Intertek | Architectural Testing

TEST REPORT

Report No.: D8867.01-501-47

Rendered to:

TREMCO®, INCORPORATED
Beachwood, Ohio

PRODUCT TYPE: Wall Panel System
SERIES/MODEL: ExoAir® 220, Spectrem ® 1, Dymonic® 100

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

ASTM E 331-00, *Test Method for Water Penetration of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference.*

Test Date: 06/11/14
Report Date: 09/15/14
Test Record Retention Date: 06/11/18

1140 Lincoln Avenue
Springdale, PA 15144

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1.0 Report Issued To: TREMCO®, INCORPORATED
3735 Green Road
P.O. Box 1014
Beachwood, Ohio 44122

2.0 Test Laboratory: Architectural Testing, Inc.
1140 Lincoln Avenue
Springdale, Pennsylvania 15144
724-275-7100

3.0 Project Summary:

3.1 Product Type: Wall Panel System

3.2 Series/Model: ExoAir® 220, Spectrem® 1, Dymonic® 100

3.3 Compliance Statement: Results obtained are tested values and were secured by using the designated test method(s). The mock-ups tested were representative of target installation methods. Testing was performed on one penetrated wall.

3.4 Test Dates: 6/11/2014

3.5 Test Location: Tremco® Incorporated test facility in Cleveland, Ohio.

3.6 Test Sample Source: The test specimen was provided by the client.

3.7 Test Specimen Installation: The test specimen was installed by representatives from Tremco®, Incorporated.

3.8 List of Official Observers:

Name	Company
Steven Kraynik	Tremco®, Inc.
Lynn George	Architectural Testing, Inc.
Brian Venturini	Architectural Testing, Inc.

4.0 Test Specification(s):

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

ASTM E 283, *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 330, *Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.*

ASTM E 331, *Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure*

A series of laboratory tests were performed to determine air leakage resistance, wind load performance, and durability of air barrier coating. The installations were tested for air leakage and structural performance testing using ASTM E 2357, ASTM E 283, and ASTM E 330. The durability of the selected installations is evaluated and re-testing for air leakage was performed.

5.0 Test Specimen Description:

5.1 Product Sizes:

Penetrated Wall

Overall Area: 5.9 m^2 (64.0 ft^2)	**Width**		**Height**	
	millimeters	**inches**	**millimeters**	**inches**
Overall size	2438	96	2438	96

5.2 Test Wall

5.2.1 Test Wall Construction: The wall was constructed of 2 x 4, 20 gauge galvanized steel studs, spaced 16" on center. The wall was sheathed with nominal 5/8" thick USG SecurRock sheathing, and secured with #6 x 1-1/4" long wafer head screws, spaced 8" on center. The USG sheathing was applied with one 8 ft. long horizontal seam and two 4' long vertical seams. The seams, both vertical and horizontal in accordance with the standard, were sealed with Dymonic® 100. The wall was then coated with a 70 mil wet thickness of ExoAir® 220 which was allowed to dry for the test. Penetrations include a 24 in. x 36 in. window opening with a 23 in. x 35 in. mock window buck constructed with a wood 2x4 frame and plywood that is wrapped with ExoAir® 111. Also included are a 4 in. x 4 in. steel duct, a 4x4 in. outlet box, a 4x4 in. octagonal outlet box, and a 1-1/2 in. diameter PVC pipe. All gaps around the penetrating items were sealed with Spectrem® 1 silicone sealant.

5.0 Test Specimen Description

5.2.2 Test Wall Installation: The test wall was installed into a 2" x 10 " Spruce/Pine/Fir wood buck and secured at the perimeter with #8 x 3" long drywall screws spaced approximately 16" on center.

6.0 Test Results: Tape and film were not used to seal against air leakage during structural testing. The temperature during testing was 25°C (77°F). The test results are recorded in the following tables:

Penetrated Wall

Air Infiltration (before loading sequence)

Pressure	Total Leakage (cfm)	Tare (cfm)	Specimen Leakage (cfm)	Leakage Rate	
				(L/s•m²)	(cfm/ft²)
25 Pa (0.52 psf)	0.103	0.000	0.103	0.008	0.002
50 Pa (1.04 psf)	0.162	0.000	0.162	0.013	0.003
75 Pa (1.57 psf)	0.211	0.000	0.211	0.017	0.003
100 Pa (2.09 psf)	0.235	0.000	0.235	0.019	0.004
150 Pa (3.13 psf)	0.297	0.000	0.297	0.024	0.005
250 Pa (5.22 psf)	0.409	0.000	0.409	0.032	0.006
300 Pa (6.27 psf)	0.452	0.000	0.452	0.036	0.007

Air Exfiltration (before loading sequence)

Pressure	Total Leakage (cfm)	Tare (cfm)	Specimen Leakage (cfm)	Leakage Rate	
				(L/s•m²)	(cfm/ft²)
25 Pa (0.52 psf)	0.102	0.000	0.102	0.008	0.002
50 Pa (1.04 psf)	0.152	0.000	0.152	0.012	0.002
75 Pa (1.57 psf)	0.185	0.000	0.185	0.015	0.003
100 Pa (2.09 psf)	0.223	0.000	0.223	0.018	0.003
150 Pa (3.13 psf)	0.303	0.000	0.303	0.024	0.005
250 Pa (5.22 psf)	0.436	0.000	0.436	0.035	0.007
300 Pa (6.27 psf)	0.485	0.000	0.485	0.038	0.008

***Note**: Reference Appendix A for Air Leakage Charts and 95% confidence Interval*

6.0 Test Results: (Continued)

Penetrated Wall (Continued)

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 (±25.06 psf)	No damage

Air Infiltration (after loading sequence)

Pressure	Total Leakage (cfm)	Tare (cfm)	Specimen Leakage (cfm)	Leakage Rate	
				(L/s•m²)	(cfm/ft²)
25 Pa (0.52 psf)	0.082	0.000	0.082	0.006	0.001
50 Pa (1.04 psf)	0.118	0.000	0.118	0.009	0.002
75 Pa (1.57 psf)	0.144	0.000	0.144	0.011	0.002
100 Pa (2.09 psf)	0.170	0.000	0.170	0.013	0.003
150 Pa (3.13 psf)	0.220	0.000	0.220	0.017	0.003
250 Pa (5.22 psf)	0.314	0.000	0.314	0.025	0.005
300 Pa (6.27 psf)	0.350	0.000	0.350	0.028	0.005

Air Exfiltration (after loading sequence)

Pressure	Total Leakage (cfm)	Tare (cfm)	Specimen Leakage (cfm)	Leakage Rate	
				(L/s•m²)	(cfm/ft²)
25 Pa (0.52 psf)	0.078	0.000	0.078	0.006	0.001
50 Pa (1.04 psf)	0.113	0.000	0.113	0.009	0.002
75 Pa (1.57 psf)	0.149	0.000	0.149	0.012	0.002
100 Pa (2.09 psf)	0.183	0.000	0.183	0.015	0.003
150 Pa (3.13 psf)	0.241	0.000	0.241	0.019	0.004
250 Pa (5.22 psf)	0.344	0.000	0.344	0.027	0.005
300 Pa (6.27 psf)	0.375	0.000	0.375	0.030	0.006

***Note**: Reference Appendix A for Air Leakage Charts and 95% confidence Interval*

6.0 Test Results: (Continued)

Penetrated Wall (Continued)

Title of Test	Pressure	Test Results (inch)		
		#1	#2	#3
Wind Pressure Loading (10 second load)	+1440 Pa (+30.09 psf)	0.26	0.29	0.30
	-1440 Pa (-30.09 psf)	0.40	0.49	0.46

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

Title of Test	Pressure	Test Results
Water Penetration, per ASTM E 331	+575 Pa (12.0 psf)	No penetration

The service life of this report will expire on the stated Test Record Retention End Date, at which time such materials as drawings, data sheets, samples of test specimens, copies of this report, and any other pertinent project documentation, shall be discarded without notice.

If test specimen contains glazing, no conclusions of any kind regarding the adequacy or inadequacy of the glass in any glazed test specimen(s) 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 specimen(s) tested. This report may not be reproduced, except in full, without the written approval of Architectural Testing, Inc.

For ARCHITECTURAL TESTING, Inc.

Digitally Signed by: Brian Venturini

Brian D. Venturini
Technician

Digitally Signed by: Lynn George

Lynn George
Director – Regional Operations

BDV:sld

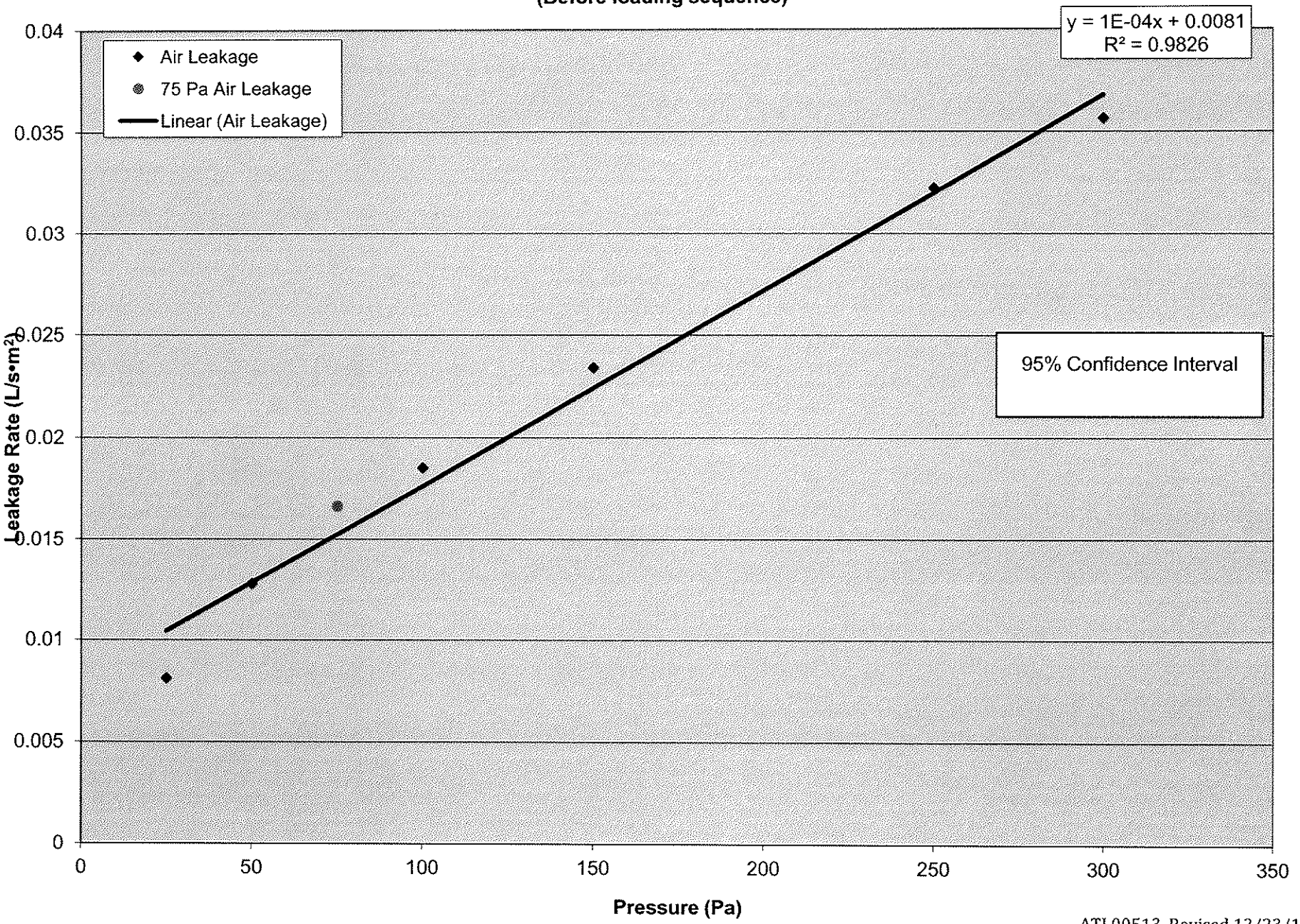
Attachments (pages): This report is complete only when all attachments listed are included.
- Appendix-A: Charts (φ)
- Appendix-B: Sketches (1)
- Appendix-C: Photographs (2)

Appendix A

Charts

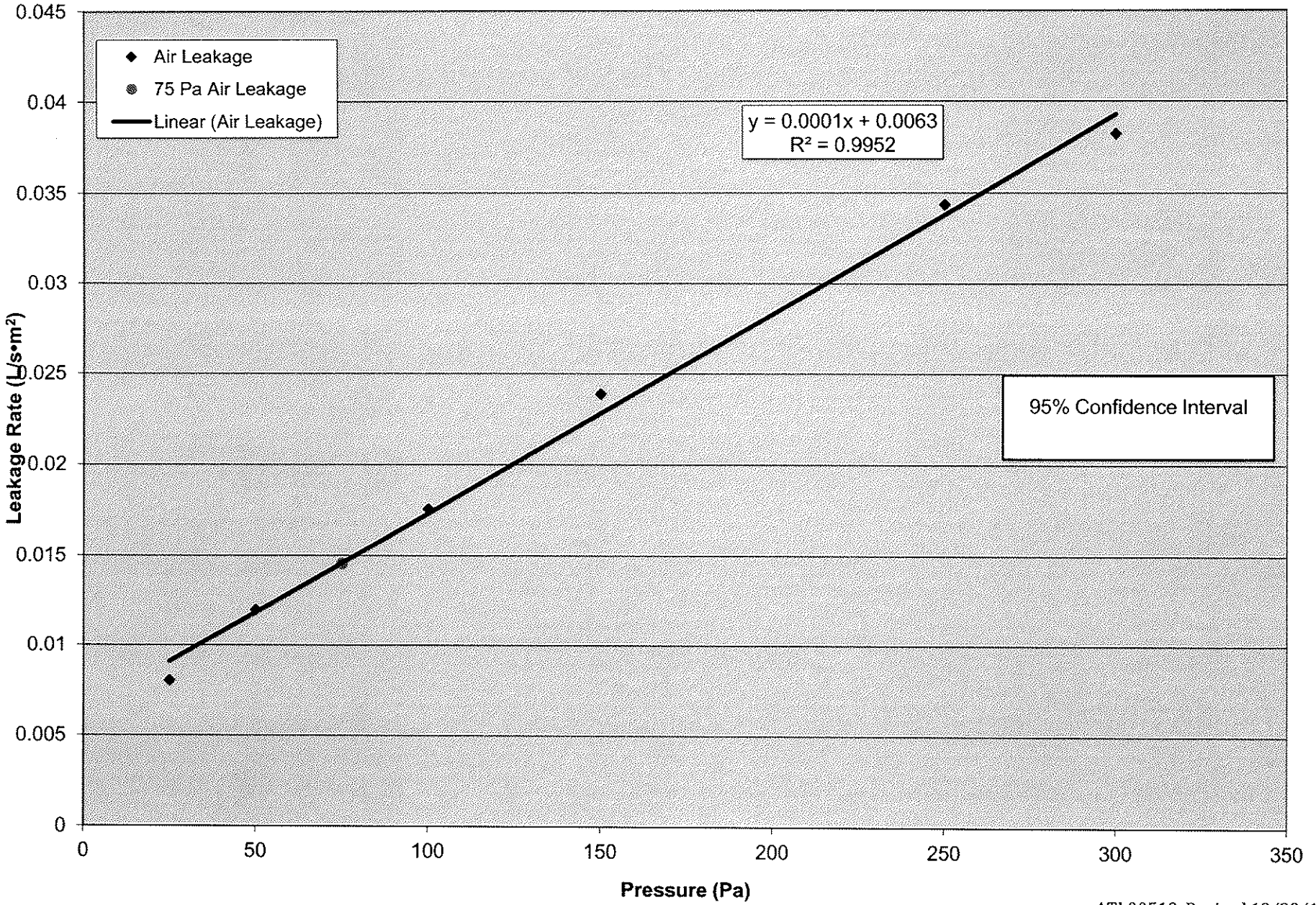
Architectural Testing, Inc.

Specimen #1 - Air Infiltration
(Before loading sequence)



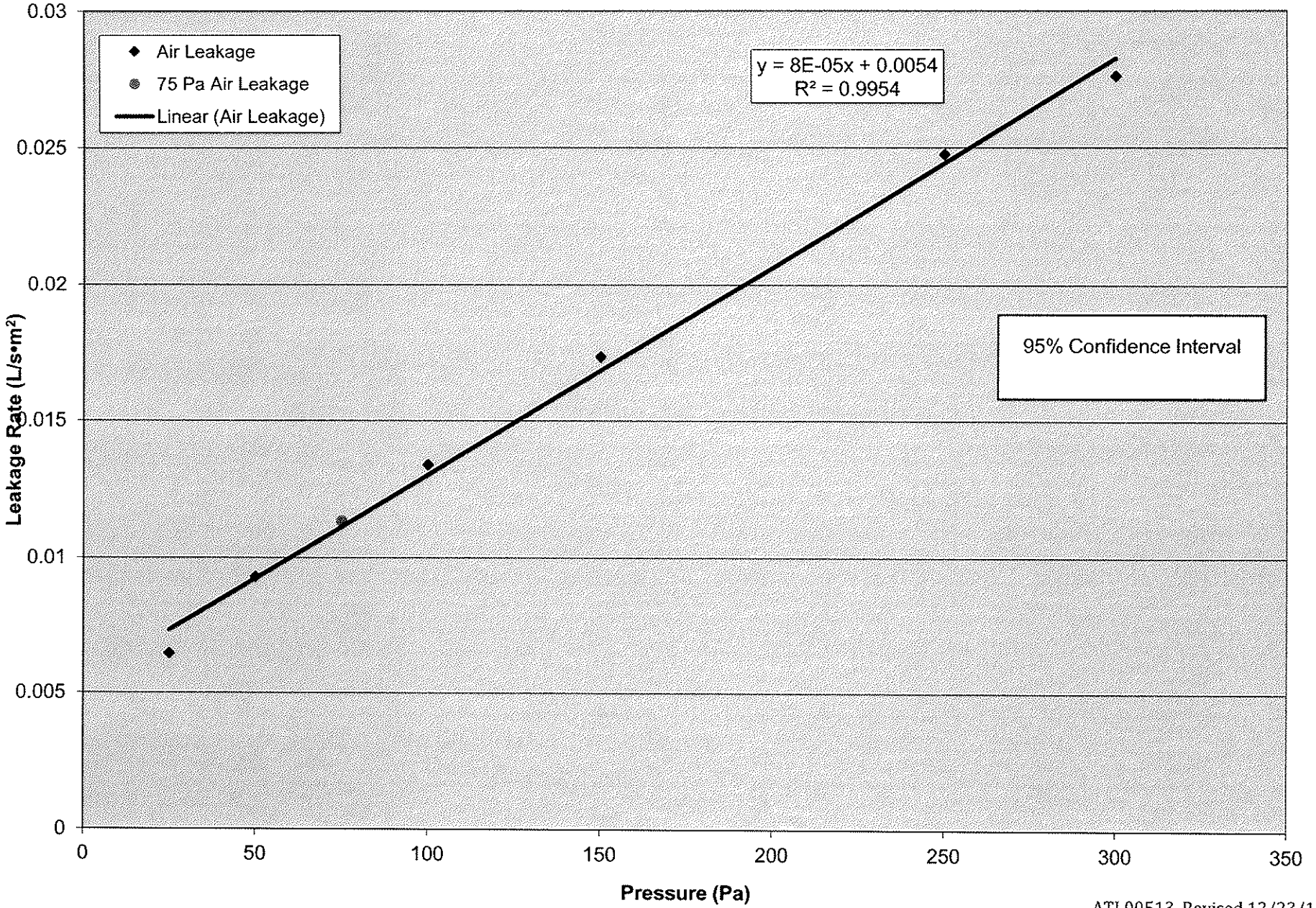
Architectural Testing, Inc.

Specimen #1 - Air Exfiltration
(Before loading sequence)

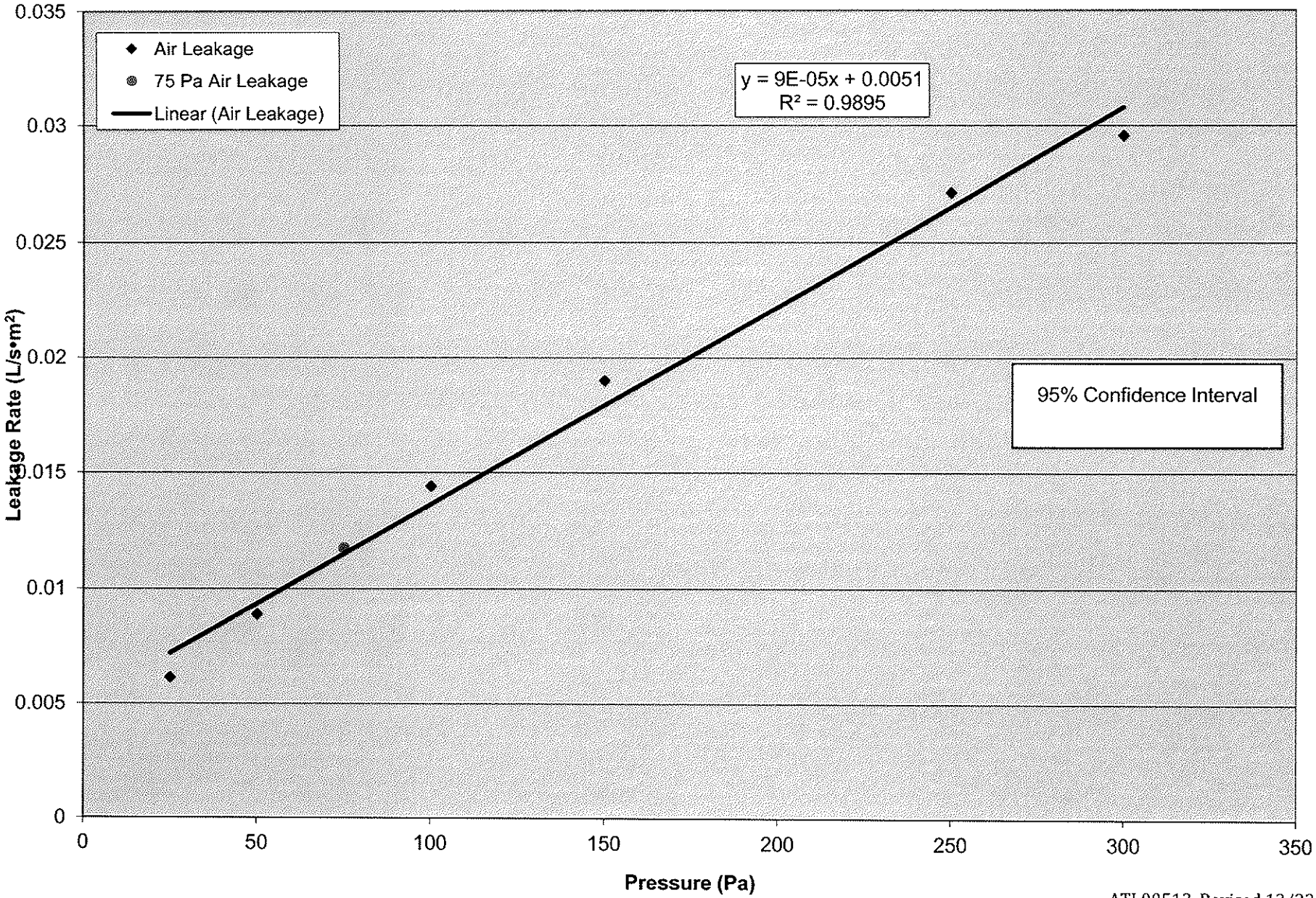


Architectural Testing, Inc.

Specimen #1 - Air Infiltration
(After loading sequence)

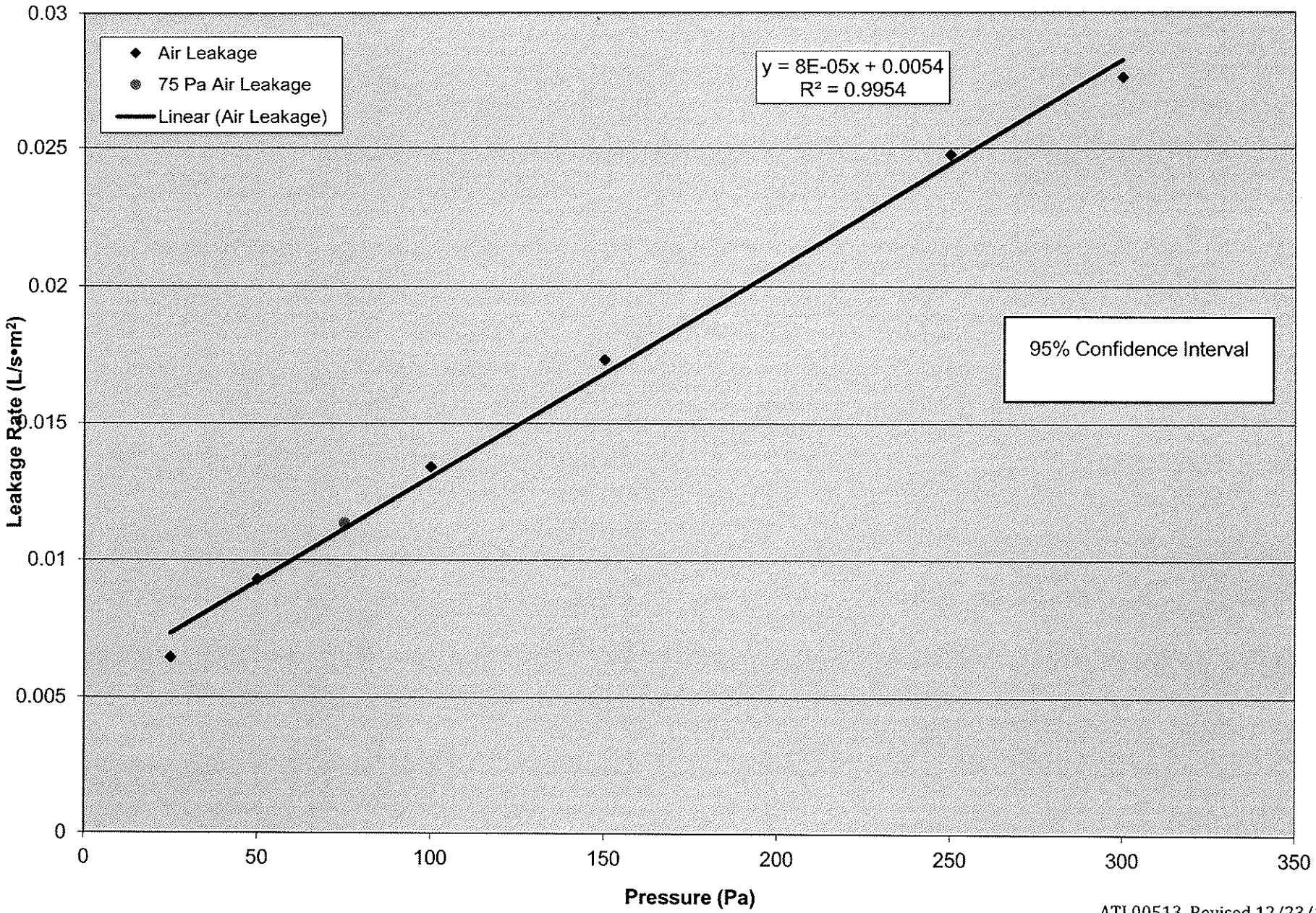


Specimen #1 - Air Exfiltration
(After loading sequence)



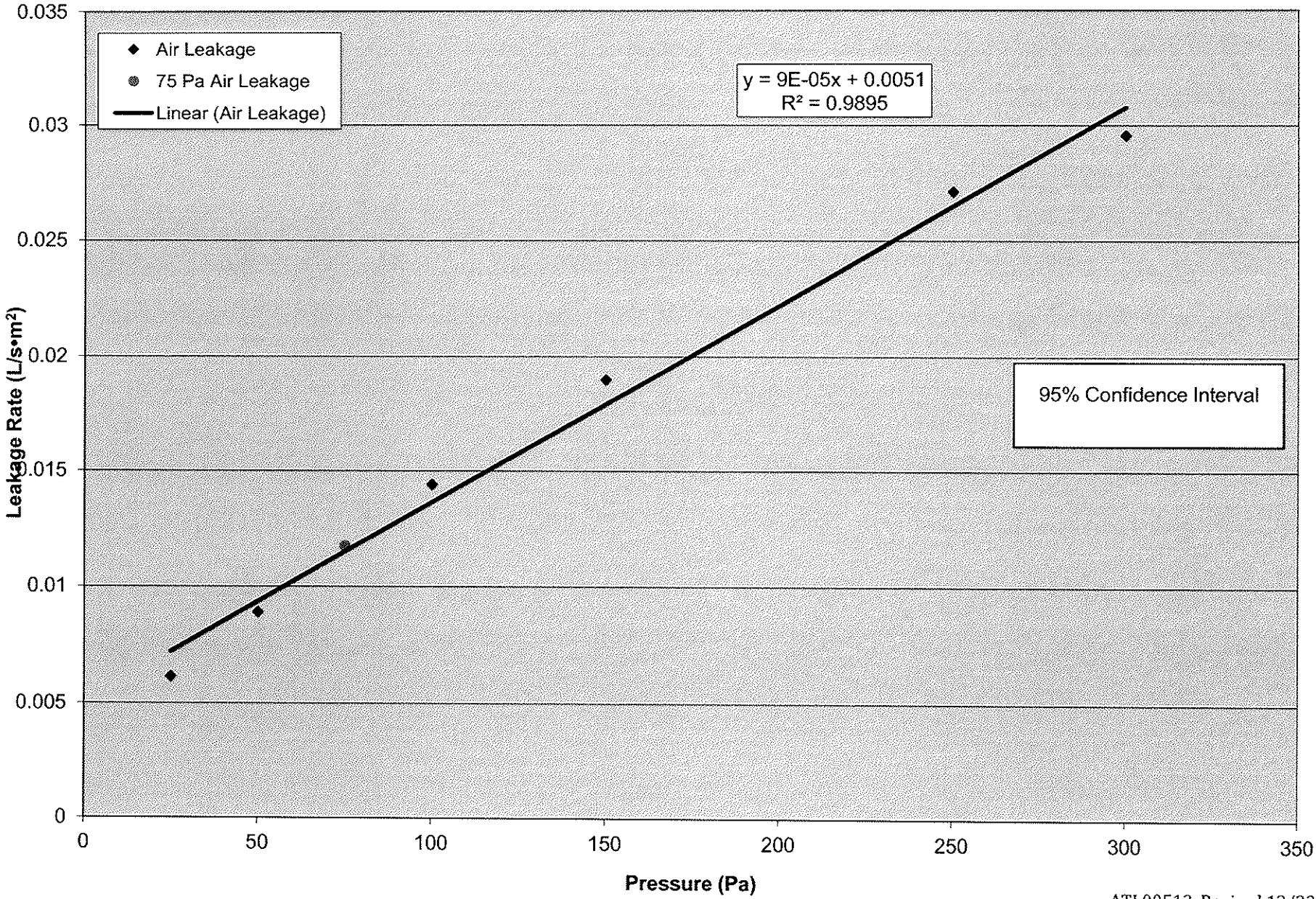
Architectural Testing, Inc.

Specimen #1 - Air Infiltration
(After loading sequence)



Architectural Testing, Inc.

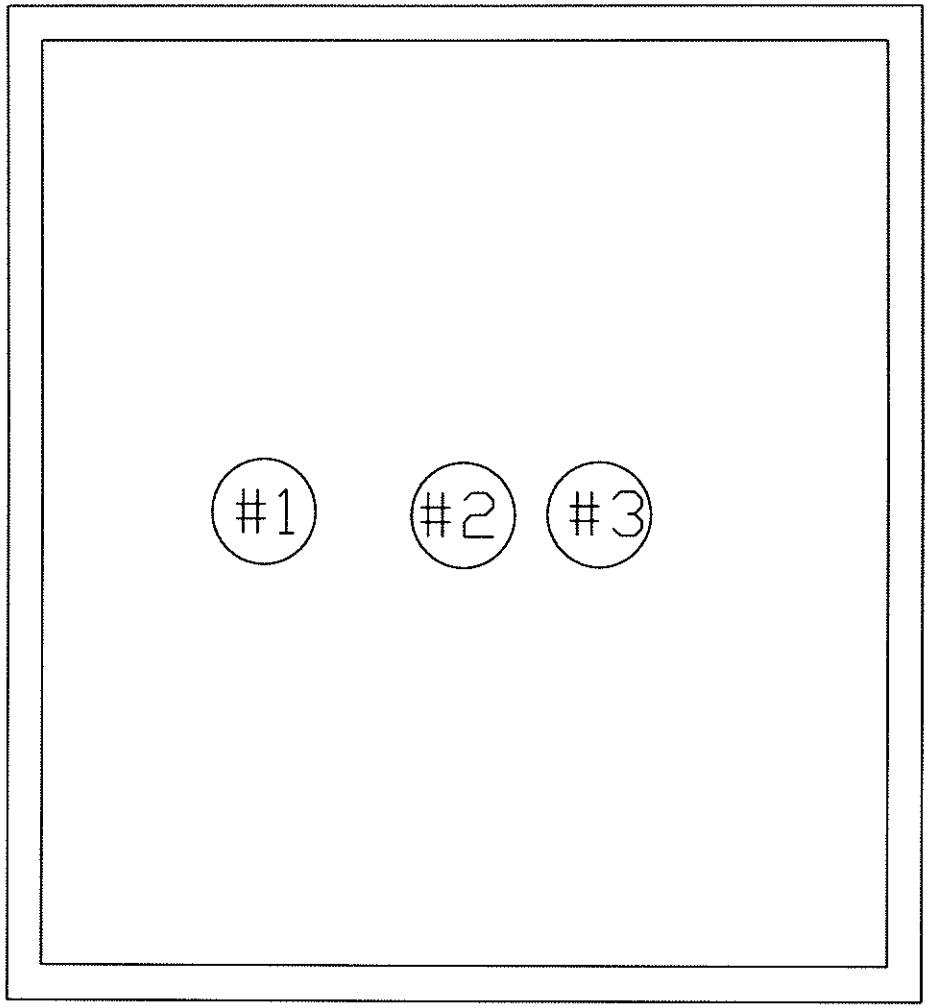
Specimen #1 - Air Exfiltration
(After loading sequence)



Appendix B

Sketches

REV	DATE	DESCRIPTION	BY
			LG



INDICATOR LOCATIONS

PROJECT NO. D8867.01 501-47	PROJECT NAME: AIR BARRIER CLIENT: TREMCO	Architectural Testing	DRAWING (Indicators)	DWG. BY: LG DATE: 7-2-14	SHEET 1 OF 1

Appendix C

Photographs

Photo No. 1

Exterior of test specimen

Photo No. 2

Interior of test specimen