

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 13-012

Report No:

TEL 01991009

Test Dates: January 16. 2014

through February 6, 2014

Report Date: March 21, 2014

Issued to:

Fleetwood Windows and Doors One Fleetwood Way Corona, CA 92879

Project Summary: Testing Evaluation Laboratories, Inc. (TEL) was contracted by Fleetwood Windows and Doors to perform tests on the Norwood 3070 Sliding Glass/Pocket Door 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:

Norwood 3070 Sliding Glass/Pocket Door

Type:

Aluminum Sliding Glass Doors

Overall Size:

144.00" x 144.00" - All Specimens

Daylight Opening:

43.50" x 135.50" - All Specimens (End Panels)

43.38" x 135.50" – All Specimens (Center Panels)

Glazing Detail:

Laminated Monolithic Glass - (All Specimens)

(See attached drawing for 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 #L-7110 and #L-7111.

SEQUENCE OF TESTS PERFORMED:

STRUCTURAL TESTS (TAS 202)

Specimen 1 – 144.0" x 144.0" Aluminum Sliding Glass Door (OXX)

Design Pressure	Positive 55.0	Negative 60.0
-----------------	---------------	---------------

Air Infiltration (ASTM E283-04)	Pressure	SCFM/Ft^2	Result
	1.57 PSF	0.197	Pass

Structural Loads (ASTM E330-02)

Range	Time (sec)	Load (psf)
Half Test Positive	30	27.50
Design Positive	30	55.00
Half Test Negative	30	30.00
Design Negative	30	60.00

Water Infiltration (ASTM E331-00)	Pressure	Time	Result
	8.25 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 A	llowable (Set)
Half Proof Positive	10	41.25				
Test Positive	30	82.50	1	1.816"	0.009"	0.565"
			2	0.457"	0.009"	0.565'
Half Proof Negative	10	45.00				
Test Negative	30	90.00	1	1.891"	0.013"	0.565"
			2	0.369"	0.009"	0.565"

Deflection Locations:

 ${\it Location~1-Center~of~Meeting~Stiles-Active/Inactive~Panels}$

Location 2 – Center of Meeting Stiles –Active Panels

Forced Entry

ASTM F842 Type "A: Assembly Passed

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.

Jarrett Wright and James Hayhurst, Test Technicians

SEQUENCE OF TESTS PERFORMED:

STRUCTURAL TESTS (TAS 202)

Specimen 2 – 144.0" x 144.0" Aluminum Sliding Glass Door (XXX) (Tested with Pocket Interlocker)

Positive 55.0	Negative 60.0		
E283-04)	Pressure 1.57 PSF	SCFM/Ft^2 0.022	Result Pass
/I E330-02)			
Time (sec)	Load (psf)		
30	27.50		
30	55.00		
30	30.00		
30	60.00		
	E283-04) M E330-02) Time (sec) 30 30	E283-04) Pressure 1.57 PSF ME330-02) Time Load (sec) (psf) 30 27.50 30 55.00	E283-04) Pressure SCFM/Ft^2 1.57 PSF 0.022 ME330-02) Time Load (sec) (psf) 30 27.50 30 55.00

Pressure

8.25 PSF

Time

15.0 Min.

Result

Pass

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

Structural Loads (ASTM E330-02)

Water Infiltration (ASTM E331-00)

Range	Time (sec)	Load (psf)	Location	Deflection	Set Allowal	ole (Set)
Half Proof Positive Test Positive	10 30	41.25 82.50	1	1.467"	0.016"	0.565"
Half Proof Negative Test Negative	10 30	45.00 90.00	1	1.718"	0.027"	0.565"

Deflection Locations:

Location 1 - Center of Meeting Stiles -Active Panels

Forced Entry

ASTM F842

Type "A: Assembly

Passed

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.

Jarrett Wright and James Hayhurst, Test Technicians

Specimen 3 – 144.0" x 144.0" Aluminum Sliding Glass Door (OXX)

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

Cond. Temp	Missile	Missile	Missile	Muzzle Distance
Of Specimen	Level	Weight	Length	From Specimen
75°F	D	9.0 lbs, 3 oz	8'-0"	17'0"

Impact Location	Results	X - Measurement	Y - Measurement	Speed
1	Pass	133.0"	9.0"	49.8 fps
2	Pass	118.0"	72.0"	49.8 fps
3	Pass	95.0"	72.0"	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 +60.0 psf / -60.0 psf

Positive % of Test Load	Positive Pressure Range (psf)	Number Of Cycles	Average Cycle Time (Sec)
20% to 50%	12.0 to 30.0	3500	1.97
0% to 60%	0.0 to 36.0	300	2.52
50% to 80%	30.0 to 48.0	600	1.36
30% to 100%*	18.0 to 60.0	100	3.00

Negative % of Test Load	Negative Pressure Range (psf)	Number Of Cycles	Average Cycle Time (Sec)
30% to 100%*	18.0 to 60.0	50	2.87
50% to 80%	30.0 to 48.0	1050	2.03
0% to 60%	0.0 to 36.0	50	2.92
20% to 50%	12.0 to 30.0	3350	1.50

^{*}Panel deflected 3.75" from original plane at 100% Positive load and 4.00" 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.

Jarrett Wright and James Hayhurst, Test Technicians

Mfg Observers - Joe Zammitt

Specimen 4 – 144.0" x 144.0" Aluminum Sliding Glass Door (OXX)

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

Cond. Temp	Missile	Missile	Missile	Muzzle Distance
Of Specimen	Level	Weight	Length	From Specimen
76°F	D	9.0 lbs, 3 oz	8'-0"	17'0"

Impact Location	Results	X - Measurement	Y - Measurement	Speed
1	Pass	133.25"	8.75"	50.1 fps
2	Pass	118.25"	71.75"	50.2 fps
3	Pass	94.75"	72.0"	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 Pre

Design Pressure +60.0 psf / -60.0 psf

Positive % of Test Load	Positive Pressure Range (psf)	Number Of Cycles	Average Cycle Time (Sec)	
20% to 50%	12.0 to 30.0	3500	2.58	
0% to 60%	0.0 to 36.0	300	2.86	
50% to 80%	30.0 to 48.0	600	2.01	
30% to 100%*	18.0 to 60.0	100	2.75	

Negative % of Test Load	Negative Pressure Range (psf)	Number Of Cycles	Average Cycle Time (Sec)
30% to 100%*	18.0 to 60.0	50	2.98
50% to 80%	30.0 to 48.0	1050	1.48
0% to 60%	0.0 to 36.0	50	2.51
20% to 50%	12.0 to 30.0	3350	1.96

^{*}Panel deflected 4.00" from original plane at 100% Positive load and 4.50" 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.

Jarrett Wright and James Hayhurst, Test Technicians

Mfg Observers - Joe Zammitt

Specimen 5 – 144.0" x 144.0" Aluminum Sliding Glass Door (OXX)

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

Cond. Temp	Missile	Missile	Missile	Muzzle Distance
Of Specimen	Level	Weight	Length	From Specimen
76°F	D	9.0 lbs, 3 oz	8'-0"	17'0"

Impact Location			Y - Measurement	Speed	
1	Pass	27.0"	72.0"	50.2 fps	
2	Pass	12.0"	131.0"	49.9 fps	
3	Pass	117.0"	131.0"	50.0 fps	
4	Pass	132.0"	73.0"	49.7 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 +60.0 psf / -60.0 psf

Positive % of Test Load	Positive Pressure Range (psf)	Number Of Cycles	Average Cycle Time (Sec)
20% to 50%	12.0 to 30.0	3500	1.89
0% to 60%	0.0 to 36.0	300	2.52
50% to 80%	30.0 to 48.0	600	2.92
30% to 100%*	18.0 to 60.0	100	3.00

Negative % of Test Load	Negative Pressure Range (psf)	Number Of Cycles	Average Cycle Time (Sec)
30% to 100%*	18.0 to 60.0	50	3.00
50% to 80%	30.0 to 48.0	1050	1.57
0% to 60%	0.0 to 36.0	50	2.81
20% to 50%	12.0 to 30.0	3350	1.93

^{*}Panel deflected 3.38" from original plane at 100% Positive load and 4.25" 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.

Jarrett Wright and James Hayhurst, Test Technicians

Mfg Observers – Joe Zammitt

Specimen 6 – 144.0" x 144.0" Aluminum Sliding Glass Door (XXX) (Tested with Pocket Interlocker)

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

Cond. Temp	Missile	Missile	Missile	Muzzle Distance
Of Specimen	Level	Weight	Length	From Specimen
75°F	D	9.0 lbs, 3 oz	8'-0"	17'0"

Impact Location	Results	X - Measurement	Y - Measurement	Speed
1	Pass	95.0"	72.0"	50.0 fps
2	Pass	133.0"	11.0"	49.8 fps
3	Pass	117.0"	72.0"	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 +60.0 psf / -60.0 psf

Positive % of Test Load	Positive Pressure Range (psf)	Number Of Cycles	Average Cycle Time (Sec)	
20% to 50%	12.0 to 30.0	3500	2.17	
0% to 60%	0.0 to 36.0	300	2.01	
50% to 80%	30.0 to 48.0	600	2.89	
30% to 100%*	18.0 to 60.0	100	2.32	

Negative % of Test Load	Negative Pressure Range (psf)	Number Of Cycles	Average Cycle Time (Sec)
30% to 100%*	18.0 to 60.0	50	2.04
50% to 80%	30.0 to 48.0	1050	2.14
0% to 60%	0.0 to 36.0	50	2.42
20% to 50%	12.0 to 30.0	3350	2.01

^{*}Panel deflected 2.63" from original plane at 100% Positive load and 3.25" 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.

Jarrett Wright and James Hayhurst, Test Technicians

Mfg Observers – Joe Zammitt

Conditions, Terms, and General Notes Regarding These Tests

The product tested <u>Has Been</u> 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 <u>"Are Equivalent"</u>. 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. Sheiton, P.E.

Florida P.E. # 26686

Revision Log

Rev No.	Date	Page(s)	Revision(s)	
0	3/21/2014	NA	Original Report Issue	

TABLE OF CONTENTS					
SHEET #	DESCRIPTION				
1	Table of contents				
2	Test elevation				
3	Horizontal cross sections				
4	Vertical cross sections				
5	Frame anchoring				
6	Components				
7	Bill of materials and glazing detail				

Specimen Complies with Drawing
Deviations Notes. TEL # 0199109
Date 32114 Verified by U

Norwood NO. DATE REVISIONS PRODUCT: FLE Norwood TABLE O
DATE
DATE

DATE: 1/21/14

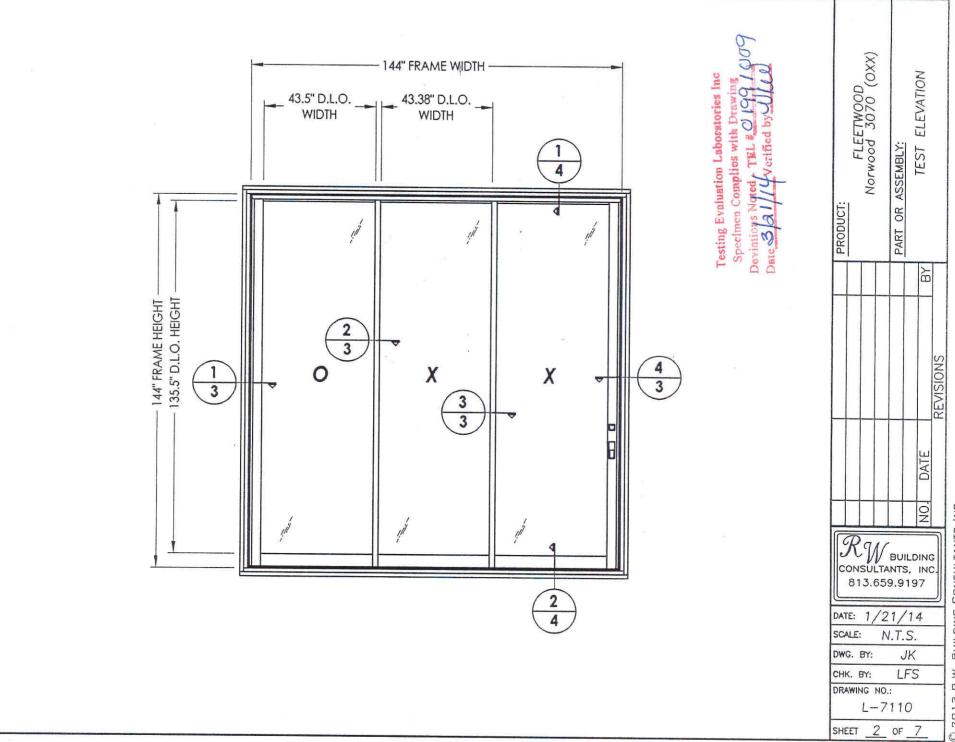
SCALE: DWG. BY:

CHK. BY: DRAWING NO.:

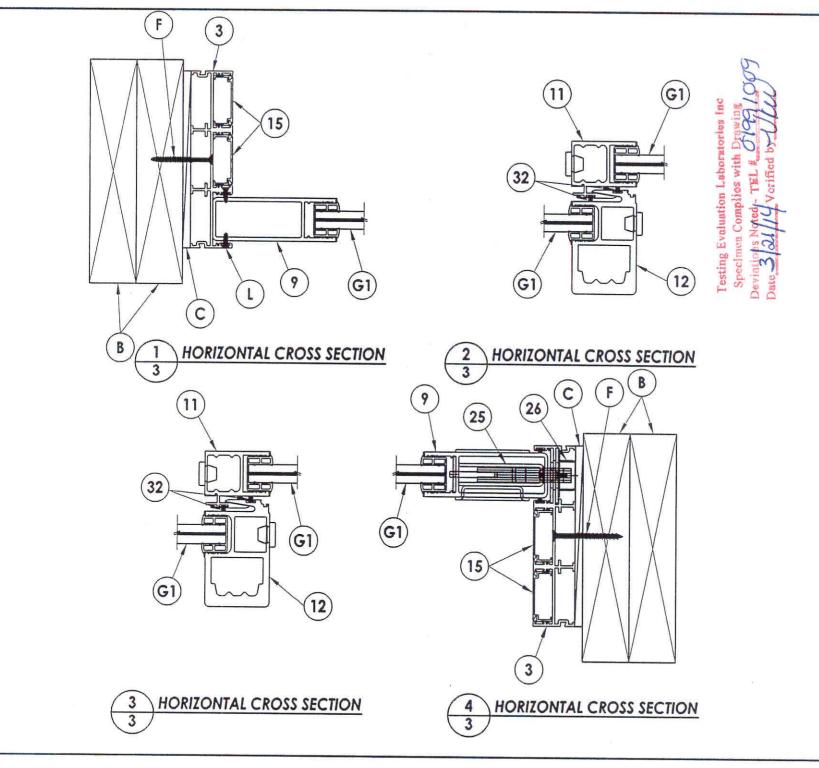
N.T.S.

L-7110 SHEET <u>1</u> OF <u>7</u>

JK LFS © 2013 R.W. BUILDING CONSULTANTS INC.



© 2013 R.W. BUILDING CONSULTANTS INC.



FLEETWOOD Norwood 3070 (OXX) HORIZONTAL CROSS SECTIONS ASSEMBLY: PRODUCT: ВУ REVISIONS DATE NO. KW BUILDING CONSULTANTS, INC.

813.659.9197

SCALE:

DWG. BY:

CHK. BY:

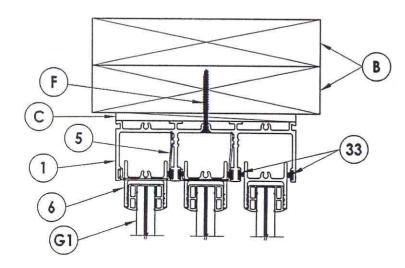
DRAWING NO .:

1/21/14

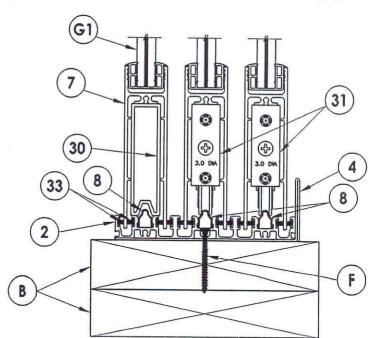
L-7110 SHEET <u>3</u> OF 7

N.T.S.

JK LFS © 2013 R.W. BUILDING CONSULTANTS II



1 VERTICAL CROSS SECTION



Testing Evaluation Laboratories inc Specimen Complies with Drawing.

2 VERTICAL CROSS SECTION

PRODUCT:		Norwood 3070 (0XX)		PART OR ASSEMBLY:		VERTICAL	CRUSS SECTIONS
						BY	
						NTE TE	REVISIONS
						DATE	
						9N	
Ci	R 0N: 81	9 SUI 3.1	LTA	BU NT	ILC S.	INC	

© 2013 R.W. BUILDING CONSULTANTS IN

N.T.S.

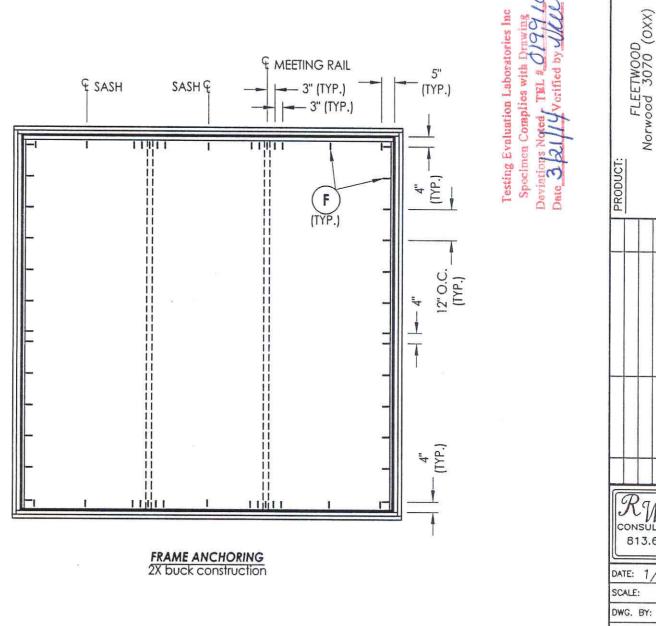
L-7110

SHEET 4 OF

DWG. BY:

CHK. BY: DRAWING NO.: JK

LFS



RW BUILDING CONSULTANTS, INC. 813.659.9197

FRAME ANCHORING

ВУ

REVISIONS

DATE

PART OR ASSEMBLY:

DATE: 1/21/14 N.T.S. JK

DWG. BY: CHK. BY:

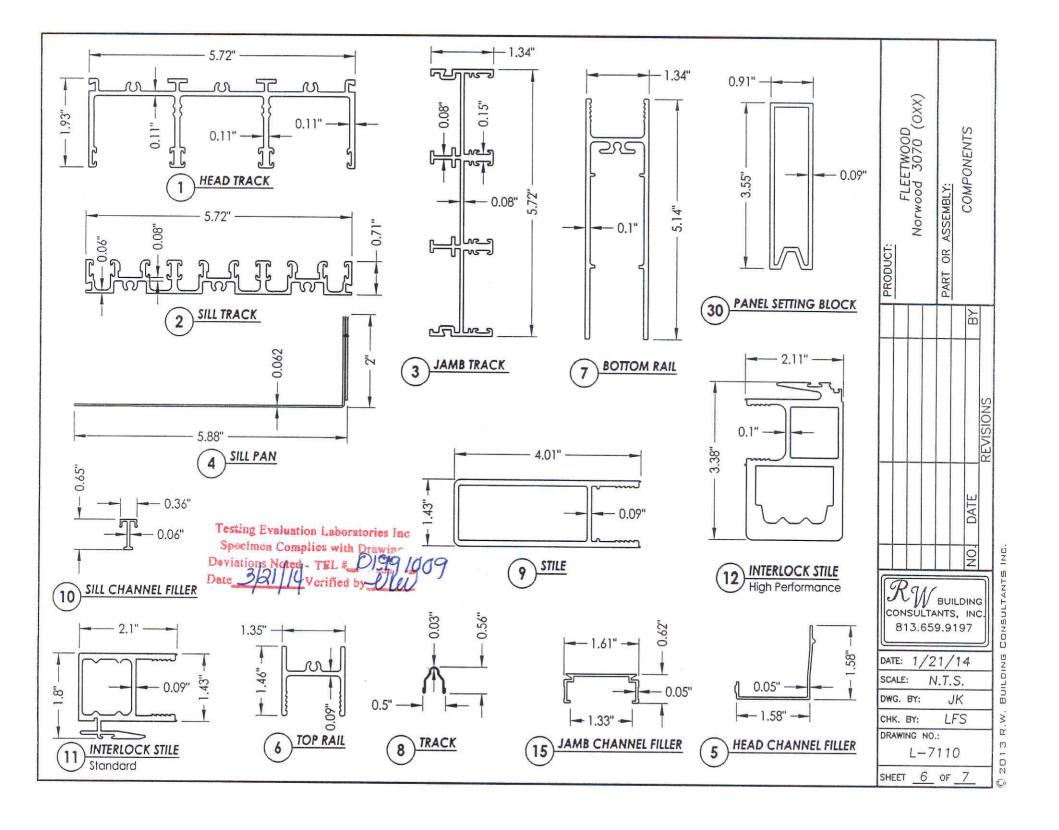
DRAWING NO .:

L-7110

LFS

SHEET <u>5</u> OF <u>7</u>

© 2013 R.W. BUILDING CONSULTANTS INC.



	BILL OF MATERIALS					
ITEM #	DESCRIPTION	MATERIAL				
В	2X BUCK SG >= 0.55	WOOD				
С	1/4" MAX. SHIM SPACE	-				
F	#10 X 2" PFH SMS	STEEL				
L	#8 X 1/2" PFH SMS	STEEL				
1	HEAD TRACK (3 RUNS)	6063-T6 ALUM				
2	SILL TRACK (3 RUNS)	6063-T6 ALUM				
3	JAMB TRACK (3 RUNS)	6063-T6 ALUM				
4	SILL PAN (TRIPLE RUN)	5052 -ALUM				
5	HEAD CHANNEL FILLER	6063-T6 ALUM				
6	TOP RAIL	6063-T6 ALUM				
7	BOTTOM RAIL	6063-T6 ALUM				
8	TRACK	S.S.				
9	STILE	6063-T6 ALUM				
10	SILL CHANNEL FILLER	6063-T6 ALUM				
11	STANDARD INTERLOCK STILE	6063-T6 ALUM				
12	HIGH PERFORMANCE INTERLOCK STILE	6063-T6 ALUM				
15	JAMB CHANNEL FILLER	6063-T6 ALUM				
25	LATCH ASSY.(JAMB)	-				
26	STRIKE PLATE ASSY.(JAMB)	:=				
30	PANEL SETTING BLOCK	6063-T6 ALUM				
31	MAMMOTH ROLLER ASSEMBLY					
32	CENTER-FIN WEATHERSEAL .290" HIGH PILE (AMESBURY 43629-270)	_				
33	HEAVY DENSITY WEATHERSEAL .300" HIGH PILE (AMESBURY 413330-270)					

Testing Evaluation Laboratories Inc.
Specimen Complies with Drawing
Deviation Noted TEL # 1919
Date 2016 Noted Tel # 1100

11/16" GLASS BITE	9/16" GLASS THICKNESS
	0.090" SENTRYGLAS INTERLAYER (DUPONT)
	1/4" ANNEALED GLASS
VIN'	YL GASKET (TREMCO)
G1 GLAZING DETAIL	

REVISIONS DATE NO. RW BUILDING CONSULTANTS, INC. 813.659.9197 DATE: 1/21/14 N.T.S. JK LFS DRAWING NO.: L-7110

FLEETWOOD Norwood 3070 (OXX)

PRODUCT:

SCALE: DWG. BY:

CHK. BY:

SHEET <u>7</u> OF <u>7</u>

BILL OF MATERIALS AND GLAZING DETAIL

ВУ

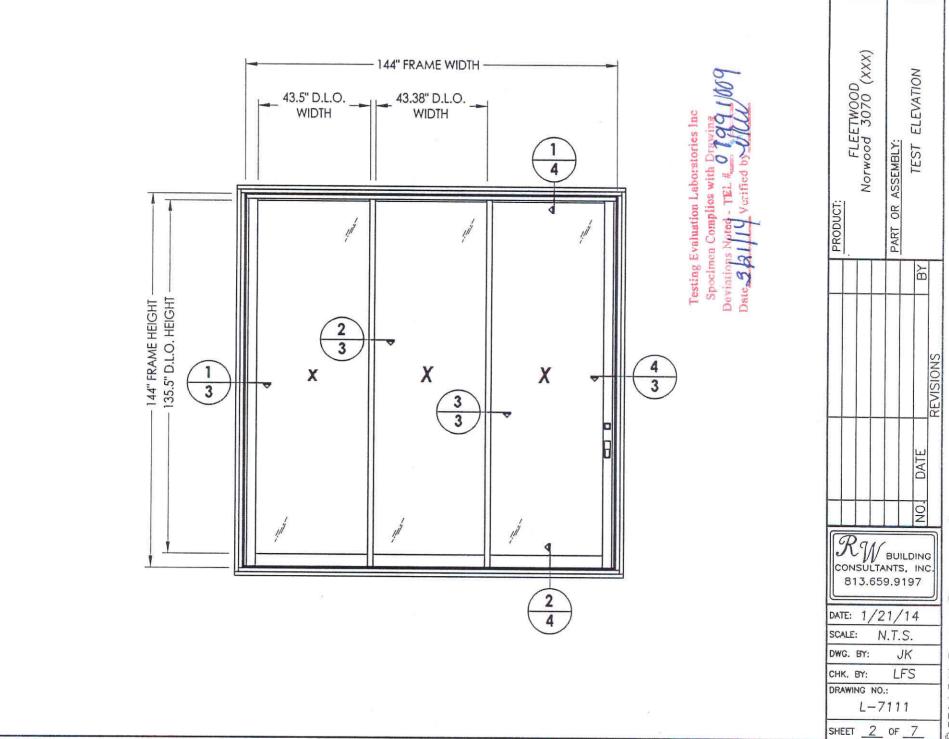
PART OR ASSEMBLY:

© 2013 R.W. BUILDING CONSULTANTS INC.

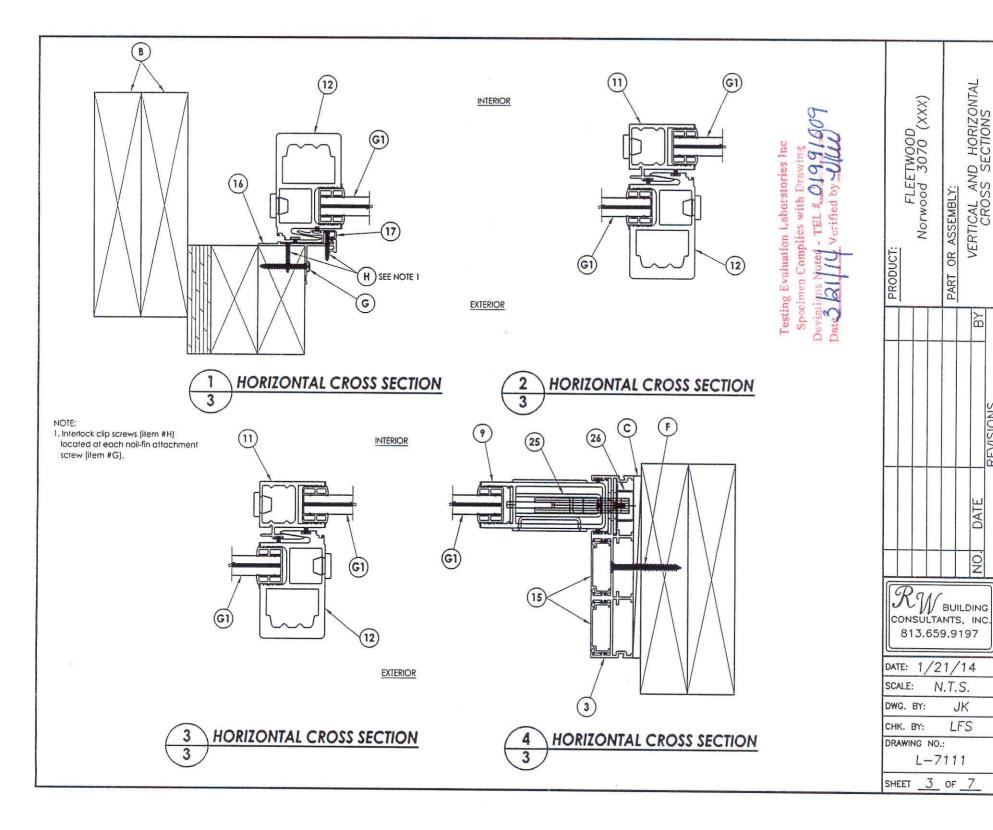
	TABLE OF CONTENTS					
SHEET #	DESCRIPTION					
1	Table of contents					
2	Test elevation					
3	Horizontal cross sections					
4	Vertical cross sections					
5	Frame anchoring					
6	Components					
7	Bill of materials					

Festing Evaluation Laboratories Inc.
Specimen Complies with Drawing
Deviations Noted. TEL # 0.199
Date 321 11 Verified by

	PRODUCT: FLEETWOOD Norwood 3070 (XXX)				PART OR ASSEMBLY:	PART OR ASSEMBLY: TABLE OF CONTENTS			
							BY		
							NO. DATE	REVISIONS	INC.
	RW BUILDING CONSULTANTS, INC. 813.659.9197 DATE: 1/21/14							IG CONSULTANTS INC.	
								LDING	
	SCALE: N.T.S. DWG. BY: JK							BUIL	
			BY:		L	FS			2014 R.W. BUI
	DR	-\WII	NG L-		.: '11	1			410
	SHEET <u>1</u> OF <u>7</u>								@ 20



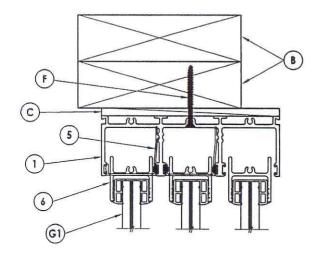
© 2014 R.W. BUILDING CONSULTANTS INC.



REVISIONS

R.W. BUILDING CONSULTANTS

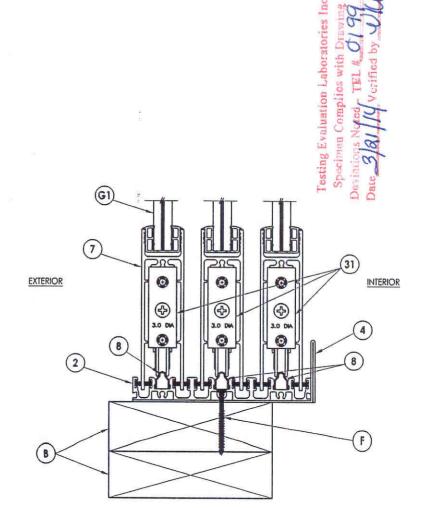
C 2014



EXTERIOR

INTERIOR

VERTICAL CROSS SECTION



2 VERTICAL CROSS SECTION

PRODUCT:	Norwood 3070 (XXX)	PART OR ASSEMBLY:	TATINO CIOCITO CIAN INCITO CIA	VERTICAL AND HORIZONIAL	CAUSS SECTIONS
				ВУ	
					REVISIONS
				NO. DATE	
				NO.	

RW BUILDING ONSULTANTS, INC B13.659.9197

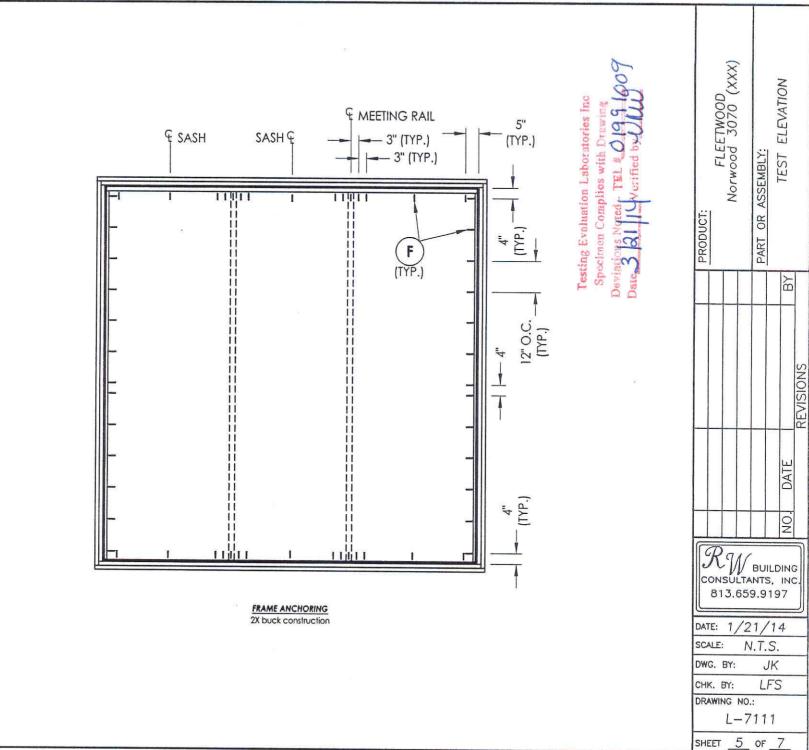
DATE: 1/21/14 SCALE: N.T.S.

DWG. BY: JK
CHK. BY: LFS

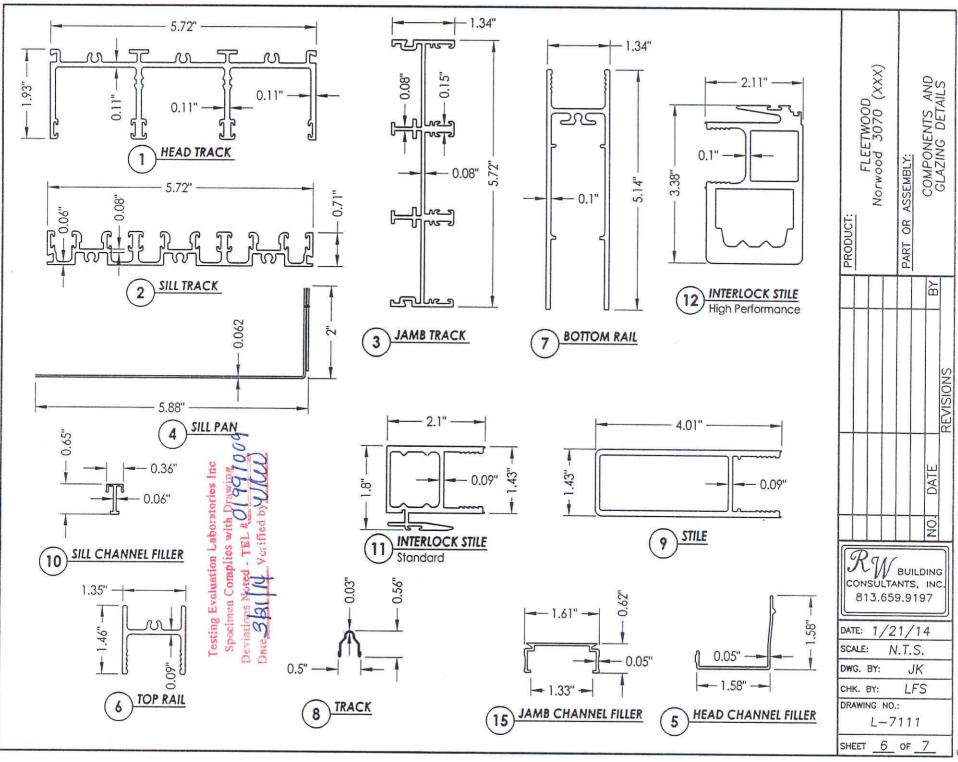
DRAWING NO.: L-7111

SHEET <u>4</u> OF <u>7</u>

© 2014 R.W. BUILDING CONSULTANTS INC.



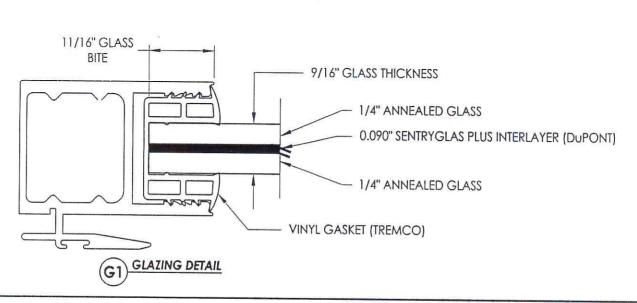
© 2014 R.W. BUILDING CONSULTANTS INC.



2014 R.W. BUILDING CONSULTANTS INC.

BILL OF MATERIALS					
ITEM #	DESCRIPTION	MATERIAL			
В	2X BUCK SG >= 0.55	WOOD			
С	1/4" MAX. SHIM SPACE	-			
F	#10 X 2" PFH SMS	STEEL			
L	#8 X 1/2" PFH SMS	STEEL			
1	HEAD TRACK (3 RUNS)	6063-T6 ALUM			
2	SILL TRACK (3 RUNS)	6063-T6 ALUM			
3	JAMB TRACK (3 RUNS)	6063-T6 ALUM			
4	SILL PAN (TRIPLE RUN)	5052 -ALUM			
5	HEAD CHANNEL FILLER	6063-T6 ALUM			
6	TOP RAIL	6063-T6 ALUM			
7	BOTTOM RAIL	6063-T6 ALUM			
8	TRACK	S.S.			
9	STILE	6063-T6 ALUM			
10	SILL CHANNEL FILLER	6063-T6 ALUM			
11	STANDARD INTERLOCK STILE	6063-T6 ALUM			
12	HIGH PERFORMANCE INTERLOCK STILE	6063-T6 ALUM			
15	JAMB CHANNEL FILLER	6063-T6 ALUM			
16	POST INTERLOCKER NAIL FIN	6063-T6 ALUM			
17	POST INTERLOCKER CLIP	6063-T6 ALUM			
25	LATCH ASSY.(JAMB)	-			
26	STRIKE PLATE ASSY.(JAMB)	-			
31	MAMMOTH ROLLER ASSEMBLY	-			
32	CENTER-FIN WEATHERSEAL .290 HIGH PILE (AMESBURY 43629-270)				
33	HEAVY DENSITY WEATHERSEAL .300 HIGH PILE (AMESBURY 413330-270)				

Specimen Complies with Drawing Deviations Noted TEL # 0199100 Date 3 91110 verified by Will



PRODUCT:		Norwood 3070 (XXX)		PART OR ASSEMBLY:		BILL OF MATERIALS	AND GLAZING DETAIL
						BY	
						NO, DATE	REVISIONS
						ž	7)
e C	ON 8	9 SU 13.	TA	BU NT: 9.9	ILE S. 19	INC 1NC	G C.

DATE: 1/21/14

SCALE:

DWG. BY:

CHK. BY: DRAWING NO.:

N.T.S.

L-7111
SHEET 7 OF 7

JK

LFS

© 2014 R.W. BUILDING CONSULTANTS INC