

# TEL Testing Evaluation Laboratories, Inc.

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

# TAS 202-94, TAS 201-94 and TAS 203-94 TEST RESULTS

IAS Lab Accreditation Number: TL-299

Report No:

TEL 01993776

**Test Dates:** 

Report Date:

November 16, 2022

through October 2, 2023

October 21, 2023

**Record Retention End Date:** 

October 21, 2033

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 EDGE Series Sliding Glass 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

Series / Model:

**EDGE Series Sliding Glass Door** 

Type:

**Impact Resistant Aluminum Sliding Glass Doors** 

**Overall Size:** 

179.94" x 120.00" – XXX – All Specimens

**Daylight Opening:** 

58.19" x 113.44" - All Panels - All Specimens

Sash Size:

60.19" x 115.81" - All Specimens

**Glazing Detail:** 

(See attached drawings #L-9826, #9826a and #L-9826b 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-9826, #L-9826a and #L-9826b.

# **STRUCTURAL TESTS (TAS 202)**

# Specimen 1 – 179.94" x 120.00" – Aluminum Sliding Glass Door (XXX)

Air Infiltration (ASTM E283-04)	Pressure	SCFM/Ft^2	Result
	1.57 PSF	0.065	Pass
Air Infiltration (ASTM E283-04)	Pressure	SCFM/Ft^2	Result
	6.24 PSF	0.196	Pass
Air Exfiltration (ASTM E283-04)	Pressure	SCFM/Ft^2	Result
	1.57 PSF	0.065	Pass
Air Exfiltration (ASTM E283-04)	Pressure	SCFM/Ft^2	Result
	6.24 PSF	0.119	Pass
Water Infiltration (ASTM E331-00)	Pressure	Time	Result
	9.75 PSF*	15.0 Min.	Pass

<sup>\*</sup>Water testing performed without sill riser. See Specimen 2 of this report for additional water test results.

Christian Seifried, Test Technician

#### **STRUCTURAL TESTS (TAS 202)**

Specimen 2 - 179.94" x 120.00" - Aluminum Sliding Glass Door (XXX)

(With 7/8" Sill Riser)

Design Pressure Positive 75.0 Negative 75.0

Air Infiltration (ASTM E283-04)

See Specimen 1, this report, for these results.

15.0 Min.

**Pass** 

Structural Loads (ASTM E330-14)

Range	Time (sec)	Load (psf)		
Half Test Positive	30	37.50		
Design Positive	30	75.00		
Half Test Negative	30	37.50		
Design Negative	30	75.00		
Water Infiltration (AS	TM E331-00)	Pressure	Time	Result

11.25 PSF\*

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

Structural Loads (ASTM E330-14)

Range	Time (sec)	Load (psf)	Location	Deflection	Set Allov	vable (Set)
Half Proof Positive	10	56.25				
Test Positive	30	112.50	1	1.979"	0.130"	0.464"
			2	0.503"	0.193"	0.241"
Half Proof Negative	10	56.25				
Test Negative	30	112.50	1	2.303"	0.257"	0.464''
			2	0.754"	0.219"	0.241"

#### **Deflection Locations:**

Deflection/Set for Location 1 measured at center of interlock.

Deflection/Set for Location 2 measured at center of top rail of panel.

**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.

Christian Seifried, Test Technician

<sup>\*</sup>See Specimen 1, this report, for additional water testing results.)

#### **STRUCTURAL TESTS (TAS 202)**

Specimen 3 - 179.94" x 120.00" - Aluminum Sliding Glass Door (XXX)

Design Pressure Positive 75.0 Negative 75.0

Air Infiltration (ASTM E283-04)

See Specimen 1, this report, for these results.

Structural Loads (ASTM E330-14)

Time (sec)	Load (psf)
30	37.50
30	75.00
30	37.50
30	75.00
	(sec) 30 30

Water Infiltration (ASTM E331-00)

See Specimens 1 and 2, this report, for these results.

Structural Loads (ASTM E330-14)

Range	Time (sec)	Load (psf)	Location	Deflection	Set Allo	wable (Set)
Half Proof Positive	10	56.25				
Test Positive	30	112.50	1	1.912"	0.191"	0.464"
			2	0.541"	0.139"	0.241"
Half Proof Negative	10	56.25				
Test Negative	30	112.50	1	2.325"	0.159"	0.464"
			2	1.069"	0.21"	0.241"

#### **Deflection Locations:**

Deflection/Set for Location 1 measured at center of interlock.

Deflection/Set for Location 2 measured at center of top rail of panel.

**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.

Christian Seifried, Test Technician

#### Specimen 2a – 179.94" x 120.00" – Aluminum Sliding Glass Door (XXX)

#### 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, 2 oz	7'-10"	

Impact Location	Results	X - Measurement	Y - Measurement	Speed
1	Pass	150.00"	59.00"	49.8 fps
2	Pass	129.50"	12.00"	49.7 fps
3	Pass	120.25"	57.25"	50.1 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 +75.0 psf / -75.0 psf

Positive % of Test Load			Average Cycle Time (Sec)
20% to 50%	15.0 to 37.5	3500	2.35
0% to 60%	0.0 to 45.0	300	2.97
50% to 80%	37.5 to 60.0	600	1.65
30% to 100%*	22.5 to 75.0	100	2.49

Negative % of Test Load	Negative Pressure Range (psf)	Number Of Cycles	Average Cycle Time (Sec)
30% to 100%*	22.5 to 75.0	50	2.98
50% to 80%	37.5 to 60.0	1050	1.37
0% to 60%	0.0 to 45.0	50	2.64
20% to 50%	15.0 to 37.5	3350	1.45

<sup>\*</sup>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.

Christian Seifried, Test Technician

Mfg Observers - None

# Specimen 2b - 179.94" x 120.00" - Aluminum Sliding Glass Door (XXX)

#### 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, 2 oz	7'-10"	17'2"

Impact Location	Results	X - Measurement	Y - Measurement	Speed
1	Pass	150.00"	59.50"	50.3 fps
2	Pass	128.50"	9.50"	50.3 fps
3	Pass	121.50"	57.00"	50.2 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 +75.0 psf / -75.0 psf

Positive % of Test Load	Positive Pressure Range (psf)	Number Of Cycles	Average Cycle Time (Sec)
20% to 50%	15.0 to 37.5	3500	2.17
0% to 60%	0.0 to 45.0	300	2.85
50% to 80%	37.5 to 60.0	600	1.79
30% to 100%*	22.5 to 75.0	100	2.98

Negative % of Test Load	Negative Pressure Range (psf)	Number Of Cycles	Average Cycle Time (Sec)
30% to 100%*	22.5 to 75.0	50	2.95
50% to 80%	37.5 to 60.0	1050	2.02
0% to 60%	0.0 to 45.0	50	2.41
20% to 50%	15.0 to 37.5	3350	1.98

<sup>\*</sup>Panel deflected 3.75" from original plane at 100% Positive load and 4.75" 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.

# Specimen 2c - 179.94" x 120.00" - Aluminum Sliding Glass Door (XXX)

#### 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, 2 oz	7'-10"	17'2"

Impact Location	Results	X - Measurement	Y - Measurement	Speed	
1	Pass	149.50"	60.00"	49.8 fps	
2	Pass 172.50"		110.00"	50.3 fps	
3	Pass	120.00"	57.00"	50.3 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 +75.0 psf / -75.0 psf

Positive % of Test Load	Positive Pressure Range (psf)	Number Of Cycles	Average Cycle Time (Sec)
20% to 50%	15.0 to 37.5	3500	2.00
0% to 60%	0.0 to 45.0	300	2.40
50% to 80%	37.5 to 60.0	600	1.99
30% to 100%*	22.5 to 75.0	100	2.93

Negative % of Test Load	Negative Pressure Range (psf)	Number Of Cycles	Average Cycle Time (Sec)
30% to 100%*	22.5 to 75.0	50	2.81
50% to 80%	37.5 to 60.0	1050	1.45
0% to 60%	0.0 to 45.0	50	2.41
20% to 50%	15.0 to 37.5	3350	2.08

<sup>\*</sup>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.

#### Specimen 3a – 179.94" x 120.00" – Aluminum Sliding Glass Door (XXX)

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, 2 oz	7'-10"	17'2"

Impact Location	Results	X - Measurement	Y - Measurement	Speed
1	Pass	149.00"	59.00"	49.6 fps
2	Pass	126.00"	11.00"	49.8 fps
3	Pass	119.25"	57.00"	49.9 fps

Orientation of Missile at Impact was within +/-5° of horizontal. None of the impacts penetrated the specimens.

TAS 201 and 203 – Fatigue Load Cycling Design Pressure +75.0 psf / -75.0 psf

Positive % of Test Load	Positive Pressure Range (psf)	Number Of Cycles	Average Cycle Time (Sec)
20% to 50%	15.0 to 37.5	3500	2.25
0% to 60%	0.0 to 45.0	300	2.50
50% to 80%	37.5 to 60.0	600	1.96
30% to 100%*	22.5 to 75.0	100	2.74

Negative % of Test Load	Negative Pressure Range (psf)	Number Of Cycles	Average Cycle Time (Sec)
30% to 100%*	22.5 to 75.0	50	2.98
50% to 80%	37.5 to 60.0	1050	1.82
0% to 60%	0.0 to 45.0	50	2.75
20% to 50%	15.0 to 37.5	3350	2.05

<sup>\*</sup>Panel deflected 4.75" from original plane at 100% Positive load and 5.63" 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.

<sup>&</sup>quot;X" measurement is from the left edge of test specimen.

<sup>&</sup>quot;Y" measurement is from the bottom edge of test specimen.

#### **General Note:**

Tape and film were used to seal against air leakage during structural testing and fatigue loading and cycling. In our opinion, the tape and film did not influence the results of the tests.

#### **Drawing Reference:**

The test specimen drawings have been reviewed by TEL and are representative of the test specimens reported herein.

#### **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 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.

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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 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.

Ciuran K. Wright,
Vivian K. Wright,
Prosid

President

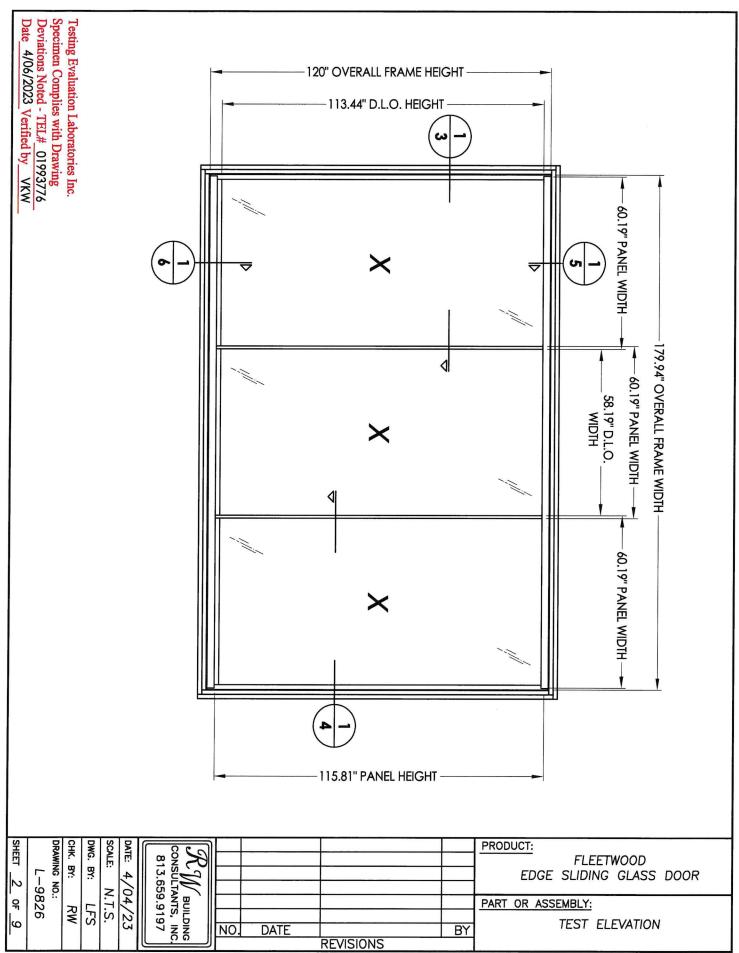
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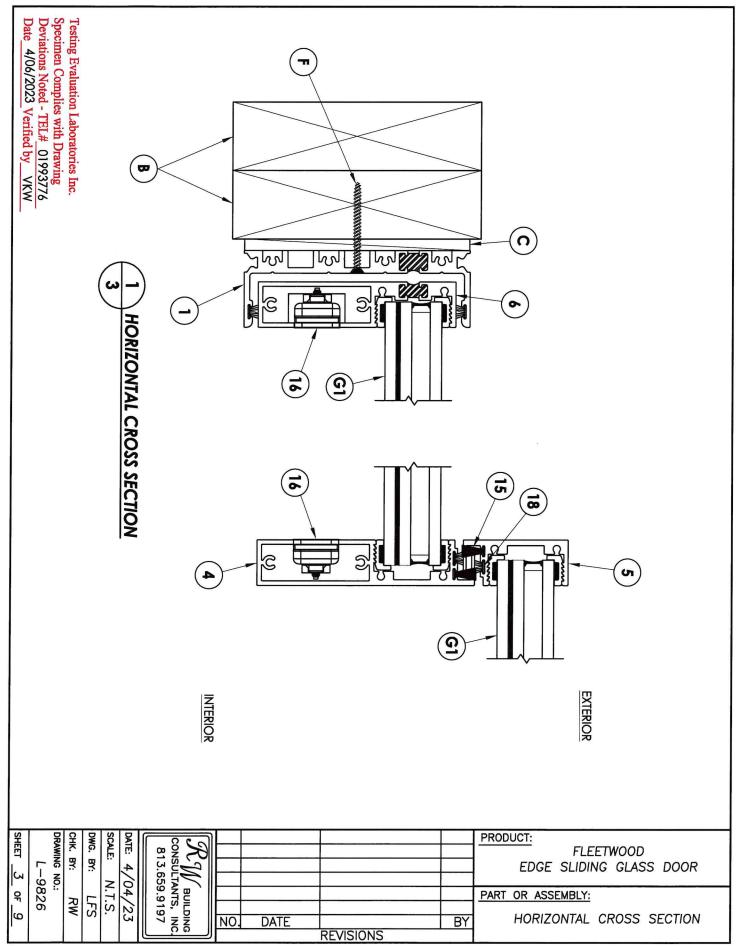
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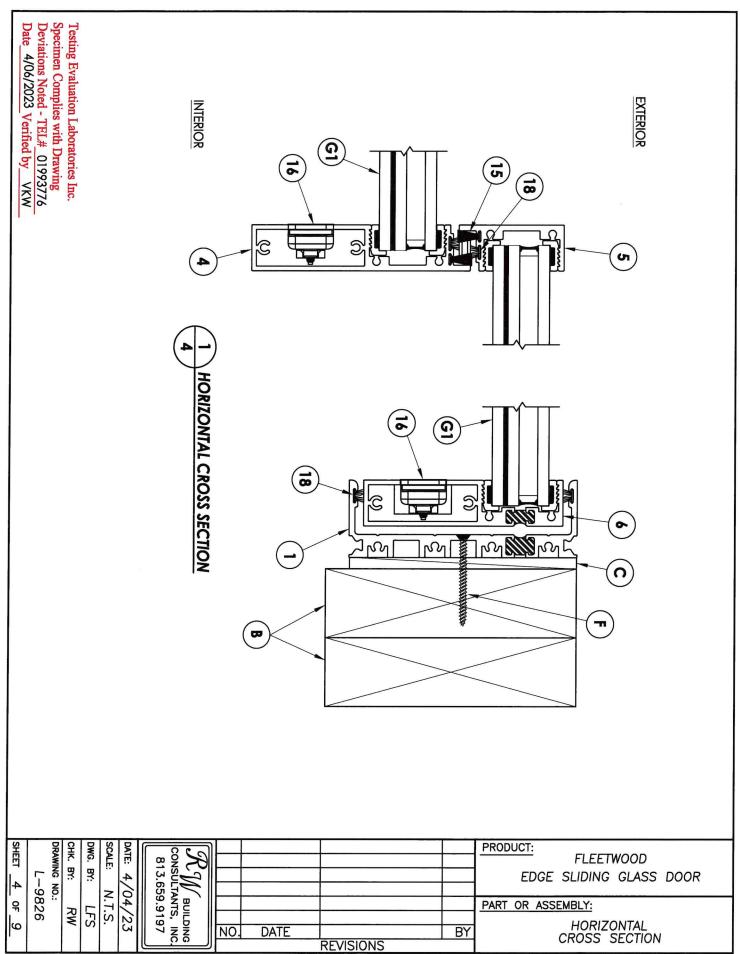
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Deviations Noted - TEL# 01993776
Date 4/06/2023 Verified by VKW

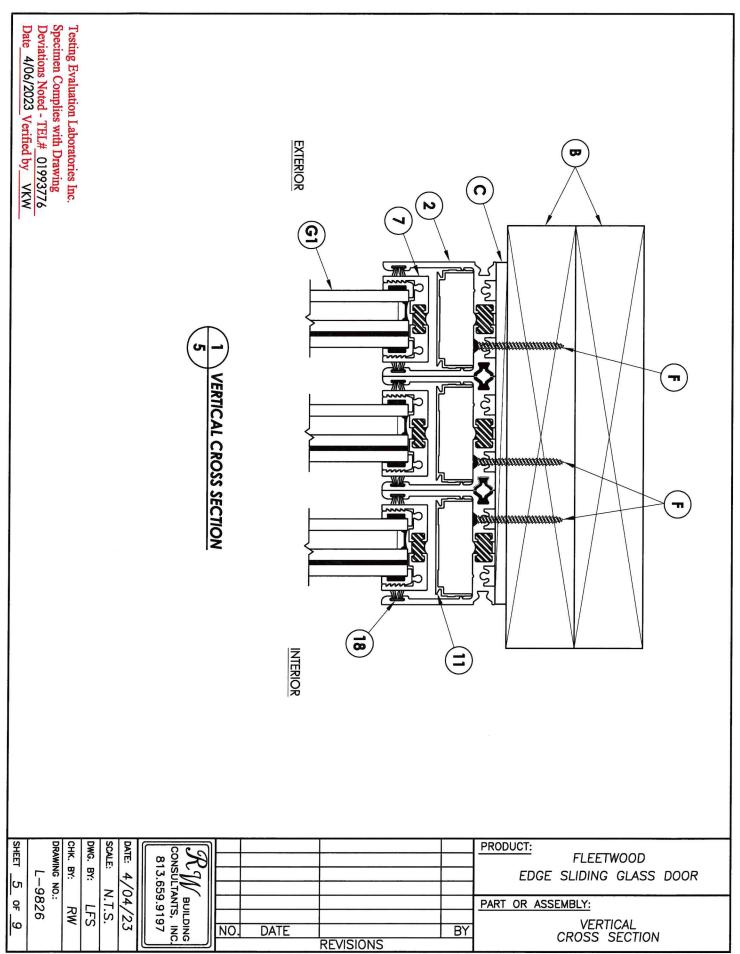
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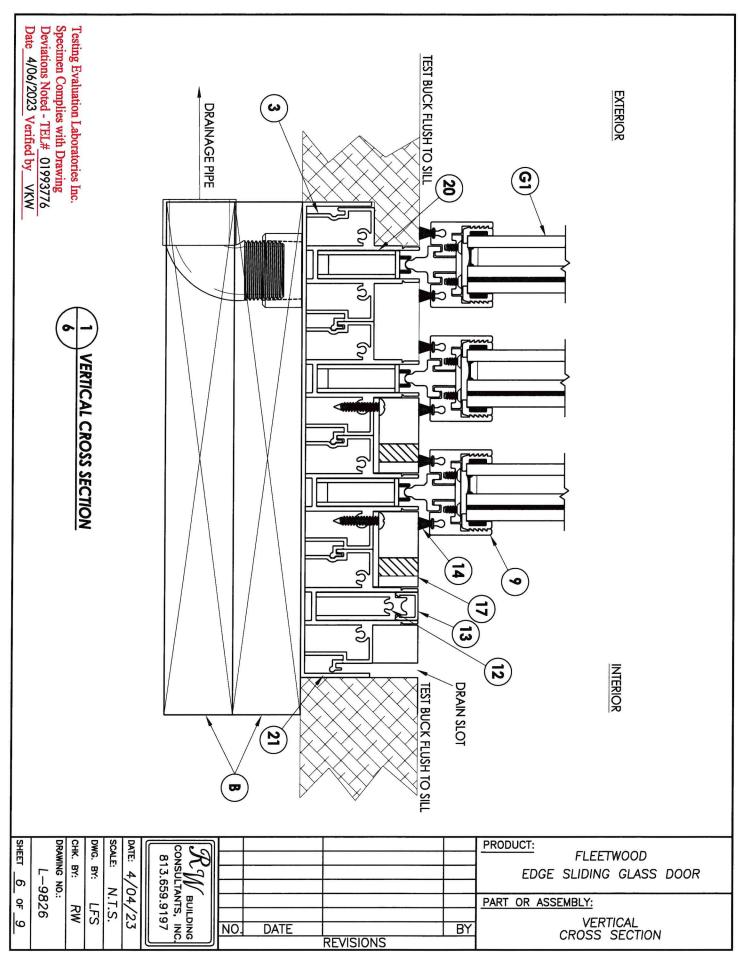
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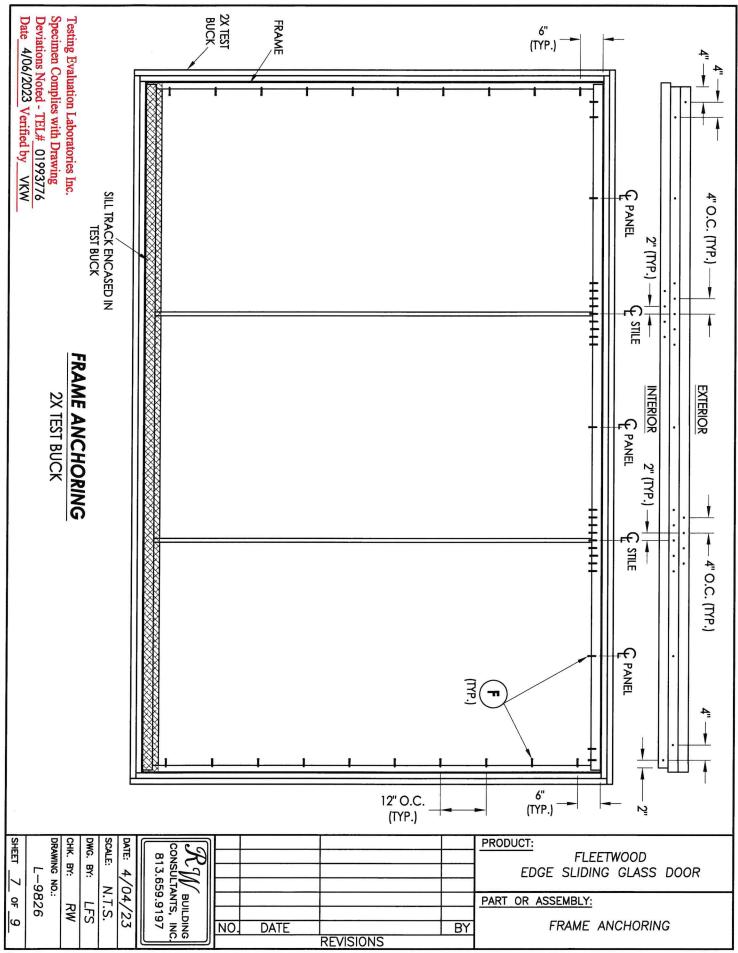


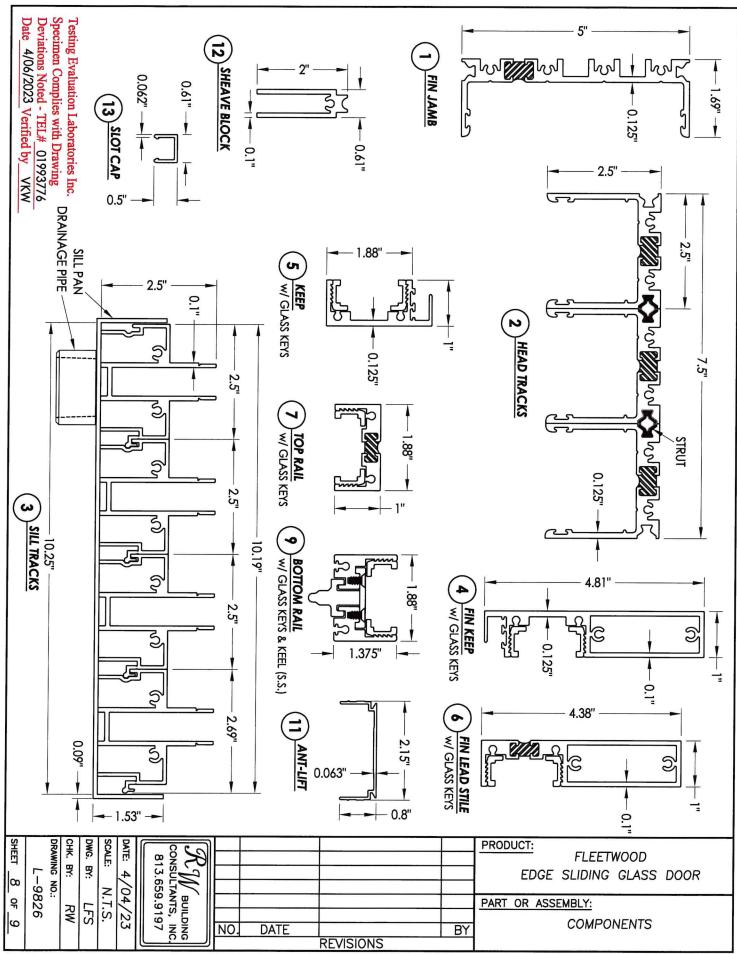


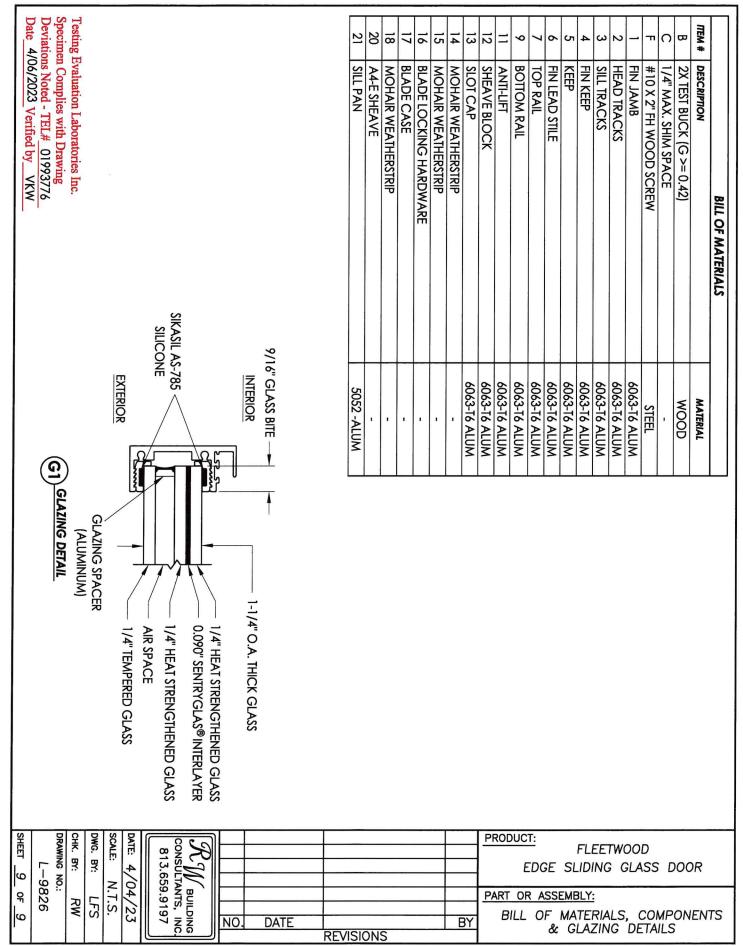








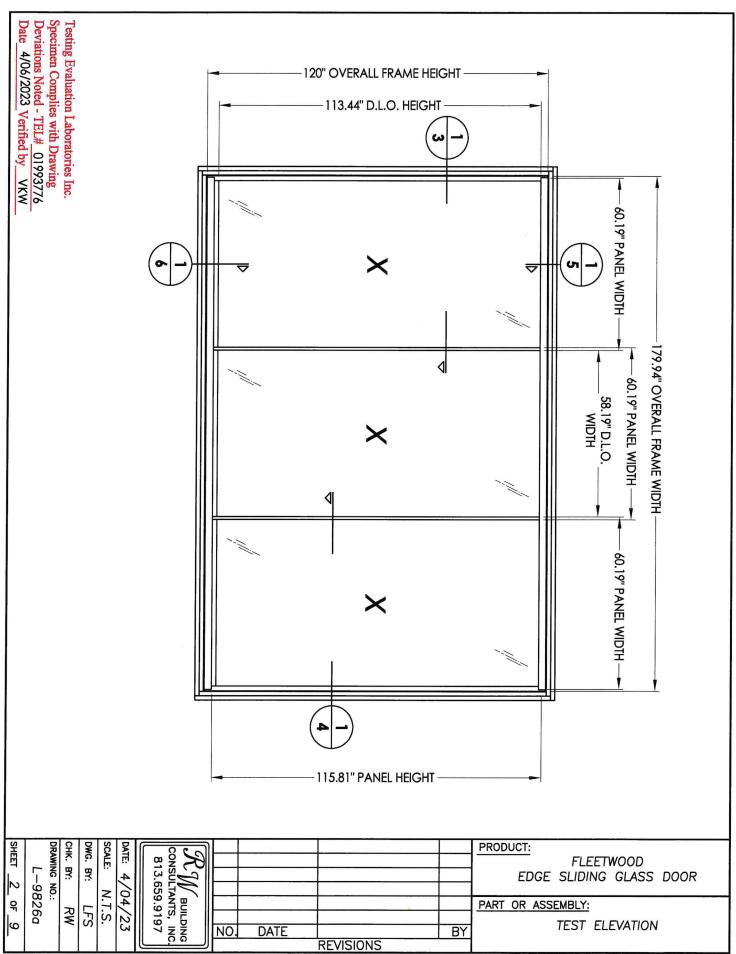


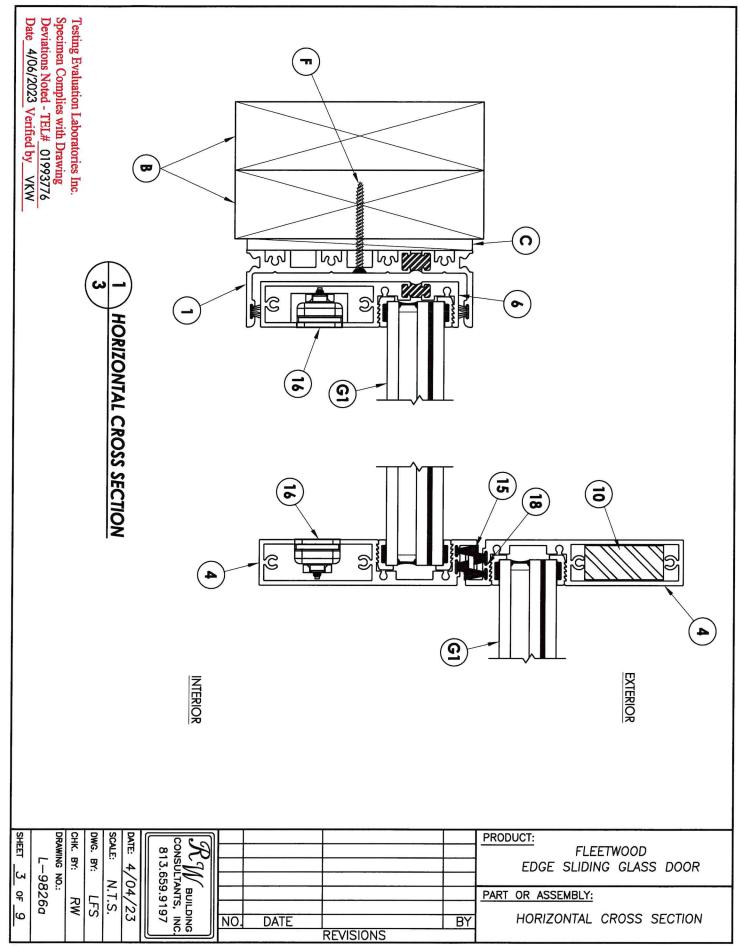


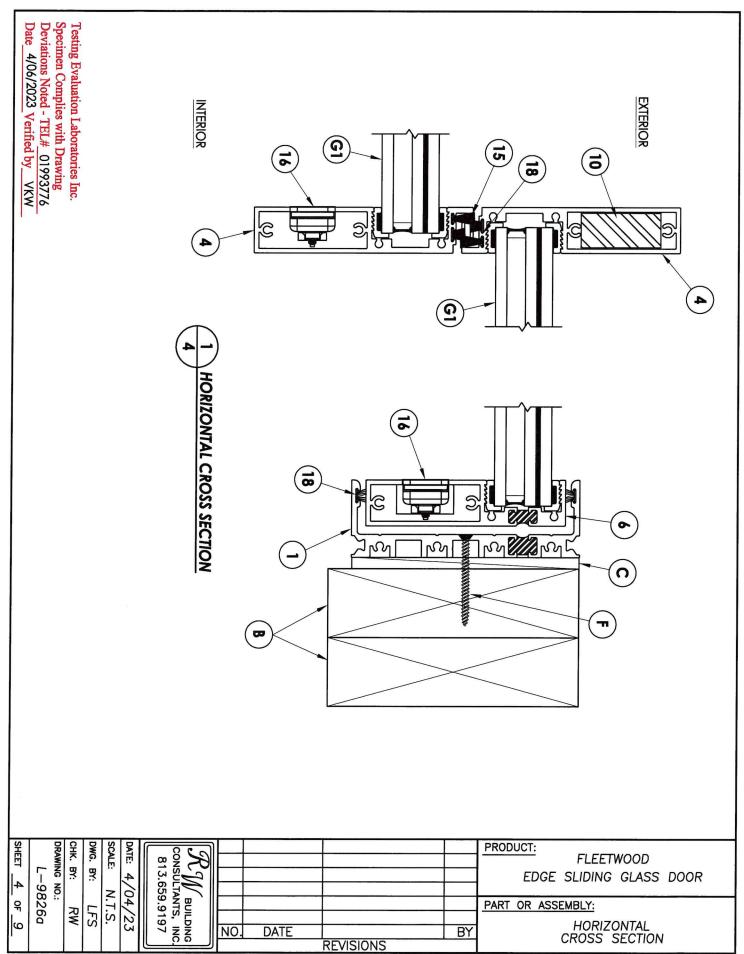
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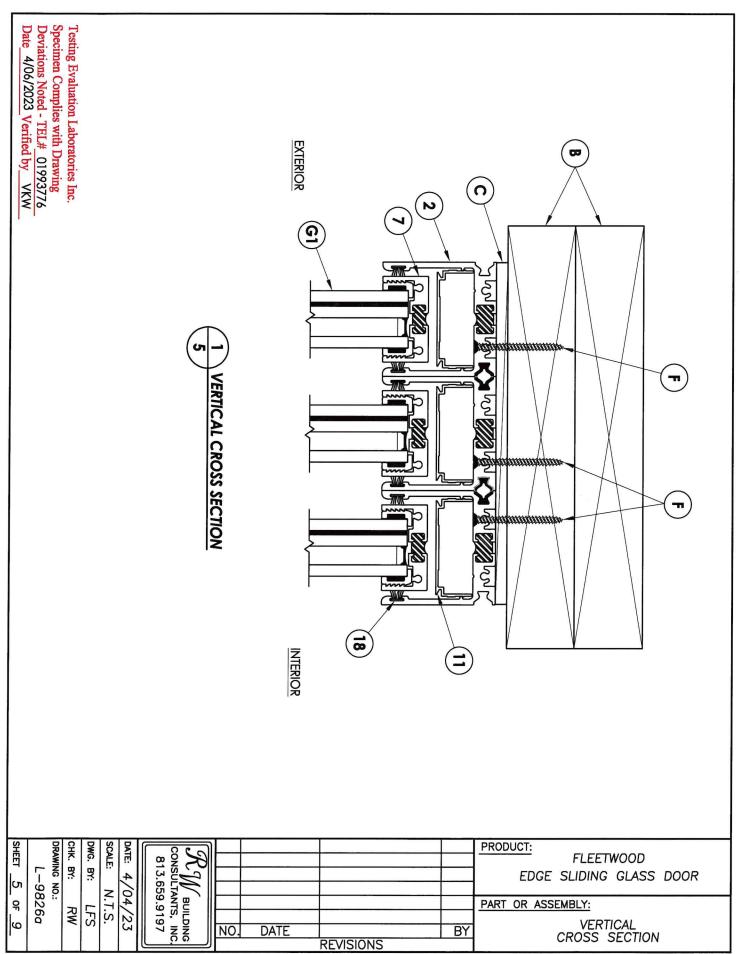
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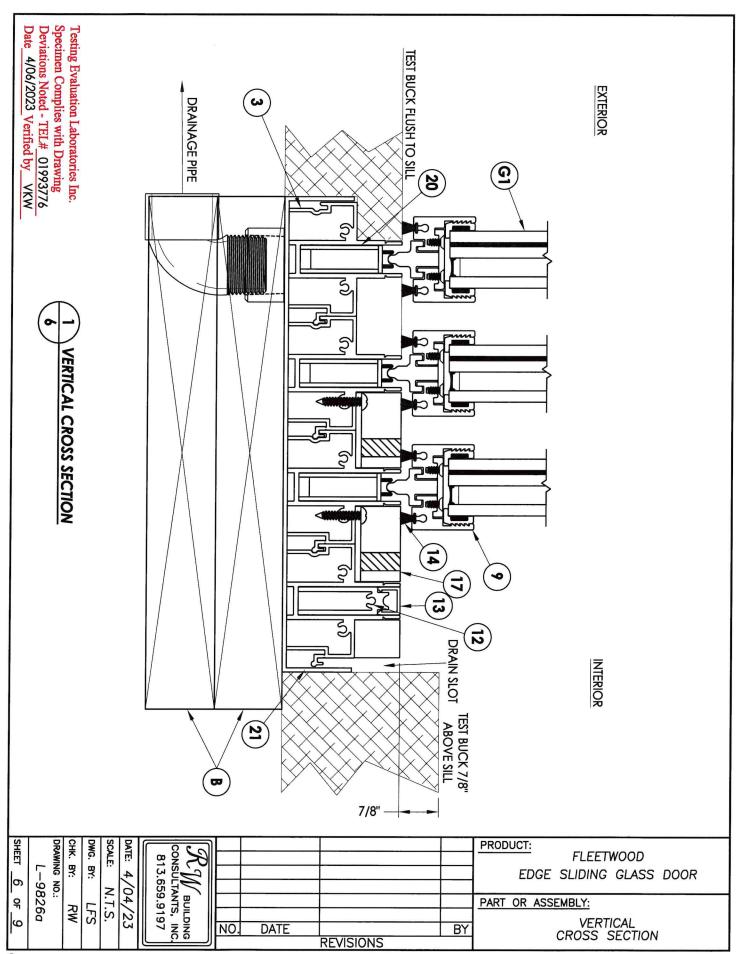
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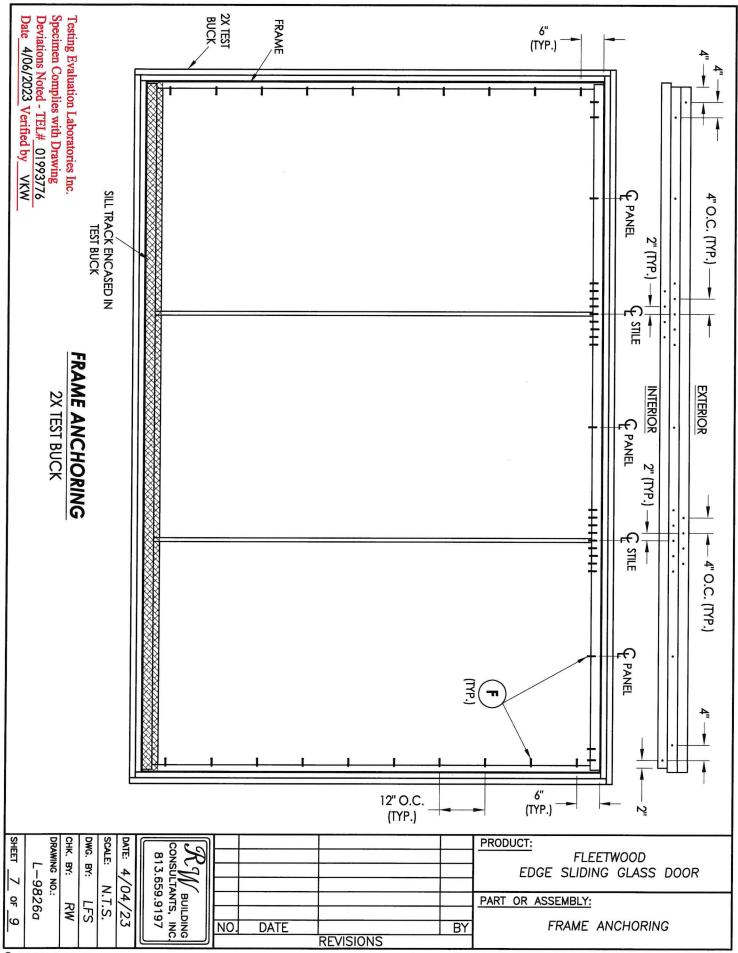


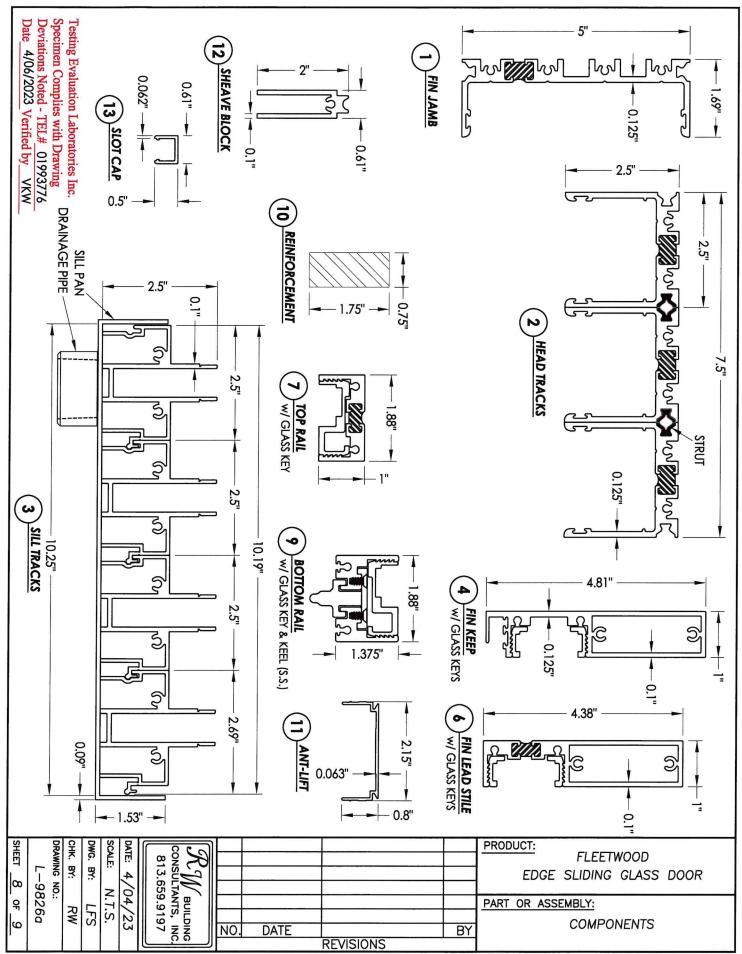


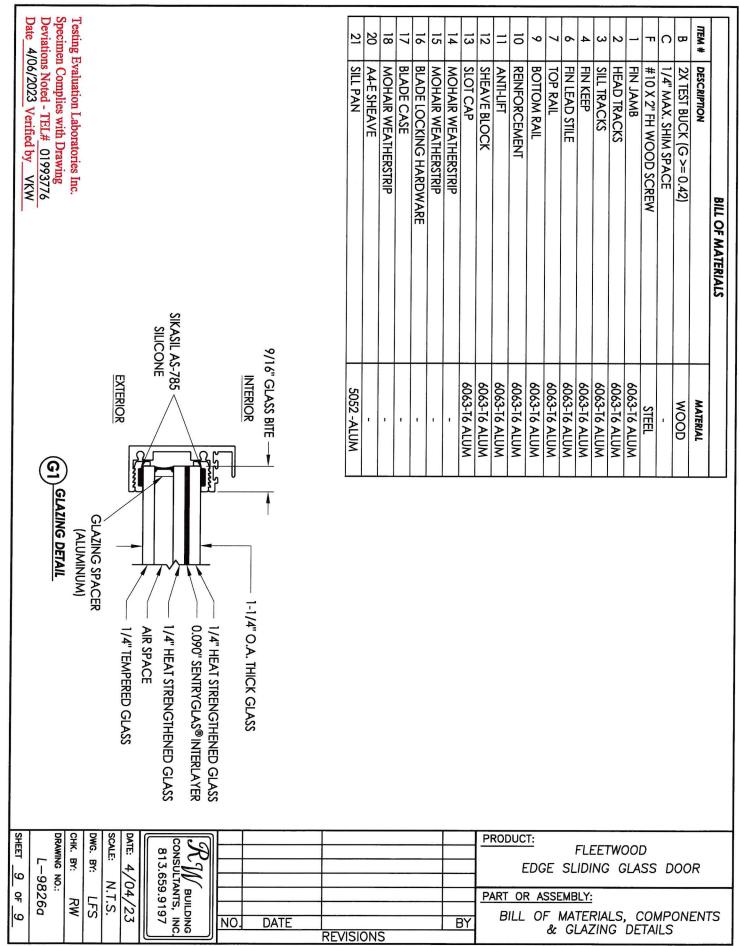












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