Page(s)</b>	<b>Revision(s)</b>
0	12/04/15	N/A	Original report issue.
1	02/09/16	Appendix B	Revised drawings.
2	02/12/16	4	Corrected air barrier description.
2	02/12/16	5	Corrected hardware description.
3	05/02/16	4	Corrected panel corner detail.
3	05/02/16	6	Corrected installation details.
3	05/02/16	Appendix B	Updated drawing package.
4	05/11/16	Appendix B	Updated drawing package.
5	05/24/16	Appendix B	Updated drawing package.
6	07/13/16	Appendix B	Updated drawing package.

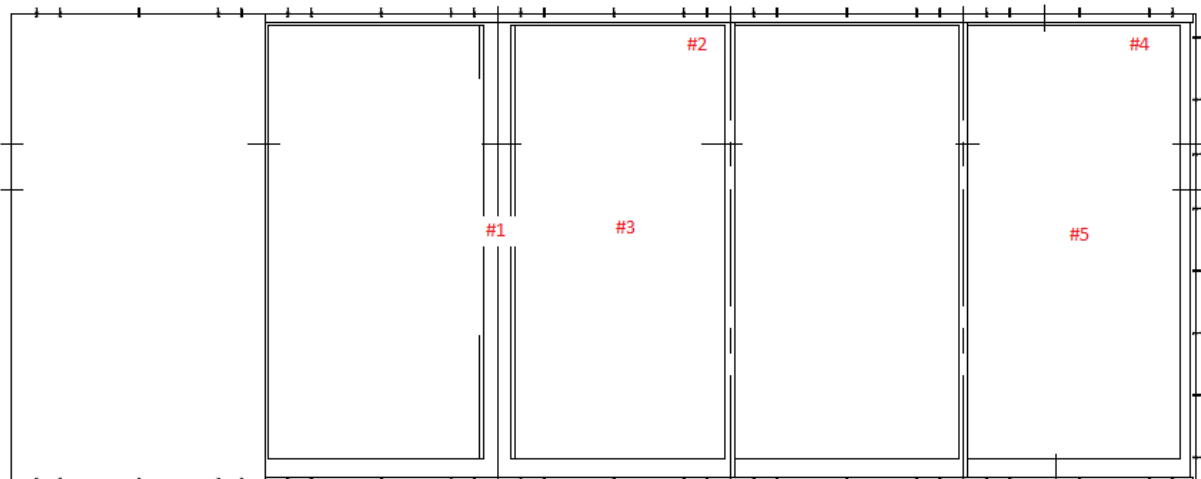
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## Appendix A

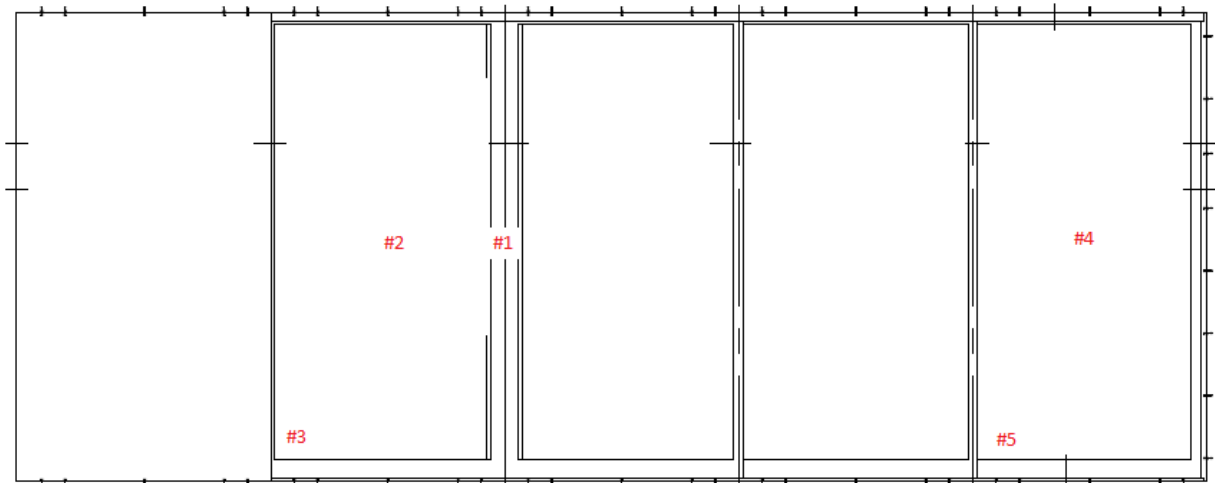
### Sketches



**Sketch #1: Test Specimen #1 Impact Locations**



**Sketch #2: Test Specimen #2 Impact Locations**



**Sketch #3: Test Specimen #3 Impact Locations**

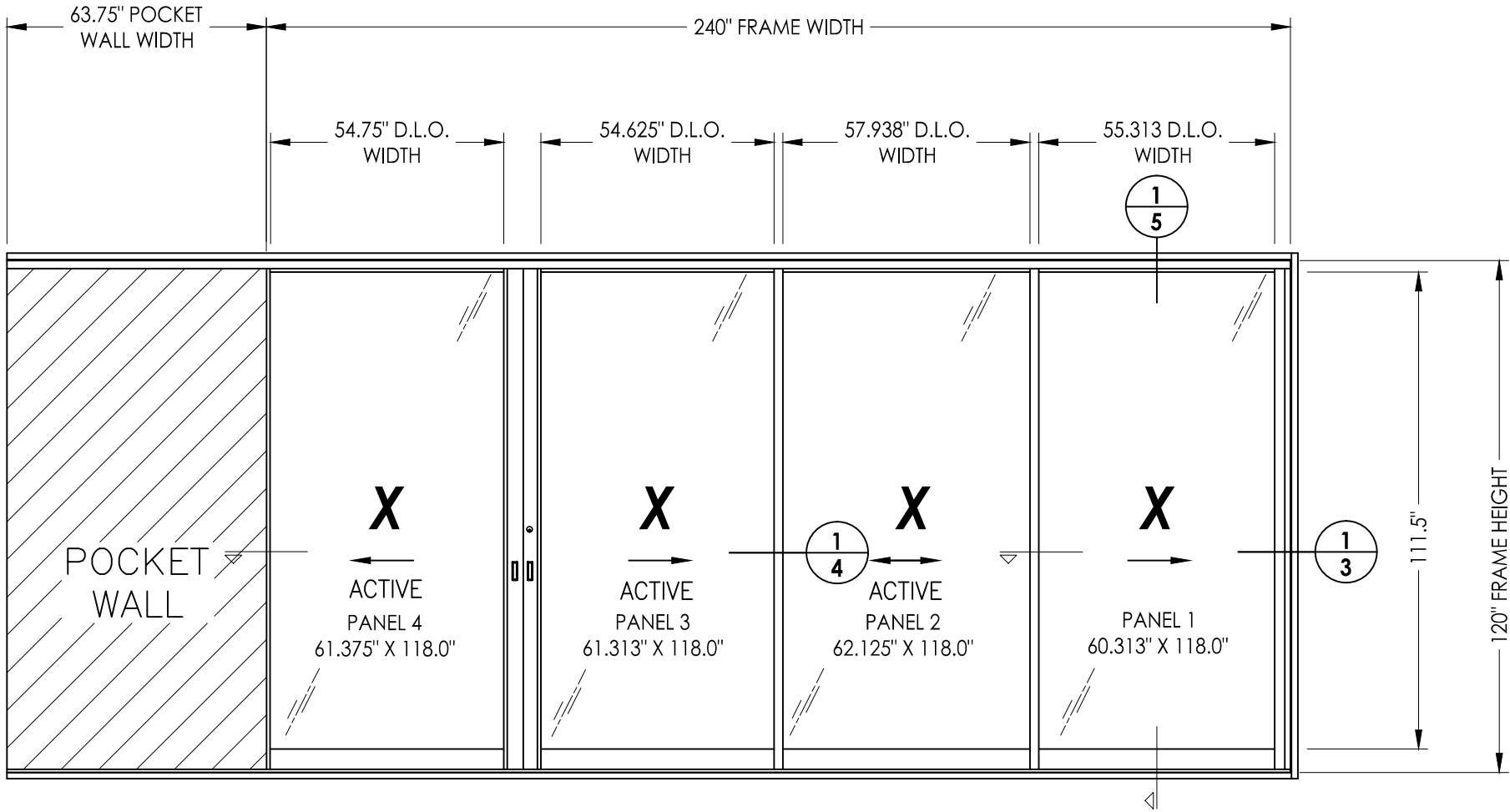




Test Report No.: E8392.02-301-44  
Report Date: 12/04/15  
Revision 6 Date: 07/13/16  
Record Retention End Date: 08/19/19

## **Appendix B**

### **Drawings**



TEST ELEVATION (SILL PAN NOT SHOWN)

TABLE OF CONTENTS	
SHEET #	DESCRIPTION
1	Table of contents and test elevation
2	Sash details
3	Horizontal cross section
4	Horizontal cross section
5	Vertical cross sections
6	Frame anchoring
7	Hardware Components
8	Hardware Components
9	Components
10	Bill of materials, components and glazing details



Report #:

E8392-301-18

Date:

07/13/16

Verified by:



COMMENTS

DRAWN BY

DATE

REVISIONS

DATE:

6/22/15

DRAWN BY:

BL

JOB NUMBER:

385199-V2

MATERIAL:

SERIES 3070-T

CUSTOMER:

FLEETWOOD WINDOWS AND DOORS

JOB NAME:

FLEETWOOD TAS & AAMA TEST



FLEETWOOD

WINDOWS AND DOORS

1 FLEETWOOD WAY CORONA, CALIFORNIA 92709 - www.fleetwoodusa.com

SCALE

DO NOT SCALE

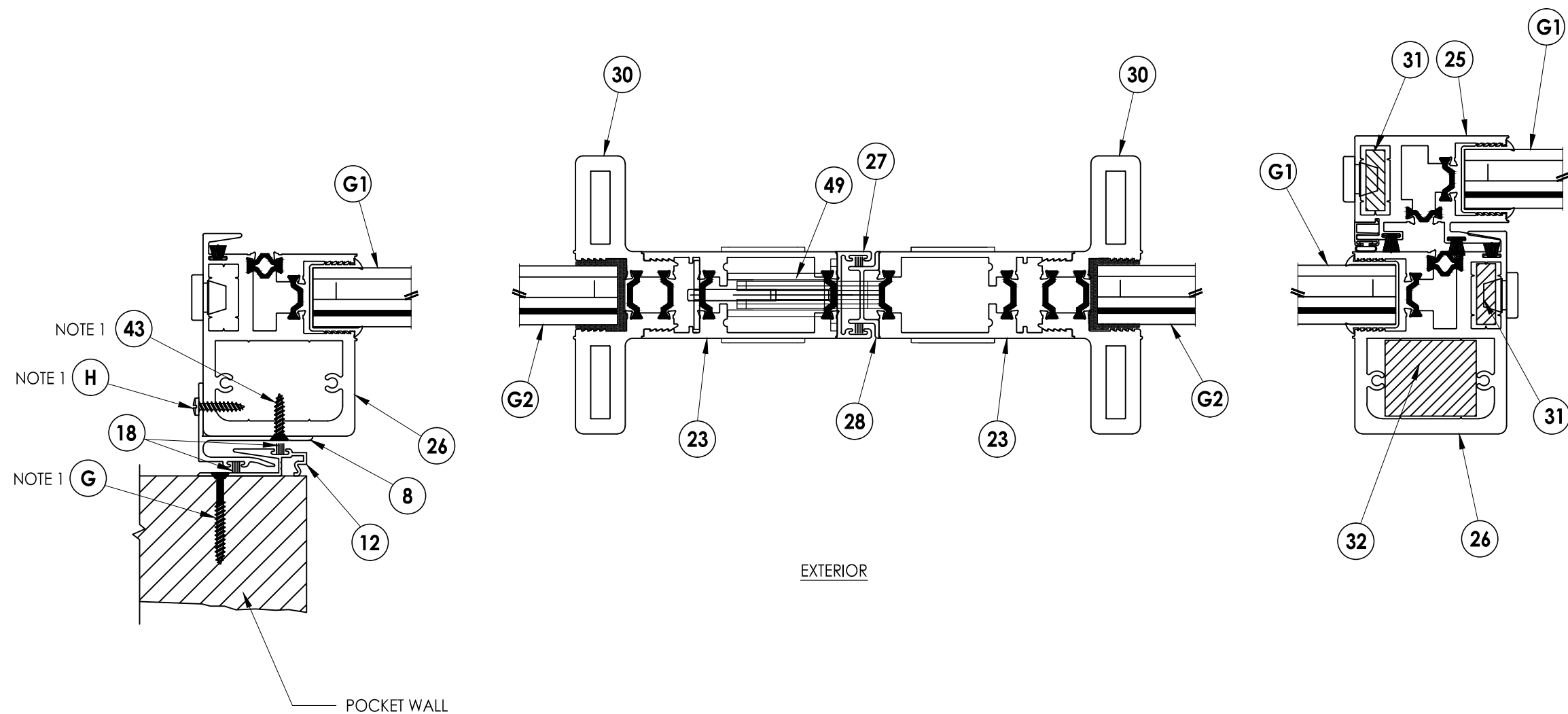
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SHEET

1 OF 9




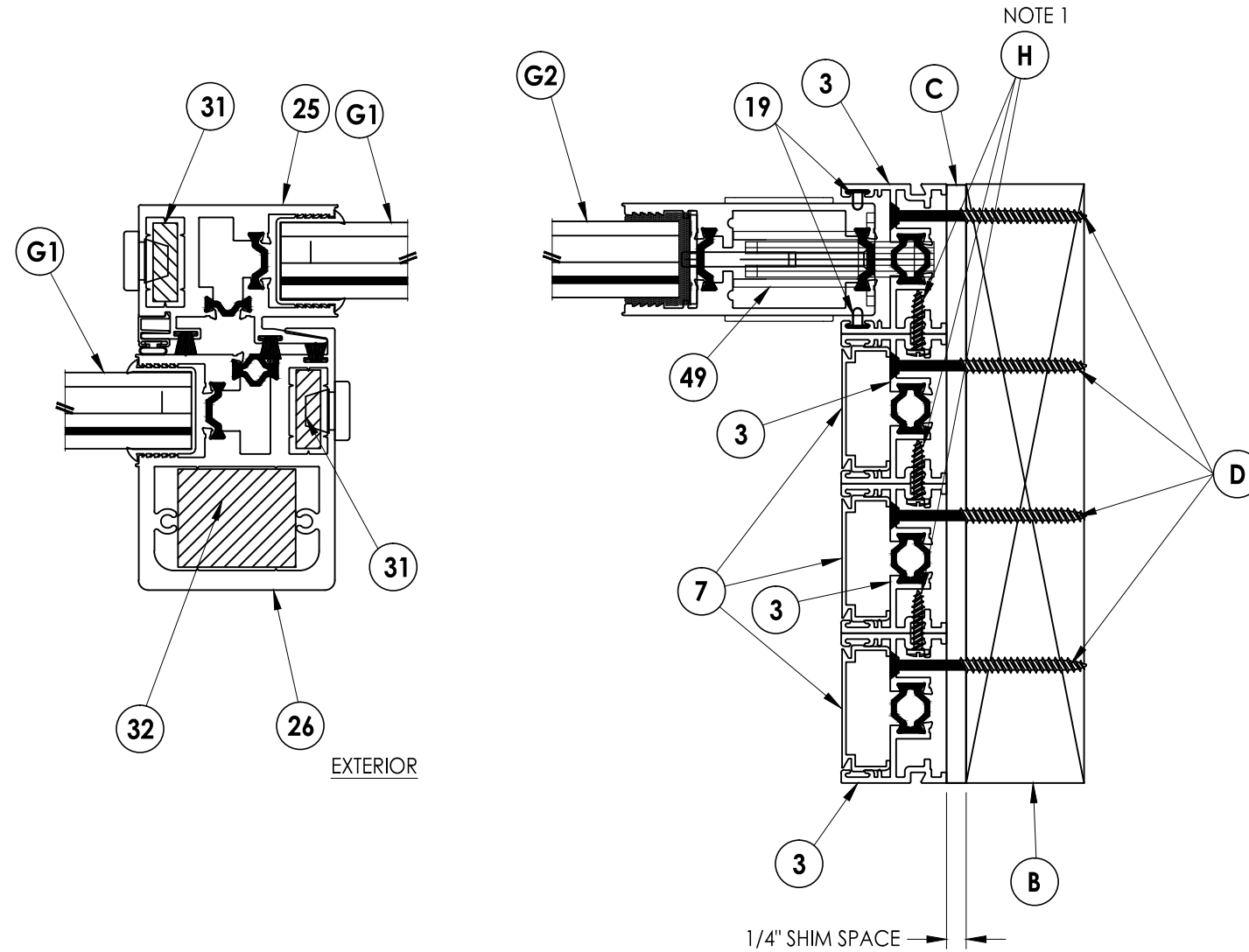


1  
3 HORIZONTAL CROSS SECTION

NOTE:  
1. 2" from each end then 12" on center

Intertek	Report #:	E8392-301-18
	Date:	07/13/16
	Verified by:	<i>[Signature]</i>


<b>FLEETWOOD</b> WINDOWS AND DOORS <small>1 FLEETWOOD WAY CORONA, CALIFORNIA 92709 - www.fleetwoodusa.com</small>	MATERIAL: SERIES 3070-T		DRAWN BY: BL	DATE: 6/22/15	REVISIONS:	COMMENTS:
	CUSTOMER: FLEETWOOD WINDOWS AND DOORS		JOB NUMBER: 385199-V2			
	JOB NAME: FLEETWOOD TAS & AAMA TEST					
	SCALE: 1/8" = 1'-0"		DO NOT SCALE			
	DRAWING NO. #					
	SHEET 3		OF 9			



1  
4 HORIZONTAL CROSS SECTION

NOTE:  
1. 1" from each end then 60" on center.

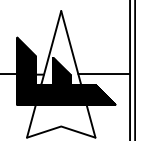
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	Date:	07/13/16
	Verified by:	<i>[Signature]</i>

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Verified by: 

**FLEETWOOD**  
**WINDOWS AND DOORS**  
1 FLEETWOOD WAY CORONA, CALIFORNIA 92719 • [www.fleetwoodusa.com](http://www.fleetwoodusa.com)







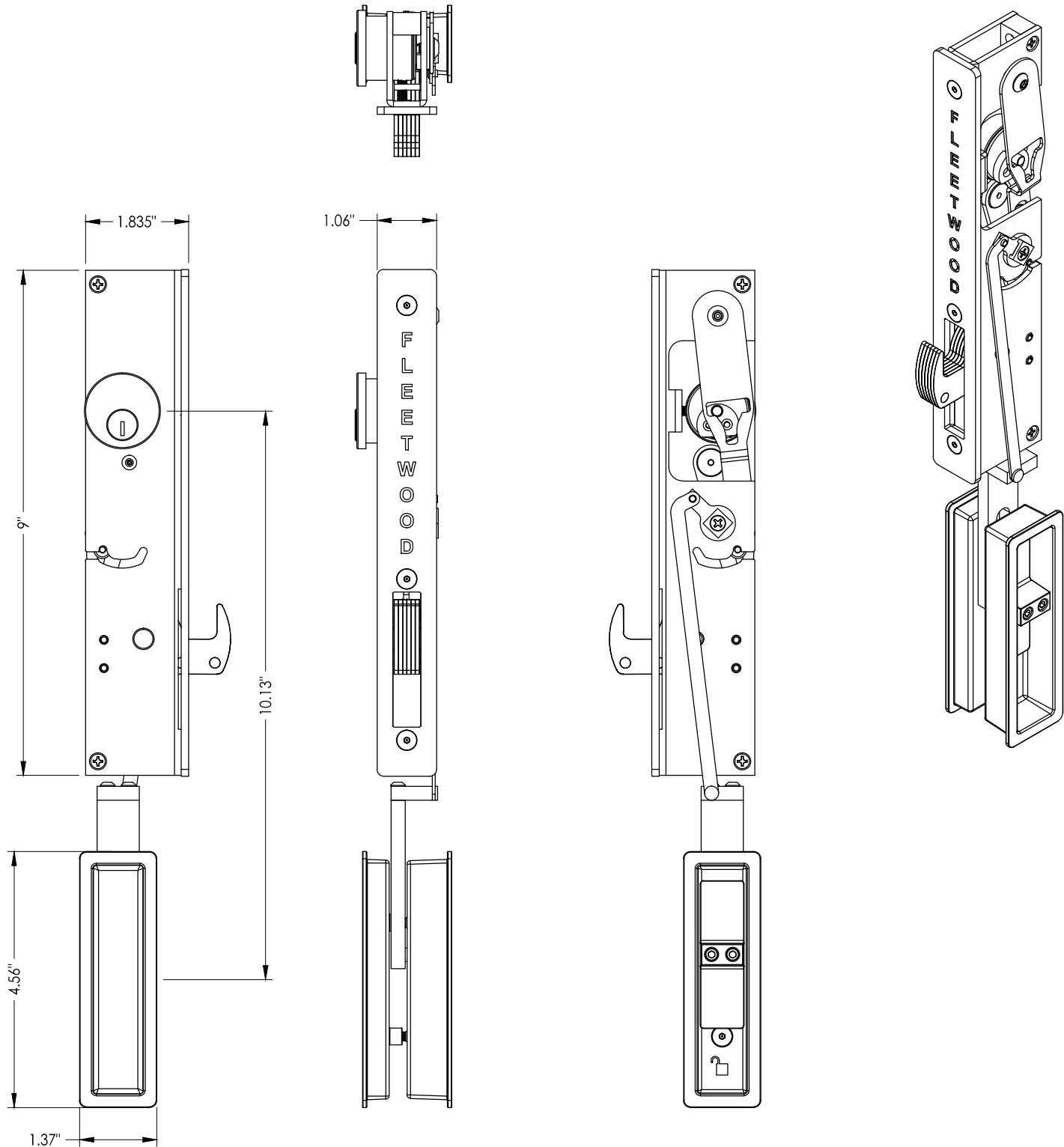
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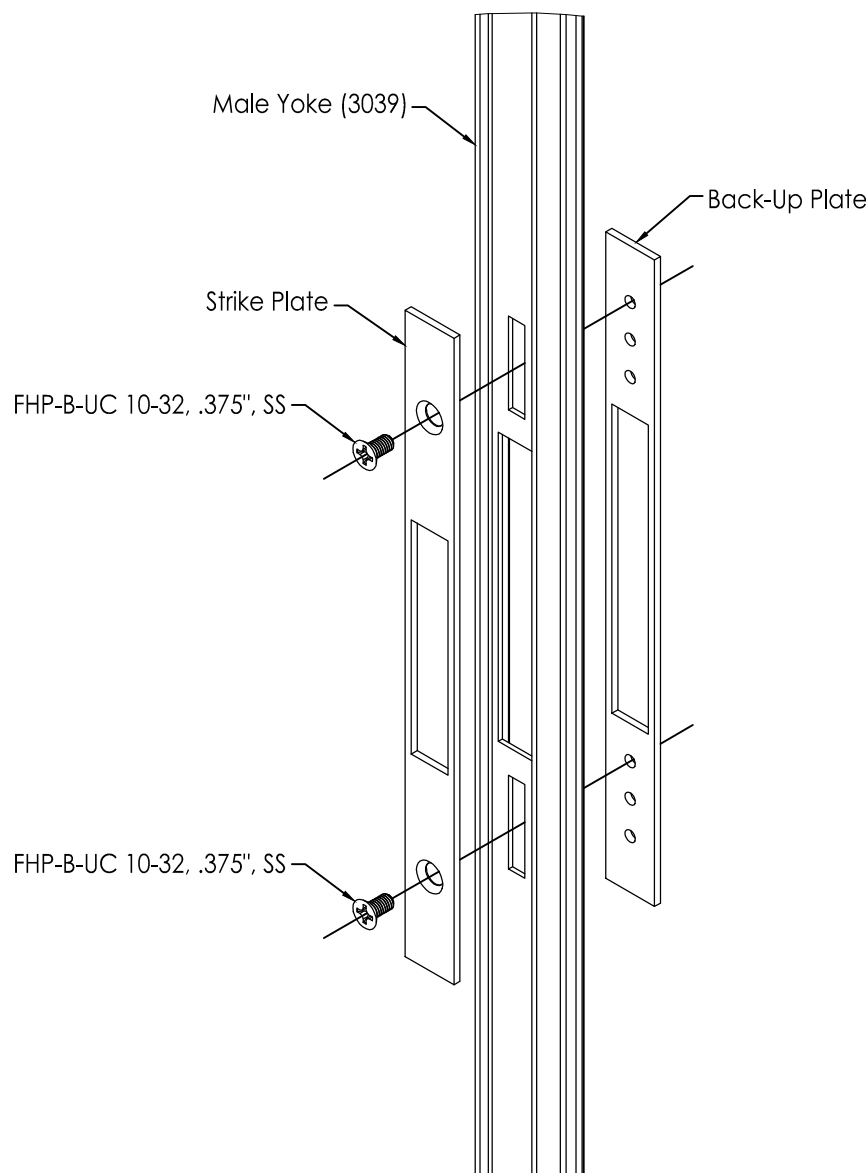
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5 OF 9



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SHEET  6 OF 9		MATERIAL: SERIES 3070-T CUSTOMER: FLEETWOOD WINDOWS AND DOORS JOB NAME: FLEETWOOD TAS & AAMA TEST	
DRAWN BY: BL		DATE: 6/22/15 REVISIONS:	
JOB NUMBER: 385199-V2		COMMENTS:	



49 ARCHETYPE NARROW LOCK



41 STRIKE PLATE



Report #:

E8392-301-18

Date:

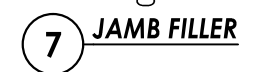
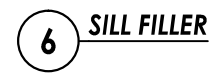
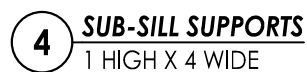
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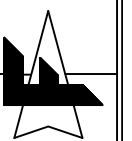


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SCALE ⚙ DO NOT SCALE			
DRAWING NO. ⚙ #			
SHEET ⚙ 7 OF 9			
MATERIAL: SERIES 3070-T		DRAWN BY:	DATE: 6/22/15
		BL	
CUSTOMER: FLEETWOOD WINDOWS AND DOORS		JOB NUMBER:	
JOB NAME: FLEETWOOD TAS & AAMA TEST		385199-V2	





Report #: E8392-301-18  
Date: 07/13/16  
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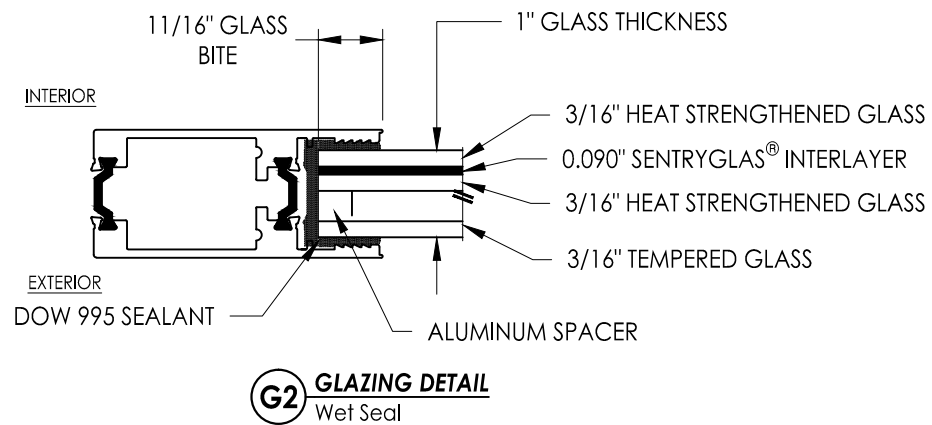
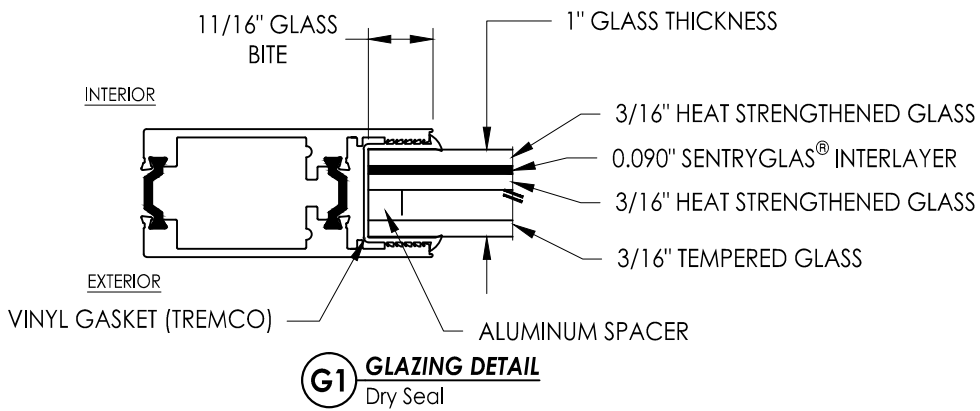
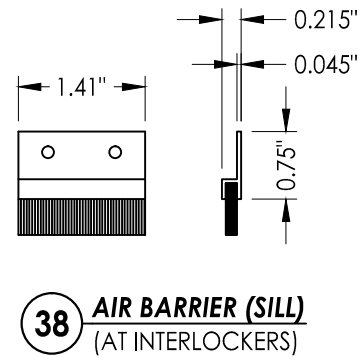
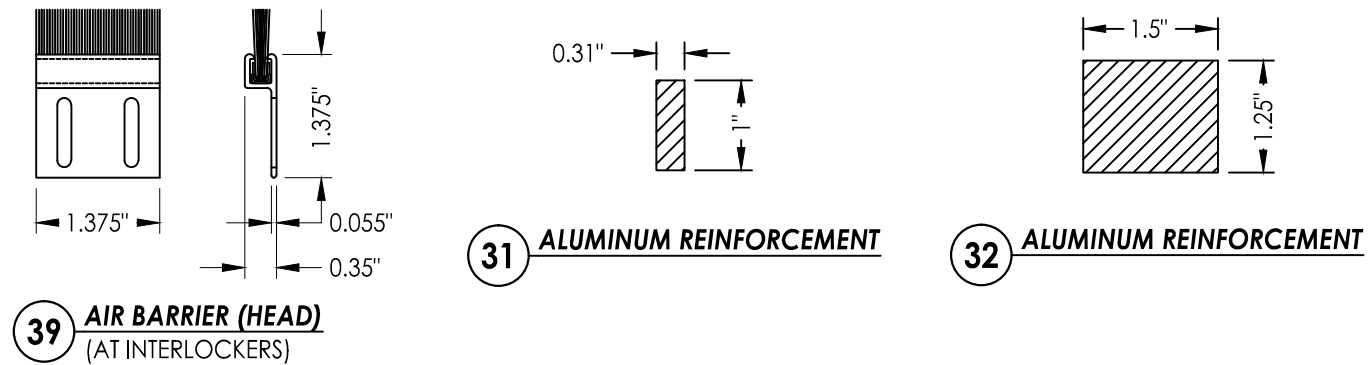
SCALE 1  
DO NOT SCALE

DRAWING NO. :

#

SHEET :  
8 OF 9

BILL OF MATERIALS			
ITEM #	DESCRIPTION	PART#	MATERIAL
B	2X BUCK SG >= 0.55	N/A	WOOD
C	1/4" MAX. SHIM SPACE	N/A	-
D	#10 x 2-1/2" PFH WOOD SCREW	N/A	STEEL
G	#8 x 1-1/2" PFH WOOD SCREW	N/A	STEEL
H	#8 x 3/4" PPH SMS	N/A	STEEL
1	THERMAL HEAD (SINGLE TRACK)	3700	6063-T6 ALUM
2	THERMAL SILL (SINGLE TRACK)	3749	6063-T6 ALUM
3	THERMAL JAMB (SINGLE TRACK)	3711	6063-T6 ALUM
4	TRACK SUPPORT (SUB-SILL)	3774	6063-T6 ALUM
5	HEAD FILLER	3014	6063-T6 ALUM
6	SILL FILLER	3747	6063-T6 ALUM
7	JAMB FILLER	3710	6063-T6 ALUM
8	POST INTERLOCKER (L-TYPE)	3730	6063-T6 ALUM
9	S.S. TRACK	FW1020	STAINLESS STEEL
10	SUB-SILLPAN (1.938" DEPTH)	3722-4-4S	-
12	J-POST INTERLOCKER SNAP-IN	3755	6063-T6 ALUM
15	Q-LON FOAM SEAL	25189	-
16	SMALL FIN SEAL .230	19118	6063-T6 ALUM
17	9/16" GLAZING VINYL (ASTM C864)	25033	6063-T6 ALUM
18	LARGE FIN SEAL .290	19117	6063-T6 ALUM
19	Q-LON (U5212)	19120	6063-T6 ALUM
20	THERMAL TOP RAIL	3004	6063-T6 ALUM
21	THERMAL BOTTOM RAIL	3027	6063-T6 ALUM
23	LOCK STILE (ARCHETYPE NARROW)	3773	6061-T6 ALUM
24	THERMAL LOCK STILE	3771	6061-T6 ALUM
25	HP THERMAL FIXED INTERLOCKER	3728	6061-T6 ALUM
26	HP THERMAL INTERLOCKER	3031	6061-T6 ALUM
27	FEMALE YOKE	3040	6061-T6 ALUM
28	MALE YOKE	3039	6061-T6 ALUM
29	WINDLOAD ADAPTOR	3715	6061-T6 ALUM
30	THERMAL HP ADAPTOR	3716	STAINLESS STEEL
31	0.31" X 1" SOLID ALUMINUM	N/A	6061-T6 ALUM
32	1.25" X 1.5" SOLID ALUMINUM	N/A	6061-T6 ALUM
38	AIR BARRIER (SILL)	25383	-
39	AIR BARRIER (HEAD)	24097	-
40	6" AIR BARRIER FOR HP INTERLOCKER	25562	-
41	STRIKE PLATE	24980	STEEL
43	10-32 X .5" FHP	N/A	STEEL
44	#10 X 1" PHP	N/A	STEEL
45	#8 TEK X 1/2"	N/A	STEEL
46	DOW 995 SILICONE	N/A	-
49	ARCHETYPE NARROW LOCK	-	-
51	ARCHETYPE ROLLERS	-	-



Report #:

E8392-301-18

Date:

07/13/16

Verified by:

COMMENTS				
DRAWN BY				
DATE				
REVISIONS				
DATE:	6/22/15	JOB NUMBER:	385199-V2	
DRAWN BY:	BL			
MATERIAL:	SERIES 3070-T	CUSTOMER:	FLEETWOOD WINDOWS AND DOORS	JOB NAME:
			FLEETWOOD TAS & AAMA TEST	
FLEETWOOD WINDOWS AND DOORS 1 FLEETWOOD WAY CORONA, CALIFORNIA 92709 - www.fleetwoodusa.com				
SCALE : DO NOT SCALE				
DRAWING NO. : #				
SHEET : 9 OF 9				