



# Testing Evaluation Laboratories, Inc.

2002 Wood Court Suite 1 – Plant City, FL 33563  
Phone: 813-754-9887

## TEST RESULTS

Dade Lab Certification Number: 15-0114.08  
Test Notification Number: TEL 15-004

Report No: TEL 01991312  
Test Dates: April 24, 2015  
Report Date: June 26, 2015

### Issued to:

Fleetwood Windows and Doors  
1 Fleetwood Way  
Corona, CA 92879

**Project Summary:** Testing Evaluation Laboratories, Inc. (TEL) was contracted by Fleetwood Windows and Doors to perform tests on the 3800-T Fixed Windows at TEL's Plant City, FL test facility. *Deviation to test protocol: At request of client, we tested one structural and one impact specimen.*

Test specimen descriptions and results are reported herein.

**Test Specifications:** The test specimens were evaluated in accordance with the following:

*High Velocity Hurricane Zone Protocols TAS 202-94, TAS 201-94 and TAS 203-94*

### Test Specimen Description:

**Series / Model:** 3800-T Fixed Windows  
**Type:** Aluminum Fixed Windows  
**Overall Size:** 181.00" x 120.00" – Specimens 1 and 1a– (OOO)  
**Daylight Opening:** 57.00" x 117.13" – Specimens 1 and 1a – (OOO)  
**Glazing Detail:** See attached drawing number L-7350 for glazing details.  
**Frame Material:** Aluminum  
**Finish:** Mill Finish

**For Tested Elevation, Vertical Cross Sections, Horizontal Cross Sections, Components, Frame Anchoring, Glazing Detail and Bill of Materials See Attached Drawing number L-7350.**

**SEQUENCE OF TESTS PERFORMED:**

**STRUCTURAL TESTS (TAS 202)**

**Specimen 1 – 181.0” x 120.0” Triple Mullied Aluminum Fixed Window (OOO)**

**Design Pressure                      Positive 65.0      Negative 65.0**

Air Infiltration (ASTM E283-04)	Pressure	SCFM/Ft <sup>2</sup>	Result
	1.57 PSF	0.000	Pass
Air Infiltration (ASTM E283-04)	Pressure	SCFM/Ft <sup>2</sup>	Result
	6.24 PSF	0.000	Pass

**Structural Loads (ASTM E330-02)**

Range	Time (sec)	Load (psf)	Location	Deflection	Allowable (Def)
Half Test Positive	30	32.50			
Design Positive	30	65.00	1	0.663"	0.667"
Half Test Negative	30	32.50			
Design Negative	30	65.00	1	0.665"	0.667"

Water Infiltration (ASTM E331-00)	Pressure	Time	Result
	15.0 PSF	15.0 Min.	Pass

**Note #1: Water Infiltration performed after Positive and Negative half and design loads.**

**Structural Loads (ASTM E330-02)**

Range	Time (sec)	Load (psf)	Location	Deflection	Set	Allowable (Set)
Half Proof Positive	10	48.75				
Test Positive	30	97.50	1	1.046"	0.005"	0.480"
Half Proof Negative	10	48.75				
Test Negative	30	97.50	1	1.033"	0.027"	0.480"

**Deflection Locations:**

**Location 1 – Center of Mullion**

**Forced Entry**                      Passed – No Entry

**Conclusion:** TEL observed no signs of failure in any area of this test specimen during the Uniform Static Load Test. In addition, specimen met the permanent set requirements. Therefore, this specimen satisfies the uniform static load test requirements of TAS 202-94.

James Hayhurst, Test Technicians

## IMPACT AND CYCLING TESTS (TAS 201/203)

### Specimen 1a – 181.5" x 120.0" Triple Mulled Aluminum Fixed Window – (OOO)

#### TAS 201 and 203 – Large Missile Impact (2 x 4 Southern Yellow Pine)

Cond. Temp Of Specimen	Missile Level	Missile Weight	Missile Length	Muzzle Distance From Specimen
74°F	D	9.0 lbs, 0 oz.	8'-0"	17'0"

Impact Location	Results	X - Measurement	Y - Measurement	Speed
1	Pass	91.00"	60.25"	50.1 fps
2	Pass	111.00"	8.00"	50.0 fps
3	Pass	60.25"	60.00"	49.9 fps
Orientation of Missile at Impact was within +/-5° of horizontal. None of the impacts penetrated the specimens. "X" measurement is from the left edge of test specimen. "Y" measurement is from the bottom edge of test specimen.				

#### TAS 201 and 203– Fatigue Load Cycling      Design Pressure +55.0 psf / - 60.0 psf

Positive % of Test Load	Positive Pressure Range (psf)	Number Of Cycles	Average Cycle Time (Sec)
20% to 50%	11.0 to 27.5	3500	1.77
0% to 60%	0.0 to 33.0	300	1.65
50% to 80%	27.5 to 44.0	600	1.27
30% to 100%*	16.5 to 55.0	100	1.95

Negative % of Test Load	Negative Pressure Range (psf)	Number Of Cycles	Average Cycle Time (Sec)
30% to 100%*	18.0 to 60.0	50	1.80
50% to 80%	30.0 to 48.0	1050	1.38
0% to 60%	0.0 to 36.0	50	1.91
20% to 50%	12.0 to 30.0	3350	1.55
*Panel deflected 4.25" from original plane at 100% Positive load and 5.50" from original plane at 100% Negative load. At the completion of cycles the door panel was operable. There were no tears in the film. In our opinion, the tape and film used to seal for air leakage did not influence the results of the test.			

James Hayhurst, Test Technician

## Conditions, Terms, and General Notes Regarding These Tests

The product tested Has Been compared to the detailed drawing, bill of materials and fabrication information supplied by the client so named herein. Our analysis, which includes dimensional and component description comparisons, indicate the tested product and engineering information supplied by the client "Are Equivalent". The report and representative samples will be retained for four years from the date of initial test.

These test results were obtained by employing all requirements of the designated test methods with no Deviations unless explicitly noted in test report. The test results and specimen supplied for testing are in compliance with the reference.

The test results are specific to the product tested by this laboratory and of the sample supplied by the client named herein, and they relate to no other product either manufactured by the client, a fabricator of the client or of the client or of installed field performance.

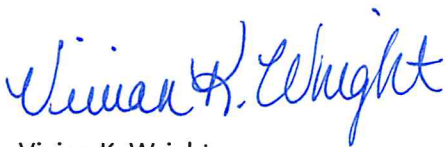
This test report does not constitute certification of this product, but only that the above test results were obtained using the designated test methods and they indicate compliance with the performance requirements (paragraphs as listed) of the above referenced specifications.

Testing Evaluation Laboratories, Inc. makes no opinions or endorsements regarding this product and its performance. This report may not be reproduced or quoted in partial form without the expressed written approval of Testing Evaluation Laboratories, Inc.

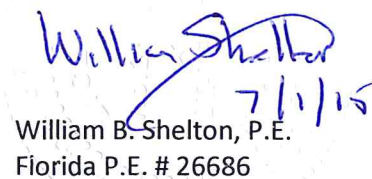
Testing Evaluation Laboratories, Inc.'s letter, reports, its name or insignia or mark are for the exclusive use of the client so named herein and any other use is strictly prohibited. The report, letters and the name of Testing Evaluation Laboratories, Inc., its seal or mark shall not be used in any circumstance to the general public or in any advertising.

Limitation of liability: Due diligence was used in performing the tests and reporting the results. By acceptance of this report, this client agrees to hold harmless and indemnify Testing Evaluation Laboratories, Inc., its employees, sub-contractors, officers and owners against all claims and demands of any kind whatsoever, which arise out of or in any manner connected with the performance of work referred to herein.

Testing Evaluation Laboratories, Inc.



Vivian K. Wright,  
President



William B. Shelton, P.E.  
Florida P.E. # 26686

**Revision Log**

Rev No.	Date	Page(s)	Revision(s)
0	6/26/2015	NA	Original Report Issue

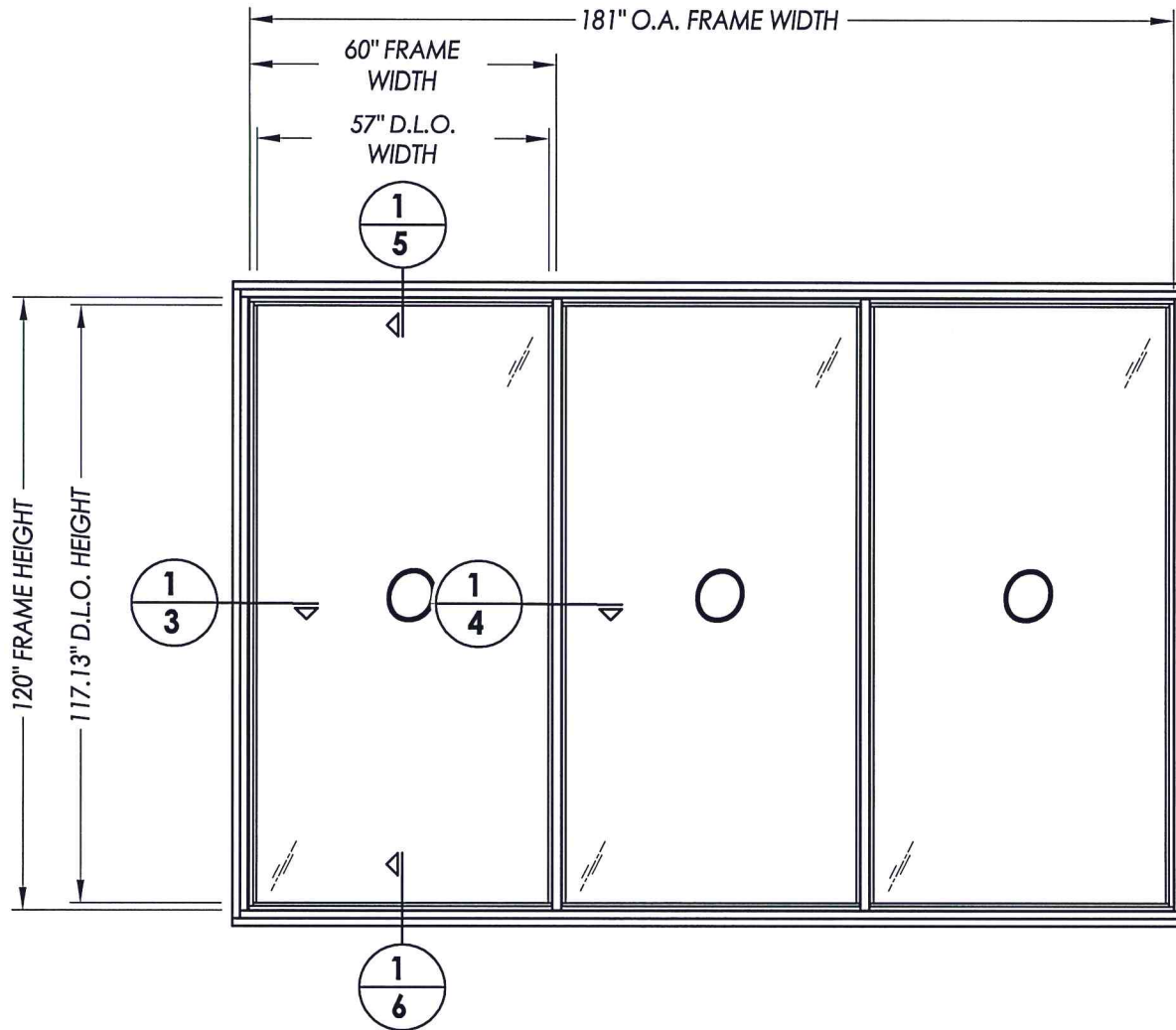
<b>TABLE OF CONTENTS</b>	
<b>SHEET #</b>	<b>DESCRIPTION</b>
1	Table of contents
2	Test elevation
3	Horizontal cross sections
4	Horizontal cross sections
5	Vertical cross sections
6	Vertical cross sections
7	Frame anchoring
8	Bill of materials, components and glazing detail

Testing Evaluation Laboratories Inc.  
 Specimen Complies with Drawing  
 Deviations Noted - TEL# 01991312  
 Date 6/26/15 Verified by gw

PRODUCT: FLEETWOOD SPEC. 1, 1a		
PART OR ASSEMBLY: TABLE OF CONTENTS		
REVISIONS		
NO.      DATE      BY		
_____		

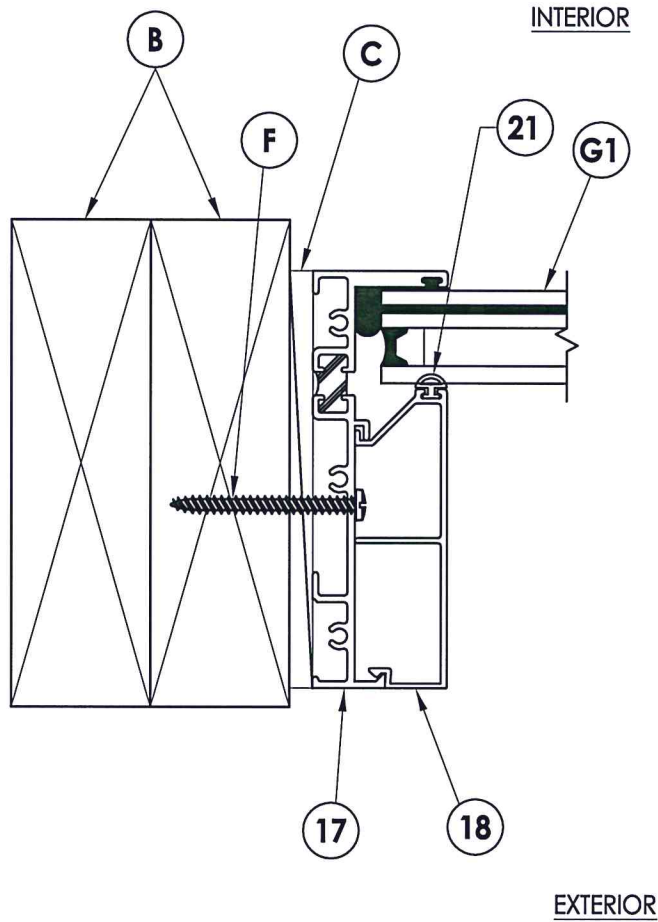


DATE: 4/2/15  
 SCALE: N.T.S.  
 DWG. BY: JK  
 CHK. BY: LFS  
 DRAWING NO.:  
               L-7350  
 SHEET 1 OF 8



Testing Evaluation Laboratories Inc.  
 Specimen Complies with Drawing  
 Deviations Noted - TEL# 01991312  
 Date 6/26/15 Verified by gq

PRODUCT: FLEETWOOD SPEC. 1, 1a		PART OR ASSEMBLY: TEST ELEVATIONS	
NO.	DATE	REVISIONS	BY
RW BUILDING CONSULTANTS, INC. 813.659.9197			
DATE: 4/2/15			
SCALE: N.T.S.			
DWG. BY: JK			
CHK. BY: LFS			
DRAWING NO.: L-7350			
SHEET <u>2</u> OF <u>8</u>			

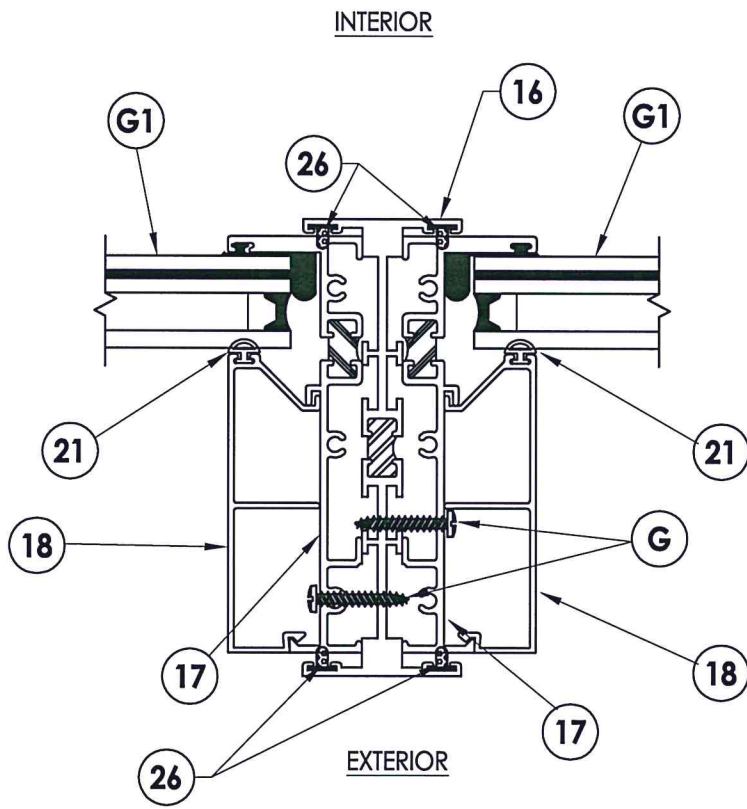


**1**  
**3** HORIZONTAL CROSS SECTION

Testing Evaluation Laboratories Inc.  
 Specimen Complies with Drawing  
 Deviations Noted - TEL# 01991312  
 Date 6/26/15 Verified by gp


PRODUCT: FLEETWOOD SPEC. 1, 1a		PART OR ASSEMBLY: HORIZONTAL CROSS SECTIONS	
NO.	DATE	REVISIONS	BY
DATE: 4/2/15			
SCALE: N.T.S.			
DWG. BY: JK			
CHK. BY: LFS			
DRAWING NO.: L-7350			
SHEET <u>3</u> OF <u>8</u>			

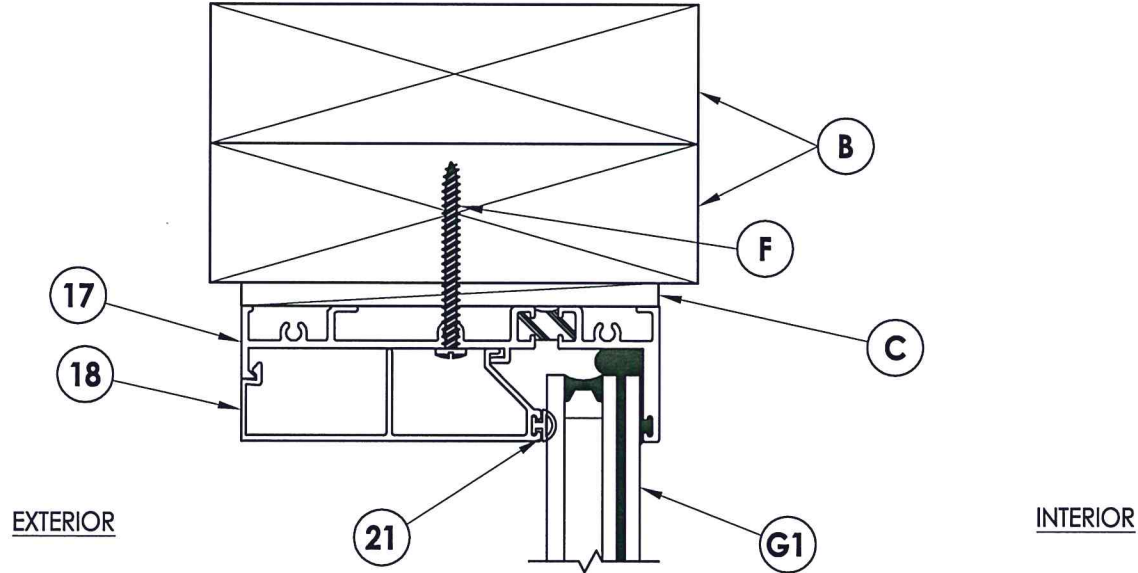




**1** HORIZONTAL CROSS SECTION  
**4**

Testing Evaluation Laboratories Inc.  
 Specimen Complies with Drawing  
 Deviations Noted - TEL# 01991312  
 Date 6/26/15 Verified by gd

PRODUCT:		FLEETWOOD SPEC. 1, 1a	
PART OR ASSEMBLY:		HORIZONTAL CROSS SECTIONS	
NO.	DATE	REVISIONS	BY
			
DATE: 4/2/15			
SCALE: N.T.S.			
DWG. BY: JK			
CHK. BY: LFS			
DRAWING NO.: L-7350			
SHEET 4 OF 8			



EXTERIOR

INTERIOR

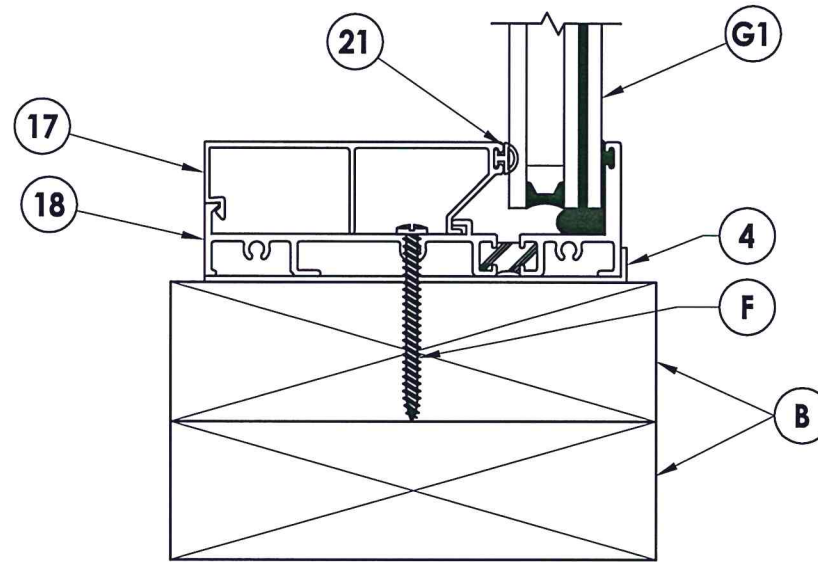
**1**  
**5** **VERTICAL CROSS SECTION**

Testing Evaluation Laboratories Inc.  
 Specimen Complies with Drawing  
 Deviations Noted - TEL# 01991312  
 Date 6/26/15 Verified by *gjd*

PRODUCT: FLEETWOOD SPEC. 1, 1a		PART OR ASSEMBLY: VERTICAL CROSS SECTIONS	
NO.	DATE	REVISIONS	BY
 R.W. BUILDING CONSULTANTS, INC. 813.659.9197			
DATE: 4/2/15			
SCALE: N.T.S.			
DWG. BY: JK			
CHK. BY: LFS			
DRAWING NO.:			
L-7350			
SHEET <u>5</u> OF <u>8</u>			

EXTERIOR

INTERIOR



1  
6 VERTICAL CROSS SECTION

Testing Evaluation Laboratories Inc.  
 Specimen Complies with Drawing  
 Deviations Noted - TEL# 01991312  
 Date 6/26/15 Verified by gjd

PRODUCT:  
 FLEETWOOD  
 SPEC. 1, 1a

PART OR ASSEMBLY:  
 VERTICAL  
 CROSS SECTIONS

NO.	DATE	REVISIONS	BY

**RW** BUILDING  
 CONSULTANTS, INC.  
 813.659.9197

DATE: 4/2/15

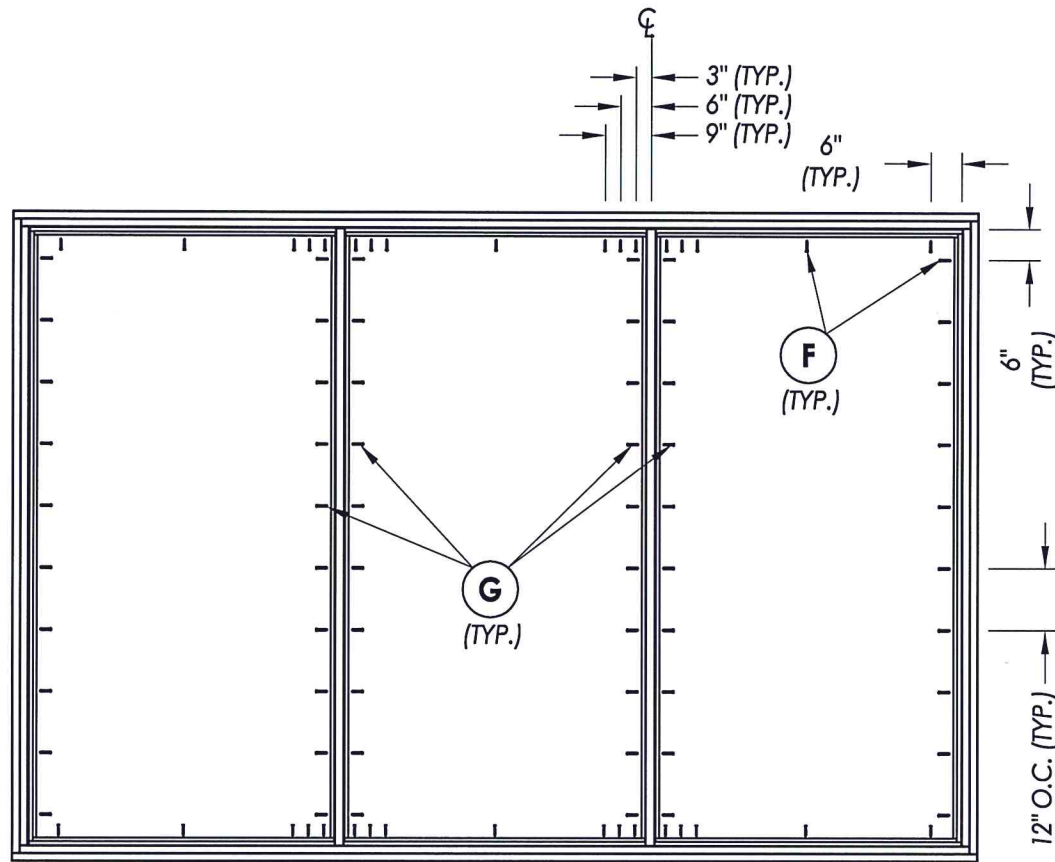
SCALE: N.T.S.

DWG. BY: JK

CHK. BY: LFS

DRAWING NO.:  
 L-7350

SHEET 6 OF 8



**FRAME ANCHORING**  
(2X buck installation)

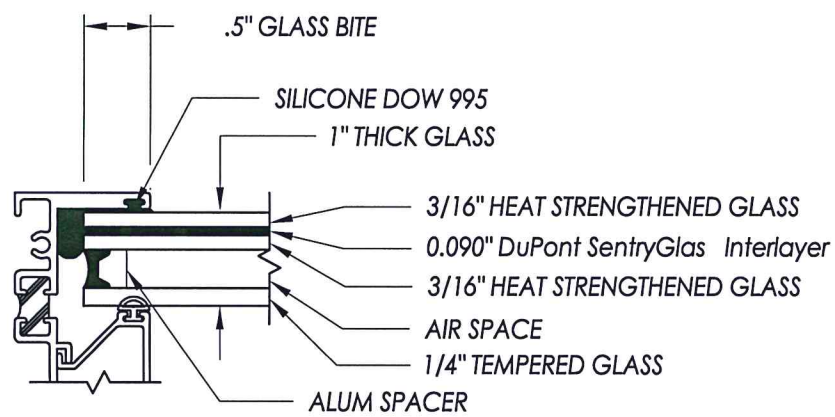
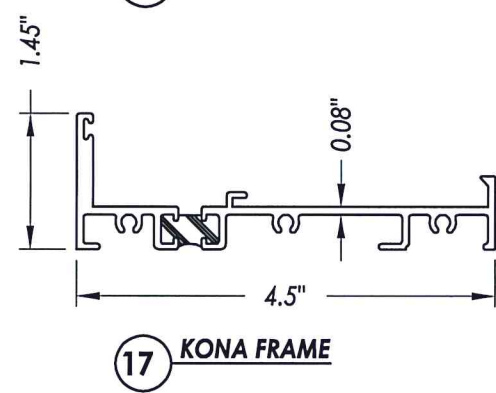
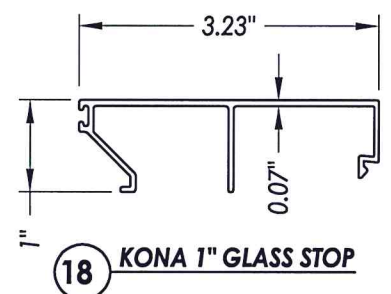
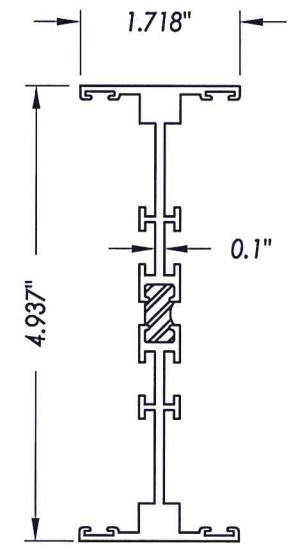
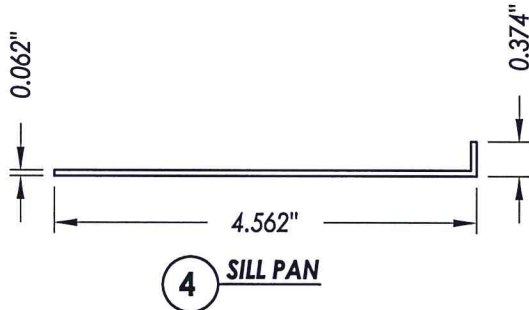
Testing Evaluation Laboratories Inc.  
 Specimen Complies with Drawing  
 Deviations Noted - TEL# 01991312  
 Date 6/26/15 Verified by op

PRODUCT: FLEETWOOD SPEC. 1, 1a		PART OR ASSEMBLY: FRAME ANCHORING	
NO.	DATE	REVISIONS	BY
			
DATE: 4/2/15			
SCALE: N.T.S.			
DWG. BY: JK			
CHK. BY: LFS			
DRAWING NO.:			
L-7350			
SHEET <u>7</u> OF <u>8</u>			

**BILL OF MATERIALS**

ITEM #	DESCRIPTION	PART#	MATERIAL
B	2X BUCK SG >= 0.55	-	WOOD
C	1/4" MAX. SHIM SPACE	-	-
F	#10 x 2" PFH WOOD SCREW	-	STEEL
G	#10 x 1" PFH WOOD SCREW	-	STEEL
4	SILL PAN	-	SHEET METAL (ALUMINUM)
16	KONA I-MULLION	3082	6063-T6 ALUM
17	KONA FRAME	3805	6063-T6 ALUM
18	KONA 1" GLASS STOP	3801	6063-T6 ALUM
21	BULB VINYL - LARGE (EPDM 70 Durometer)	25031	TREMCO, # TX19638E
26	Q-LON FOAM SEAL	19120	SCHLEGEL CORP., # U 5212
50	4" LONG SETTING BLOCK	18620	-

Testing Evaluation Laboratories Inc.  
 Specimen Complies with Drawing  
 Deviations Noted - TEL# 01991312  
 Date 6/26/15 Verified by gja



PRODUCT: FLEETWOOD SPEC. 1, 1a		PART OR ASSEMBLY: BILL OF MATERIALS, COMPONENTS AND GLAZING DETAIL	
NO.	DATE	BY	REVISIONS
DATE: 4/2/15			
SCALE: N.T.S.			
DWG. BY: JK			
CHK. BY: LFS			
DRAWING NO.: L-7350			
SHEET 8 OF 8			