



Testing Evaluation Laboratories, Inc.

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

AAMA/WDMA/CSA 101/I.S.2/A440-08 Canadian Supplement A440S1-09

TEST REPORT SUMMARY

Test Report Issued To:

FLEETWOOD WINDOWS AND DOORS
1 Fleetwood Way
Corona, CA 92879

WESTWOOD 250 Impact Resistant Aluminum Mullled Awning Window

Title	Summary of Results
	Specimen 8
Primary Product Designator	Class LC- PG65 1067 x 4572 (42 x 180) Type AP
Design Pressure	+3112/-3112 Pa (+65.0/- 65.0 psf)
Operating Force	Pass
Air Infiltration	0.105 L/s/m ² (0.021 scfm/ft ²)
Air Infiltration/Exfiltration (A440S1-09)	Level A3: < 0.50 L/s•m ²
Water Resistance	467 Pa (9.75 psf)
Structural Test Pressure	+4668/-4668 Pa (+97.5/- 97.5 psf)
Forced Entry	No Entry

Reference should be made to Report No. TEL 01991060 for complete test specimen description and data. For corresponding data regarding ASTM E1886 and ASTM E1996 reference should be made to Report No. TEL 01990818 and TEL 01991061.

For Testing Evaluation Laboratories, Inc.

Vivian K. Wright,
President



Testing Evaluation Laboratories, Inc.

2002 Wood Court Suite 1 – Plant City, FL 33563

Phone: 813-754-9887

AAMA/WDMA/CSA 101/I.S.2/A440-08

Canadian Supplement A440S1-09

Issued to:

FLEETWOOD WINDOWS AND DOORS

1 Fleetwood Way

Corona, CA 92879

IAS Lab Certification Number: TL-299

Report No: TEL 01991060

Test Dates: October 3-5, 2013

Report Date: June 19, 2014

Project Summary: Testing Evaluation Laboratories, Inc. (TEL) was contracted by Fleetwood Windows and Doors to perform tests on the Westwood 250 Casement and Awning Windows at TEL's Plant City, FL test facility.

This specimen successfully achieved a Performance Grade Class LC-PG65 1067 x 4572 (42 x 180) Type AP.

Test specimen descriptions and results are reported herein.

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

AAMA/WDMA/CSA 101/I.S.2/A440-08 and Canadian Supplement A440S1-09

Standard Specification for Windows, Doors and Unit Skylights

Test Specimen Description:

Series / Model: Westwood 250 Casement and Awning Windows

Type: Aluminum Muller Awning Windows – (O/X/O)

Overall Size 1067 mm x 4572 mm (42.00" x 180.00") – Specimen 8 - (O/X/O)

Daylight Opening: 992 mm x 237 mm (39.062" x 9.312") – Specimen 8 - Top Fixed Panel (O)
842 mm x 1932 mm (33.13" x 76.062") – Specimen 8 - Center Active Panel (X)
992 mm x 2073 mm (39.062" x 81.625") – Specimen 8 - Bottom Fixed Panel (O)

Glazing Detail: See attached drawing numbers L-7171 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-7171

Test Results:

**Specimen 8 – Class LC-PG65 1067 x 4572 (42 x 180) Type AP- Muller Aluminum
Fixed/Awning/Fixed Windows (O/X/O))**

The test results are tabulated as follows:

<u>Paragraph</u>	<u>Title of Test – Test Method</u>	<u>Results</u>	<u>Allowed</u>
5.3.1	Operating Force per ASTM E2068-00		
	Initiate Motion	9 N (2.1 lbf)	Report Only
	Maintain Motion	9 N (2.0 lbf)	45 N (10.00 lbf)
	Latches	22 N (5.0 lbf)	100 N (22.5 lbf)
5.3.2.1	Air Infiltration per ASTM E283 @ 75 Pa (1.57 psf)	0.110 L/s/m ² (0.021 SCFM/FT ²)	1.5 L/s/m ² (0.30 SCFM/FT ²)
	Air Infiltration per ASTM E283 @ 299 Pa (6.24 psf)	0.095 L/s/m ² (0.019 SCFM/FT ²)	1.5 L/s/m ² (0.30 SCFM/FT ²)
	Air Exfiltration per ASTM E283 @ 75 Pa (1.57 psf)	0.530 L/s/m ² (0.106 SCFM/FT ²)	1.5 L/s/m ² (0.30 SCFM/FT ²)
	Air Exfiltration per ASTM E283 @ 299 Pa (6.24 psf)	1.660 L/s/m ² (0.322 SCFM/FT ²)	1.5 L/s/m ² (0.30 SCFM/FT ²)
Note #1:	<i>The tested specimen meets (or exceeds) the performance levels specified in AAMA/WDMA/CSA 101/I.S.2/A440-08 (A440S1-09) for air infiltration/exfiltration.</i>		
5.3.3.2	Water Resistance per ASTM E547		See Note #2
5.3.4.2	Uniform Load Structural per ASTM E330		See Note #2
Note #2:	<i>The client opted to start at a pressure higher than the minimum required. Those results are listed under "Optional Performance".</i>		
5.3.5	Forced Entry resistance per ASTM F588 Type B Grade 10		
	Disassembly Test	No Entry	No Entry
	Test B1 – B3	No Entry	No Entry
	Sash/Panel Manipulation Test	No Entry	No Entry
	Lock Manipulation Test	No Entry	No Entry
5.3.6.6.6	Awning, Hopper, Projected Hardware Load Test 70N (15 lbf)	48.57 mm (1.912")	No Damage
	Optional Performance		
4.3.2.1	Water Resistance per ASTM E547 (without insect screen) 467 Pa (9.75 psf)	No Leakage	No Leakage

Specimen 8: Optional Performance – Continued

4.4.2.6 Optional Performance

Range	Time (seconds)	Load Pa (psf)	Location	Deflection mm (in.)	Allowable mm (in.)
Half Test Positive	30	1556 (32.50)			
Test Positive	30	3112 (65.00)	1	0.127 (0.005)	See Note #3
Half Test Negative	30	1556 (32.50)			
Test Negative	30	3112 (65.00)	1	0.178 (0.007)	See Note #3

Note #3: *The deflections reported are not limited by AAMA/WDMA/CSA 101/I.S.2/A440-08 (A440S1-09) for this product designation. The deflection data is recorded in this report for special code compliance and information only. See Note #4 for deflection locations.*

Range	Time (seconds)	Load Pa (psf)	Location	Deflection mm(in.)	Set mm(in.)	Allowable mm(in.)
Half Proof Positive	10	2334 (48.75)				
Proof Positive	30	4668 (97.50)	1	0.559 (0.022)	0.051 (0.002)	3.810 (0.168)
Half Proof Negative	10	2334 (48.75)				
Proof Negative	30	4668 (97.50)	1	1.118 (0.044)	0.102 (0.004)	3.810 (0.168)

Note #4: *Deflection/Set for Location 1 measured at center of top rail.*

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 and 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.

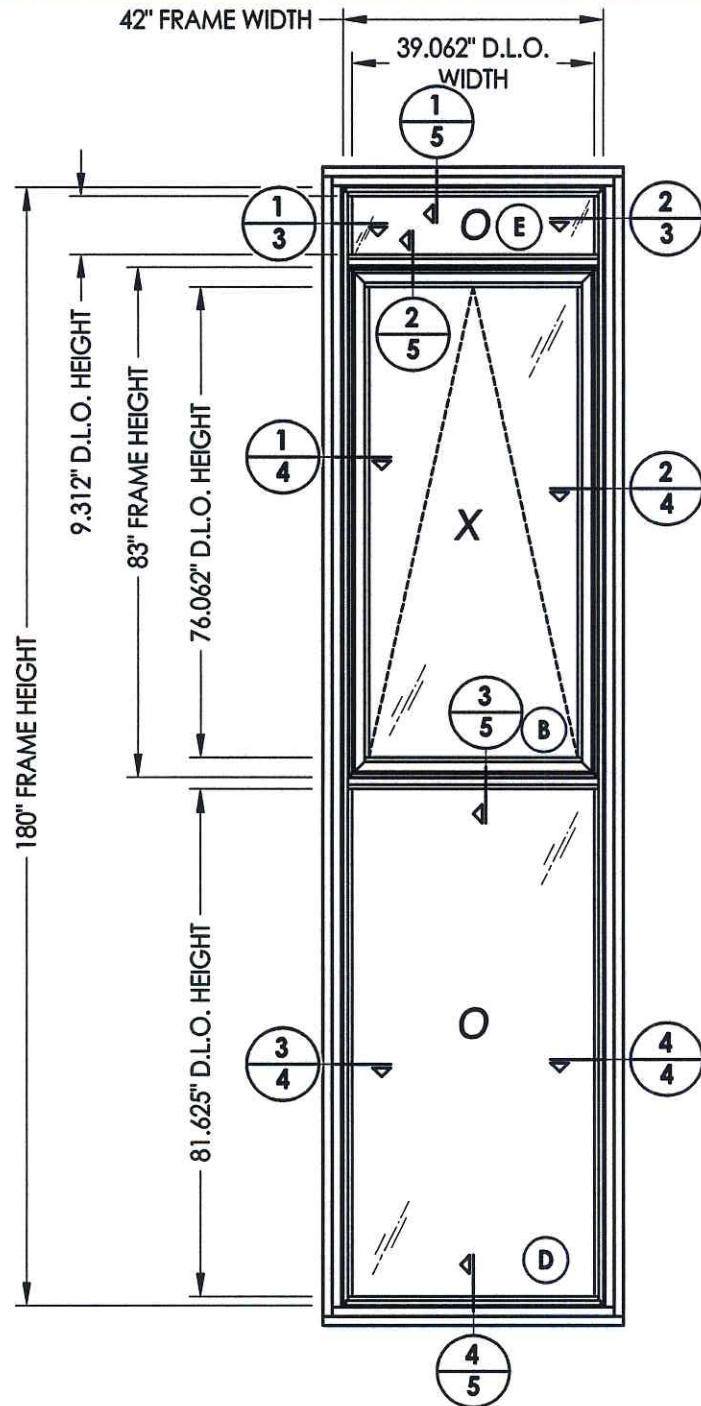
Testing Evaluation Laboratories, Inc.



Vivian K. Wright,
President

Revision Log

Rev No.	Date	Page(s)	Revision(s)
0	6/19/2014	NA	Original Report Issue

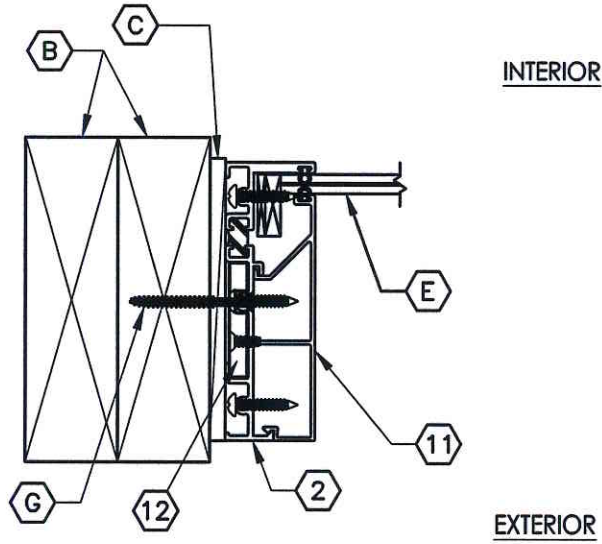


SPEC. #8, 8A

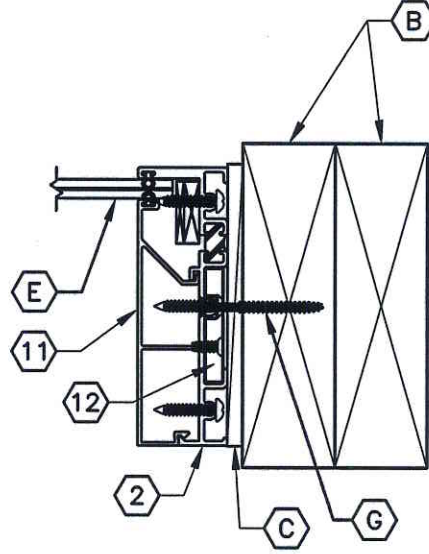
Testing Evaluation Laboratories Inc
 Specimen Complies with Drawing
 Deviations Noted - TEL # 01991960
 Date 6/19/14 Verified by *[Signature]*

PRODUCT:		FLEETWOOD KONA 3800 CASEMENT WINDOW	
PART OR ASSEMBLY:		TEST ELEVATION	
NO.	DATE	BY	REVISIONS
DATE: 6/19/14			
SCALE: N.T.S.			
DWG. BY: JK			
CHK. BY: LFS			
DRAWING NO.: L-7171			
SHEET 2 OF 9			

1
3 HORIZONTAL CROSS SECTION

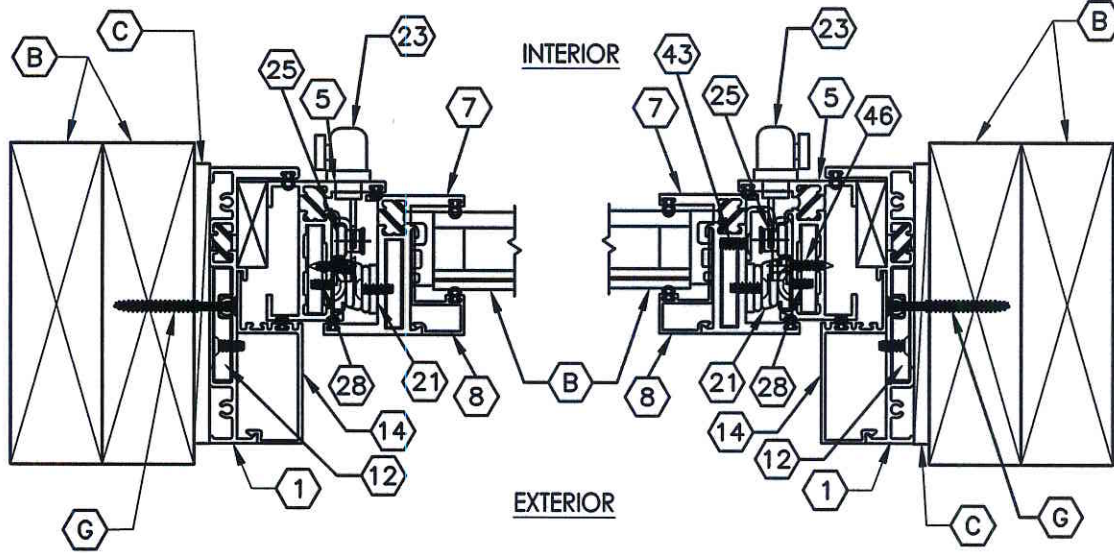


2
3 HORIZONTAL CROSS SECTION



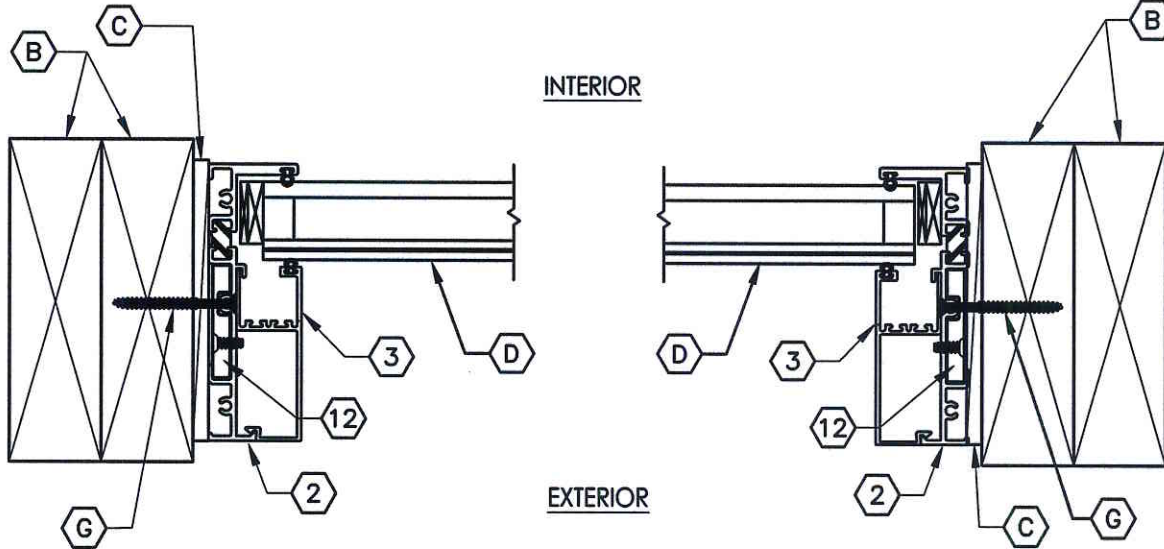
Testing Evaluation Laboratories Inc
 Specimen Complies with Drawing
 Deviations Noted. TEL # 0199.1060
 Date 6/19/14 Verified by *ELW*

PRODUCT:		FLEETWOOD KONA 3800 CASEMENT WINDOW	
PART OR ASSEMBLY:		HORIZONTAL CROSS SECTIONS	
NO.	DATE	REVISIONS	BY
 RW BUILDING CONSULTANTS, INC. 813.659.9197			
DATE: 6/19/14			
SCALE: N.T.S.			
DWG. BY: JK			
CHK. BY: LFS			
DRAWING NO.:			
L-7171			
SHEET 3 OF 9			



1
4 HORIZONTAL CROSS SECTION

2
4 HORIZONTAL CROSS SECTION

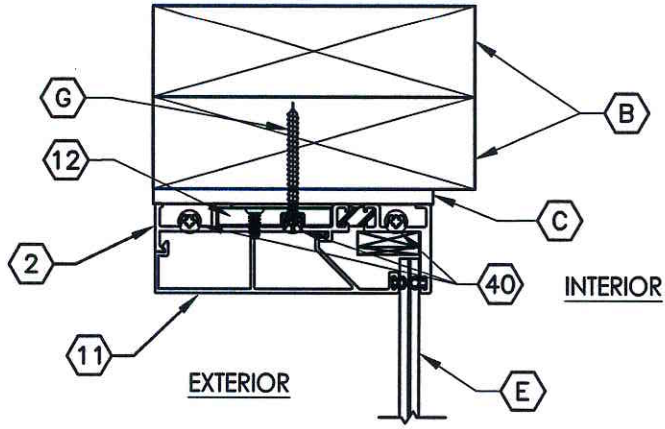


3
4 HORIZONTAL CROSS SECTION

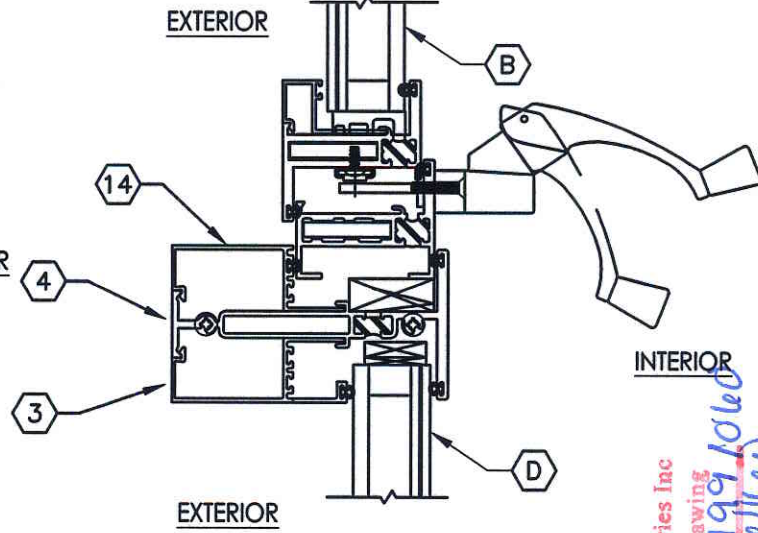
4
4 HORIZONTAL CROSS SECTION

Testing Evaluation Laboratories Inc
 Specimen Complies with Drawing
 Deviations Noted: TEL # 0199-1960
 Date 6/19/14 verified by WJee

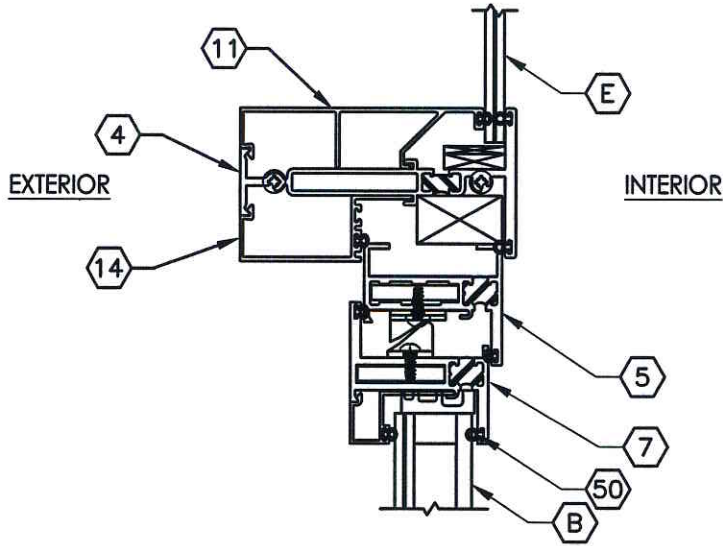
PRODUCT:		FLEETWOOD KONA 3800 CASEMENT WINDOW	
PART OR ASSEMBLY:		HORIZONTAL CROSS SECTIONS	
NO.	DATE	BY	REVISIONS
DATE: 6/19/14			
SCALE: N.T.S.			
DWG. BY: JK			
CHK. BY: LFS			
DRAWING NO.: L-7171			
SHEET 4 OF 9			



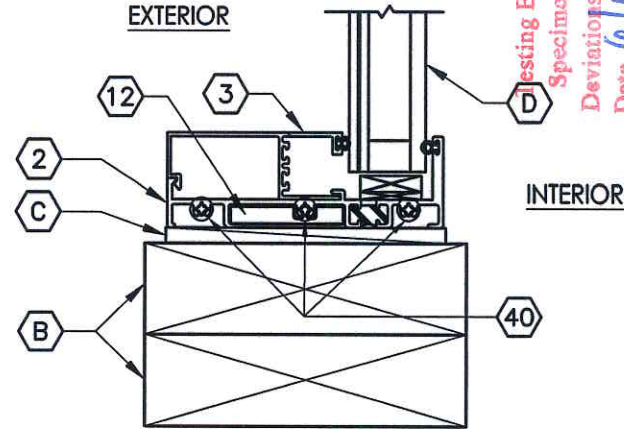
1
5 VERTICAL CROSS SECTION



3
5 VERTICAL CROSS SECTION



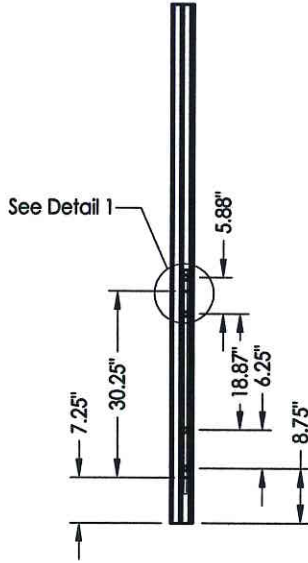
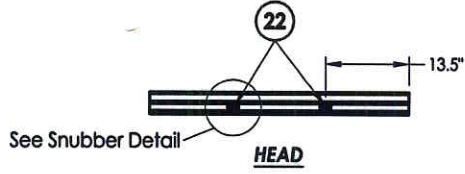
2
5 VERTICAL CROSS SECTION



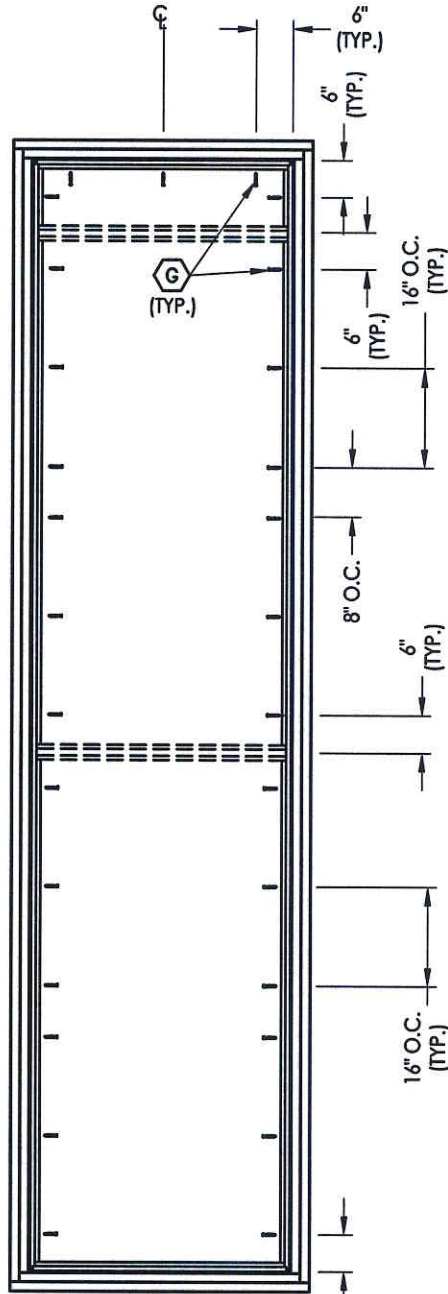
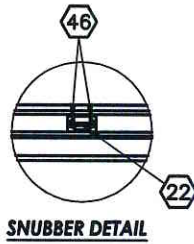
4
5 VERTICAL CROSS SECTION

Testing Evaluation Laboratories Inc
Specimen Complies with Drawing
Deviations Noted: TEL # 0199 7060
Date 6/19/14 Verified by JLF

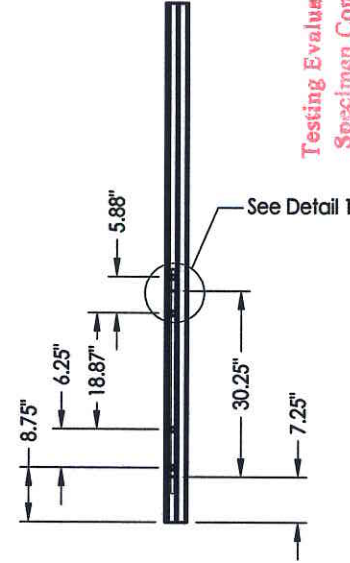
PRODUCT:		FLEETWOOD KONA 3800 CASEMENT WINDOW	
PART OR ASSEMBLY:		VERTICAL CROSS SECTIONS	
NO.	DATE	BY	REVISIONS
DATE: 6/19/14			
SCALE: N.T.S.			
DWG. BY: JK			
CHK. BY: LFS			
DRAWING NO.: L-7171			
SHEET 5 OF 9			



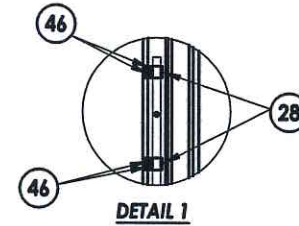
LOCK JAMB
Two Point Lock
(Casement)



FRAME ANCHORING
2X buck construction

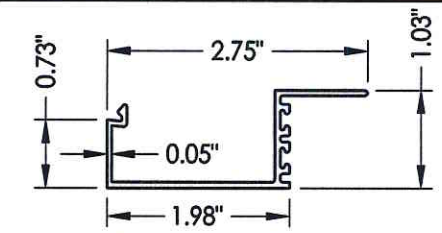


LOCK JAMB
Two Point Lock
(Casement)

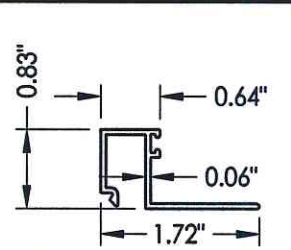


Testing Evaluation Laboratories Inc
Specimen Complies with Drawing
Deviations Noted - TEL # 01991914
Date 6/19/14 verified by *elc*

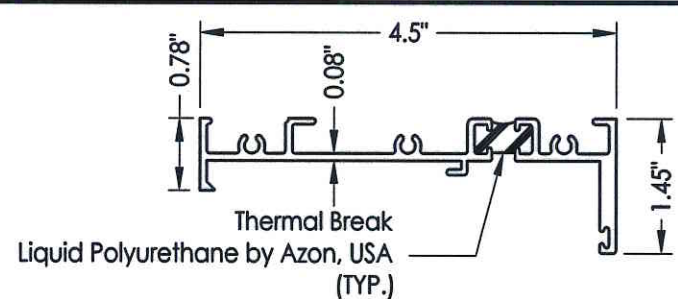
PRODUCT:		FLEETWOOD KONA 3800 CASEMENT WINDOW	
PART OR ASSEMBLY:		FRAME ANCHORING	
NO.	DATE	REVISIONS	BY
DATE: 6/19/14			
SCALE: N.T.S.			
DWG. BY: JK			
CHK. BY: LFS			
DRAWING NO.: L-7171			
SHEET 6 OF 9			



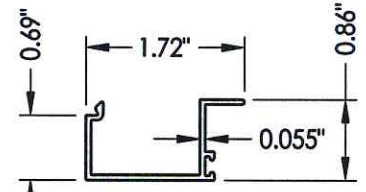
14 INSERT STOP
011448



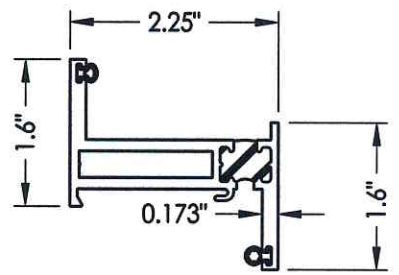
8 GLASS STOP 1 1/4"
901487



2 KONA BLOCK FRAME
011239

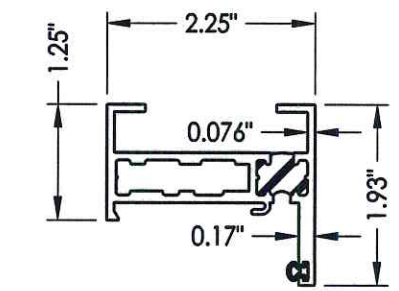


10 GLASS STOP 5/16"
007930

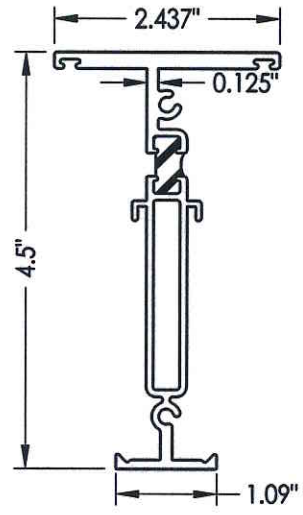


7 ZEE BAR (PANEL)
H006733

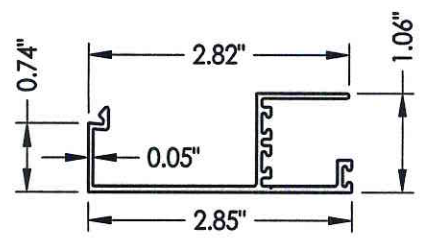
Testing Evaluation Laboratories Inc
Specimen Complies with Drawing
Deviations Noted - TEL # 01991060
Date 6/19/14 Verified by *WLF*



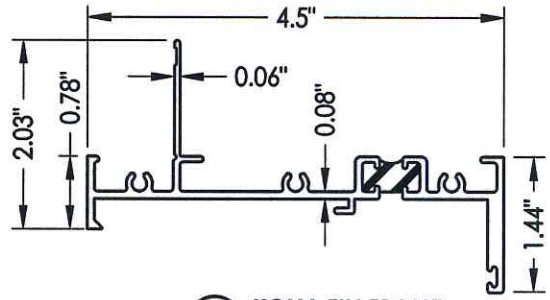
5 BLOCK FRAME
5278C1



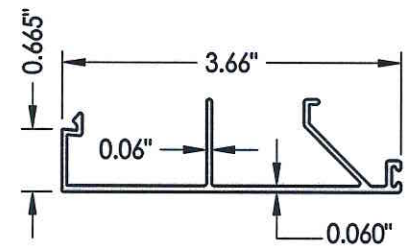
4 MULLION
H011241



3 GLASS STOP 1-1/4"
011448



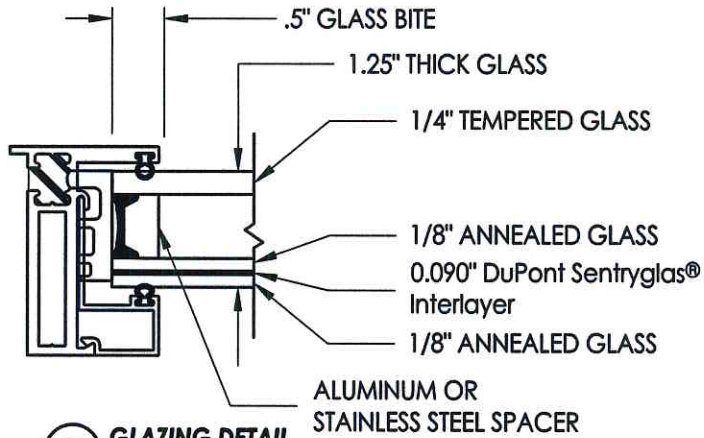
1 KONA FIN FRAME
011239



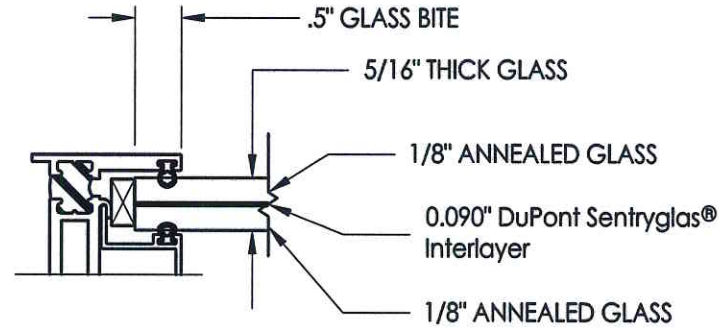
11 GLASS STOP 5/16"
011243

PRODUCT:		FLEETWOOD KONA 3800 CASEMENT WINDOW	
PART OR ASSEMBLY:		COMPONENTS	
NO.	DATE	REVISIONS	BY
DATE: 6/19/14			
SCALE: N.T.S.			
DWG. BY: JK			
CHK. BY: LFS			
DRAWING NO.: L-7171			
SHEET 7 OF 9			

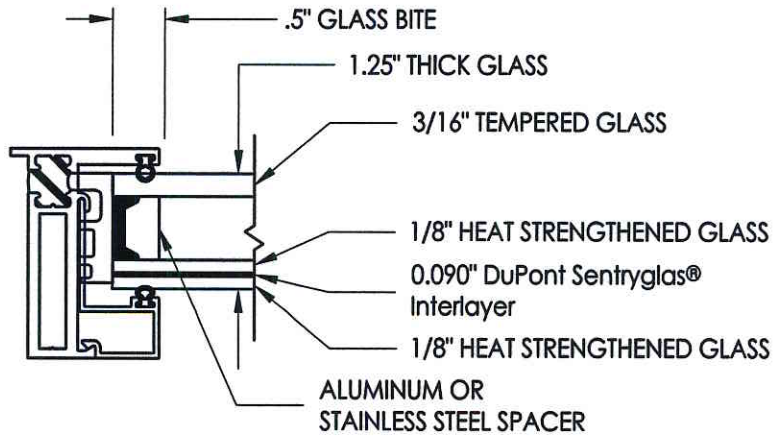
Testing Evaluation Laboratories Inc
 Specimen Complies with Drawing
 Deviations Noted - TEL # 0199 1060
 Date 6/19/14 Verified by *[Signature]*



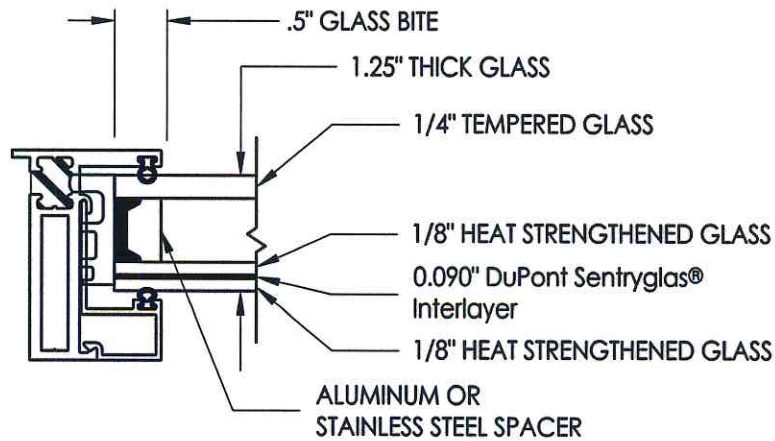
B GLAZING DETAIL



E GLAZING DETAIL



C GLAZING DETAIL



D GLAZING DETAIL

PRODUCT:		FLEETWOOD KONA 3800 CASEMENT WINDOW	
PART OR ASSEMBLY:		GLAZING DETAILS	
NO.	DATE	BY	REVISIONS
RW BUILDING CONSULTANTS, INC. 813.659.9197			
DATE: 6/19/14			
SCALE: N.T.S.			
DWG. BY: JK			
CHK. BY: LFS			
DRAWING NO.: L-7171			
SHEET 8 OF 9			

