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EVALUATION OF FRAMED WALL CONSTRUCTION SECTIONS UTILIZING LATICRETE INTERNATIONAL'S "LATICRETE BUILDING ENVELOPE SYSTEM" AIR BARRIER SYSTEM IN ACCORDANCE WITH CAN/ULC S742-11

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Report No.:	12-06-M0324-2 18 Pages, 5 Appendices
Proposal No.:	12-006-04895
Date:	March 19, 2013

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1.0 INTRODUCTION

At the request of LATICRETE International Inc., Exova was retained to evaluate various wall section configurations of the "LATICRETE Building Envelope System" air barrier system applied to "DensGlass Gold Sheathing" utilizing a framed construction configuration. The testing was conducted in accordance with CAN/ULC S472-11 as outlined in Proposal Number: 12-006-04895.

Upon receipt, the specimens were assigned the following Exova Specimen Numbers:

Client Specimen Description	**Exova Specimen No.**
LATICRETE Building Envelope System	12-06-M0324-A
Primary Air Barrier Material: LATICRETE Air & Water Barrier	
Measured Thickness *(Dry)*: 1.6 mm	
Application Technique: Roller Applied	

Wall Specimen Description
Opaque Wall
Frame Construction (Utilizing Georgia Pacific's 5/8" thick DensGlass Gold Exterior Sheathing); CAN/ULC S742-11, Figure D4 – Opaque Wall Assembly Test Specimen for Exterior Gypsum with Wood/Metal Studs Infill between Steel Frame

Client Specimen Description	**Exova Specimen No.**
LATICRETE Building Envelope System	12-06-M0324-B
Primary Air Barrier Material: LATICRETE Air & Water Barrier	
Measured Thickness *(Dry)*: 1.6 mm	
Application Technique: Roller Applied	

Wall Specimen Description
Continuity at Penetrations in Combination with Roof/Foundation Interface
CAN/ULC S742-11, Section 6.1.6, Note: Combination Penetrated + Concrete Foundation Interface referencing ASTM E2357-11, Figures A1.2 + A1.3.

2.0 PROCEDURE

Test Method	Test Description
Section 6.3.2.1 (a), ASTM E2357-05, Section 9.1	Air Leakage
Section 6.3.3	Wind Pressure Loading
Section 6.3.4	Deflection
Section 6.3.2.1 (a), ASTM E2357-05, Section 9.1	Post Conditioning Air Permeance

Note: SI Units are the primary units of measure.

2.1 Test Wall Construction

Specimens 12-06-M0324-A &B (Opaque & Penetrated Roof Foundation Interface Wall Sections):

The 10' x 10' test wall sections were constructed using commercially purchased steel studs *(3-5/8" deep, 18 gauge / 16" O/C)* and built as per the construction details located in Appendix D & E on November 14-15, 2012.

Upon the installation of the fluid applied air barrier material, the wall sections were allowed to cure for a minimum period of 10-days, prior to testing.

2.2 Air Leakage Testing

Testing was conducted in both exfiltration (-) and infiltration (+) cases. Upon mounting the wall system on the wall test apparatus, a sheet of 6 mil poly was draped over and sealed against the exterior face of the specimen's test frame utilizing sheathing tape and double-sided gasket material for extraneous air leakage measurement purposes.

Using the procedure outlined in ASTM E2357-05, Section 9.1.2, the wall section was subjected to positive and negative pressures of: 25, 50, 75, 100, 150, 250, 300 Pa. Upon completion of the extraneous air leakage, the 6 mil poly was carefully removed and the actual specimen air leakage testing was conducted.

As per ASTM E2357-05, Section 11.2.1.4 logarithmic graphs for each air leakage test (infiltration/exfiltration) displaying the linear regression ($r^2 \geq 0.95$) values are located in Appendices B & C.

The air leakage testing as described above was also conducted upon completion of the "Wind Pressure Loading & Deflection" portion as outlined in the standard.

2.3 Wind Pressure Conditioning

The following wind pressure loading schedule was applied to the wall system using the loads prescribed for a sustained 1 in 50 hourly wind pressure difference of 650 Pa at a building height 12 meters above grade:

Sustained Loads:

Deformation Test (Sustained Pressure, P_1)
The wall system was subject to increasing pressure in increasing stages (150 Pa increments) for a minimum period of 10 seconds at each stage, up to a maximum pressure of 650 Pa which was maintained for 1-hour.

Deformation Test (Sustained Pressure, P'_1)
The wall system was subject to increasing pressure in increasing stages (150 Pa increments) for a minimum period of 10 seconds at each stage, up to a maximum pressure of -650 Pa which was maintained for 1-hour.

The deformation measurements were taken continuously during pressurisation.

Note: As per CAN/ULC S742-11, Section 6.3.3.5, P_1 air pressure differences are to be applied in 100 Pa increments. However, as testing was also conducted in conjunction with ASTM E2357-11, the loading increments used were 150 Pa stepping followed by the 650 Pa pressure hold. This is considered a more severe stepping increment and is representative of the procedure outlined in CCMC 07272, in which the CAN/ULC S742 standard is based.

Cyclic Loads P_2 & P'_2:

Repeated Positive and Negative Pressure Test (Cyclic Pressure, P_2 & P'_2)
The wall system was subject to 2,000 cycles of pressure. The first 1000 cycles were from 0 to +950 Pa and was followed by 1,000 cycles from 0 to –950 Pa. The deformation measurements were taken continuously during cycling.

Gust Loads, P_3 & P'_3:

The wall system was then subjected to a 'Gust Wind' pressure of +1410 Pa followed by a repeat 'Gust Wind' pressure of –1410 Pa. These pressures were held for a minimum of 3 seconds. The maximum deformation readings were taken after each gust pressure.

2.4 Deflection

Upon completeng the wind pressure conditioning sub-section, the wall specimens were subjected to wind pressure loading for 10 seconds using the P_2 and $P`_2$. values as per CAN/ULC S742-11, Section 6.3.4.

After completeing the deflection loads above, air leakage testing was again conducted at ambient conditions at an exterior temperature of -20°C and the interior temperature of 20°C as per CAN/ULC S742-11, Section 6.3.2.3 in both exfiltration (-) and infiltration (+) cases.

2.5 Test Dates

Specimen Number	**Test Criteria**	**Testing Date**
12-06-M0324-A	Air Leakage (Exfiltration)	November 27, 2012
	Air Leakage (Infiltration)	November 27, 2012
	Structural (Wind) Loading	November 28, 2012
	Air Leakage (Exfiltration)	November 28, 2012
	Air Leakage (Infiltration)	November 28, 2012
	Air Leakage (Infiltration) Cold	November 29, 2012
	Air Leakage (Exfiltration) Cold	November 29, 2012
Specimen Number	**Test Criteria**	**Testing Date**
12-06-M0324-B	Air Leakage (Exfiltration)	November 30, 2012
	Air Leakage (Infiltration)	November 30, 2012
	Structural (Wind) Loading	Nov. 30 – Dec. 1, 2012
	Air Leakage (Exfiltration)	December 1, 2012
	Air Leakage (Infiltration)	December 1, 2012
	Structural Performance	December 1, 2012
	Air Leakage (Infiltration) Cold	December 3, 2012
	Air Leakage (Exfiltration) Cold	December 3, 2012

2.6 General Test Specimen Setup Photographs

Figure 1 – Hygrothermal Chamber Prior to Specimen Installation Displaying Location of Air Seal

Figure 2 – General Specimen Installation between Warm Side and Hygrothermal Chamber

3.0 RESULTS

Table 1 - Summarized Air Leakage Results at 75 Pa in Accordance with CAN/ULC S742-11, Section 6.3.2.1 (a), referencing ASTM E2357-05 – Section 9.1, Air Leakage Testing

Exova Specimen No.:	Airflow Direction	Optional	Ambient	Cold	Air Leakage Rate Classification[2]
		Calculated Air Leakage at 75 Pa Prior to Wind Pressure Conditioning ($L/s \cdot m^2$)	Calculated Air Leakage at 75 Pa After Wind Pressure Conditioning ($L/s \cdot m^2$)	Calculated Air Leakage at 75 Pa After Wind Pressure Conditioning ($L/s \cdot m^2$)	
12-06-M0324-A *(Opaque Wall)*	-	0.00017	0.00069	0.00070	**A1**
	+	0.00038	0.00058	0.00060	
12-06-M0324-B *(Penetrated Wall in Combination with a Foundation Interface)*	-	0.00141	0.00141	0.00141	
	+	0.00106	0.00168	0.00171[1]	

Notes: '-' denotes exfiltration airflow direction (simulated negative wind loading)
'+' denotes infiltration airflow direction (simulated positive wind loading)

(1) Highest measured air leakage rate at 75 Pa

(2) As per CAN/ULC S742-11, an air barrier in compliance with this standard shall be classified as one of the types listed in clause 4.1.1.1 to clause 4.1.1.5 according to its reference air leakage rate:

4.1.1.1 A1 – The reference air leakage rate shall not exceed 0.05 $L/(s \cdot m^2)$ at a pressure difference of 75 Pa.
4.1.1.2 A2 – The reference air leakage rate shall not exceed 0.10 $L/(s \cdot m^2)$ at a pressure difference of 75 Pa.
4.1.1.3 A3 – The reference air leakage rate shall not exceed 0.15 $L/(s \cdot m^2)$ at a pressure difference of 75 Pa.
4.1.1.4 A4 – The reference air leakage rate shall not exceed 0.20 $L/(s \cdot m^2)$ at a pressure difference of 75 Pa.
4.1.1.5 A5 – The reference air leakage rate shall not exceed 0.50 $L/(s \cdot m^2)$ at a pressure difference of 75 Pa.

The reference air leakage rate is the highest air leakage rate of those recorded among all specimens when tested in accordance with CAN/ULC S742-11, Section 6.

3.1 DETAILED EXOVA SPECIMEN NO. 12-06-M0324-A RESULTS

Table 2 - Summarized Air Leakage Results in Accordance with ASTM E2357-05 - Section 9.1, Air Leakage Testing Exova Specimen No.: 12-06-M0324-A (Exfiltration '-')

Differential Pressure (Pa)	Optional	Ambient	Cold (-20°C)
	Calculated Air Leakage Prior to Wind Pressure Conditioning	Calculated Air Leakage After Wind Pressure Conditioning	Calculated Air Leakage After Wind Pressure Conditioning
	($L/s \cdot m^2$)	($L/s \cdot m^2$)	($L/s \cdot m^2$)
25	0.00008	0.00052	0.00052
50	0.00013	0.00062	0.00063
75	**0.00017**	**0.00069**	**0.00070**
100	0.00021	0.00074	0.00076
150	0.00028	0.00082	0.00085
250	0.00040	0.00093	0.00097
300	0.00046	0.00098	0.00102

Table 3 - Summarized Air Leakage Results in Accordance with ASTM E2357-05 - Section 9.1, Air Leakage Testing Exova Specimen No.: 12-06-M0324-A (Infiltration '+')

Differential Pressure (Pa)	Optional	Ambient	Cold (-20°C)
	Calculated Air Leakage Prior to Wind Pressure Conditioning	Calculated Air Leakage After Wind Pressure Conditioning	Calculated Air Leakage After Wind Pressure Conditioning
	($L/s \cdot m^2$)	($L/s \cdot m^2$)	($L/s \cdot m^2$)
25	0.00030	0.00049	0.00049
50	0.00035	0.00055	0.00056
75	**0.00038**	**0.00058**	**0.00060**
100	0.00040	0.00061	0.00063
150	0.00044	0.00065	0.00067
250	0.00048	0.00071	0.00073
300	0.00050	0.00073	0.00076

* As per ASTM E2357-05, logarithmic graphs for each air leakage test (infiltration/exfiltration) displaying the linear regression (r^2) value are located in Appendix B.

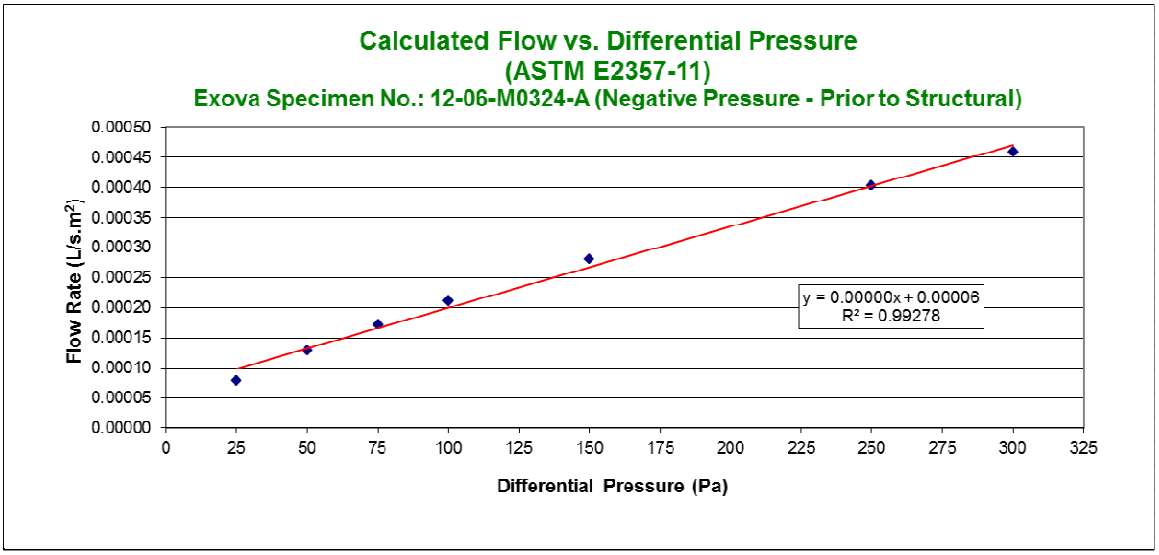

Figure 3– Exova Specimen No.: 12-06-M0324-A Exfiltration Air Leakage Prior to Wind Conditioning

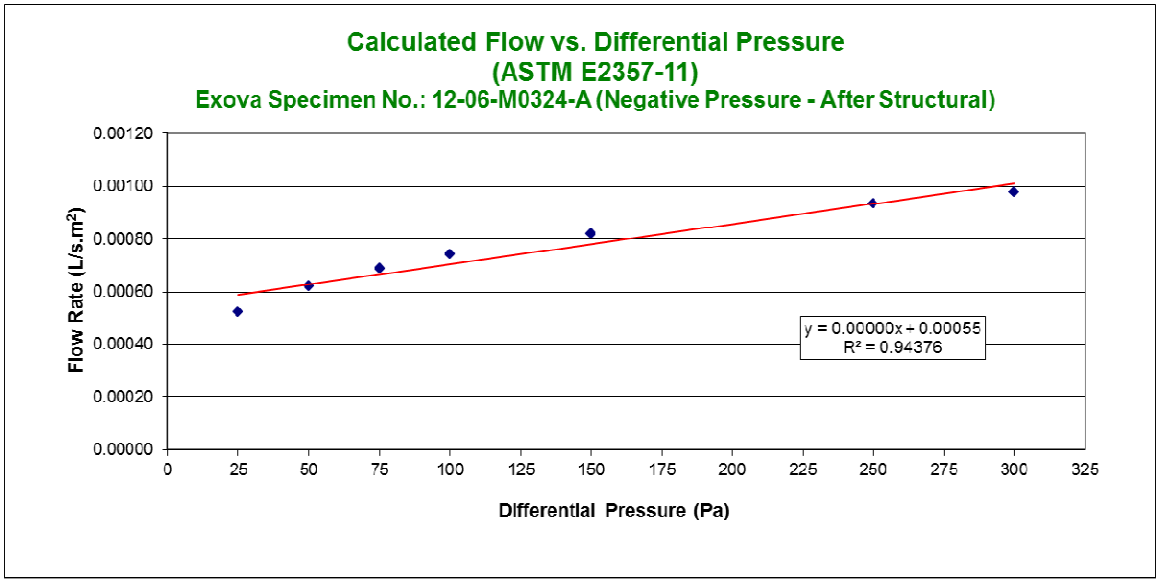

Figure 4– Exova Specimen No.: 12-06-M0324-A Infiltration Air Leakage Prior to Wind Conditioning

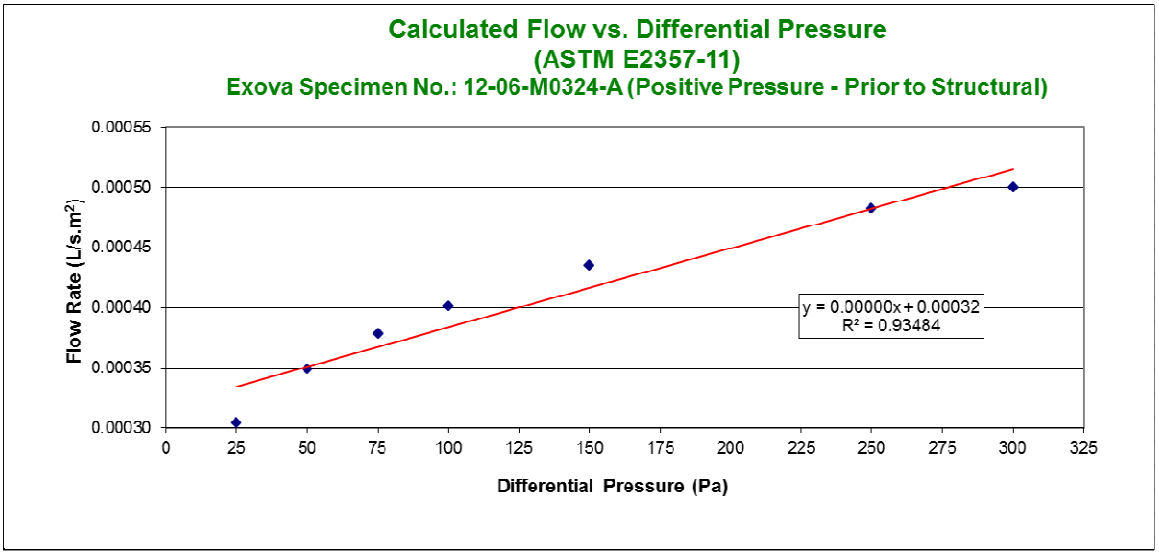

Figure 5– Exova Specimen No.: 12-06-M0324-A Exfiltration Air Leakage After Wind Conditioning (Ambient)

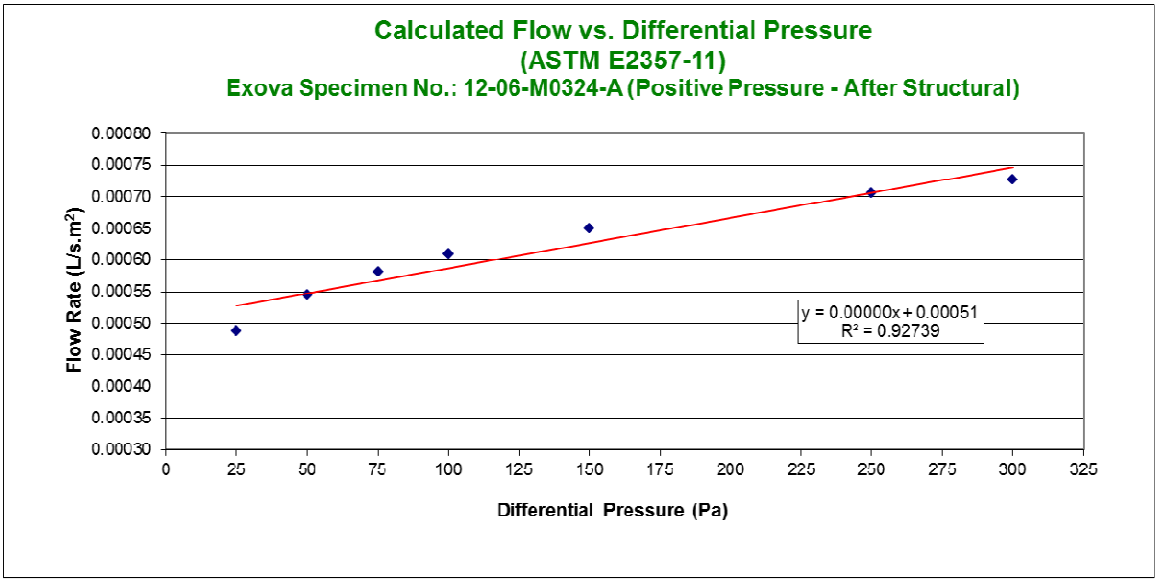

Figure 6– Exova Specimen No.: 12-06-M0324-A Infiltration Air Leakage After Wind Conditioning (Ambient)

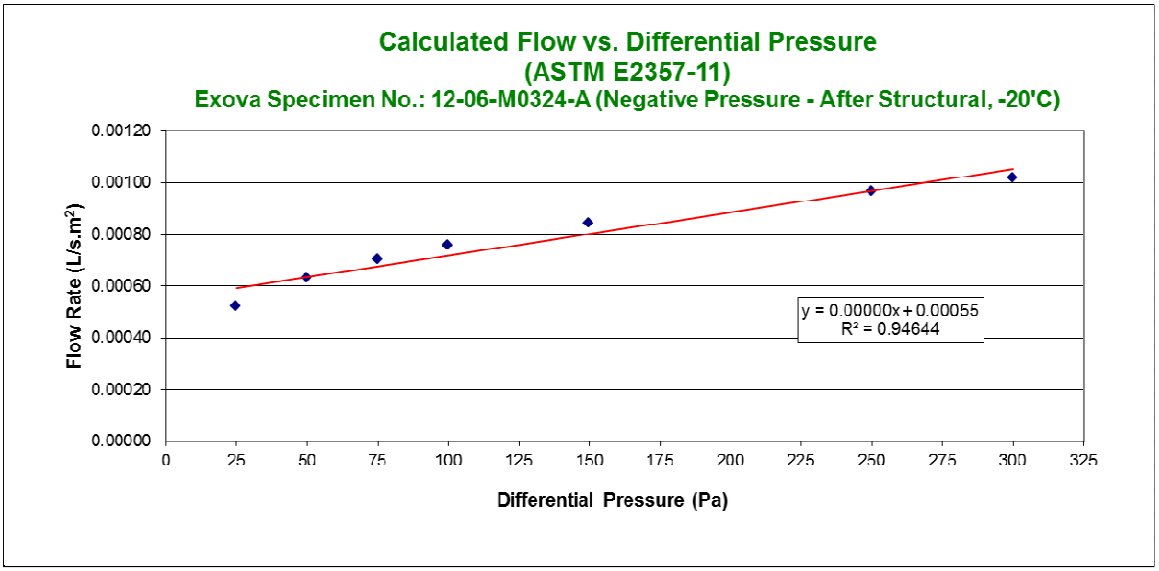

Figure 7 - Exova Specimen No.: 12-06-M0324-A Exfiltration Air Leakage After Wind Conditioning (Cold)

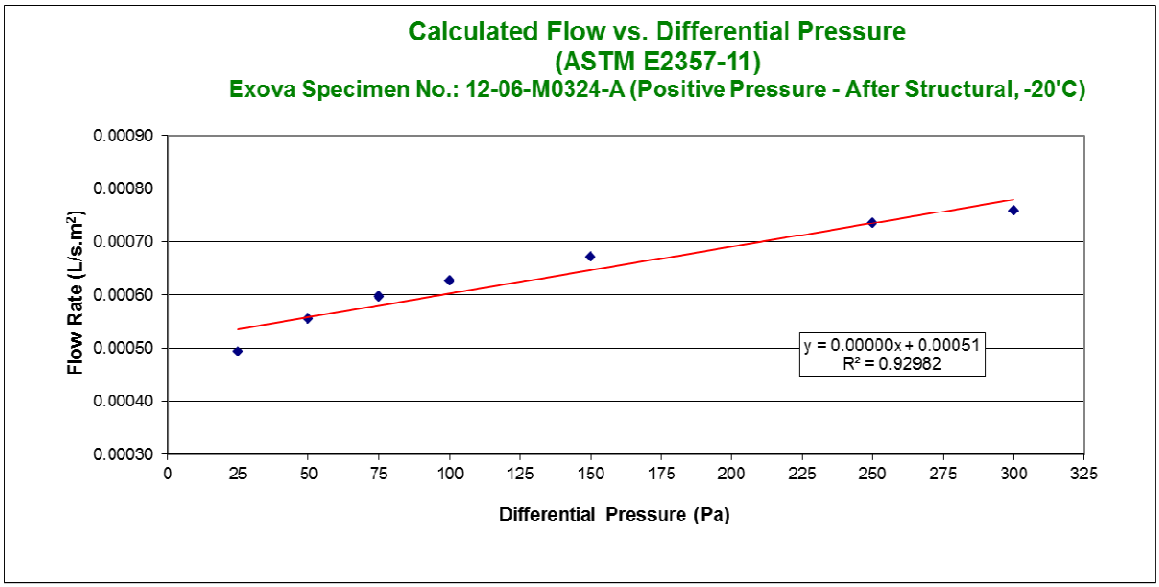

Figure 8– Exova Specimen No.: 12-06-M0324-A Infiltration Air Leakage After Wind Conditioning (Cold)

Table 4 – Wind Pressure Loading Deflection Results in Accordance with CAN/ULC S742-11, Section 6.3.3
Exova Specimen No.: 12-06-M0324-A

Cycle	Pressure (Pa)	Gauge Numbers (Locations) & Maximum Deflections (mm)						
		1	2	3	4	5	6	7
Sustained Loads	150	-0.5	-0.8	-1.1	-1.4	-1.3	0.0	-0.5
	300	-0.8	-0.4	-2.8	-2.9	-2.6	-0.2	-1.2
	450	-0.2	-0.4	-3.7	-4.0	-3.8	0.0	-0.2
	650 (P_1)	-2.1	-0.4	-5.4	-6.2	-5.7	0.0	-0.7
	-150	0.9	0.0	1.8	2.6	2.1	-0.3	0.6
	-300	1.7	1.3	3.8	4.2	4.0	0.6	1.4
	-450	3.1	2.3	3.9	4.7	3.9	0.6	1.0
	-650 (P_1')	6.5	4.6	11.1	10.7	10.3	4.0	2.9
Cyclic Loads	**0 to 950 (P_2)**	-6.2	-2.9	-12.4	-13.4	-11.7	-3.2	-3.8
	0 to -950 (P_2')	7.6	4.3	14.5	15.7	14.7	4.9	5.7
Gust Loads	**0 to 1410 (P_3)**	-5.5	-0.7	-14.6	-16.3	-15.2	-1.6	-2.6
	0 to -1410 (P_3')	8.3	1.0	18.6	20.4	18.6	1.7	2.6

Table 5 – Deflection Results in Accordance with CAN/ULC S742-11, Section 6.3.4
Exova Specimen No.: 12-06-M0324-A

Cycle	Pressure (Pa)	Gauge Numbers (Locations) & Deflections (mm)						
		1	2	3	4	5	6	7
Wind Loading	0 to 950	-3.7	-0.5	-9.3	-10.4	-10.0	-1.5	-1.4
	0 to –950	5.5	0.6	11.6	12.8	13.5	0.3	1.8

Note: The locations for each gauge number are located on the following page in Figure 9.

Wall Section Observations During Structural Wind Loading

During the wind loading schedule as shown in Tables 4 and 5, there were no visible signs of Exova Specimen No. 12-06-M0324-A tearing, cracking or peeling from the sheathed wall section.

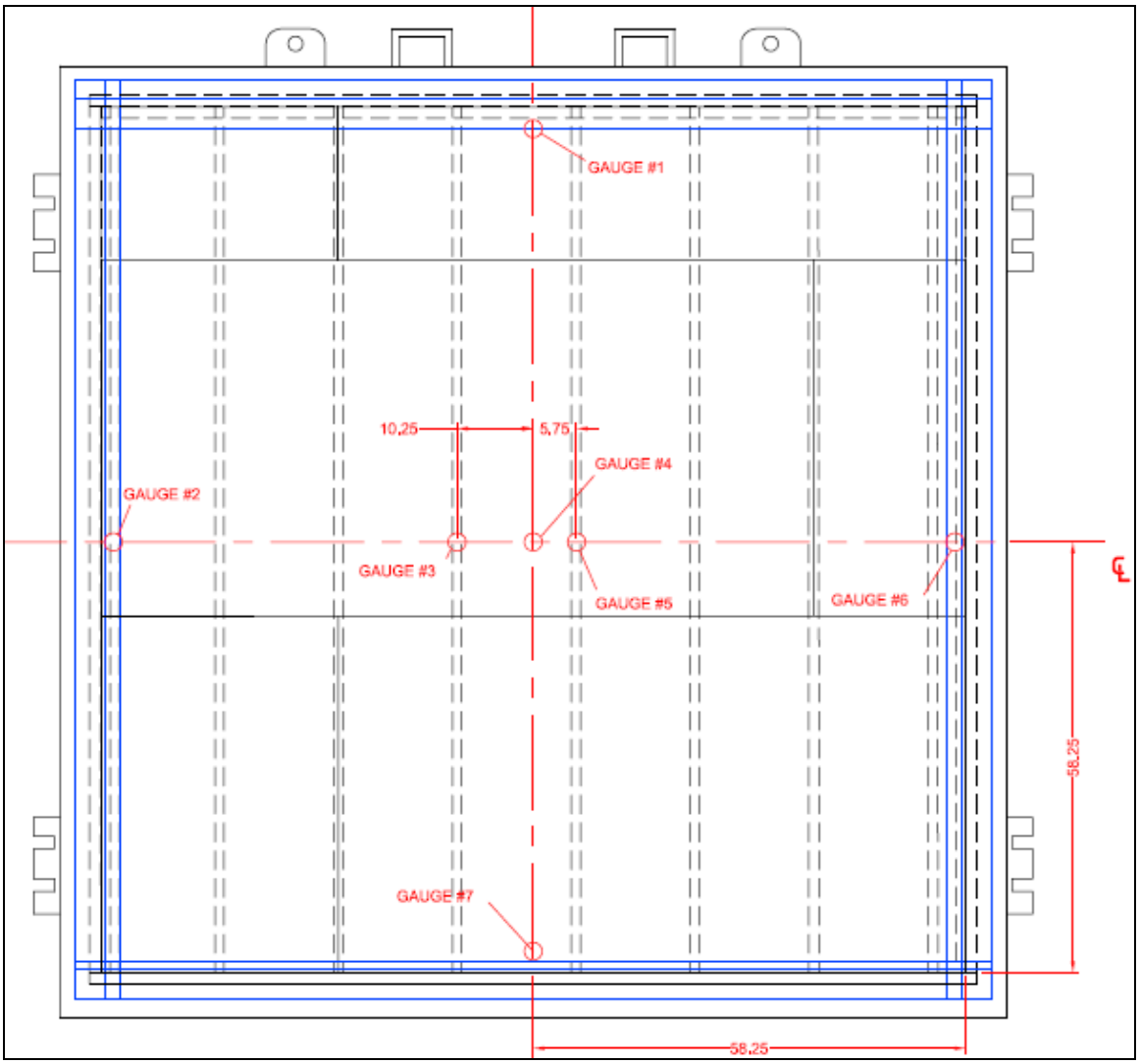

Figure 9 – Exova Specimen 12-06-M0324-A Gauge Locations

3.2 DETAILED EXOVA SPECIMEN NO. 12-06-M0324-B RESULTS

Table 6 - Summarized Air Leakage Results in Accordance with ASTM E2357-05 - Section 9.1, Air Leakage Testing Exova Specimen No.: 12-06-M0324-B (Exfiltration '-')

Differential Pressure (Pa)	Optional	Ambient	Cold (-20°C)
	Calculated Air Leakage Prior to Wind Pressure Conditioning	Calculated Air Leakage After Wind Pressure Conditioning	Calculated Air Leakage After Wind Pressure Conditioning
	($L/s \cdot m^2$)	($L/s \cdot m^2$)	($L/s \cdot m^2$)
25	0.00053	0.00053	0.00053
50	0.00098	0.00098	0.00098
75	**0.00141**	**0.00141**	**0.00141**
100	0.00182	0.00182	0.00182
150	0.00262	0.00262	0.00262
250	0.00414	0.00414	0.00414
300	0.00487	0.00487	0.00487

Table 7 - Summarized Air Leakage Results in Accordance with ASTM E2357-05 - Section 9.1, Air Leakage Testing Exova Specimen No.: 12-06-M0324-B (Infiltration '+')

Differential Pressure (Pa)	Optional	Ambient	Cold (-20°C)
	Calculated Air Leakage Prior to Wind Pressure Conditioning	Calculated Air Leakage After Wind Pressure Conditioning	Calculated Air Leakage After Wind Pressure Conditioning
	($L/s \cdot m^2$)	($L/s \cdot m^2$)	($L/s \cdot m^2$)
25	0.00047	0.00089	0.00090
50	0.00079	0.00133	0.00135
75	**0.00106**	**0.00168**	**0.00171**
100	0.00130	0.00198	0.00202
150	0.00175	0.00251	0.00255
250	0.00255	0.00337	0.00343
300	0.00291	0.00375	0.00381

* As per ASTM E2357-05, logarithmic graphs for each air leakage test (infiltration/exfiltration) displaying the linear regression (r^2) value are located in Appendix C.

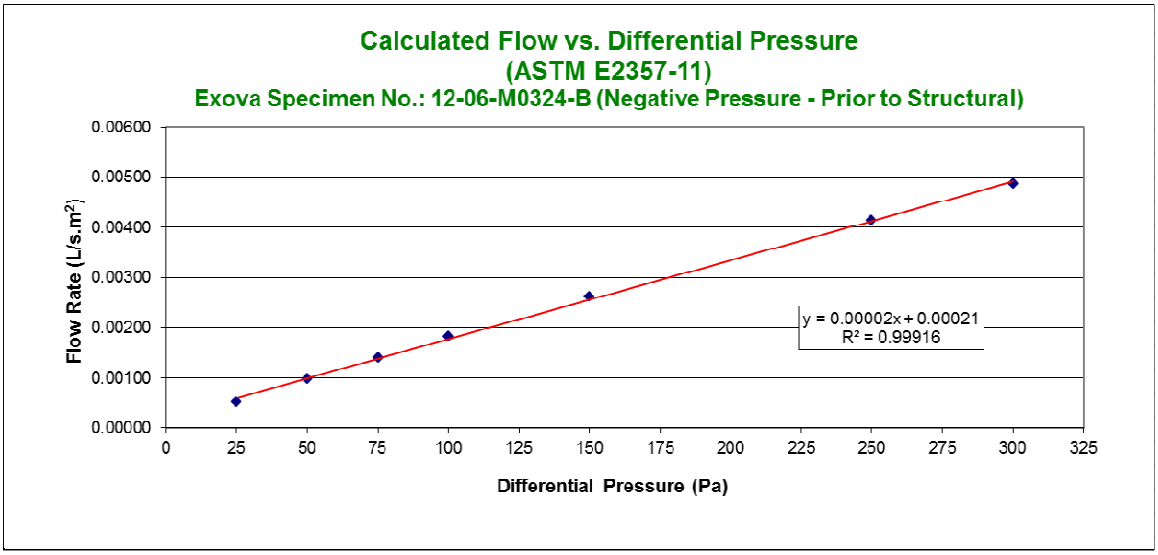

Figure 10 – Exova Specimen No.: 12-06-M0324-B Exfiltration Air Leakage Prior to Wind Conditioning

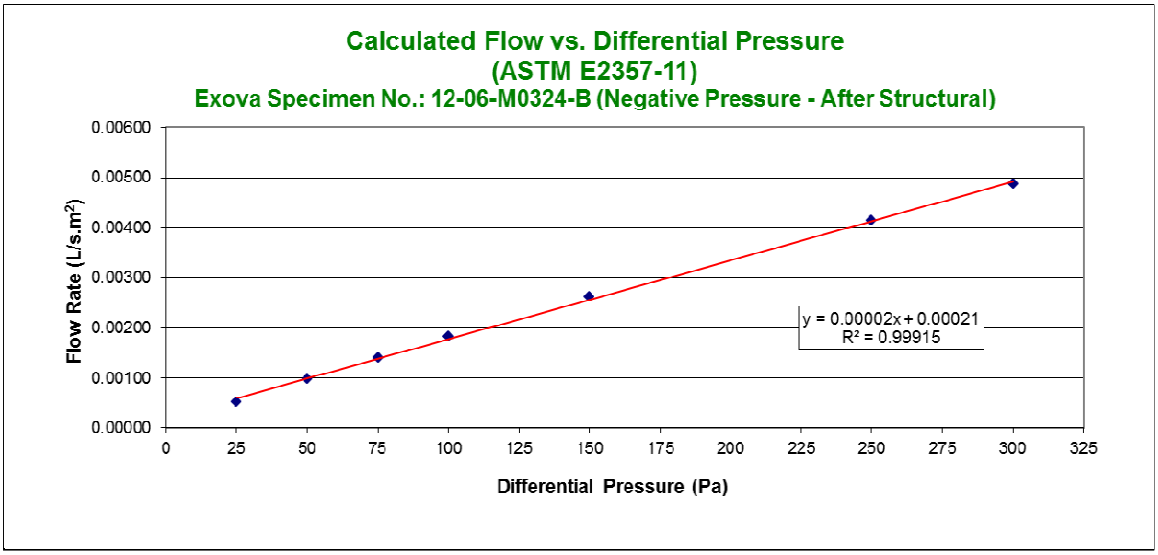

Figure 11 – Exova Specimen No.: 12-06-M0324-B Infiltration Air Leakage Prior to Wind Conditioning

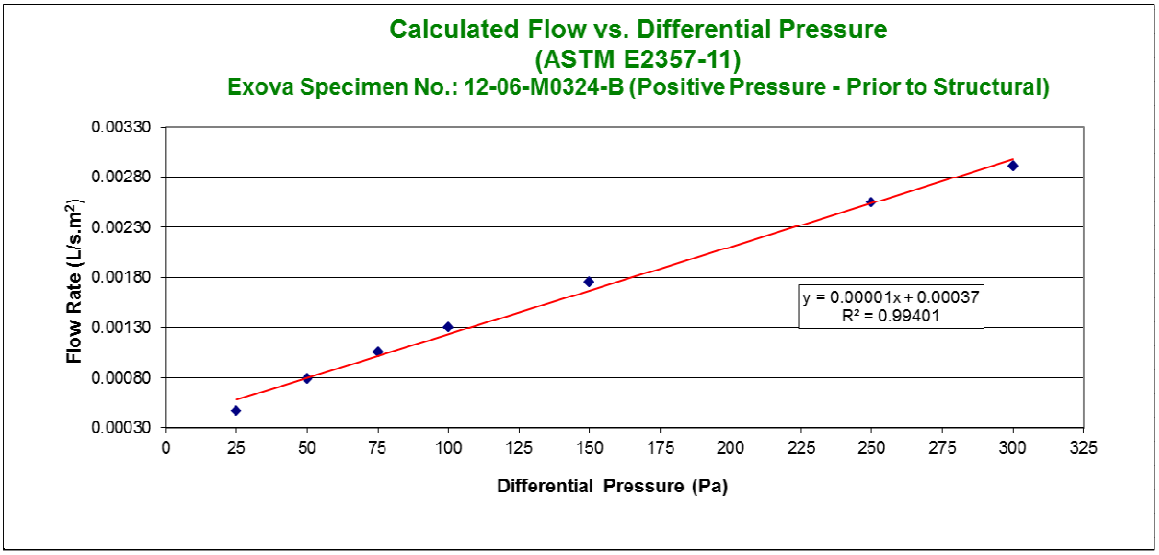

Figure 12 – Exova Specimen No.: 12-06-M0324-B Exfiltration Air Leakage After Wind Conditioning (Ambient)

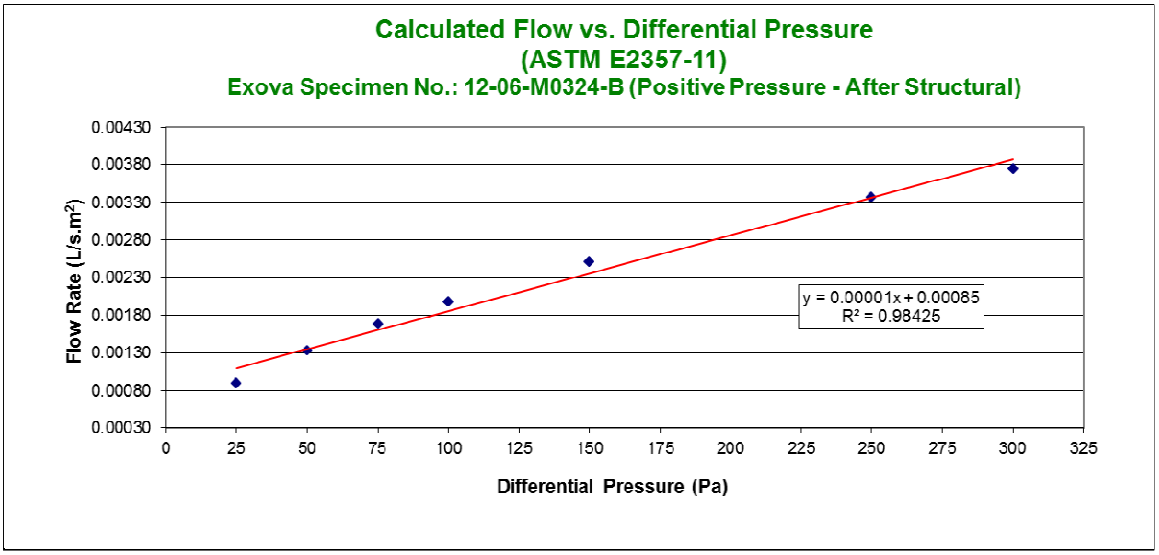

Figure 13 – Exova Specimen No.: 12-06-M0324-B Infiltration Air Leakage After Wind Conditioning (Ambient)

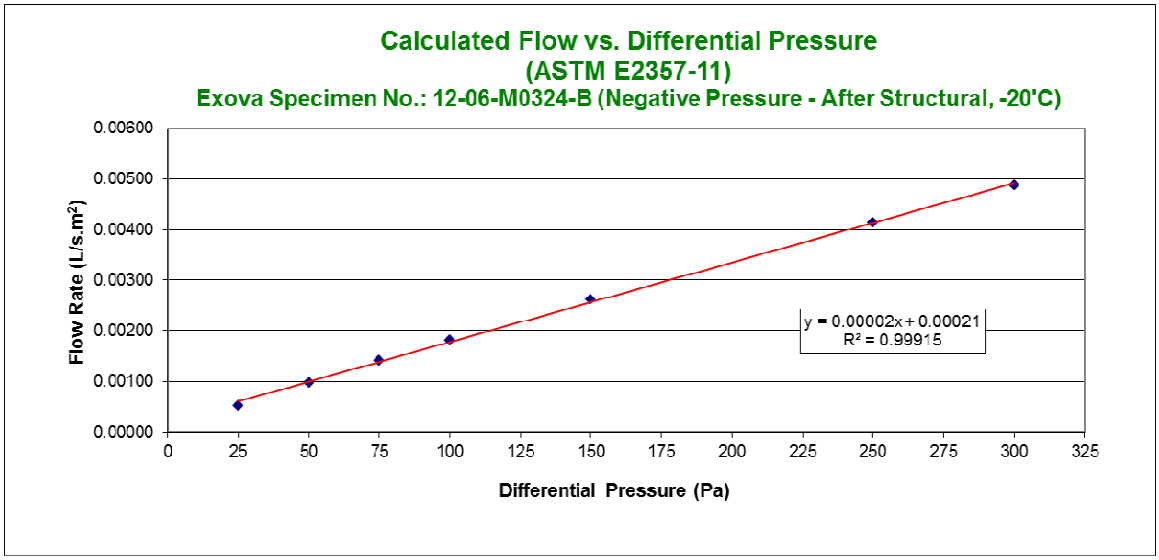

Figure 14 - Exova Specimen No.: 12-06-M0324-B Exfiltration Air Leakage After Wind Conditioning (Cold)

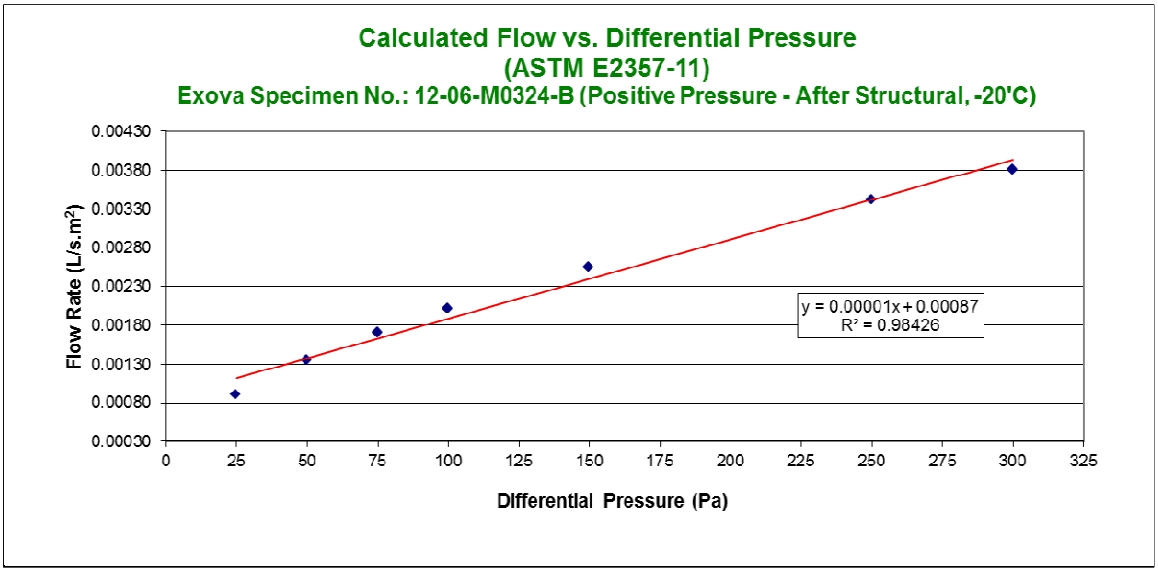

Figure 15 – Exova Specimen No.: 12-06-M0324-B Infiltration Air Leakage After Wind Conditioning (Cold)

Table 8 – Wind Pressure Loading Deflection Results in Accordance with CAN/ULC S742-11, Section 6.3.3
Exova Specimen No.: 12-06-M0324-B

Cycle	Pressure (Pa)	Gauge Numbers (Locations) & Maximum Deflections (mm)						
		1	2	3	4	5	6	7
Sustained Loads	150	-0.3	-0.1	-1.7	-1.8	-1.3	0.0	3.4
	300	-1.0	-0.3	-2.9	-2.8	-2.7	-1.3	0.3
	450	-1.1	0.3	-4.3	-5.5	-4.0	-0.1	2.4
	650 (P_1)	-8.2	-1.6	-9.7	-9.7	-9.1	-2.3	*Gauge Error*
	-150	0.7	0.4	1.5	4.9	1.4	1.7	1.3
	-300	1.1	0.1	3.3	5.2	3.4	0.5	0.7
	-450	2.6	0.4	7.2	8.9	6.5	0.2	2.6
	-650 (P_1')*	4.8	1.7	10.3	11.2	11.0	3.0	6.3
Cyclic Loads	**0 to 950 (P_2)**	-5.4	-1.5	-12.4	-14.1	-12.1	-2.8	*Gauge Error*
	0 to -950 (P_2')	7.6	2.1	14.9	16.7	14.8	3.6	6.0
Gust Loads	**0 to 1410 (P_3)**	-5.9	-0.7	-17.0	-18.0	-16.2	-0.7	-5.0
	0 to -1410 (P_3')	7.9	0.9	19.4	21.1	19.0	0.9	7.4

Table 9 – Deflection Results in Accordance with CAN/ULC S742-11, Section 6.3.4
Exova Specimen No.: 12-06-M0324-B

Cycle	Pressure (Pa)	Gauge Numbers (Locations) & Deflections (mm)						
		1	2	3	4	5	6	7
Wind Loading	0 to 950	-3.6	-10.8	-11.8	-10.5	0.9	-2.8	-3.6
	0 to –950	5.1	13.2	14.6	12.9	0.1	4.9	5.1

Note: The locations for each gauge number are located on the following page in Figure 16.

Wall Section Observations During Structural Wind Loading

During the wind loading schedule as shown in Tables 8 and 9, there were no visible signs of Exova Specimen No. 12-06-M0324-B tearing, peeling or cracking away from the sheathed wall section.

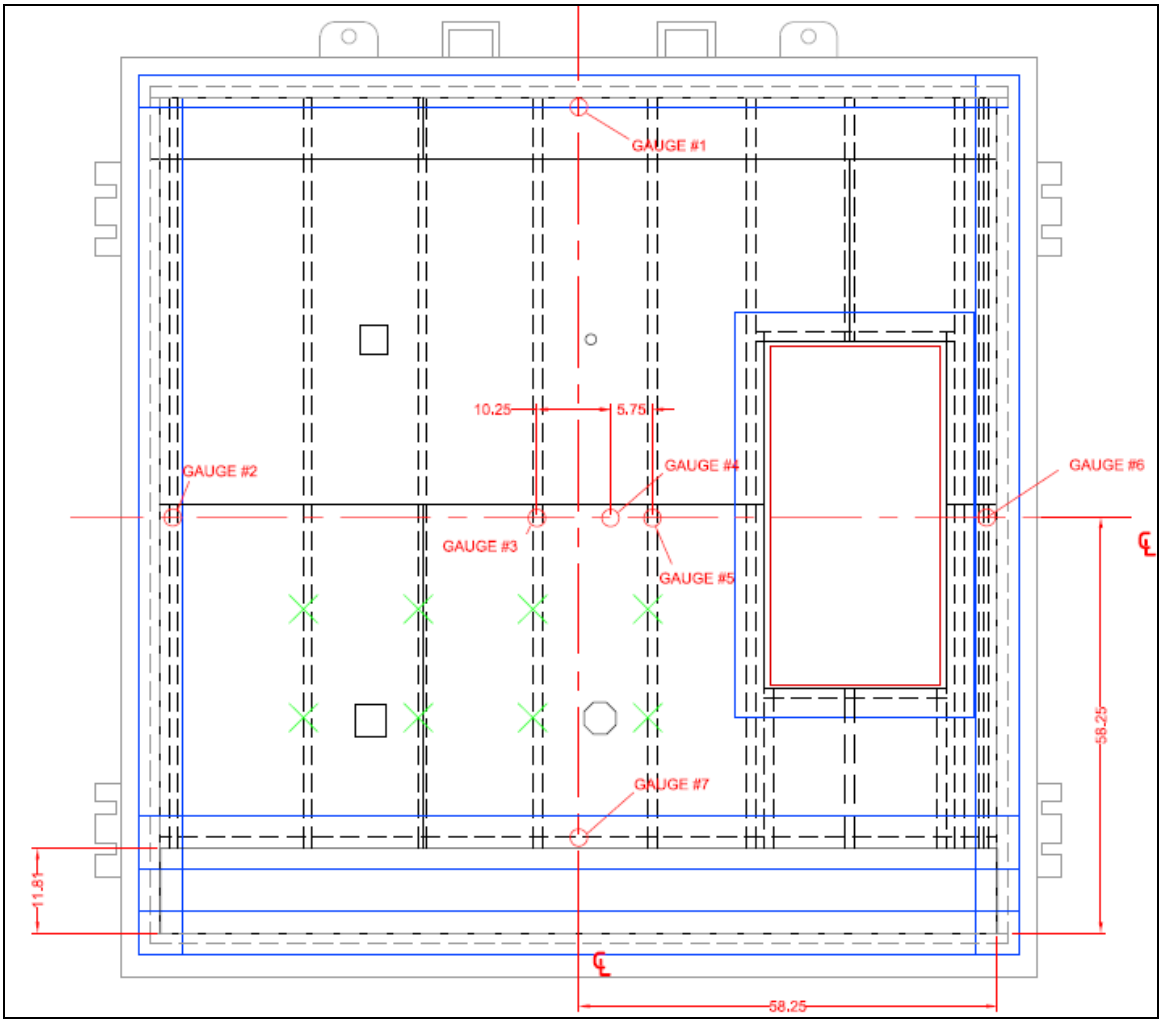

Figure 16 – Exova Specimen 12-06-M0324-B Gauge Locations

4.0 CONCLUSION

LATICRETE International Inc. "LATICRETE Building Envelope System" air barrier system *(Exova Specimen Numbers: 12-06-M0324-A & B)*, comply with the air leakage requirements of CAN/ULC S742-11 utilizing steel-stud framing construction and achieved an "A1" air leakage rate classification at a 1 in 50 hourly wind pressure difference of 650 Pa, 12 meters above grade.

The summarized test results are located in the table below:

Exova Specimen No.:	Airflow	Optional	Ambient	Cold	Air Leakage Rate Classification[(1)]
		Calculated Air Leakage at 75 Pa Prior to Wind Pressure Conditioning ($L/s \cdot m^2$)	Calculated Air Leakage at 75 Pa After Wind Pressure Conditioning ($L/s \cdot m^2$)	Calculated Air Leakage at 75 Pa After Wind Pressure Conditioning ($L/s \cdot m^2$)	
12-06-M0324-A *(Opaque Wall)*	-	0.00017	0.00069	0.00070	**A1**
	+	0.00038	0.00058	0.00060	
12-06-M0324-B *(Penetrated Wall in Combination with a Foundation Interface)*	-	0.00141	0.00141	0.00141	
	+	0.00106	0.00168	0.00171	

Notes: '-' denotes exfiltration airflow direction (simulated negative wind loading)
'+' denotes infiltration airflow direction (simulated positive wind loading)

Reported by:

Jordan M. Church, B.Tech, Technologist, Ext. 546
Supervisor, Fenestration / Walls
Products Division

Reviewed & Authorized by:

Franz C. Bauer, Ext 406
Technical Manager, Building Performance Centre
Products Division

APPENDIX A

LATICRETE Air & Weather Barrier Data Sheet
(Provided by LATICRETE International Inc.)

(3 Pages)

Air & Water Barrier

DS-661.0-0812

1. PRODUCT NAME

LATICRETE® Air & Water Barrier

2. MANUFACTURER

LATICRETE International, Inc.
1 LATICRETE Park North
Bethany, CT 06524-3423 USA

Telephone: +1.203.393.0010, ext. 235
Toll Free: 1.800.243.4788, ext. 235
Fax: +1.203.393.1684
Internet: **www.laticrete.com**

3. PRODUCT DESCRIPTION

LATICRETE Air & Water Barrier is single component, load bearing, fluid applied, waterproofing, crack isolation, air barrier membrane. LATICRETE Air & Water Barrier produces a seamless, monolithic elastomeric coating and bonds directly to a wide variety of substrates. LATICRETE Air & Water Barrier is a low VOC, self-curing, water – based formula containing antimicrobial technology used in construction where air & water barriers are required to improve building efficiencies & durability. This membrane is a vital component of the LATICRETE Air & Water Barrier comprehensive building protection system.

Uses

- Designed for use as an air and water barrier behind exterior wall claddings.
- Performs as a component of air barrier assembly when used with other wall components within the building envelope.
- Bridges up to 1/4" (6mm) gaps on sheathing board joints with LATICRETE Waterproofing/Anti-Fracture Fabric.
- Creates an air and water barrier coating for applications to glass mat gypsum exterior sheathing panels, exterior glue plywood, OSB, cement board sheathing and other approved substrates.
- Consult LATICRETE Technical Services Department for further options.

Advantages

- Adhered Exterior veneers may be installed to membrane using LATICRETE MVIS Polymer Fortified Masonry Veneer Mortars over concrete, brick, cement plaster and cement backer board.
- Excellent bond strength
- Contribute to overall building energy efficiency
- Contains Microban® antimicrobial product protection
- Rapid drying
- Lighter color for ease of inspection
- Safe—no solvents and non-flammable

Suitable Substrates

- Concrete & Brick Masonry †
- Cement Plaster †
- Oriented Strand Board (OSB) *
- Exterior Glue Plywood *
- Cement Backer Board * †
- Glass Mat Gypsum Exterior Sheathing Panels *

†Suitable as a load bearing substrate for installation of direct adhered masonry veneers.
*Consult panel manufacturer for specific installation recommendations and to verify acceptability for intended use.

Packaging

Commercial Unit
5 gal (18.9 ℓ) pail liquid (36 commercial units/pallet)

Approximate Coverage

Commercial Unit: 250 ft² (23.2 m²)
Each wet coat thickness is 15 – 22 mils, 0.015" – 0.022" (0.4 – 0.6mm); use wet film gauge to check thickness; consumption/coat is approximately 0.01 gal/ft2 (0.4 L/m2); coverage/coat is approximately 100 ft2/gal (2.5 m2/L). Applied in two coats for a total dry coat thickness of 20-30 mils, 0.02-0.03" (0.5-0.8mm); for a total of 250 ft2 per 5 gallons/23.2m2 per (18.9 L) pail.

Shelf Life

Factory sealed containers of this product are guaranteed to be of first quality for two (2) years* if stored at temperatures >32°F (0°C) and <110°F (43°C).

Limitations

- Do not bond to OSB, particle board, luan, Masonite® or hardwood surfaces
- Do not install over structural cracks, cracks with vertical movement or cracks with >1/8" (3 mm) horizontal movement.
- Do not use as a primary roofing membrane over occupied space.

- Based on information provided in the Technical Data Table – Section 4 of this document. The design professional / specifier should detail and specify vapor barrier layer material type and location within the installation assembly and in accord with local building codes and to determine suitability of LATICRETE Air & Water Barrier within the installation assembly.
- Do not expose to negative hydrostatic pressure, rubber solvents or ketones.
- Do not expose membrane directly to sun or weather for more than 30 days.
- Do not use below grade.
- LATICRETE Air & Water Barrier is a secondary weather barrier. The outer façade finish is the primary weather barrier and must be installed and maintained per manufacturer's guidelines in order to ensure the proper performance of LATICRETE Air & Water Barrier.
- Do not install if surface or air temperature is below 50°F (10°C) or above 90°F(32°C).
- Not for use beneath cement or other plaster finishes. Consult with plaster manufacturer for their recommendations when waterproofing membrane is required under plaster finishes.

Cautions

Consult MSDS for more safety information.

- Wet coat thickness is 0.015 to 0.022" (0.4 to 0.6 mm) per coat. Use a wet film thickness gauge to check thickness.
- The LATICRETE Air & Water Barrier will go from a light sage green to a darker olive green when fully cured. The second coat should not be applied until the first coat is dry to the touch.
- Review local building codes and obtain any required approvals before using LATICRETE Air & Water Barrier. Placement of LATICRETE Air & Water Barrier in a wall assembly to be determined by project design professional.
- Allow wet mortars/plasters to cure for a minimum of 72 hours at 70°F (21°C) / 50% R.H. prior to installing LATICRETE Air & Water Barrier.
- Mechanical anchors, brick ties, furring strips, finish cladding supports or other penetrations through LATICRETE Air & Water Barrier should be sealed and made air and water tight.
- For all finishes: The successful performance and installation of exterior finishes is dependent upon the proper design and construction of the finish, adjacent building materials and systems of the assembly. Follow all applicable industry guidelines and building codes for the respective utilized finish.
- When LATICRETE® Air & Water Barrier is installed in conjunction with other building materials; it must be properly integrated so that water is diverted to the exterior of the wall system.
- Use of certain additives, coatings or cleansers on or in the façade system may impact the performance of LATICRETE Air & Water Barrier. It is the user's responsibility to determine the proper construction materials needed.
- For adhered veneer applications, substrates must be structurally sound, stable and rigid enough to support the intended finish. Substrate deflection under all live, dead and impact loads, including concentrated loads, must not exceed L/600 where L=span length.
- Placement of LATICRETE Air & Water Barrier in a wall assembly to be determined by project design professional.

4. TECHNICAL DATA

Applicable Standard

Total VOC content pounds/gallon (grams/liter) of product in unused form is 0.02lb/gal (2.39 g/ℓ).
ICC – ES AC212: Acceptance Criteria for Resistive Coatings us as Water Resistive Barriers over Exterior Sheathing.
ICC – ED AC38: Acceptance Criteria for Water-Resistive Barriers

Physical Properties

Physical Property	Test Method	LATICRETE® Air & Water Barrier™
Fastener Sealability	ASTM D1970-01	Pass
Flatwise Tensile Strength to Aluminum	ASTM C297	546 psi (3.8 MPa)
Flatwise Tensile Strength to Copper	ASTM C297	216 psi (1.5 MPa)
Flatwise Tensile Strength to Galvanized Steel	ASTM C297	530 psi (3.7 MPa)
Flatwise Tensile Strength to Polyvinyl Chloride (PVC)	ASTM C297	273 psi (1.9 MPa)
Tensile Strength Painted Aluminum	ASTM C297	368 psi (2.5 MPa)
Freeze Thaw Glass Mat Gypsum Exterior Sheathing Panels	AC212 Sec. 4.2	Pass 10 Cycles
Freeze Thaw Cement Board	AC212 Sec. 4.2	Pass 10 Cycles
Water Resistance Test Glass Mat Exterior Gypsum Sheathing Panels	ASTM D2247	Passed 14 Day Exposure
Water Resistance Test Cement Board	ASTM D2247	Passed 14 Day Exposure
Pull-Off Strength CMU	ASTM D4541-02	223 PSI
Pull-Off Strength Glass Mat Gypsum Exterior Sheathing Panels	ASTM D4541-02	47 PSI
Water Vapor Transmission Rate	ASTM E96-00e1 (Procedure A) Desiccant Method	1.081 gm/24 hr.m^2
Water Vapor Permeance	ASTM E96-00e1 (Procedure A) Desiccant Method	0.157 (grains/hr.in.Hg.ft^2) (Perms)
Water Vapor Transmission Rate	ASTM E96-00e1 (Procedure B) Water Method	6.8 gm/24 hr.m^2
Water Vapor Permeance	ASTM E96-00e1 (Procedure B) Water Method	1.002 (grains/hr.in.Hg.ft^2) (Perms)
Water Penetration Test	ASTM E331	Pass
Transverse Load (Structural) Test	ASTM E1233	Pass
Racking Shear Test	ASTM E72	Pass
Restrained Environmental Conditioning	AC212 Sec. 4.7.3	Pass
Weathering Test	AC212 SEC. 4.8	Pass
Ultraviolet Exposure	AC212	Pass
Accelerated Aging	AC212	Pass
Hydrostatic Pressure Test	AATCC 127	Pass
Air Permeance Test	ASTM E 2178	Pass

5. INSTALLATION

See LATICRETE Air & Water Barrier How to Install Instructions DS 661.5 for complete installation instructions.

LATICRETE Air & Water Barrier can be applied using airless spray equipment or paint roller. All areas must have two coats to ensure proper coverage. Substrate will not show through LATICRETE Air & Water Barrier if coated with 0.020–0.030" (0.5–0.8 mm) of dried membrane. Color changes from a light sage to olive green when fully cured.

Surface Preparation

Surface temperature must be 50–90°F (10–32°C) during application and for 24 hours after installation. All substrates must be structurally sound, clean and free of dirt, oil, grease, paint, laitance, efflorescence, concrete sealers or curing compounds. Dampen hot, dry surfaces and sponge off excess water—installation may be made on a damp surface. Remove loose aggregates, concrete, nails, screws or other sharp protrusions that may interfere with or compromise the adhesion of the LATICRETE Air & Water Barrier.

- Install sheathing boards and panels per board/panel manufacturer's installation instructions.
- Installer must verify that deflection under all live, dead and impact loads is L/600 for all exterior adhered veneer applications where L=span length.

Cleaning

While wet, LATICRETE Air & Water Barrier can be washed from tools with water.

6. AVAILABILITY AND COST

Availability

LATICRETE and LATAPOXY® materials are available worldwide.

For Distributor information, call:

Toll Free: 1.800.243.4788, ext. 235
Telephone: +1.203.393.0010

For on-line Distributor Information, visit LATICRETE at **www.laticrete.com.**

Cost

Contact a LATICRETE Distributor in your area.

7. WARRANTY

See 10. FILING SYSTEM.

DS 230.13: LATICRETE Product Warranty

A component of:

DS 230.15-SPD: LATICRETE 15 Year System Warranty – SPD For Steel or Wood Framed Exterior Facades
DS 025.0-SPD: LATICRETE 25 Year System Warranty – SPD

8. MAINTENANCE

LATICRETE and LATAPOXY grouts, sealants and pointing mortars require routine cleaning with a neutral pH soap and water. All other LATICRETE and LATAPOXY materials require no maintenance but installation performance and durability may depend on properly maintaining products supplied by other manufacturers.

9. TECHNICAL SERVICES

Technical Assistance

Information is available by calling the LATICRETE Technical Service Hotline (hours 8:00 AM to 5:30 PM EST):

Toll Free: 1.800.243.4788, ext. 235
Telephone: +1.203.393.0010, ext. 235
Fax: +1.203.393.1948

Technical and Safety Literature

To acquire technical and safety literature, please visit our website at **www.laticrete.com.**

10. FILING SYSTEM

Additional product information is available on our website at **www.laticrete.com**. The following is a list of related documents:

DS 230.13: LATICRETE Product Warranty
DS 230.15-SPD: LATICRETE 15 Year System Warranty – SPD For Steel or Wood Framed Exterior Facades
DS 025.0-SPD: LATICRETE 25 Year System Warranty – SPD
DS 070.0: LATAPOXY Waterproof Flashing Mortar
DS 237.0: LATICRETE Waterproofing/Anti-Fracture Fabric
DS 6200.1: LATICRETE Latasil™
DS 661.5: How to install instructions – LATICRETE Air & Water Barrier
TDS 410M: Spraying LATICRETE Air & Water Barrier

LATICRETE International, Inc.
One LATICRETE Park North, Bethany, CT 06524-3423 USA • 1.800.243.4788 • +1.203.393.0010 • www.laticrete.com

APPENDIX B

Logarithmic Air Leakage Graphs

Exova Specimen No.: 12-06-M0324-A

(Opaque Wall Section)

(3 Pages)

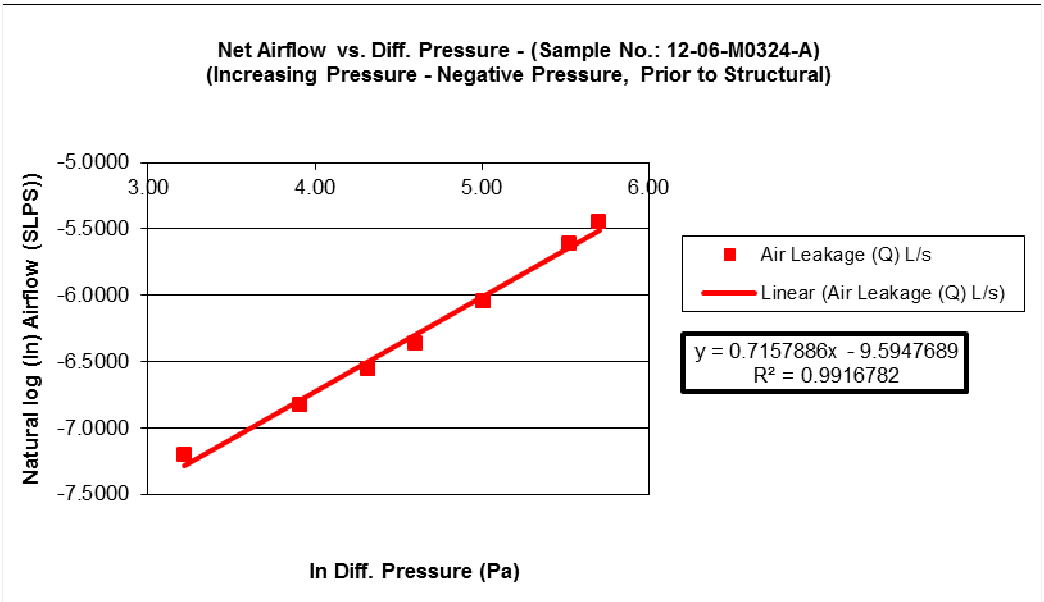

Figure B-1 – Exova Specimen 12-06-M0324-A Exfiltration Log/Log Graph Prior to Structural Cycling

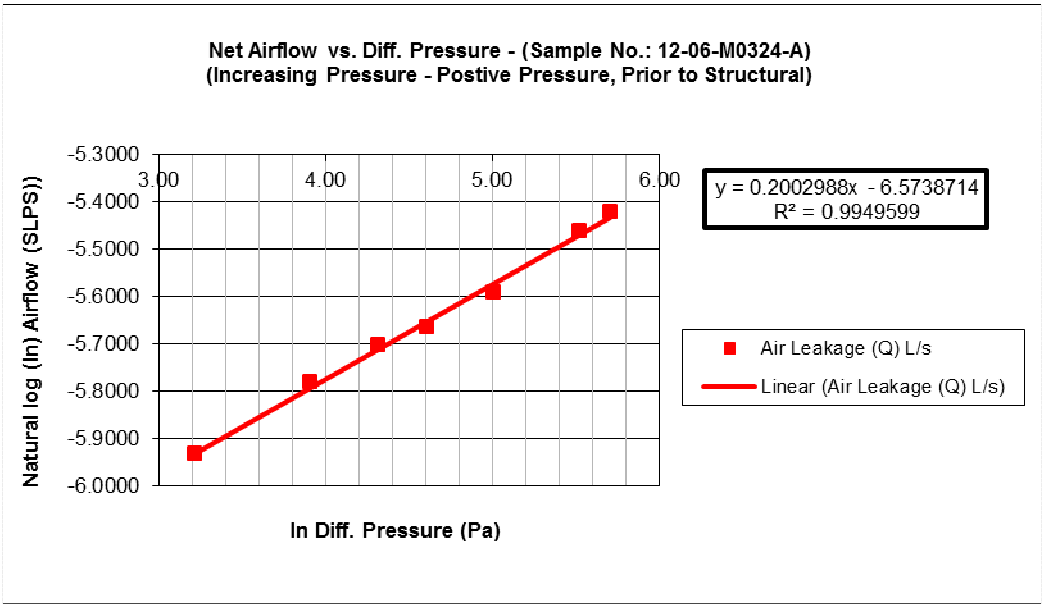

Figure B-2 – Exova Specimen 12-06-M0324-A Infiltration Log/Log Graph Prior to Structural Cycling

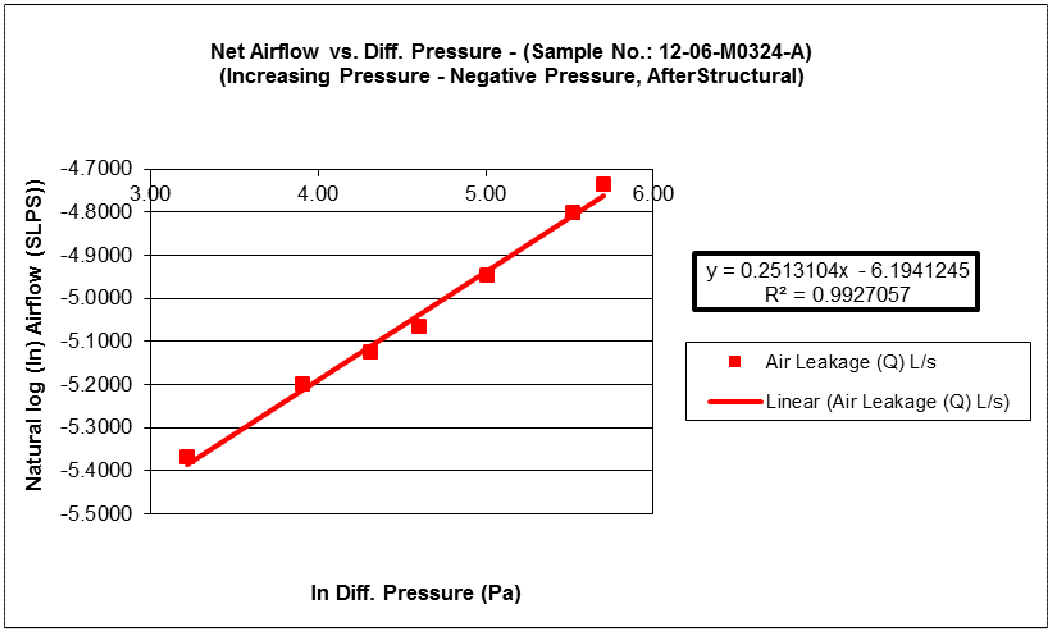

Figure B-3 – Exova Specimen 12-06-M0324-A Exfiltration Log/Log Graph After Structural Cycling

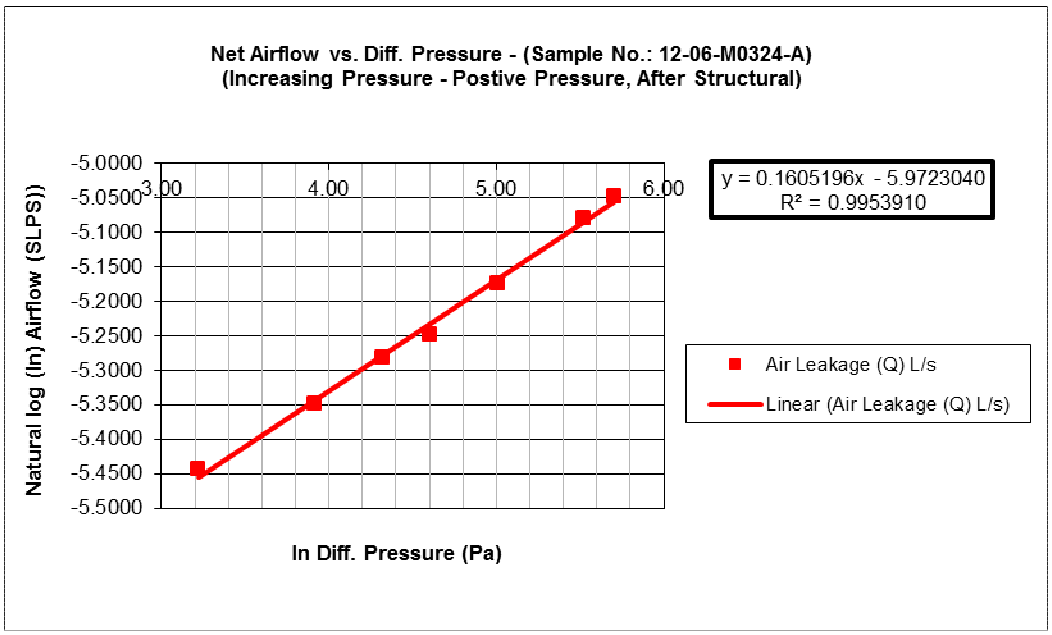

Figure B-4 – Exova Specimen 12-06-M0324-A Infiltration Log/Log Graph After Structural Cycling

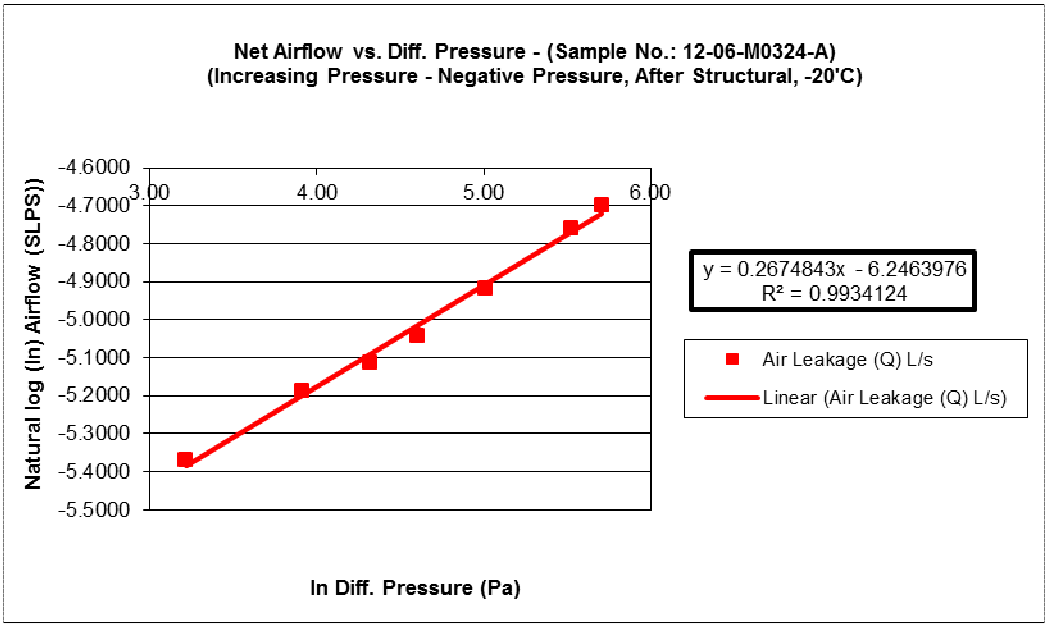

Figure B-5 – Exova Specimen 12-06-M0324-A Exfiltration Log/Log Graph After Structural Cycling (Cold)

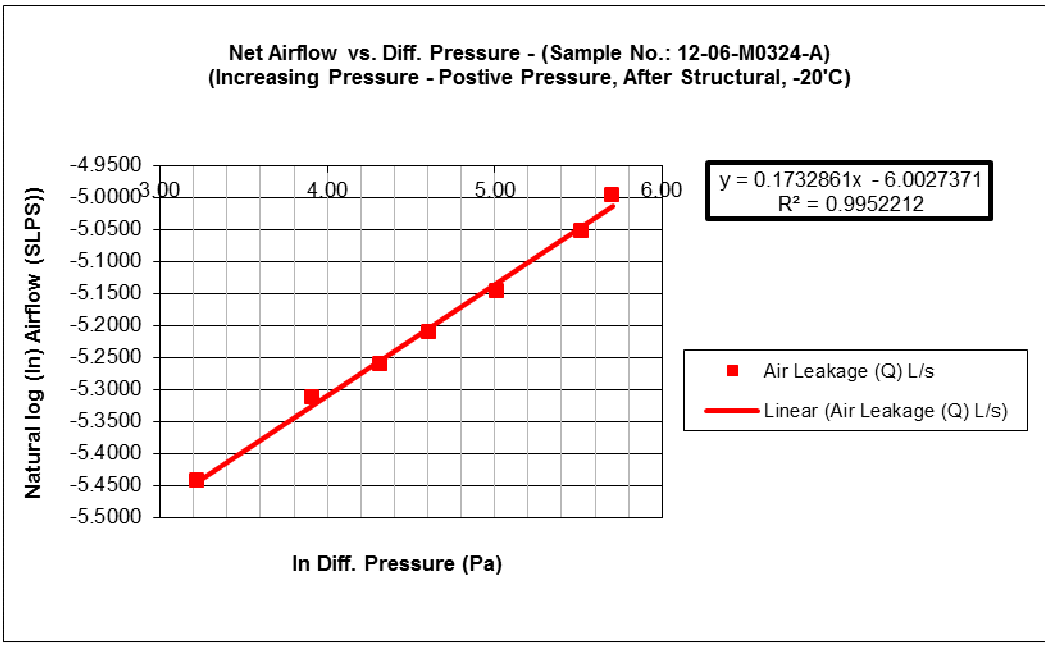

Figure B-6 – Exova Specimen 12-06-M0324-A Infiltration Log/Log Graph After Structural Cycling (Cold)

APPENDIX C

Logarithmic Air Leakage Graphs

Exova Specimen No.: 12-06-M0324-B

(Continuity at Penetrations / Foundation / Roof Interface Wall Section)

(3 Pages)

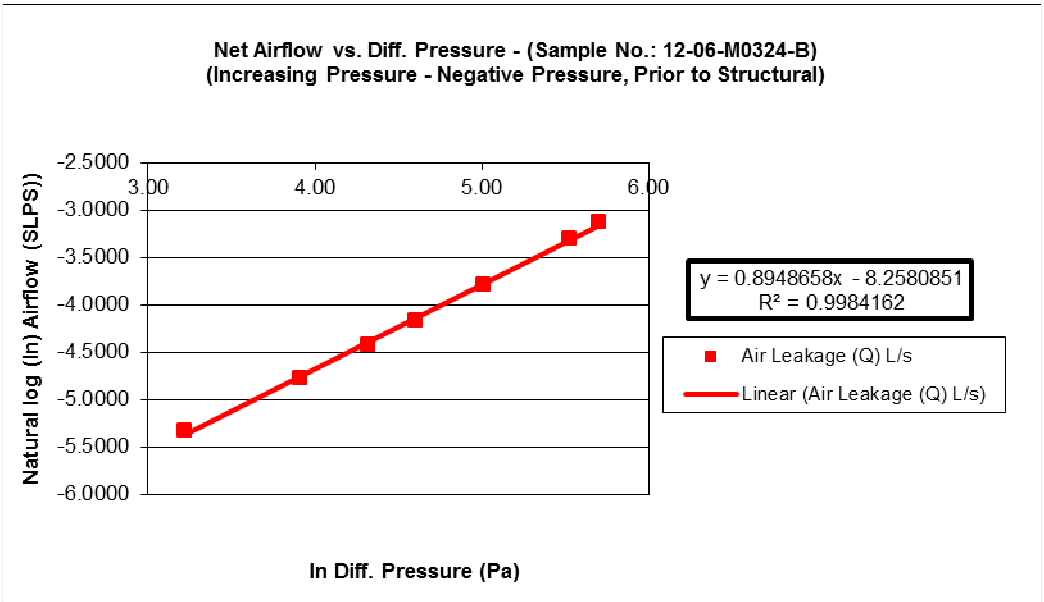

Figure C-1 – Exova Specimen 12-06-M0324-B Exfiltration Log/Log Graph Prior to Structural Cycling

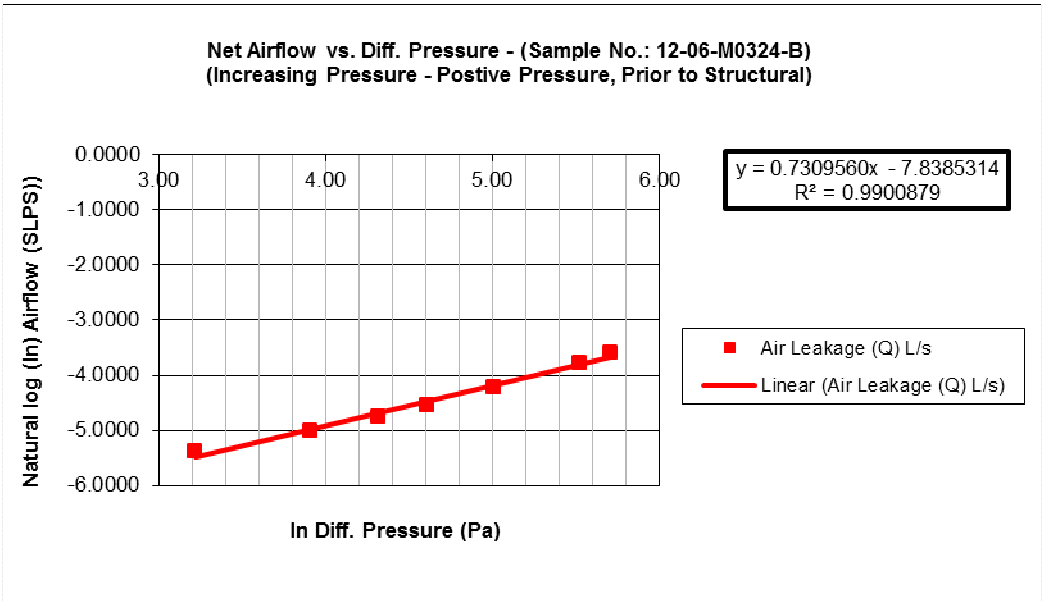

Figure C-2 – Exova Specimen 12-06-M0324-B Infiltration Log/Log Graph Prior to Structural Cycling

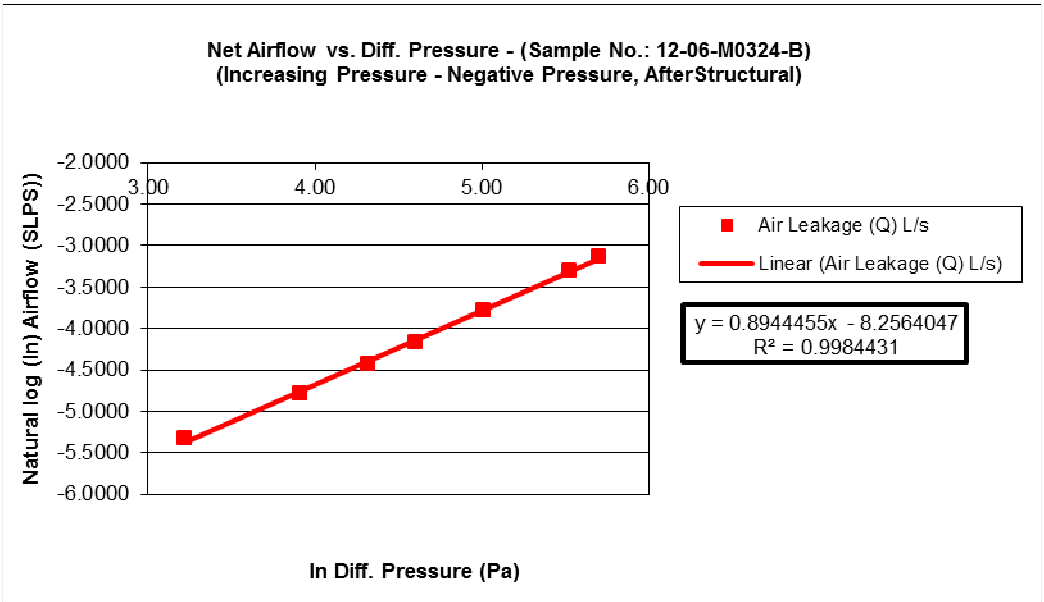

Figure C-3 – Exova Specimen 12-06-M0324-B Exfiltration Log/Log Graph After Structural Cycling

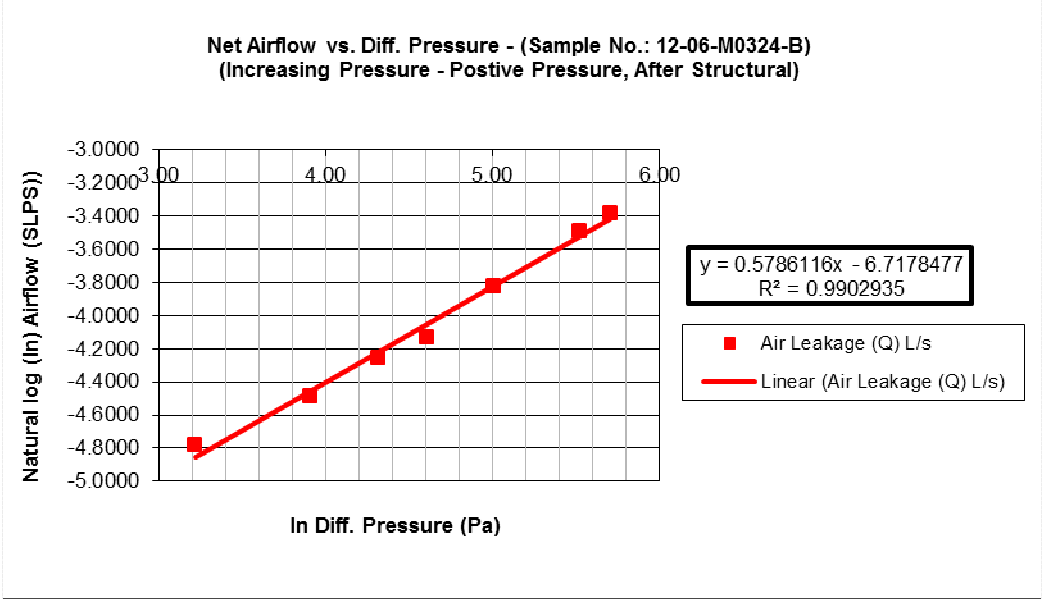

Figure C-4 – Exova Specimen 12-06-M0324-B Infiltration Log/Log Graph After Structural Cycling

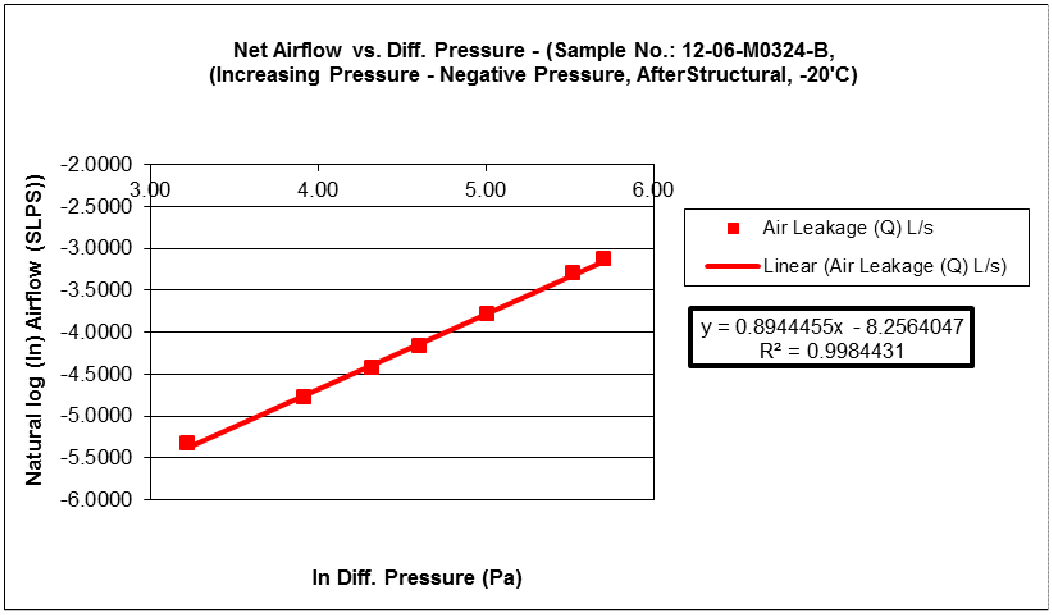

Figure C-5 – Exova Specimen 12-06-M0324-B Exfiltration Log/Log Graph After Structural Cycling (Cold)

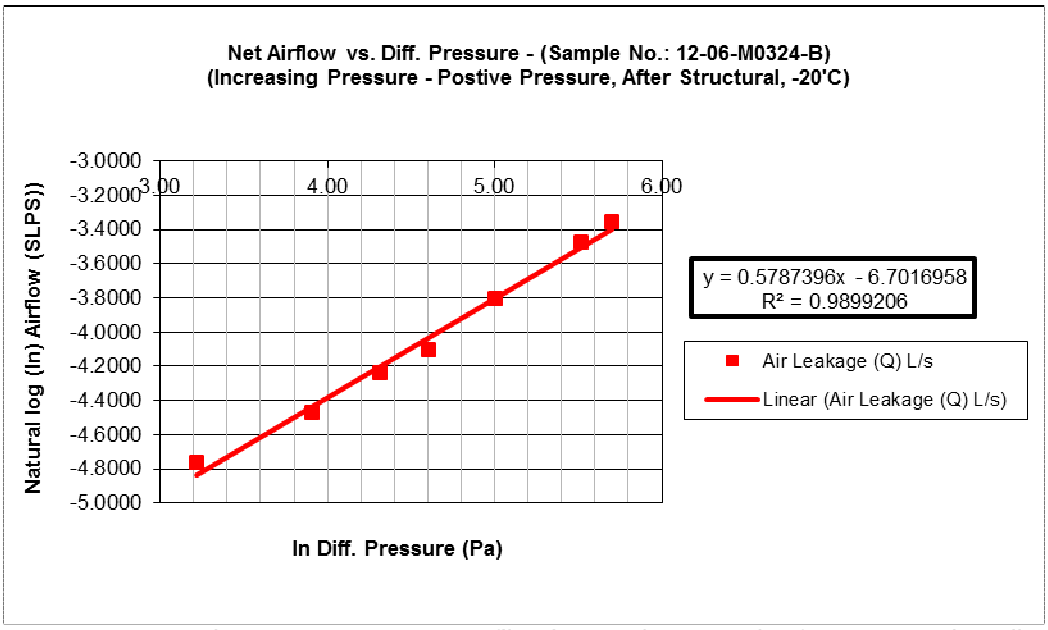

Figure C-6 – Exova Specimen 12-06-M0324-B Infiltration Log/Log Graph After Structural Cycling (Cold)

APPENDIX D

LATICRETE Air & Weather Barrier Wall Details & Application Photographs

Exova Specimen No.: 12-06-M0324-A
(Opaque Wall Section)

(2 Pages)

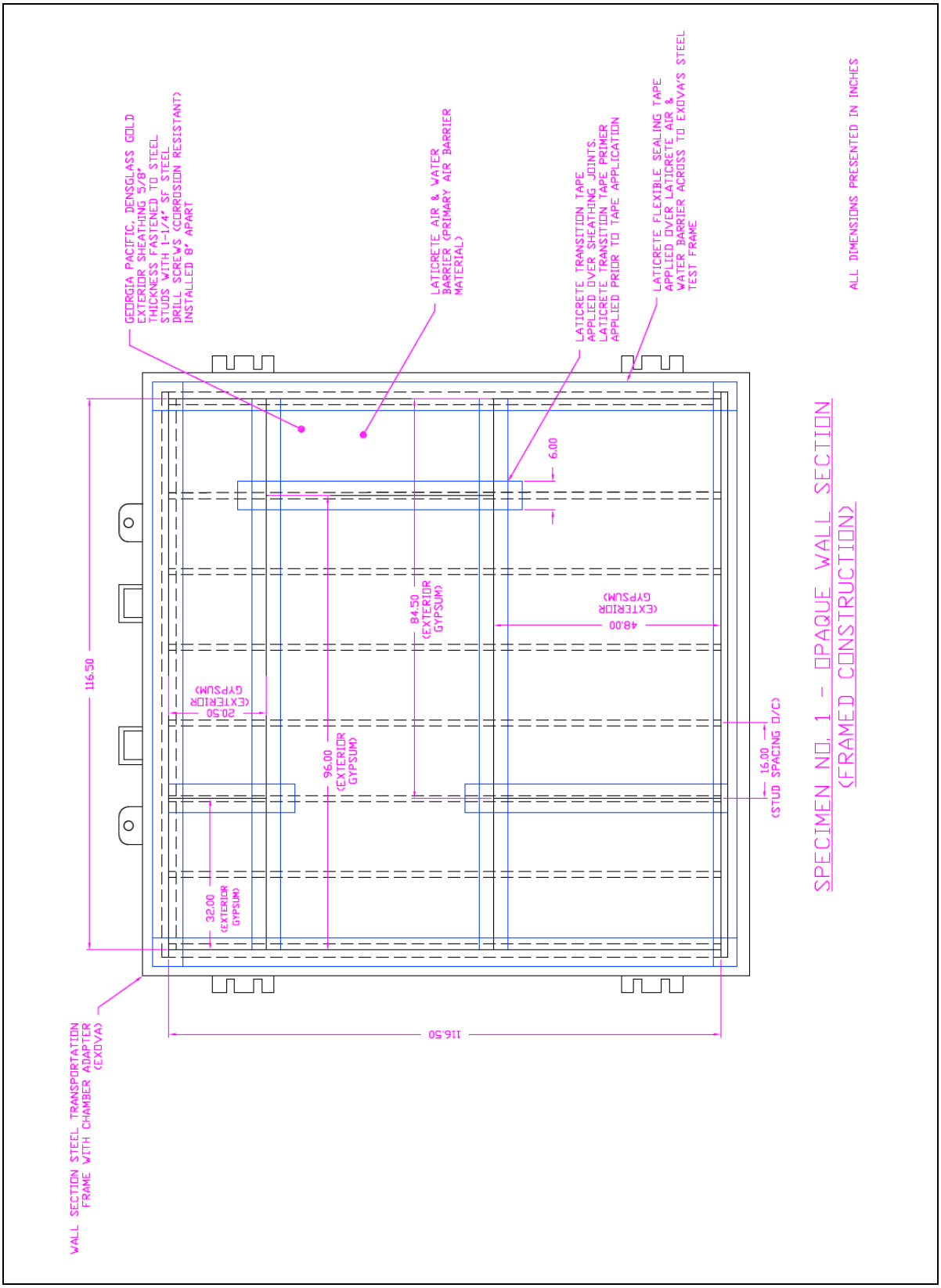
GEORGIA PACIFIC, DENSGLASS GOLD EXTERIOR SHEATHING 5/8" THICKNESS FASTENED TO STEEL STUDS WITH 1-1/4" SF STEEL DRILL SCREWS (CORROSION RESISTANT) INSTALLED 8" APART
LATICRETE AIR & WATER BARRIER (PRIMARY AIR BARRIER MATERIAL)
LATICRETE TRANSITION TAPE APPLIED OVER SHEATHING JOINTS. LATICRETE TRANSITION TAPE PRIMER APPLIED PRIOR TO TAPE APPLICATION
LATICRETE FLEXIBLE SEALING TAPE APPLIED OVER LATICRETE AIR & WATER BARRIER ACROSS TO EXOVA'S STEEL TEST FRAME
ALL DIMENSIONS PRESENTED IN INCHES
6.00
84.50 (EXTERIOR GYPSUM)
48.00 (EXTERIOR GYPSUM)
116.50
20.50 (EXTERIOR GYPSUM)
96.00 (EXTERIOR GYPSUM)
16.00 (STUD SPACING O/C)
32.00 (EXTERIOR GYPSUM)
116.50
WALL SECTION STEEL TRANSPORTATION FRAME WITH CHAMBER ADAPTER (EXOVA)
SPECIMEN NO. 1 - OPAQUE WALL SECTION (FRAMED CONSTRUCTION)

Figure D-1 – Sheathed Opaque Wall Section
(Sheathing Joints Sealed and First Coat of LATICRETE Air & Water Barrier Applied)

Figure D-2 – Completed Air Barrier Installation
(Sheathing Joints Sealed, Second Coat of LATICRETE Air & Water Barrier Applied and LATICRETE Transition Tape and LATICRETE Flexible Sealing Tape Applied)

APPENDIX E

LATICRETE Air & Weather Barrier Wall Details & Application Photographs

Exova Specimen No.: 12-06-M0324-B
(Continuity at Penetrations + Foundation Interface Wall Section)

(8 Pages)

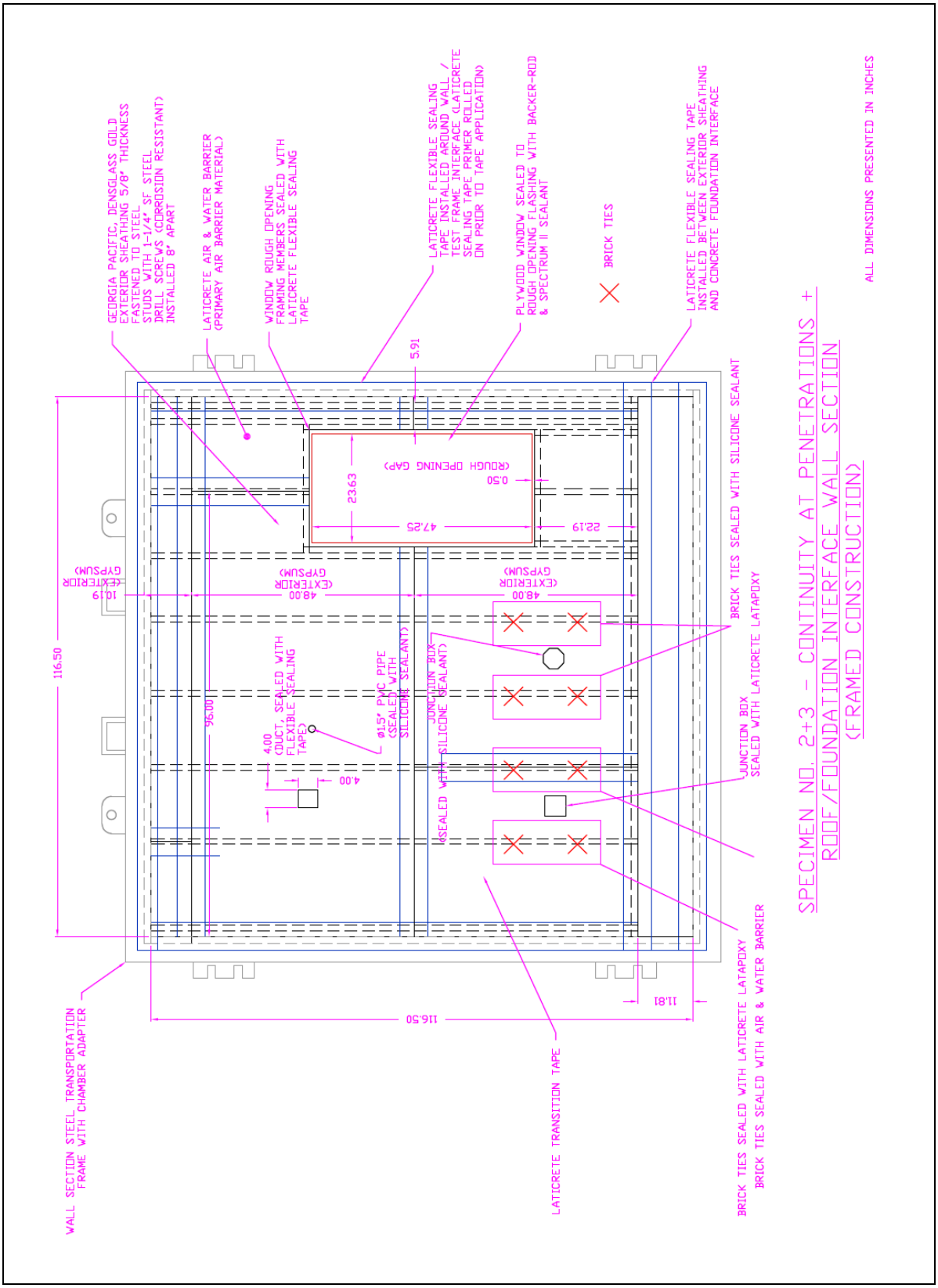
SPECIMEN NO. 2+3 – CONTINUITY AT PENETRATIONS +
ROOF/FOUNDATION INTERFACE WALL SECTION
(FRAMED CONSTRUCTION)
ALL DIMENSIONS PRESENTED IN INCHES
GEORGIA PACIFIC, DENSGLASS GOLD EXTERIOR SHEATHING 5/8" THICKNESS FASTENED TO STEEL STUDS WITH 1-1/4" SF STEEL DRILL SCREWS (CORROSION RESISTANT) INSTALLED 8" APART
LATICRETE AIR & WATER BARRIER (PRIMARY AIR BARRIER MATERIAL)
WINDOW ROUGH OPENING FRAMING MEMBERS SEALED WITH LATICRETE FLEXIBLE SEALING TAPE
LATICRETE FLEXIBLE SEALING TAPE INSTALLED AROUND WALL / TEST FRAME INTERFACE (LATICRETE SEALING TAPE PRIMER ROLLED ON PRIOR TO TAPE APPLICATION)
PLYWOOD WINDOW SEALED TO ROUGH OPENING FLASHING WITH BACKER-ROD & SPECTRUM II SEALANT
BRICK TIES
LATICRETE FLEXIBLE SEALING TAPE INSTALLED BETWEEN EXTERIOR SHEATHING AND CONCRETE FOUNDATION INTERFACE
5.91
(ROUGH OPENING GAP)
0.50
23.63
47.25
22.19
(EXTERIOR GYPSUM)
48.00
10.19
116.50
96.00
4.00 CDUCT SEALED WITH FLEXIBLE SEALING TAPE
4.00
Ø1.5" PVC PIPE (SEALED WITH SILICONE SEALANT)
JUNCTION BOX SEALED WITH SILICONE SEALANT
BRICK TIES SEALED WITH SILICONE SEALANT
JUNCTION BOX SEALED WITH LATICRETE LATAPOXY
11.81
116.50
WALL SECTION STEEL TRANSPORTATION FRAME WITH CHAMBER ADAPTER
LATICRETE TRANSITION TAPE
BRICK TIES SEALED WITH LATICRETE LATAPOXY
BRICK TIES SEALED WITH AIR & WATER BARRIER

Figure E-1 – Application of LATICRETE Flexible Sealing Tape around Window Rough Opening

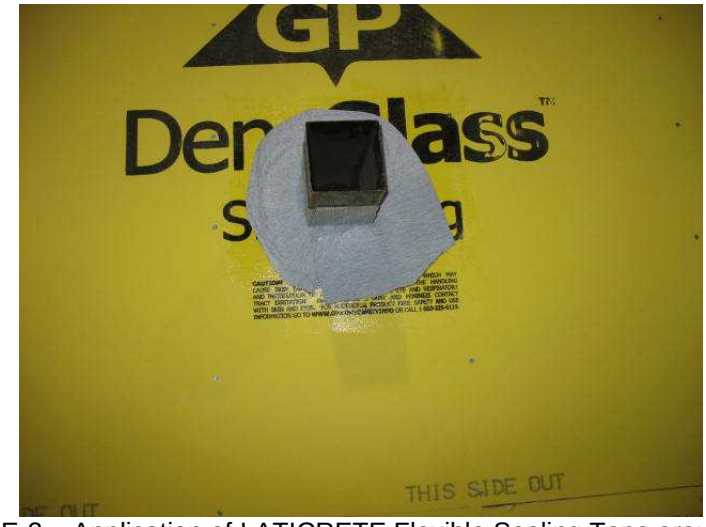

Figure E-2 – Application of LATICRETE Flexible Sealing Tape around Duct

Figure E-3 – Application of LATICRETE Flexible Sealing Tape along Concrete Foundation Interface

Figure E-4 – Application of LATICRETE Air and Water Barrier

Figure E-5 – Application of LATICRETE Waterproof/Anti-Fracture Fabric along Sheathing Joint / Brick Ties

Figure E-6 – Application of LATICRETE Air & Water Barrier

Figure E-7 – Application of LATICRETE Air & Water Barrier

Figure E-8 – Application of LATICRETE Air & Water Barrier

Figure E-9 – Application of LATICRETE Transition Tape Primer around Perimeter Wall / Specimen Transporter Frame Interface

Figure E-10 – Application of LATAPOXY Waterproof Flashing Mortar around Brick Ties and Square Electrical Junction Box / Adjacent Brick Ties Sealed with LATICRETE Air & Water Barrier

Figure E-11 – Application of MVIS Silicone Sealant around Brick Ties and Hexagonal Electrical Junction Box

Figure E-12 – Application of MVIS Silicone Sealant around PVC Pipe

Figure E-13 – Completed Wall Assembly *(red Tuck Tape along Foundation Interface used for Extraneous Bagging Purposes)*