

SILEX FIBERGLASS WINDOWS & DOORS TEST REPORT

SCOPE OF WORK

AIR / WATER / STRUCTURAL TESTING ON 8000 SERIES, CURTAIN WALL

REPORT NUMBER

Q0299.01-750-44 R0

TEST DATES

04/18/23 - 04/22/23

ISSUE DATE

07/20/23

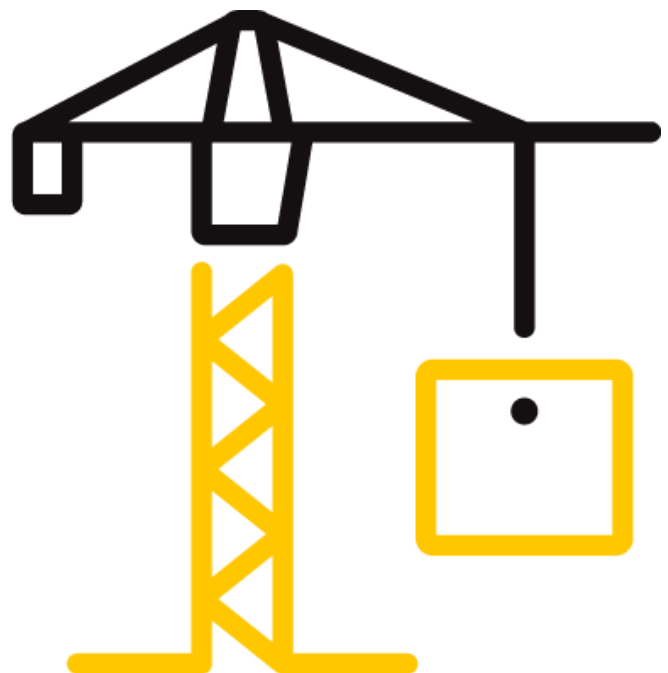
PAGES

21

DOCUMENT CONTROL NUMBER

RT-R-AMER-Test-2804 (03/31/23)

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TEST REPORT FOR SILEX FIBERGLASS WINDOWS & DOORS

Report No.: Q0299.01-750-44 R0

Date: 07/20/23

REPORT ISSUED TO

SILEX FIBERGLASS WINDOWS & DOORS

1450 Wall Street

Winnipeg, Manitoba R3E 2S3

SECTION 1

SCOPE

Intertek Testing Services NA Ltd. dba Intertek Building & Construction (B&C) was contracted by Silex Fiberglass Windows & Doors to perform testing in accordance with ASTM E283/E283M-19, *Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Skylights, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen*, ASTM E331-00(2023), *Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference*, and ASTM E330/E330M-14(2021), *Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference* on their 8000 Series, Curtain Wall. Results obtained are tested values and were secured by using the designated test methods. Testing was conducted at the Intertek B&C test facility in Winnipeg, Manitoba.

This report does not constitute certification of this product nor an opinion or endorsement by this laboratory. Intertek B&C will service this report for the entire test record retention period. The test record retention period ends four years after the test date. Test records, such as detailed drawings, datasheets, representative samples of test specimens, or other pertinent project documentation, will be retained for the entire test record retention period.

Unless differently required, Intertek reports apply the "Simple Acceptance" rule, also called "Shared Risk approach," of ILAC-G8:09/2019, Guidelines on Decision Rules and Statements of Conformity.

For INTERTEK B&C:

COMPLETED BY:	Bryan J. Boyle
TITLE:	Director - Regional Operations
SIGNATURE:	
DATE:	07/20/23

BJB:bjb

REVIEWED BY:	Graham Knight
TITLE:	Senior Project Manager – Building Science Solutions
SIGNATURE:	
DATE:	07/20/23

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SECTION 2

SUMMARY OF TEST RESULTS

TITLE	RESULTS
Design Pressure	+4320 Pa (+90.23 psf)
Negative Design Pressure	-4080 Pa (-85.21 psf)
Air Infiltration	0.01 L/s/m ² (<0.01 cfm/ft ²)
Air Exfiltration	<0.01 L/s/m ² (<0.01 cfm/ft ²)
Water Penetration Resistance Test Pressure	730 Pa (15.25 psf)
Uniform Load Structural Test Pressure	+6480 Pa (+135.34 psf)
Negative Uniform Load Structural Test Pressure	-6120 Pa (-127.82 psf)

Reference must be made to Intertek B&C Report No. Q0299.01-750-44, dated 07/06/23 for complete test specimen description and detailed test results.

SECTION 3

TEST METHODS

The following test methods were used during testing:

ASTM E283/E283M-19, *Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Skylights, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen*

ASTM E330/E330M-14(2021), *Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference*

ASTM E331-00(2023), *Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference*

SECTION 4

MATERIAL SOURCE/INSTALLATION

Test specimen was provided by the client. Representative samples of the test specimens will be retained by Intertek B&C for a minimum of four years from the test completion date.

The specimen was installed into a Spruce-Pine-Fir wood buck. The rough opening allowed for a 10 mm (3/8") to 12 mm (1/2") shim space. The exterior perimeter of the specimen was sealed to the test buck via strips of air barrier membrane installed over the metal flashing and onto the curtain wall frame. Installation of the tested product was performed by the client.

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LOCATION	ANCHOR DESCRIPTION	ANCHOR SPACING
Uppermost and lowermost horizontal frame members	#10 x 3/4" truss head screws #10 x 1-1/2" pan head screws	Along the top and bottom, the metal flashing was secured to the wood buck with four truss head screws each, 40 mm (1-9/16") to 185 mm (7-5/16") from ends and spaced 305 mm (12") on centre, and secured to the frame members with a total of four screws each, 40 mm (1-9/16") to 85 mm (3-3/8") from ends and spaced 305 mm (12") to 610 mm (24") on centre.
Vertical frame members	#10 x 3/4" truss head screws #10 x 1-1/2" pan head screws	Along each side, the metal flashing was secured to the wood buck with five truss head screws each, 75 mm (2-15/16") to 152 mm (6") from ends and spaced 305 mm (12") to 610 mm (24") on centre, and secured to the frame members with a total of five screws each, 152 mm (6") from ends and spaced 305 mm (12") to 610 mm (24") on centre.

SECTION 5

LIST OF OFFICIAL OBSERVERS

NAME	COMPANY
Bryan Boyle	Intertek B&C
Jack Guerreiro	Intertek B&C

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SECTION 6

TEST SPECIMEN DESCRIPTION

Product Type: Fiberglass curtain wall, complete with four vision panels in a 2x2 grid.

Series/Model: 8000 Series

Product Sizes:

OVERALL AREA:	WIDTH		HEIGHT	
2.8 m ² (30.0 ft ²)	millimeters	inches	millimeters	inches
Overall size	1186	46-11/16	2349	92-1/2

Frame Construction:

MEMBER	MATERIAL	DESCRIPTION
All members	Fiberglass	Pultruded fiberglass
Cover cap	Aluminum	Extruded aluminum. Snap fit over the aluminum pressure plates.
Pressure plates	Aluminum	Extruded aluminum. Two continuous rows of 8.6 mm (5/16") fin glazing gasket were installed via plug into accessory grooves in the pressure plate.

	JOINERY TYPE	DETAIL
All corners	Butt joint	At each intersection between vertical and horizontal frame members, an aluminum adapter running the full length of the frame member was pressure fit into an accessory port at each end of the member. At each end of the adapter, two #10 x 2-1/2" pan head screws were installed through the adapter and the frame member and into screws ports on a metal bracket that was secured to the abutting frame member with three #10 x 3/4" truss head screws. The bracket was aligned to fit into the large profile cavity of the abutting frame member; each of the brackets had two #10 x 3/8" pan head screws installed on each side to allow for a tighter fit into the profile cavity. At each intersection between vertical and horizontal frame members, plate shims were

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embedded into silicone and sandwiched between abutting adapters.

Construction:

FRAME MEMBER	MATERIAL	DESCRIPTION
Each outermost frame member	Composite	35 mm (1-3/8") x 20 mm (13/16") composite blocking set behind the pressure plate on each outermost frame member.

Reinforcement: *No reinforcement was utilized.*

Weatherstripping: *No weatherstripping was utilized.*

Glazing: *No conclusions of any kind regarding the adequacy or inadequacy of the glass in any glazed test specimen can be made.*

GLASS TYPE	SPACER TYPE	INTERIOR LITE	EXTERIOR LITE	INTERIOR LITE	GLAZING METHOD
31 mm (1-7/16") IG	4 mm (5/32") annealed	4 mm (5/32") annealed	4 mm (5/32") annealed	4 mm (5/32") annealed	Exterior glazed and set into a four-fin glazing gasket installed via plug into an accessory groove on the glazing tower of each frame member, and into silicone sealant at each corner. Each sealed unit was set onto two setting blocks along the bottom, located 100 mm (3-15/16") from corners, and two setting blocks along each side, 50 mm (1-15/16") from ends. Pressure plates were secured to the aluminum adapter with five #14 x 1/4" truss head screws located 40 mm (1-9/16") from ends and spaced 45 mm (1-3/4") to 140 mm (5-1/2") on

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centre. Each end of each pressure plate was sealed with silicone sealant.

LOCATION	QUANTITY	DAYLIGHT OPENING		GLASS BITE
		millimeters	inches	
Direct set into the frame members (upper row of sealed units)	2	500 x 1075	19-11/16 x 42-5/16	18 mm (13/16")

Drainage:

METHOD	SIZE	QUANTITY	LOCATION
Weep holes	7 mm (1/4") diameter	2/pressure plate	On the uppermost pressure plates, the weep holes were located 120 mm (4-3/4") from each end. On the middle pressure plates, the weep holes were located 150 mm (5-15/16") from each end. On the bottommost pressure plates, the weep holes were located 175 mm (6-7/8") from each end.
Weep holes	7 mm (1/4") diameter	2/cover cap	On the underside of each cover cap. On the uppermost cover caps, the weep holes were located 120 mm (4-3/4") from each end. On the middle cover caps, the weep holes were located 150 mm (5-15/16") from each end. On the bottommost cover caps, the weep holes were located 175 mm (6-7/8") from each end.

Hardware: No hardware was utilized.

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SECTION 7

TEST RESULTS

The temperature range during testing was 23.1-25.4°C (73.5-77.8°F). The results are tabulated as follows:

TITLE OF TEST	RESULTS	ALLOWED	NOTE
Air Leakage, Infiltration per ASTM E283 at 300 Pa (6.27 psf)	0.01 L/s/m ² (<0.01 cfm/ft ²)	Report only	1
Air Leakage, Exfiltration per ASTM E283 at 300 Pa (6.27 psf)	<0.01 L/s/m ² (<0.01 cfm/ft ²)	Report only	1
Water Penetration, per ASTM E331 at 730 Pa (15.25 psf)	Pass	No leakage	
Uniform Load Deflection, per ASTM E330 Deflections taken at centre vertical frame member +4320 Pa (+90.23 psf) -4320 Pa (-90.23 psf)	3.0 mm (0.12") 2.0 mm (0.08")	13.5 mm (0.53") max. 13.5 mm (0.53") max.	2, 4, 5
Uniform Load Deflection, per ASTM E330 Deflections taken at centre horizontal frame member +4320 Pa (+90.23 psf) -4320 Pa (-90.23 psf)	0.5 mm (0.02") 0.3 mm (0.01")	2.8 mm (0.11") max. 2.8 mm (0.11") max.	2, 4, 5
Uniform Load Structural, per ASTM E330 Permanent set taken at centre vertical frame member +6480 Pa (+135.34 psf) -6120 Pa (-127.82 psf)	0.3 mm (0.01") 0.3 mm (0.01")	4.8 mm (0.19") max. 4.8 mm (0.19") max.	3, 4, 5
Uniform Load Structural, per ASTM E330 Permanent set taken at centre horizontal frame member +6480 Pa (+135.34 psf) -6120 Pa (-127.82 psf)	<0.3 mm (<0.01") 0.3 mm (0.01")	1.0 mm (0.04") max. 1.0 mm (0.04") max.	3, 4, 5

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Note 1: Test Date 04/18/23 / Time: 2:32 PM (Air Note Only)

Note 2: The allowed deflection was based on $L/175$ where L = length of span.

Note 3: The allowed permanent set was based on $L*0.02$ where L = length of span.

Note 4: Loads were held for 10 seconds.

Note 5: Tape and film were used to seal against air leakage during structural testing. In our opinion, the tape and film did not influence the results of the test.



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SECTION 8

ALTERATIONS

No alterations were required.

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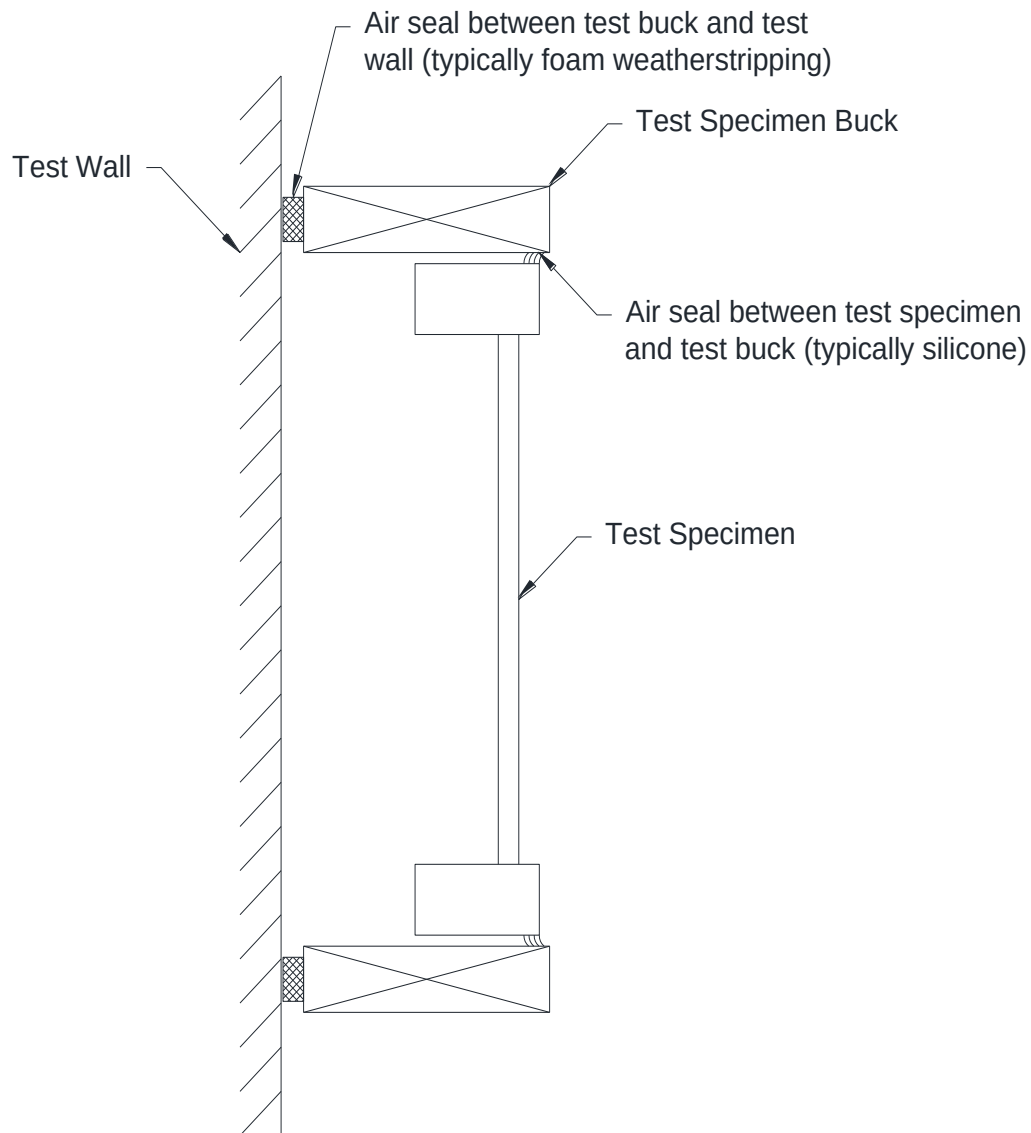
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SECTION 9

LOCATION OF AIR SEAL

The air seal between the test specimen and the test wall is detailed below. The seal is made of foam weatherstripping and is attached to the edge of the test specimen buck. The test specimen buck is placed against the test wall and clamped in place, compressing the weatherstripping and creating a seal.





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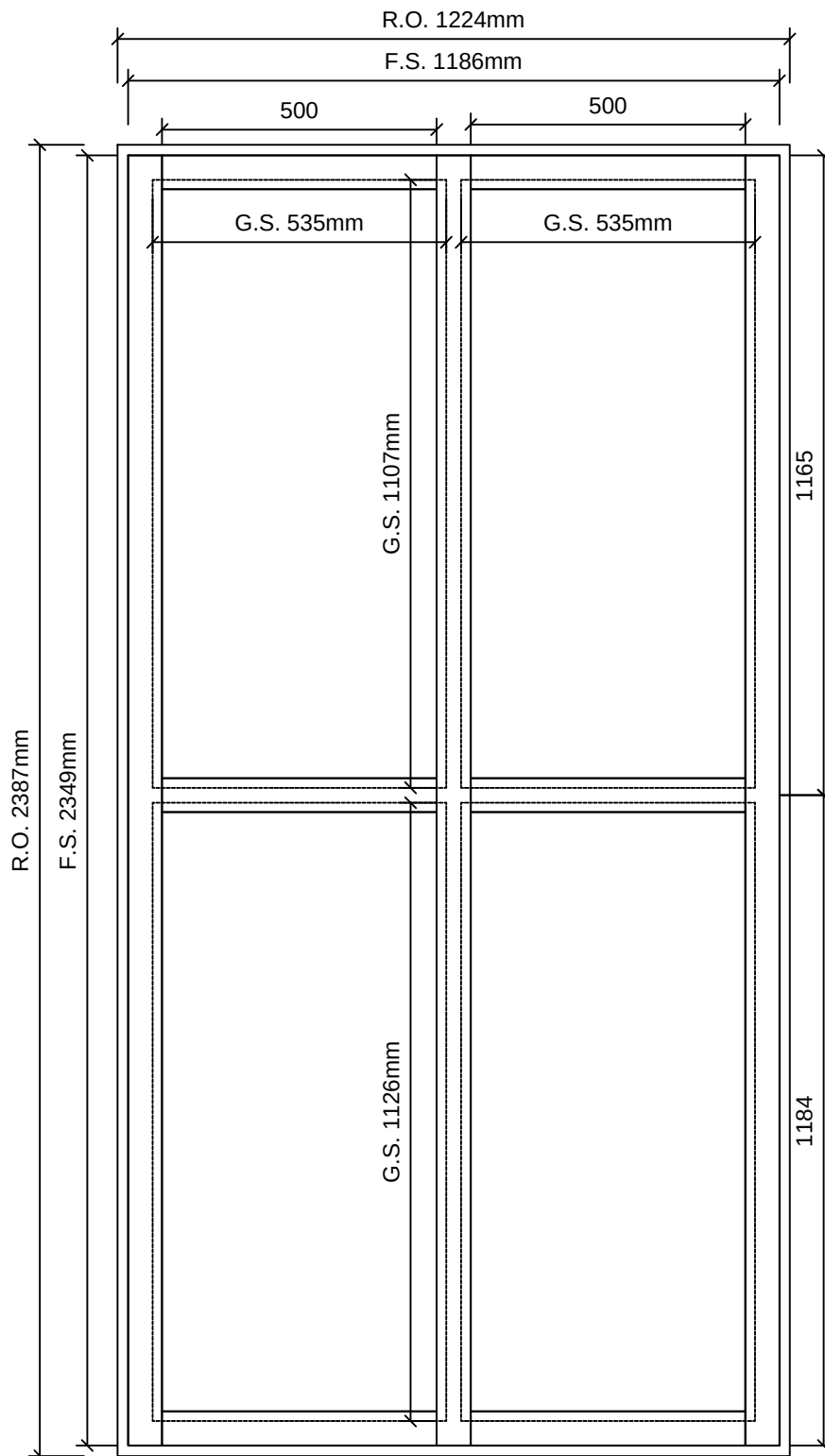
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SECTION 10

DRAWINGS

The test specimen drawings have been reviewed by Intertek B&C and are representative of the test specimen reported herein. Test specimen construction was verified by Intertek B&C per the drawings included in this report. Any deviations are documented herein or on the drawings.



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 WINNIPEG, MB R3E 2S3
 TEL: 204-788-0648
 FAX: 204-788-0649

PROJECT TITLE AND ADDRESS:
TEST CURTAIN WALL
WINNIPEG MB

NOTES:
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 2, WHITE IN AND OUT;
 3, STD.PERIMETER AND CELLULAR;
 4, F.S.= FRAME SIZE, R.O.= ROUGH OPENING SIZE,
 B.M.= BRICK MOULD SIZE, G.S.= GLASS SIZE, QTY=
 QUANTITY.

SHEET TITLE:
WINDOW ELEVATION
SCALE: 1:16
DATE: 23-02-09
DRAWN BY: ZH **E1**

1/4" - 13 SCREW @ 9" O.C.

GLASS TRIPLE :

FIBERGLASS
CURTAIN WALL
FRAME

#10X1 1/2" PAN HEAD
SCREWS @ BETWEEN 12
AND 24 O.C.

BLUE SKIN

#10X3/4" TRESS HEAD
SCREWS @ BETWEEN 12
AND 24" O.C.

1X3" METAL L
FLASHING

2X8" WOOD
BLOCKING

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TEL: 204-788-0648
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PROJECT TITLE AND ADDRESS:

TEST CURTAIN WALL

WINNIPEG MB

NOTES:

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2, WHITE IN AND OUT;
3, STD. PERIMETER AND CELLULAR;
4, F.S.=FRAME SIZE, R.O.= ROUGH OPENING SIZE, B.M.= BRICK
MOULD SIZE, G.S.= GLASS SIZE, QTY= QUANTITY.

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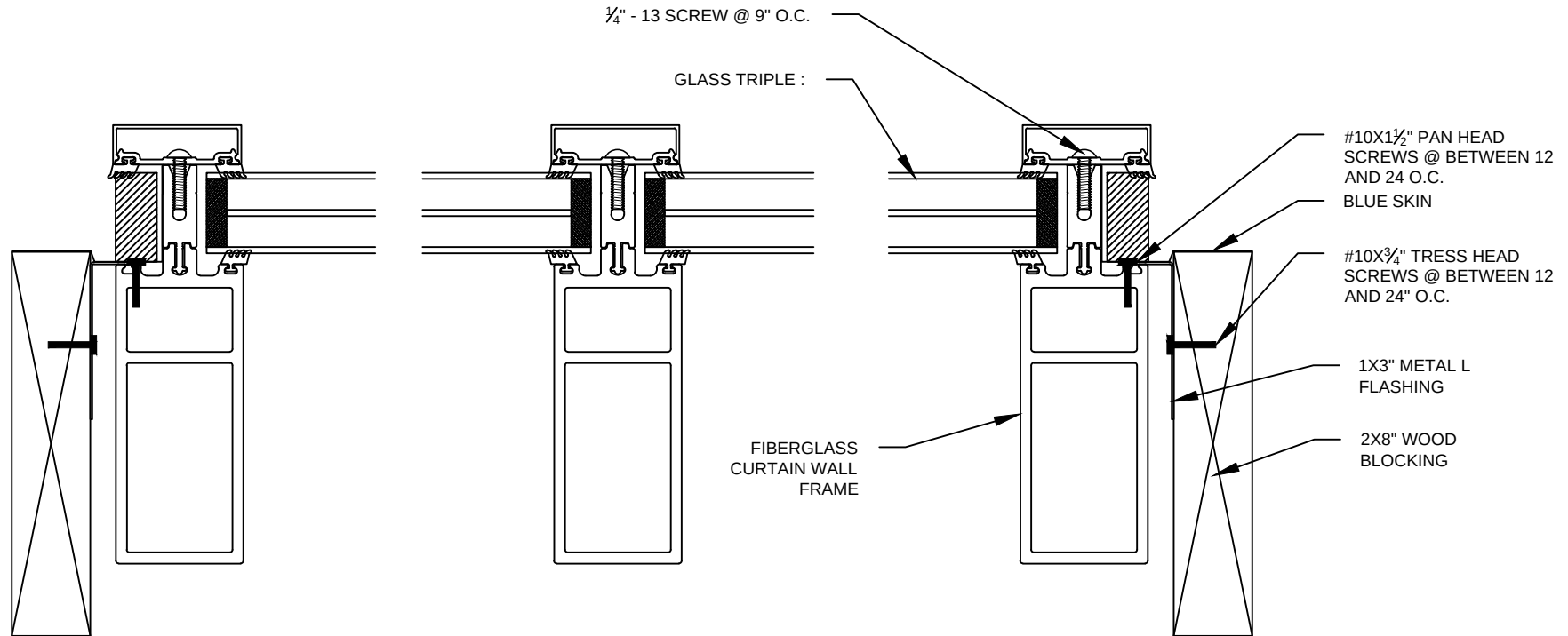
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SCALE: 1:1

DATE: 23-06-28

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D1



HORIZONTAL DETAIL

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TEST CURTAIN WALL

WINNIPEG MB

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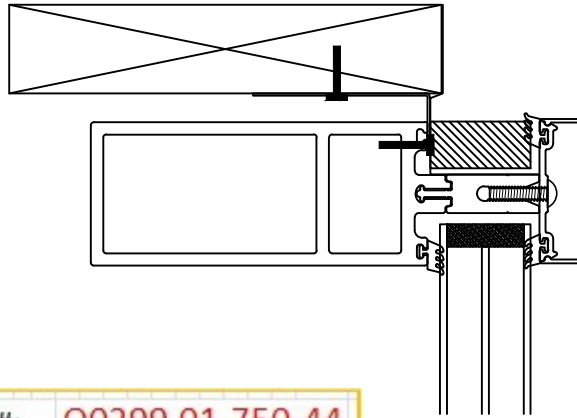
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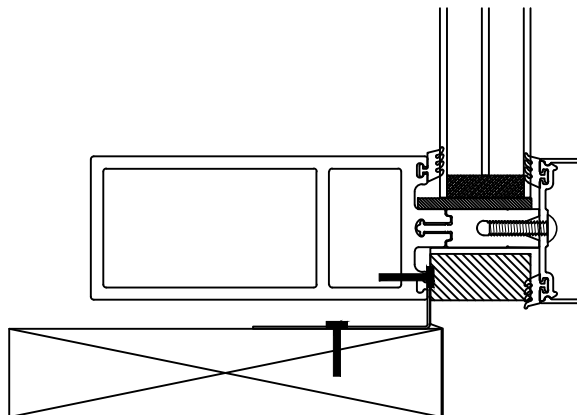
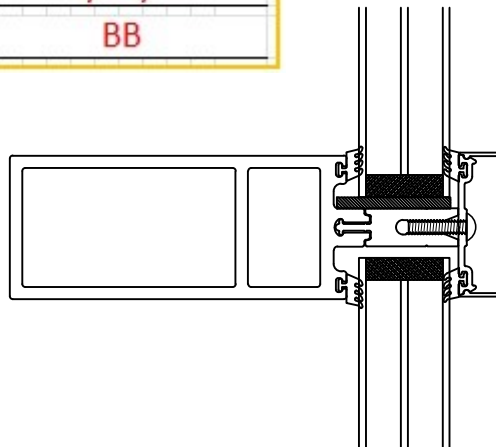
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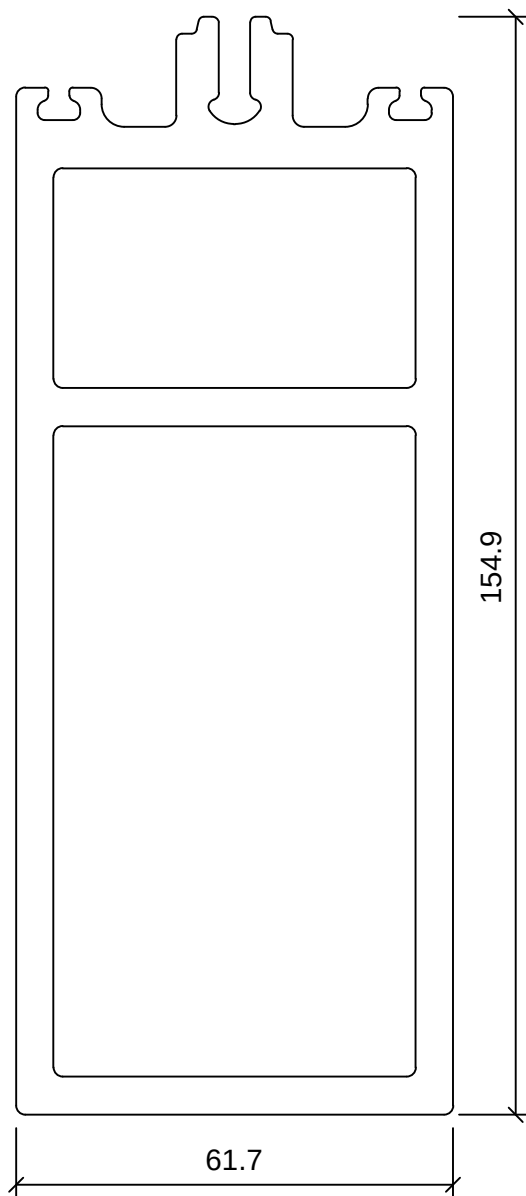
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VERTICAL DETAIL

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OMNIGLASS CURTAIN WALL
FRAME

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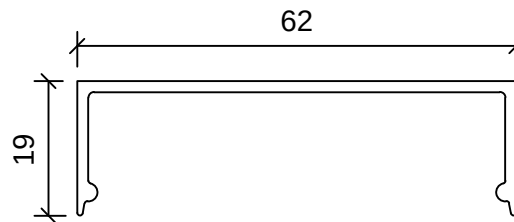
SILEX FIBERGLASS
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PROJECT TITLE AND ADDRESS:
**TEST CURTAIN
WALL**
WINNIPEG MB

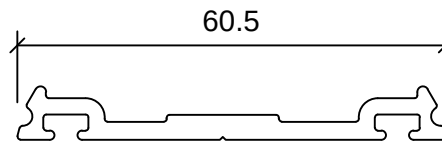
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2, COLOR:
3, NARROW PERIMETER & 1/2";
4, F.S.=FRAME SIZE, R.O.= ROUGH OPENING
SIZE, B.M.= BRICK MOULD SIZE, G.S.=
GLASS SIZE, QTY. QUANTITY.

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WINDOW SECTION
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D4



ALUMICOR METAL COVER
CAP



ALUMICOR PRESSURE
PLATE

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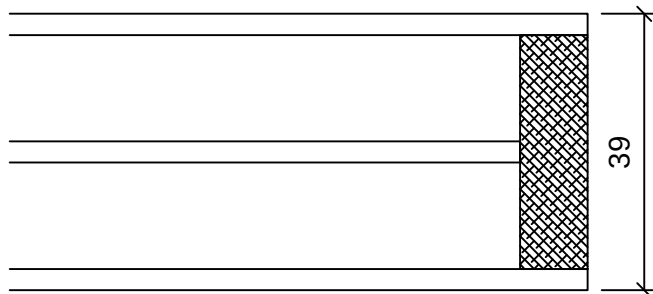
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**TEST CURTAIN
WALL**
WINNIPEG MB

NOTES:
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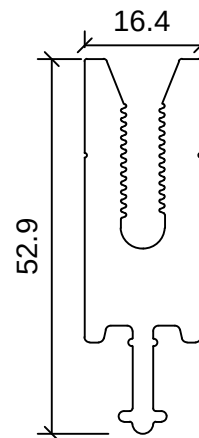
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D5

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VITRO TRIPLE
GLASS



SILEX ALUMINUM
ADAPT

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WINDOW SECTION	
SCALE:	1:1
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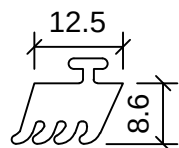


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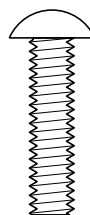
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TEST CURTAIN WALL
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NOTES:
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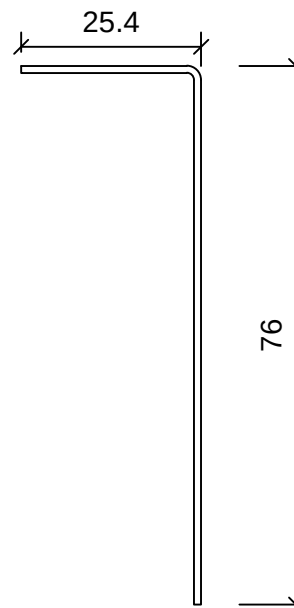
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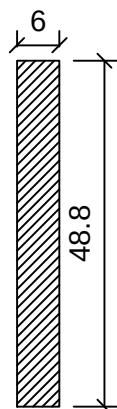
GASKET



1/4" - 13
SCREW



1X3" METAL
FLASHING



GLASS SHIM

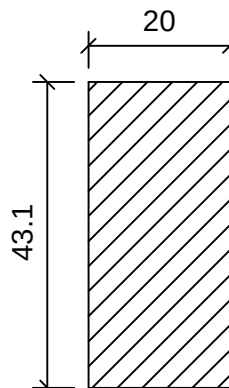


PLATE SHIM

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SHEET TITLE:	
WINDOW SECTION	
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SECTION 11

REVISION LOG

REVISION #	DATE	PAGES	REVISION
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