



REPORT ON ENVELOPE AIR

TIGHTNESS TESTING

AT

SCIENCE BLOCK
SOUTH CAMDEN COMMUNITY SCHOOL
CHARRINGTON STREET
LONDON
NW1 1RG

CLIENT:
BAM CONSTRUCT UK LTD



1. INTRODUCTION

This report details the results of the envelope air tightness test carried out by HRS Services Ltd at:

Science Block
South Camden Community School
Charrington Street
London
NW1 1RG

The estimated year of construction was 2014.

The test was commissioned by Jim McCormack.

2. TEST CONDITIONS AND RESULTS

The worst acceptable building air permeability performance criteria as defined in Section 2 of the Building Regulations 2010, Part L2A Conservation of Fuel and Power in New Buildings Other Than Dwellings is $10\text{m}^3/(\text{h.m}^2)$ @ 50Pa.

The specified building air permeability as defined by the client was $5\text{m}^3/(\text{h.m}^2)$ @ 50Pa.

The test was carried out on 21.03.14, between 10.30 and 11.03. The result is representative of the building as tested on this day.

The type of HVAC was mechanical.

The envelope area for air permeability is defined as the area of the external walls plus the area of the roof and the ground floor. The envelope area was calculated by HRS Services.

The entire area of the Science Block was tested.

The envelope area of the test area was 3964m^2 .

The following air permeability was determined at 50Pa.

$$2.87\text{m}^3/(\text{h.m}^2)$$

The test area therefore **passed** the specified air permeability performance criteria

Summary of Temporary Sealing

Temporary sealing was applied to the following elements of the building for the air test:

- HVAC supplies and extracts

Temporary sealing was applied to unfinished elements, see table overleaf for full details. It should be noted that temporary seals may, in practice, be more airtight than the element they replace. The finished elements should therefore be of an equal standard of airtightness for the quoted test result to remain unchanged.

Please see the next page for full details of temporary sealing.

3. TEMPORARY SEALING

The following tables provide a detailed breakdown of the temporary sealing applied to the building during the air test.

Temporary sealing applied to intentional openings		
Element	Temporarily sealed for air test?	Comment/Extent of Sealing
HVAC supplies	Yes	All supplies sealed
HVAC extracts	Yes	All extracts sealed
Passive ventilation	No	None
Ventilation louvres	No	None
Drainage traps	No	None
Other	No	None

Temporary sealing applied to un-intentional openings/incomplete works	
Element	Comment/Extent of sealing/Reason for Sealing
Windows	1 No missing window pane temporarily sealed

Comments on Temporary Sealing

All temporary sealing applied was in compliance with Building Regulations 2000 (as amended), Part L2A Conservation of Fuel and Power in New Buildings Other Than Dwellings.

4. TEST METHOD

The envelope air tightness test was carried out in line with the following standards:

ATTMA TSL2 Oct 2010 Issue - Measuring Air Permeability of Building Envelopes (Non Dwellings)

BS EN 13829:2001 Thermal performance of buildings - Determination of air permeability of building - Fan pressurisation method.

The purpose of the test was method B (building envelope) as stated in BS 13829:2001. This requires that all adjustable openings shall be closed and remaining intentional openings sealed.

The building was pressurised using the HRS Services Ltd 'MIDIFAN' system. The MIDIFAN system comprises of a hydraulic powered fan designed to supply up to 32m³/second at 70 Pascals static pressure. The MIDIFAN system was tested and calibrated in accordance with BS 848 Part 1 1997.

The MIDIFAN system was set up in the double door.

Pressure differences across the MIDIFAN and the building were measured using digital micromanometers at the start, during and end of the test. Air temperatures were measured using Therna 1 digital thermometer with K Special penetration probes. Measurements were taken at the start and end of the test. The probes were located central and external to the building. Wind speeds at the start and end of the test were measured using a Kestrel K4000 meter. Barometric pressure was established by an absolute pressure meter.

The test area was prepared for air testing by the client. During the test HRS are external to the test area and are therefore reliant on the client maintaining the test area as agreed. The agreed test state of the test area is with all external windows and doors closed, and all internal doors open, with any temporary seals employed to remain intact for the duration of the test.

5. DETAILS OF TEST RESULTS

Please refer to the test results overleaf. The results have been interpolated from the readings taken between **49.25Pa** and **98.25Pa** with a correlation co-efficient of **0.9876**.

Zero-Flow Pressure Differences

The mean fan off Δp at the start of the test, $\Delta p_{0,1}$, was 0

The mean fan off Δp at the end of the test, $\Delta p_{0,2}$, was -4.5

The zero flow pressure difference $\Delta p_{0,1+}$ at the start of the test was 0

The zero flow pressure difference $\Delta p_{0,1-}$ at the start of the test was -0.5

The zero flow pressure difference $\Delta p_{0,2+}$ at the end of the test was 2

The zero flow pressure difference $\Delta p_{0,2-}$ at the end of the test was -3.5

**FOR THE FULL SET OF CALCULATIONS USED TO CALCULATE
THE AIR PERMEABILITY RATE, PLEASE GO TO**

http://www.hrsservices.co.uk/downloads/air_permeability_calculations.pdf

Building Ref: 111447 - Science Block

Date of Test: 21.03.14

$C_{env} = 0.2011$

$C_L = 0.2026$

$n = 0.7041$

Corr Coeff = 0.9876

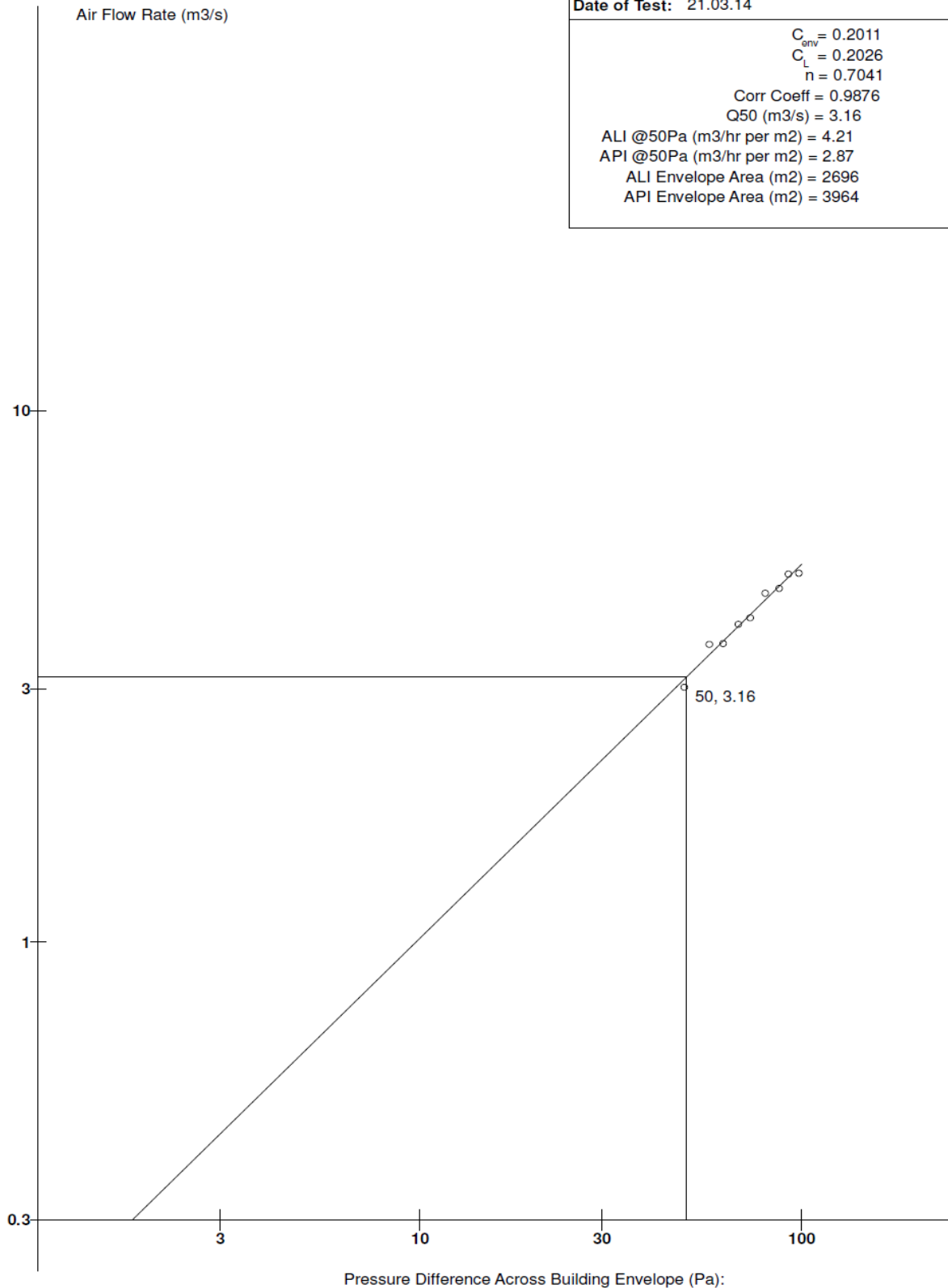
Q50 (m3/s) = 3.16

ALI @50Pa (m3/hr per m2) = 4.21

API @50Pa (m3/hr per m2) = 2.87

ALI Envelope Area (m2) = 2696

API Envelope Area (m2) = 3964



Log-Log Air Leakage Characteristic

Engineer: Paul Bannister

Date: 21.03.14

Source: Altas V6.3.2 Updated 17/8/2009

Building Air Leakage Test Data Sheet

Client Details

Client Name: BAM Construct UK Ltd

Client Contact: Jim McCormack

Building Ref: 111447 - Science Block

HRS Ref. No: 111447

Site Address:

Science Block
South Camden Community School
Charrington Street
London

Air Leakage Test Details

Test Start Time: 10.30

Test Data Base No: 111447

Test Finish Time: 11.03

Date of Test: 21.03.14

Pressurisation: ☒

Depressurisation: ☐

General Weather Conditions:

Dry and sunny with steady wind

Measured Parameters

Parameter	Start	End
Wind Speed (m/s)	0	0
External Temp (deg C)	10.7	11.6
Internal Temp (deg C)	19.7	19.2
Barometric Pressure (Pa)	100500	100400
Fan off Press. Diff. (Pa)	0	-4.5

Internal temp Sensor Location:

central

Fan Speed	0	0	0	0	0	0	0	0	0					
(Pa)	98.25	92.25	87.25	80.25	73.25	68.25	62.25	57.25	49.25					
(m3/s)	5.09	5.07	4.77	4.67	4.20	4.08	3.76	3.74	3.11					

Engineer: Paul Bannister

Date: 21.03.14

Source: Altas V6.3.2 Updated 17/8/2009



AIR PERMEABILITY TEST CERTIFICATE

This is to certify that an air tightness test was carried out at:

SCIENCE BLOCK
SOUTH CAMDEN COMMUNITY SCHOOL
CHARRINGTON STREET
LONDON
NW1 1RG

The test was carried out on 21.03.14 in accordance with ATTMA TSL2.

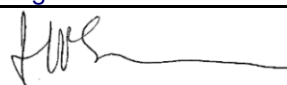
The following air permeability was determined at 50Pa:

2.87m³/(h.m²)

Client: BAM CONSTRUCT UK LTD



2587

Name	Position	Signature	Date
Bert Simmons	Air Tightness Consultant		24.03.2014

To be read in conjunction with relevant test report