

**PERFORMANCE TEST REPORT  
FOR  
AIR LEAKAGE AND DURABILITY  
OF BARRIER PRODUCTS  
ASTM E 2357**

**Rendered to:**

**BAUTEX SYSTEMS**

**SERIES/MODEL: AMB 20-WN  
PRODUCT TYPE: Air Barrier System**

**Report No.: A1709.04-201-44  
Test Dates: 07/19/10  
Through: 07/22/10  
Report Date: 01/03/13  
Record Retention Date: 07/19/14**

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Rendered to:

BAUTEX SYSTEMS  
101 Thermon Drive, Suite 10  
San Marcos, Texas 78666

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**Project Summary:** Architectural Testing, Inc. was contracted by Bautex Systems to conduct air leakage and durability tests on an air barrier assembly in accordance with ASTM E 2357, *Standard Test Method for Determining Air Leakage of Air Barrier Assemblies*.

**Reference Documents:**

ASTM E 283-04, *Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen*.

ASTM E 2357-05, *Standard Test Method for Determining Air Leakage of Air Barrier Assemblies*.

ASTM E 330-02, *Test Method for Structural Performance of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference*.

**Test Protocol:** A series of laboratory tests were performed to determine air leakage resistance, wind load performance, and durability of an air barrier assembly. The installations were tested for air leakage and structural performance testing using ASTM E 283-04, ASTM E 2357-05, and ASTM E 330-02. The durability of the selected installations was evaluated and re-testing for air leakage was performed.

**Test Specimen Description:** Two walls were constructed for this project. Both walls measured 96" wide by 96" high.

**Wall #1 Construction (Penetrated Wall):** The wall was constructed of 2 x 6, 18 gauge steel studs spaced 16" on center and sheathed with nominal 1/2" thick DensGlass sheathing. The sheathing was secured with #8 x 1" long flat head screws spaced 8" on center. The wall was set atop a sill foam strip that was on a 12" thick by 12" high by 96" long concrete beam at the sill to represent an air barrier assembly/foundation wall interface.

**Wall #1 Installation (Penetrated Wall):** Sheathing joints were taped over with Venture VTC 1585CW sheathing tape 3" wide. The assembly was then covered with Bautex Systems, AMB 20-WN primary air barrier material that was spray applied uniformly across the wall at a 32 mil wet thickness average. The assembly/foundation joint was taped over with Venture VB300 Air Barrier Foil 9" width. Penetrations in the assembly included a 24" by 48" window blank, a 4" by 4" duct, a 1-1/2" diameter PVC pipe, and two electrical box penetrations, one square and one octagon per ASTM E 2357. Six masonry anchors were additionally secured to the assembly with #8 x 2" screws before the AMB 20-WN air barrier was applied. The electrical boxes, 1-1/2" PVC pipe, and the perimeter of the window blank were flashed with Venture VB400 tape self-adhering flashing 6" width. The 4" by 4" duct was sealed with Venture VB300 Air Barrier Film. The dry thickness of the Bautex Systems AMB 20-WN primary air barrier material was 22 mil (Reference Photo #1 for details).

**Wall #2 Construction (Control Wall):** The wall was constructed of 2 x 6, 18 gauge steel studs spaced 16" on center and sheathed with nominal 1/2" thick DensGlass sheathing. The sheathing was secured with #8 x 1" long flat head screws spaced 8" on center.

**Wall #2 Installation (Control Wall):** Sheathing joints were taped over with Venture VTC 1585CW sheathing tape. The assembly was then covered with Bautex Systems AMB 20-WN primary air barrier material that was spray applied uniformly across the wall at a 32 mil wet thickness average. The dry thickness of the AMB 20-WN primary air barrier material was 22 mil (Reference Photo #2 for details).

**Test Results:** The test results are recorded in the following tables:

**Wall #1 - Commercial Penetrated Wall**

		Test Results	
Title of Test	Pressure	Air Infiltration	Air Exfiltration
Air Infiltration (Phase I)	25 Pa (0.52 psf)	0.0000 cfm/ft <sup>2</sup> (0.000 L/s/m <sup>2</sup> )	0.0003 cfm/ft <sup>2</sup> (0.002 L/s/m <sup>2</sup> )
	50 Pa (1.04 psf)	0.0000 cfm/ft <sup>2</sup> (0.000 L/s/m <sup>2</sup> )	0.0003 cfm/ft <sup>2</sup> (0.002 L/s/m <sup>2</sup> )
	<b>75 Pa (1.57 psf)</b>	<b>0.0002 cfm/ft<sup>2</sup> (0.001 L/s/m<sup>2</sup>)</b>	<b>0.0003 cfm/ft<sup>2</sup> (0.002 L/s/m<sup>2</sup>)</b>
	100 Pa (2.09 psf)	0.0002 cfm/ft <sup>2</sup> (0.001 L/s/m <sup>2</sup> )	0.0005 cfm/ft <sup>2</sup> (0.002 L/s/m <sup>2</sup> )
	150 Pa (3.13 psf)	0.0003 cfm/ft <sup>2</sup> (0.002 L/s/m <sup>2</sup> )	0.0009 cfm/ft <sup>2</sup> (0.005 L/s/m <sup>2</sup> )
	250 Pa (5.22 psf)	0.0003 cfm/ft <sup>2</sup> (0.002 L/s/m <sup>2</sup> )	0.0016 cfm/ft <sup>2</sup> (0.008 L/s/m <sup>2</sup> )
	300 Pa (6.27 psf)	0.0003 cfm/ft <sup>2</sup> (0.002 L/s/m <sup>2</sup> )	0.0011 cfm/ft <sup>2</sup> (0.006 L/s/m <sup>2</sup> )

Title of Test	Pressure	Test Results
Deformation (10 second load)	±100 Pa (±2.09 psf)	No damage
	±200 Pa (±4.18 psf)	No damage
	±300 Pa (±6.27 psf)	No damage
	±400 Pa (±8.36 psf)	No damage
	±500 Pa (±10.45 psf)	No damage
Deformation (60 minute load)	±600 Pa (±12.54 psf)	No damage
Cyclic Loading (2000 cycles)	±800 Pa (±16.72 psf)	No damage
Gust Loading (3 second load)	±1200 Pa (±25.08 psf)	No damage

		Test Results	
Title of Test	Pressure	Air Infiltration	Air Exfiltration
Air Infiltration (Phase II)	25 Pa (0.52 psf)	0.0003 cfm/ft <sup>2</sup> (0.002 L/s/m <sup>2</sup> )	0.0008 cfm/ft <sup>2</sup> (0.004 L/s/m <sup>2</sup> )
	50 Pa (1.04 psf)	0.0006 cfm/ft <sup>2</sup> (0.003 L/s/m <sup>2</sup> )	0.0010 cfm/ft <sup>2</sup> (0.006 L/s/m <sup>2</sup> )
	<b>75 Pa (1.57 psf)</b>	<b>0.0009 cfm/ft<sup>2</sup> (0.005 L/s/m<sup>2</sup>)</b>	<b>0.0013 cfm/ft<sup>2</sup> (0.006 L/s/m<sup>2</sup>)</b>
	100 Pa (2.09 psf)	0.0016 cfm/ft <sup>2</sup> (0.008 L/s/m <sup>2</sup> )	0.0014 cfm/ft <sup>2</sup> (0.007 L/s/m <sup>2</sup> )
	150 Pa (3.13 psf)	0.0017 cfm/ft <sup>2</sup> (0.009 L/s/m <sup>2</sup> )	0.0014 cfm/ft <sup>2</sup> (0.007 L/s/m <sup>2</sup> )
	250 Pa (5.22 psf)	0.0022 cfm/ft <sup>2</sup> (0.011 L/s/m <sup>2</sup> )	0.0016 cfm/ft <sup>2</sup> (0.008 L/s/m <sup>2</sup> )
	300 Pa (6.27 psf)	0.0031 cfm/ft <sup>2</sup> (0.016 L/s/m <sup>2</sup> )	0.0008 cfm/ft <sup>2</sup> (0.004 L/s/m <sup>2</sup> )

Title of Test	Pressure	Test Results (inch)		
		#1	#2	#3
Wind Pressure Loading (10 second load)	+1440 Pa (+30.09 psf)	0.09	0.12	0.11
	-1440 Pa (-30.09 psf)	0.20	0.22	0.21

*Note: See Architectural Testing Sketch #1 for indicator locations.*



**Test Results:** (Continued)

**Wall #2 - Commercial Control Wall**

		<b>Test Results</b>	
<b>Title of Test</b>	<b>Pressure</b>	<b>Air Infiltration</b>	<b>Air Exfiltration</b>
Air Infiltration (Phase I)	25 Pa (0.52 psf)	0.0002 cfm/ft <sup>2</sup> (0.001 L/s/m <sup>2</sup> )	0.0006 cfm/ft <sup>2</sup> (0.003 L/s/m <sup>2</sup> )
	50 Pa (1.04 psf)	0.0003 cfm/ft <sup>2</sup> (0.002 L/s/m <sup>2</sup> )	0.0012 cfm/ft <sup>2</sup> (0.006 L/s/m <sup>2</sup> )
	<b>75 Pa (1.57 psf)</b>	<b>0.0003 cfm/ft<sup>2</sup> (0.002 L/s/m<sup>2</sup>)</b>	<b>0.0017 cfm/ft<sup>2</sup> (0.009 L/s/m<sup>2</sup>)</b>
	100 Pa (2.09 psf)	0.0005 cfm/ft <sup>2</sup> (0.002 L/s/m <sup>2</sup> )	0.0020 cfm/ft <sup>2</sup> (0.010 L/s/m <sup>2</sup> )
	150 Pa (3.13 psf)	0.0009 cfm/ft <sup>2</sup> (0.005 L/s/m <sup>2</sup> )	0.0031 cfm/ft <sup>2</sup> (0.016 L/s/m <sup>2</sup> )
	250 Pa (5.22 psf)	0.0009 cfm/ft <sup>2</sup> (0.005 L/s/m <sup>2</sup> )	0.0038 cfm/ft <sup>2</sup> (0.019 L/s/m <sup>2</sup> )
	300 Pa (6.27 psf)	0.0009 cfm/ft <sup>2</sup> (0.005 L/s/m <sup>2</sup> )	0.0016 cfm/ft <sup>2</sup> (0.008 L/s/m <sup>2</sup> )

<b>Title of Test</b>	<b>Pressure</b>	<b>Test Results</b>
Deformation (10 second load)	±100 Pa (±2.09 psf)	No damage
	±200 Pa (±4.18 psf)	No damage
	±300 Pa (±6.27 psf)	No damage
	±400 Pa (±8.36 psf)	No damage
	±500 Pa (±10.45 psf)	No damage
Deformation (60 minute load)	±600 Pa (±12.54 psf)	No damage
Cyclic Loading (2000 cycles)	±800 Pa (±16.72 psf)	No damage
Gust Loading (3 second load)	±1200 Pa (±25.08 psf)	No damage

		<b>Test Results</b>	
<b>Title of Test</b>	<b>Pressure</b>	<b>Air Infiltration</b>	<b>Air Exfiltration</b>
Air Infiltration (Phase II)	25 Pa (0.52 psf)	0.0005 cfm/ft <sup>2</sup> (0.002 L/s/m <sup>2</sup> )	0.0006 cfm/ft <sup>2</sup> (0.003 L/s/m <sup>2</sup> )
	50 Pa (1.04 psf)	0.0006 cfm/ft <sup>2</sup> (0.003 L/s/m <sup>2</sup> )	0.0006 cfm/ft <sup>2</sup> (0.003 L/s/m <sup>2</sup> )
	<b>75 Pa (1.57 psf)</b>	<b>0.0011 cfm/ft<sup>2</sup> (0.006 L/s/m<sup>2</sup>)</b>	<b>0.0011 cfm/ft<sup>2</sup> (0.006 L/s/m<sup>2</sup>)</b>
	100 Pa (2.09 psf)	0.0027 cfm/ft <sup>2</sup> (0.014 L/s/m <sup>2</sup> )	0.0014 cfm/ft <sup>2</sup> (0.007 L/s/m <sup>2</sup> )
	150 Pa (3.13 psf)	0.0023 cfm/ft <sup>2</sup> (0.012 L/s/m <sup>2</sup> )	0.0016 cfm/ft <sup>2</sup> (0.008 L/s/m <sup>2</sup> )
	250 Pa (5.22 psf)	0.0023 cfm/ft <sup>2</sup> (0.012 L/s/m <sup>2</sup> )	0.0027 cfm/ft <sup>2</sup> (0.014 L/s/m <sup>2</sup> )
	300 Pa (6.27 psf)	0.0025 cfm/ft <sup>2</sup> (0.013 L/s/m <sup>2</sup> )	0.0028 cfm/ft <sup>2</sup> (0.014 L/s/m <sup>2</sup> )

<b>Title of Test</b>	<b>Pressure</b>	<b>Test Results (inch)</b>		
		<b>#1</b>	<b>#2</b>	<b>#3</b>
Wind Pressure Loading (10 second load)	+1440 Pa (+30.09 psf)	0.10	0.10	0.12
	-1440 Pa (-30.09 psf)	0.24	0.24	0.22

*Note: See Architectural Testing Sketch #1 for indicator locations.*

*General Note: All testing was performed in accordance with the referenced standards.*

Tape and film were not used to seal against air leakage during structural testing.

**List of Official Observers:**

<u>Name</u>	<u>Company</u>
Mark D. Lewke	Architectural Testing, Inc.
Karl Lips-Eakins	Architectural Testing, Inc.

Detailed drawings, data sheets, a copy of this report, or other pertinent project documentation will be retained by Architectural Testing, Inc. for a period of four years from the original test date. At the end of this retention period, such materials shall be discarded without notice and the service life of this report will expire.

Results obtained are tested values and were secured by using the designated test methods. No conclusions of any kind regarding the adequacy or inadequacy of the glass in the test specimen can be made. This report does not constitute certification of this product nor an opinion or endorsement by this laboratory. It is the exclusive property of the client so named herein and relates only to the specimens tested. This report may not be reproduced, except in full, without the written approval of Architectural Testing, Inc.

For ARCHITECTURAL TESTING, INC:

Karl A. Lips-Eakins  
Technician

Daniel A. Johnson  
Director - Regional Operations

KLE/jb

Attachments (pages): This report is complete only when all attachments listed are included.

Appendix-A: Air Leakage Graphs (8)

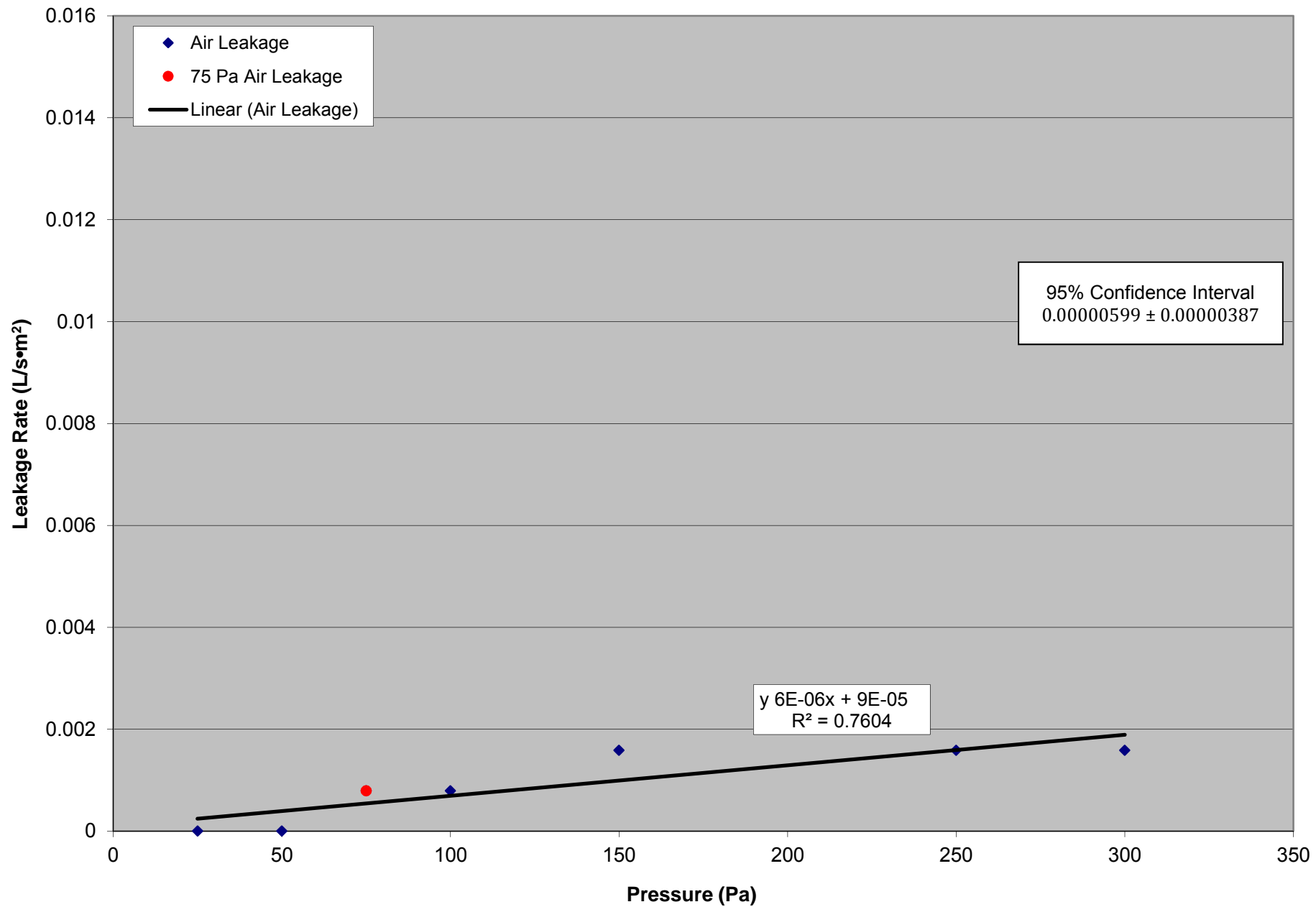
Appendix-B: Sketch (1)

Appendix-C: Photographs (2)

**Appendix A**  
**Air Leakage Graphs**



### Specimen #1 - Air Infiltration (Before loading sequence)

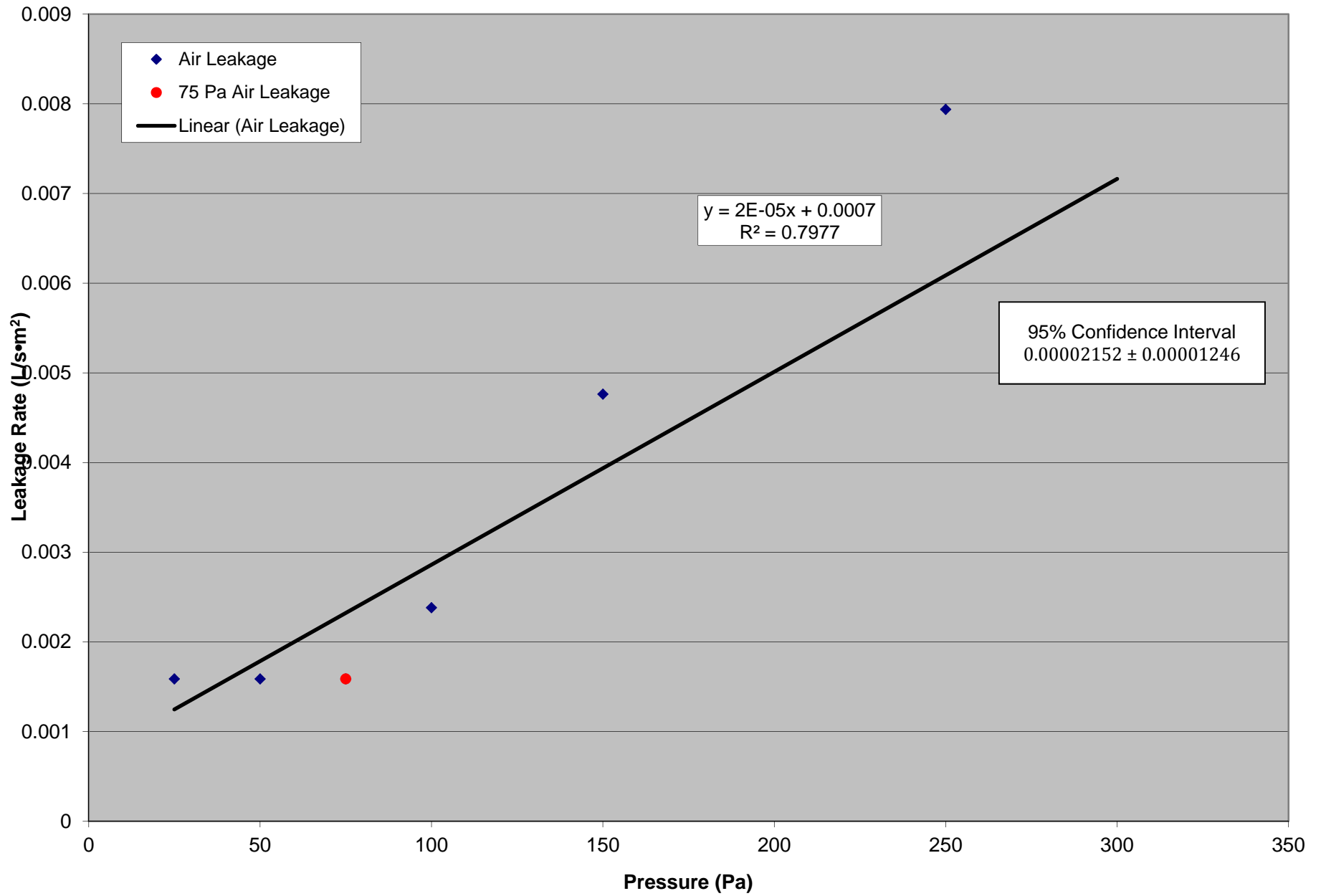






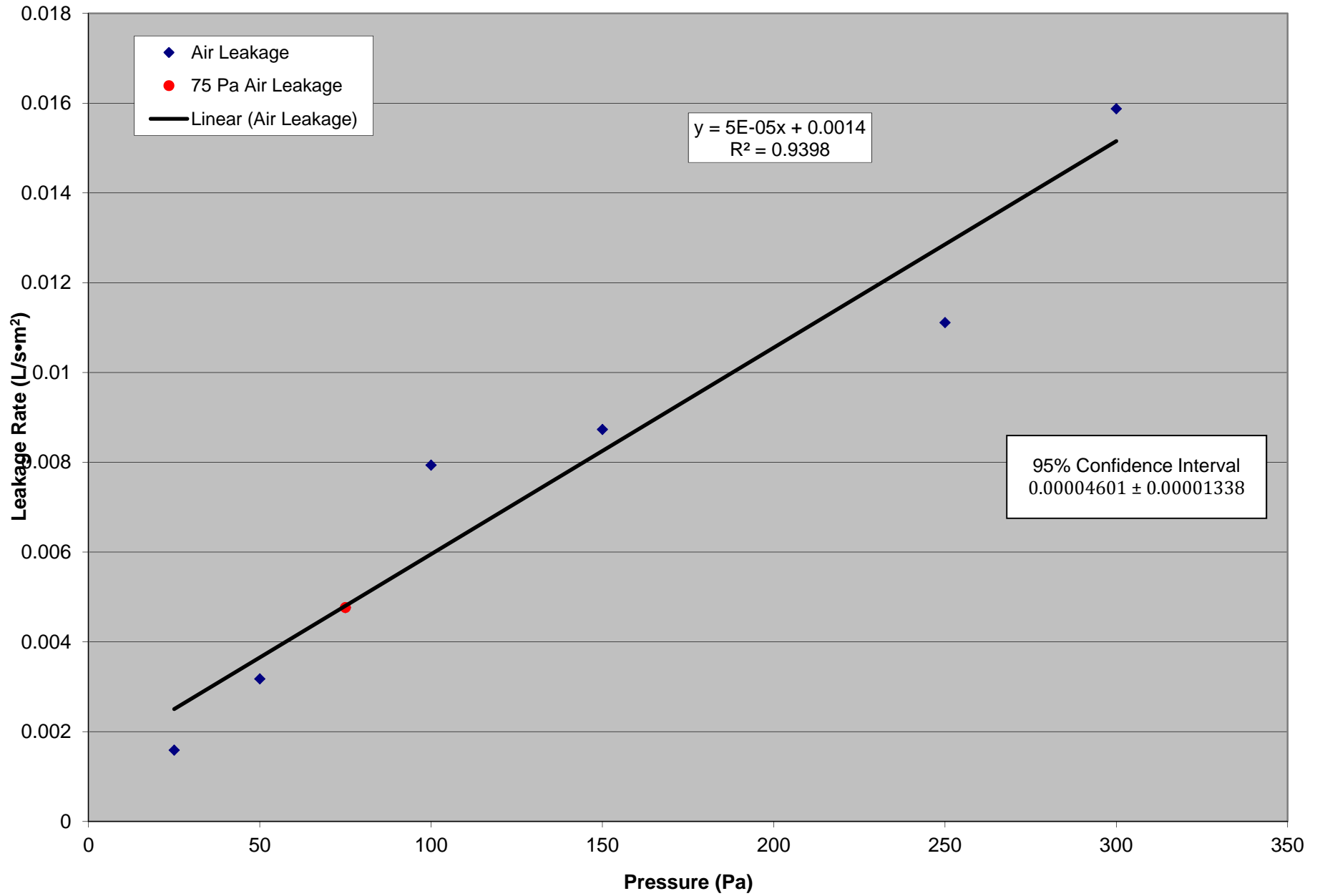
Architectural Testing, Inc.

### Specimen #1 - Air Exfiltration (Before loading sequence)





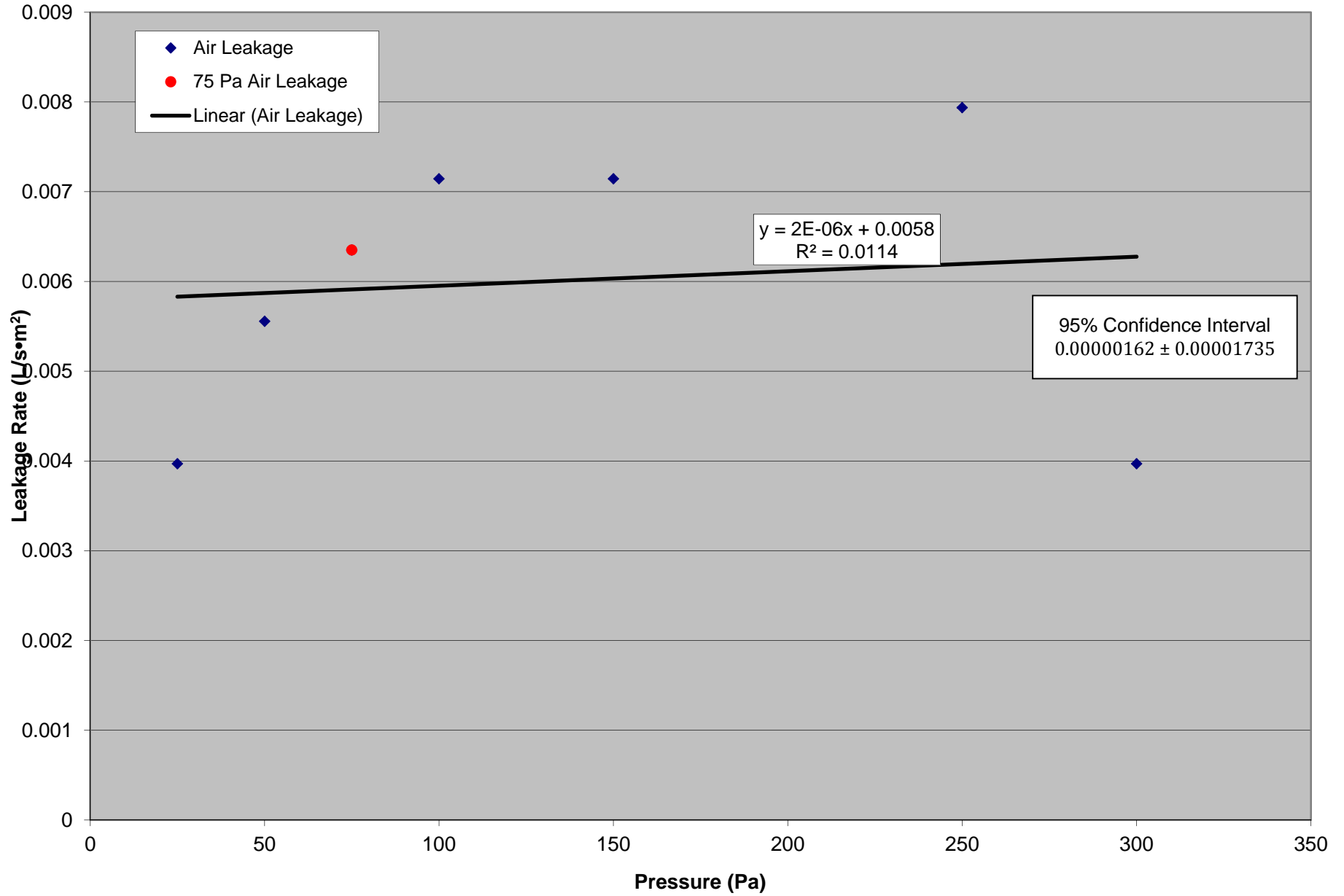
### Specimen #1 - Air Infiltration (After loading sequence)





Architectural Testing, Inc.

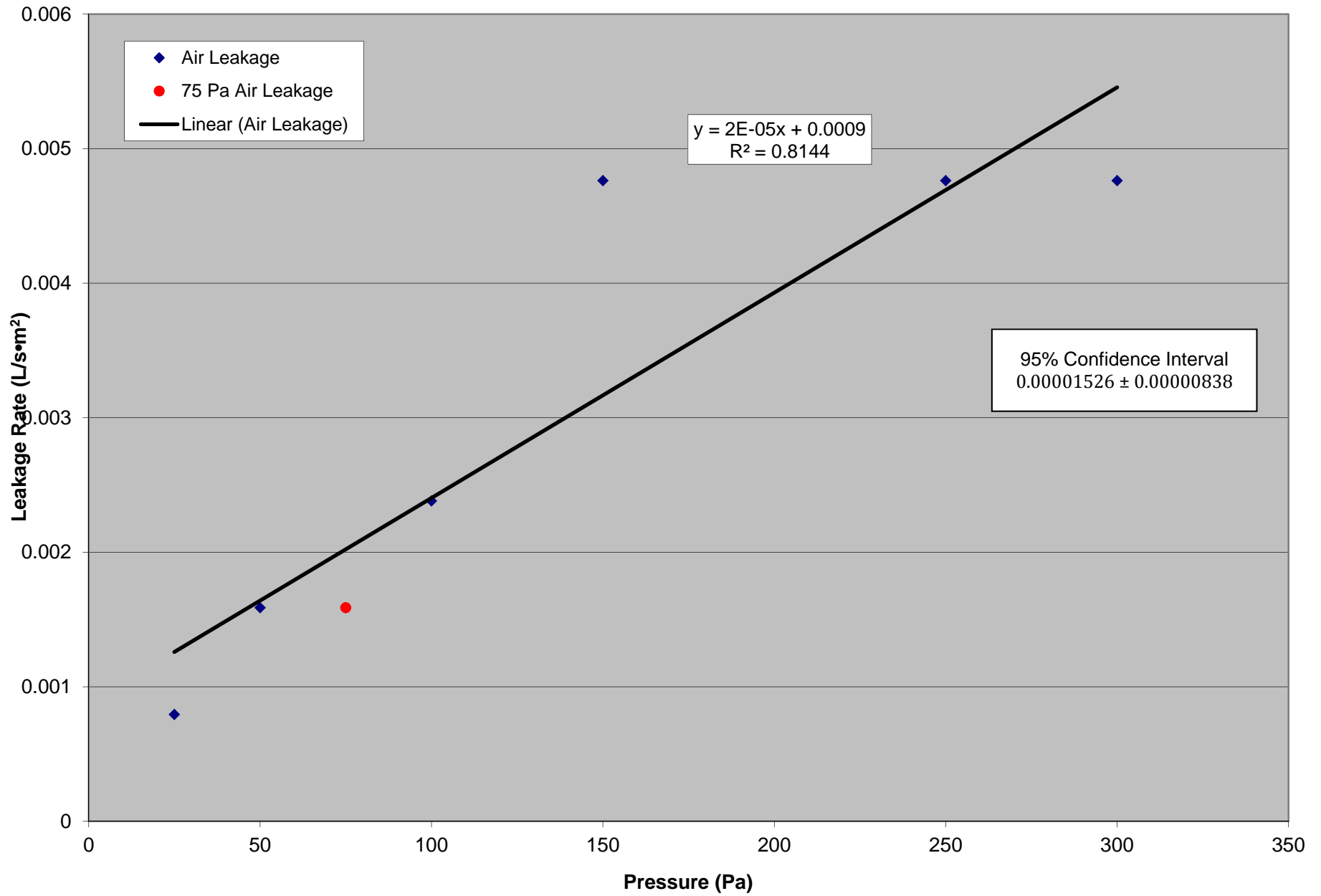
### Specimen #1 - Air Exfiltration (After loading sequence)





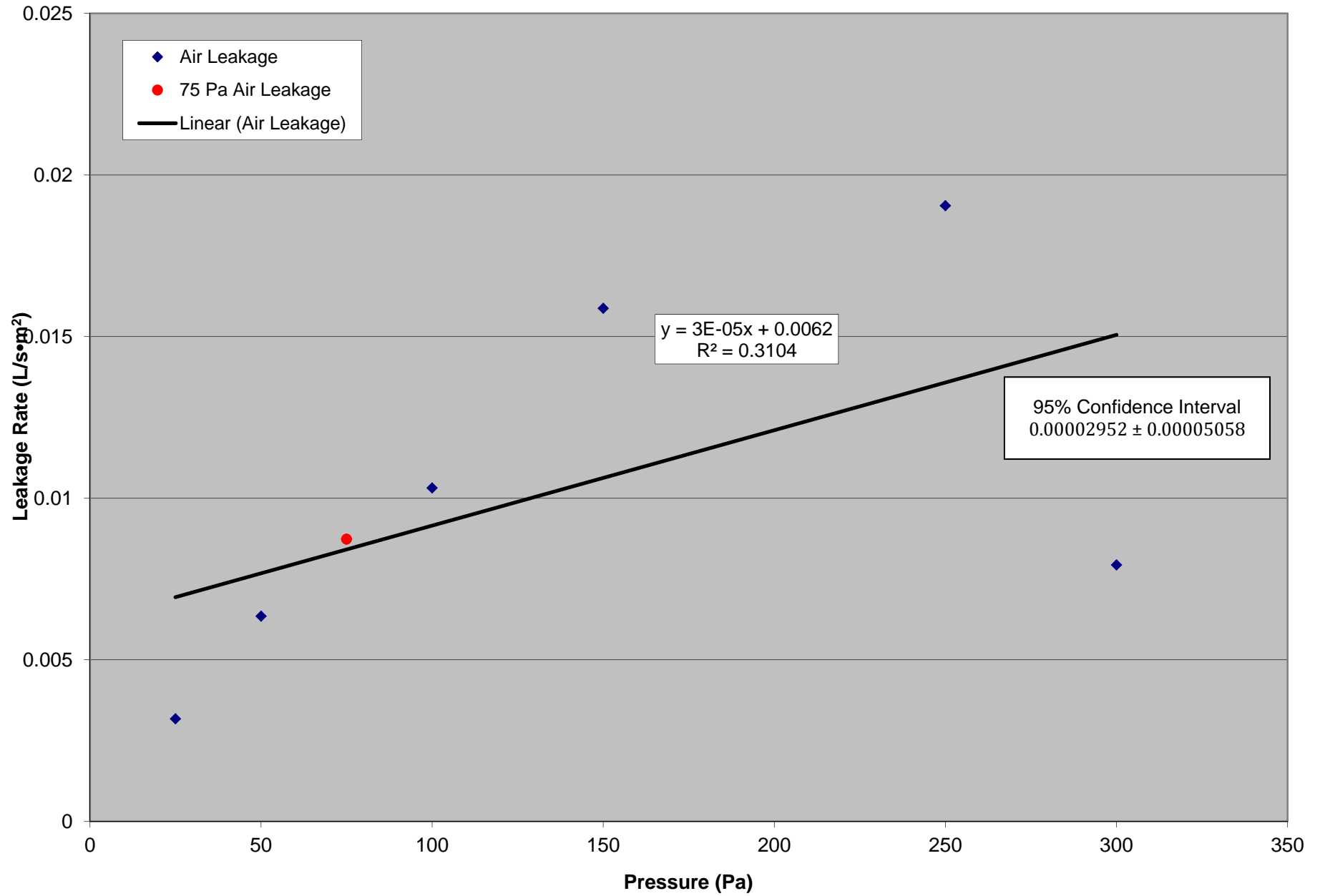
Architectural Testing, Inc.

**Specimen #2 - Air Infiltration  
(Before loading sequence)**





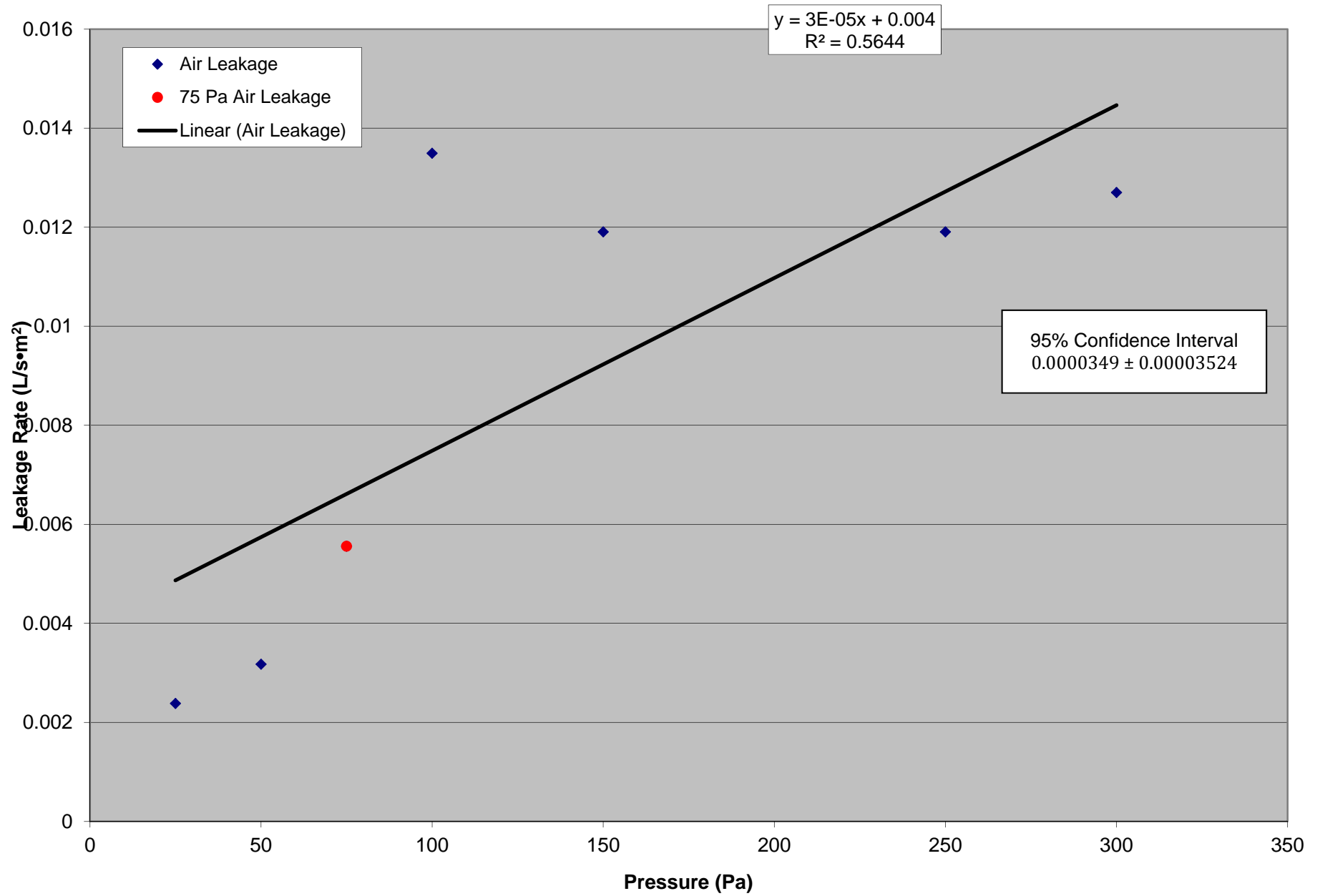
### Specimen #2 - Air Exfiltration (Before loading sequence)





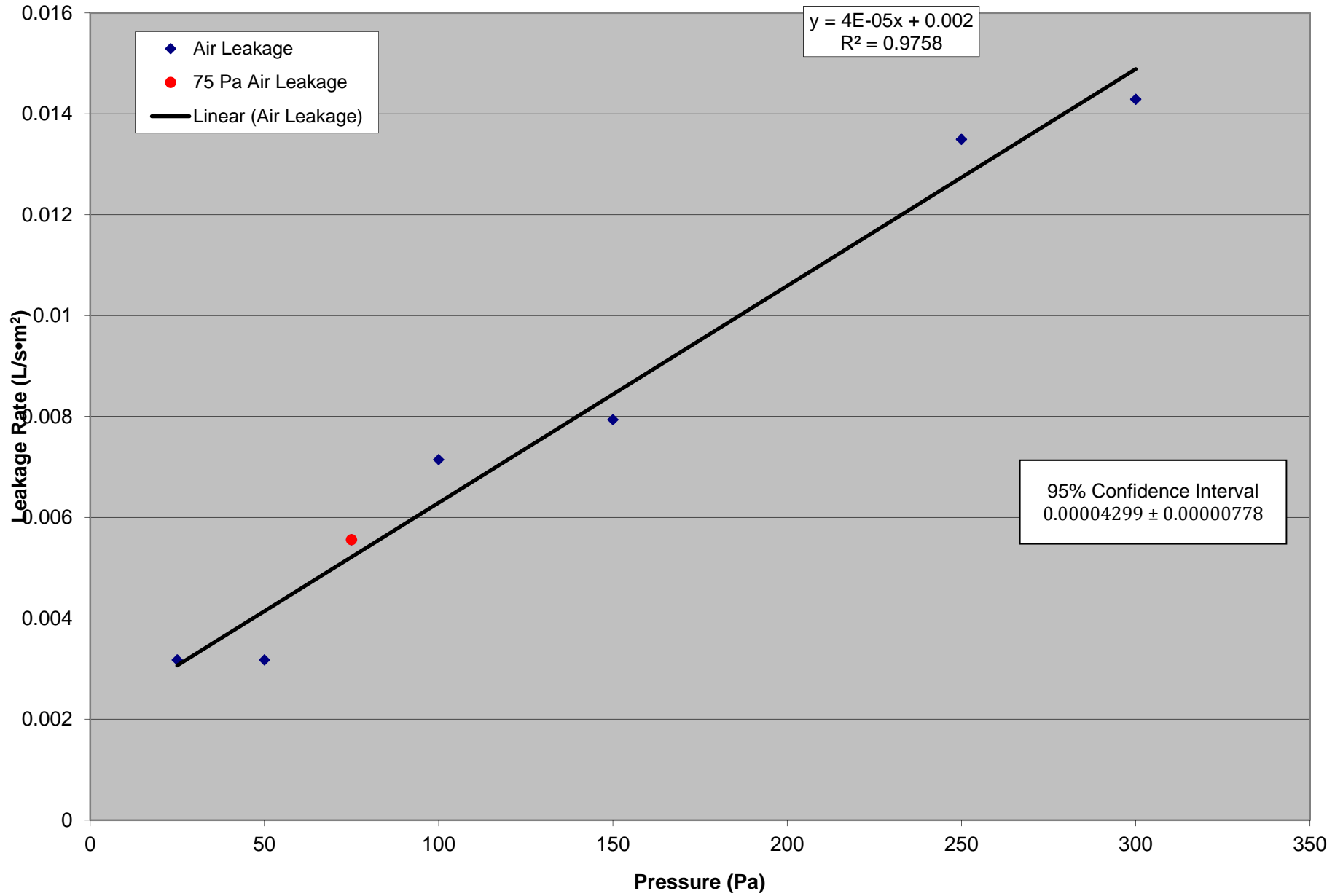
Architectural Testing, Inc.

### Specimen #2 - Air Infiltration (After loading sequence)





### Specimen #2 - Air Exfiltration (After loading sequence)

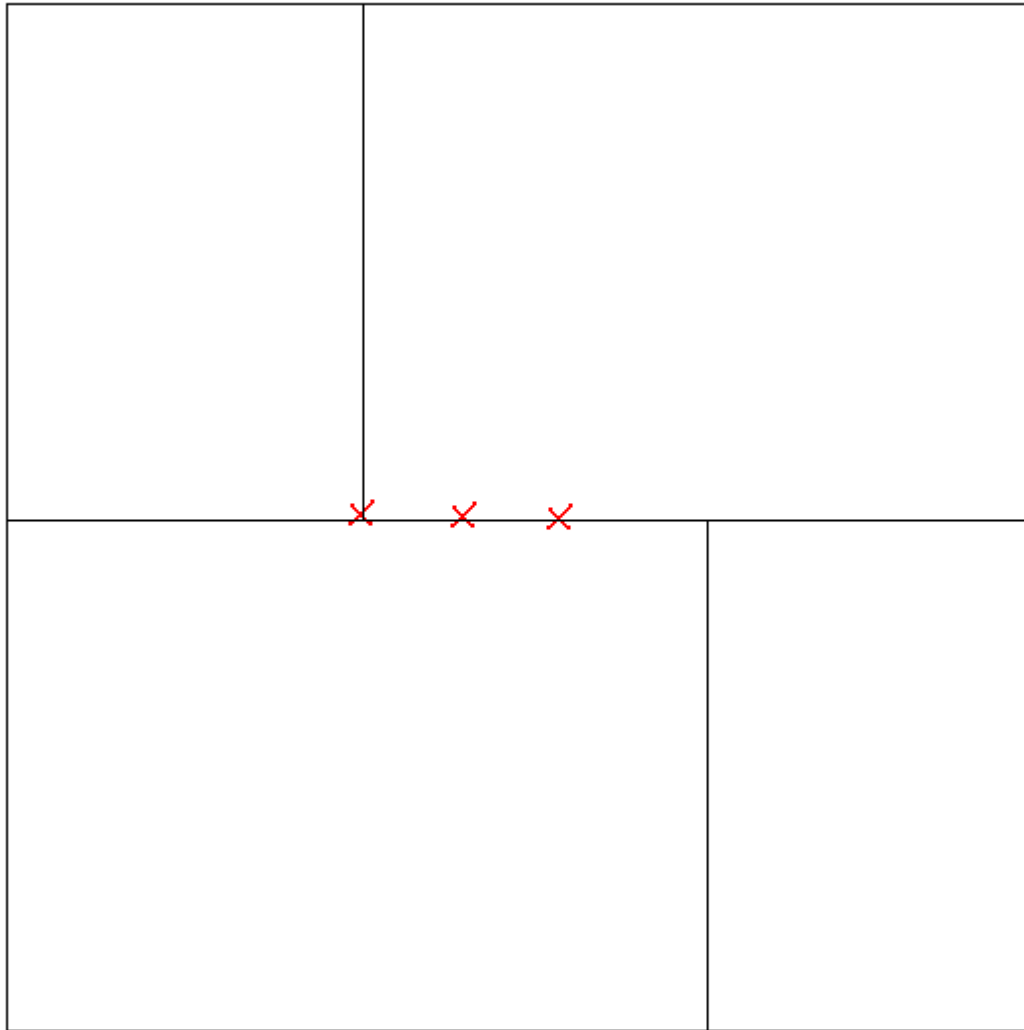


## Appendix A

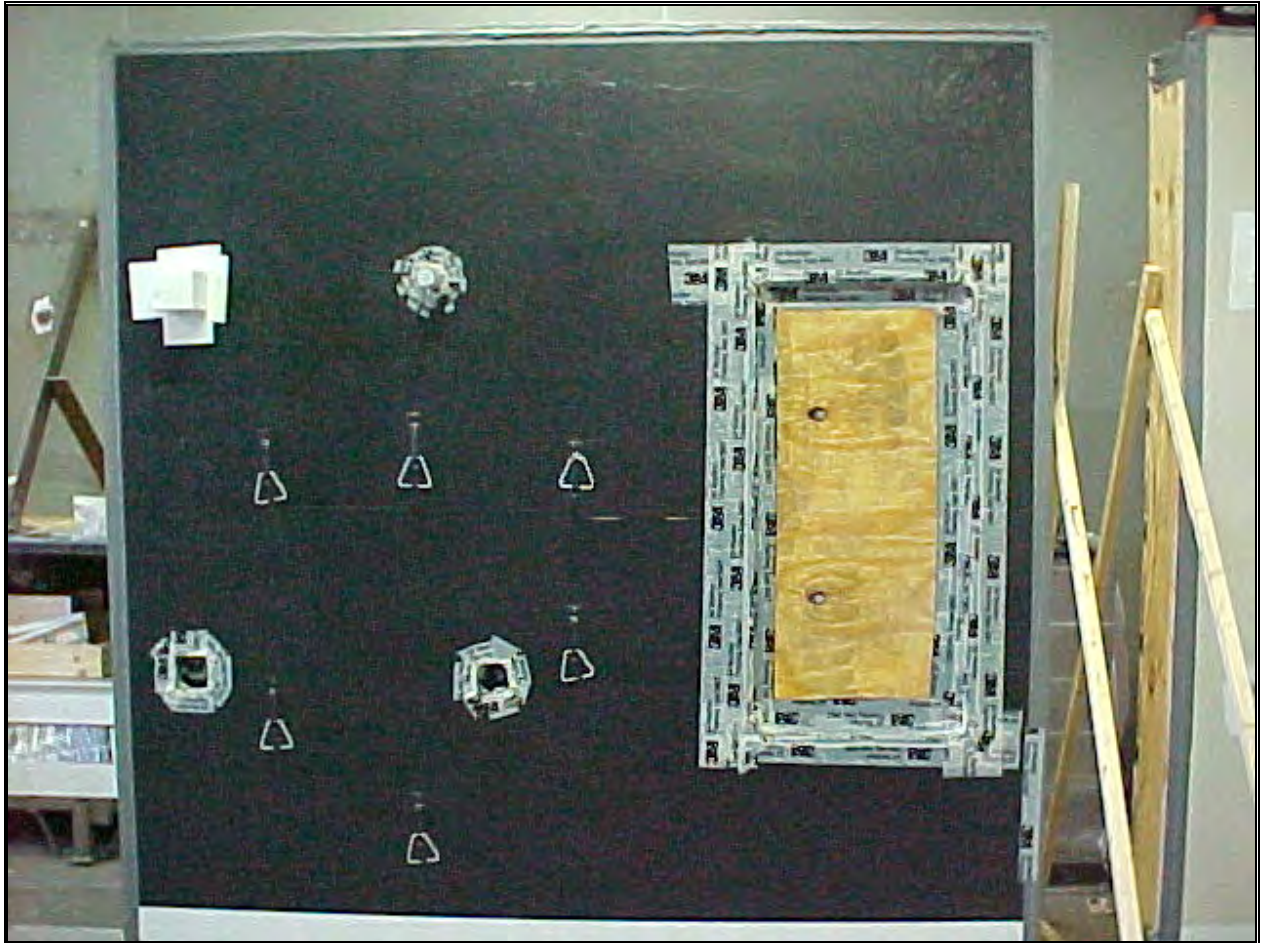
### Sketch



### Indicator Locations



**Appendix B**  
**Photographs**



**Photo No. 1**  
**Penetrated Wall**  
**All air seals on the exterior tape / air barrier seal**



**Photo No. 2**  
**Control Wall**  
**All air seals on the exterior air barrier seal**