



# Testing Evaluation Laboratories, Inc.

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

## TEST RESULTS

Dade Lab Certification Number: 11-1213.01  
Test Notification Number: TEL 13-005

Report No: TEL 01991030  
Test Dates: April 17, 2014  
Report Date: April 30, 2014

### 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 Kona 3800 Casement and Awning Windows at TEL's Plant City, FL test facility.

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:** Kona 3800 Casement and Awning Windows  
**Type:** Aluminum Awning Window  
**Overall Size:** 65.00" x 42.00" – (X)  
**Daylight Opening:** 56.63" x 33.88" – (X)  
**Glazing Detail:** See attached drawing numbers L-7033A 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-7033A.



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

### Specimen 1A – 42.0” x 84.0” Aluminum Casement Window – (X)

#### 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
76°F	D	9.0 lbs, 2 oz	8'-0"	17'1"

Impact Location	Results	X - Measurement	Y - Measurement	Speed
1	Pass	32.0"	21.0"	49.6 fps
2	Pass	56.0"	11.0"	49.8 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 +65.0 psf / -65.0 psf

Positive % of Test Load	Positive Pressure Range (psf)	Number Of Cycles	Average Cycle Time (Sec)
20% to 50%	13.0 to 32.5	3500	1.66
0% to 60%	0.0 to 39.0	300	2.06
50% to 80%	32.5 to 52.0	600	1.60
30% to 100%*	19.5 to 65.0	100	2.20

Negative % of Test Load	Negative Pressure Range (psf)	Number Of Cycles	Average Cycle Time (Sec)
30% to 100%*	19.5 to 65.0	50	2.29
50% to 80%	32.5 to 52.0	1050	2.00
0% to 60%	0.0 to 39.0	50	2.24
20% to 50%	13.0 to 32.5	3350	1.37

\*Panel deflected 1.88" from original plane at 100% Positive load and 1.75" 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 Technicians

Mfg Observers – Joe Zammit



## 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.

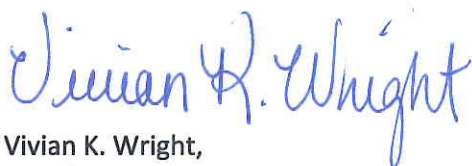
This test report does not constitute certification of this product, but only that the above test results were obtained using the designated test methods and they indicate compliance with the performance requirements (paragraphs as listed) of the above referenced specifications.

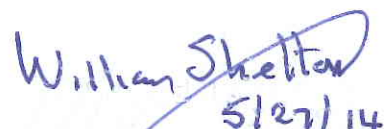
Testing Evaluation Laboratories, Inc. makes no opinions or endorsements regarding this product and its performance. This report may not be reproduced or quoted in partial form without the expressed written approval of Testing Evaluation Laboratories, Inc.

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

  
5/27/14  
William B. Shelton, P.E.  
Florida P.E. # 26686

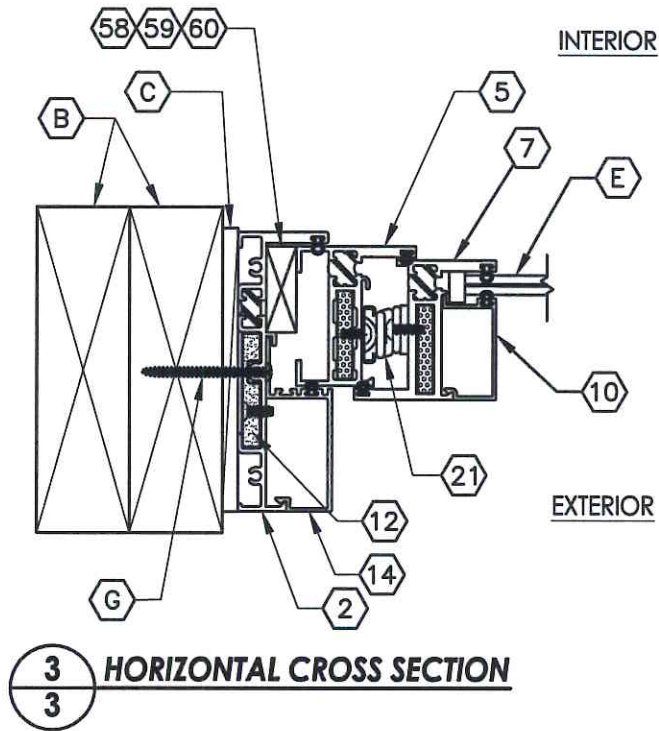
**Revision Log**

Rev No.	Date	Page(s)	Revision(s)
0	4/30/2014	NA	Original Report Issue



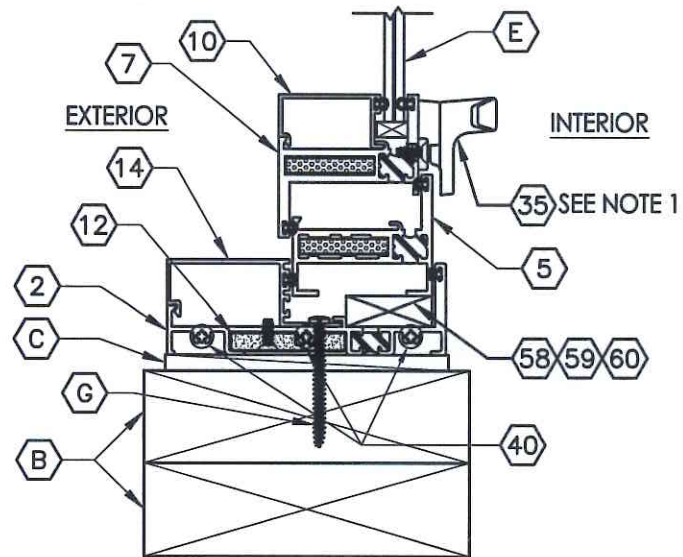
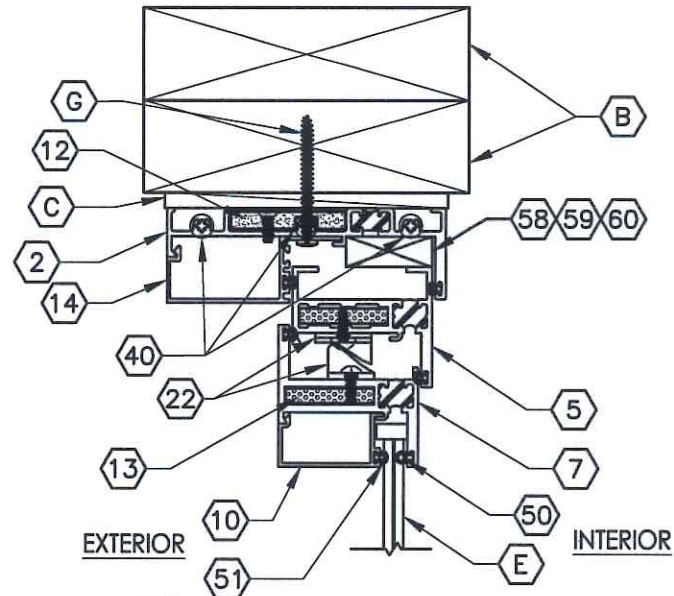






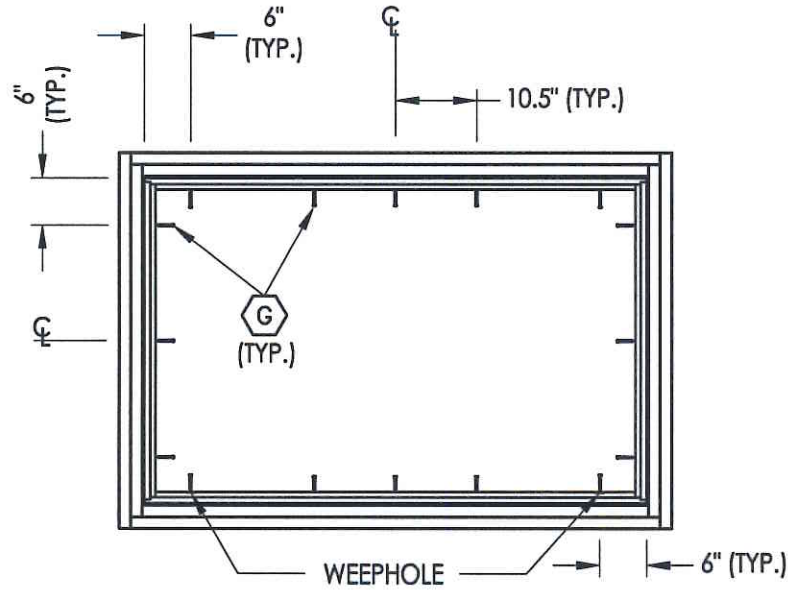
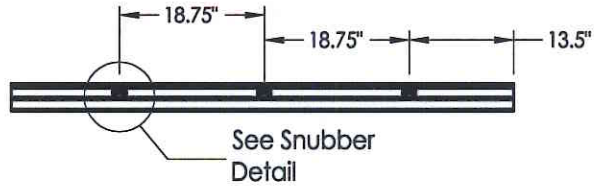
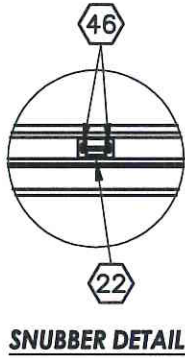
NOTE:  
1. Item #35 located 17"  
from each end (2) total.

Testing Evaluation Laboratories Inc  
Specimen Complies with Drawing  
Deviations Noted - TEL # 01991630  
Date 4/30/14 Verified by [Signature]



PRODUCT: FLEETWOOD KONA 3800 AWNING WINDOW		PART OR ASSEMBLY: HORIZONTAL AND VERTICAL CROSS SECTIONS	
NO.	DATE	REVISIONS	BY
 RW BUILDING CONSULTANTS, INC. 813.659.9197			
DATE: 4/23/14			
SCALE: N.T.S.			
DWG. BY: JK			
CHK. BY: LFS			
DRAWING NO.: L-7033A			
SHEET 3 OF 6			





**FRAME ANCHORING**  
2X buck construction

PRODUCT: FLEETWOOD  
KONA 3800  
AWNING WINDOW

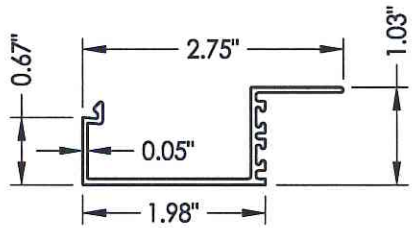
PART OR ASSEMBLY: FRAME ANCHORING

NO.	DATE	BY	REVISIONS

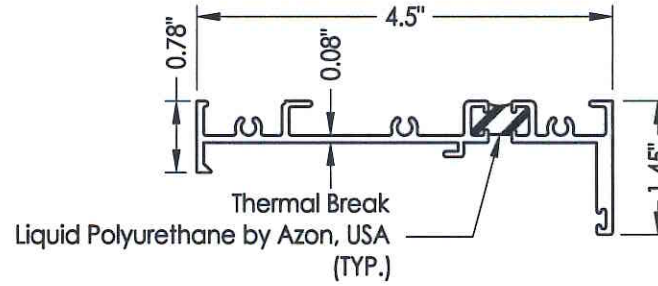
**RW** BUILDING  
CONSULTANTS, INC.  
813.659.9197

DATE: 4/23/14  
SCALE: N.T.S.  
DWG. BY: JK  
CHK. BY: LFS  
DRAWING NO.:  
L-7033A  
SHEET 4 OF 6

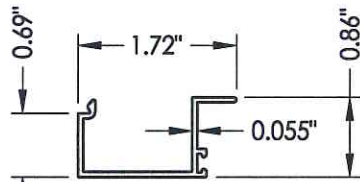
Testing Evaluation Laboratories Inc  
Specimen Complies with Drawing  
Deviations Noted - TEL # 0199 1030  
Date 4/30/14 Verified by [Signature]



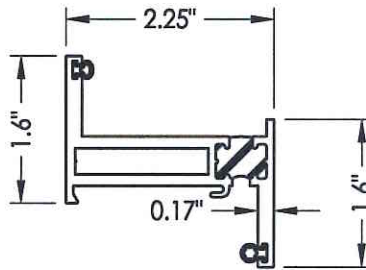
**14 INSERT STOP**



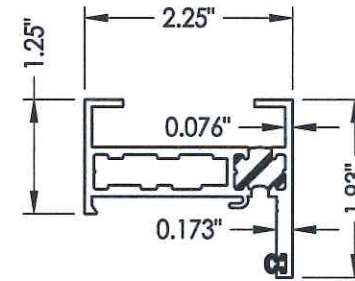
**2 KONA BLOCK FRAME**



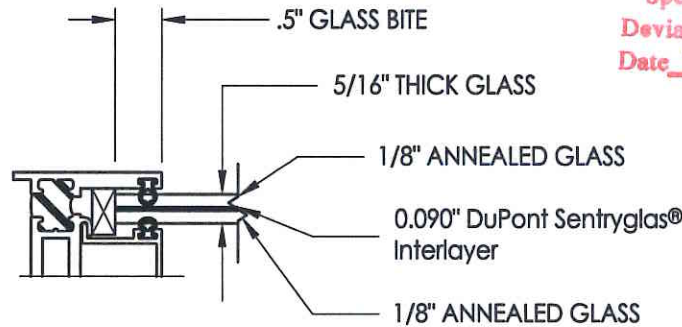
**10 GLASS STOP 5/16", 7/16"**



**7 ZEE BAR (PANEL)**



**5 BLOCK FRAME**



**E GLAZING DETAIL**

Testing Evaluation Laboratories Inc  
 Specimen Complies with Drawing  
 Deviations Noted - TEL # 01991030  
 Date 4/30/14 Verified by [Signature]

PRODUCT: FLEETWOOD KONA 3800 AWNING WINDOW		PART OR ASSEMBLY: COMPONENTS	
NO.	DATE	BY	REVISIONS
RW BUILDING CONSULTANTS, INC. 813.659.9197			
DATE: 4/23/14			
SCALE: N.T.S.			
DWG. BY: JK			
CHK. BY: LFS			
DRAWING NO.: L-7033A			
SHEET 5 OF 6			

