Louvre Tests

Report Number 55967/1

Carried out for
Architectural Profiles Ltd

By Andrew Freeth

1 March 2012

Louvre Tests

Carried out for:

Architectural Profiles Ltd
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Contract: **Report 55967/1**

Date: **1 March 2012**

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PHOTOGRAPHS

1 INTRODUCTION

This report concerns tests conducted on a louvre to determine the Rainwater Penetration and Coefficient of Entry performance curves with the test methods contained within EN 13030 : 2001. The work was commissioned by Architectural Profiles Ltd. and was carried out at BSRIA on 14 - 15 February 2012, under Purchase Order number 2503/R+D/ 12.

Table 1 Items received for test

Test Item	BSRIA ID
AP70 LB4	55967A1

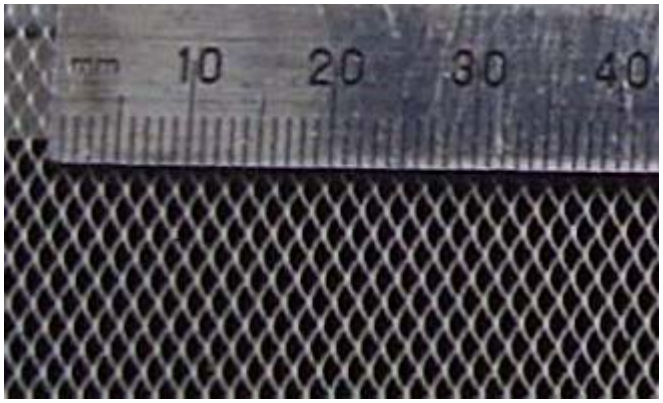
Test item information

Contract		55967
Date		15 February 2012
Manufacturer		Architectural Profiles Ltd
Louvre Model		AP70 LB4
Material		Aluminium
Painted		No
Blade Height		980 mm
Blade Width		970 mm
Blade Depth		100 mm
Frame Depth		190 mm (400mm including water tray)
No. of Blades		9
Blade Pitch		100 mm
Blade Angle		45º
No. of Banks		1
Guard Type		Insect
Guard Spacing		45 mm approx..
Side Channels		No
Water Drip Tray		Yes
Blade Orientation		Horizontal

Photograph 1 Test item 55967A1 (front)

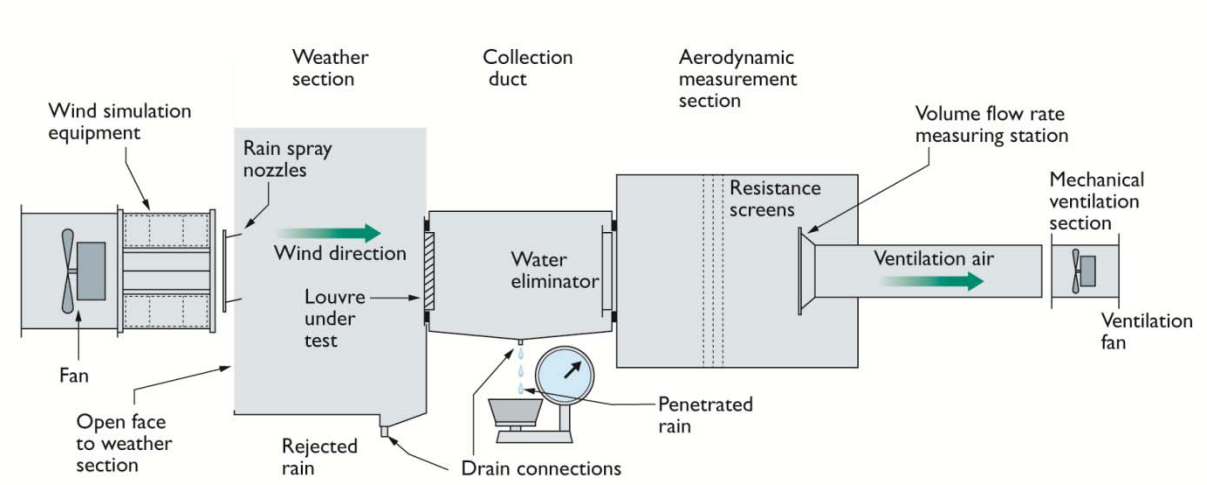
Photograph 2 Test item 55967A1 (rear showing water tray)

Photograph 3 Close-up of mesh



2 TEST METHOD

A graphical representation of the rig used during testing



The test comprises of two parts:

2.1 WATER PENETRATION

The weather louvre is subjected to fan driven wind at a speed of 13 m/s and water sprayed as rainfall at a rate of 75 l/h. In addition to the simulated wind and rain, air is drawn through the louvre at various set velocities (0, 0.5, 1.0, 1.5, 2.0, 2.5, 3.0 and 3.5 m/s).

Each test is to run for a minimum of 30 minutes or until the results become stable. Each test is preceded by a suitable 'pre-test' soak which is usually around 30 minutes.
The penetrated water is collected in the collection duct and is measured and recorded against time elapsed.
A range of measurements are taken to give the characteristic curve for the test louvre.

2.2 PRESSURE DROP

This is measured by attaching the test louvre to the front of the Aerodynamic Measuring Section after it is separated from the main rig.
Pressure tappings are used to record the static pressure within the plenum during testing. The airflow volume is calculated from the differential pressure at the measuring cones. The plenum has a set of settling screens within to produce even flow through the cones and therefore give accurate reading of the total volume.

By adjusting the fan speed, the total airflow through the system varies and therefore changes the pressure on the louvre under test. A range of measurements are taken to give the characteristic curve for the test louvre.

2.3 TEST EQUIPMENT USED

Test equipment	BSRIA ID
Water supply measurement	352
Rain measuring system	353
Airflow cones	364
Micromanometer	708
Scales	149

3 RESULTS

Rainwater Penetration

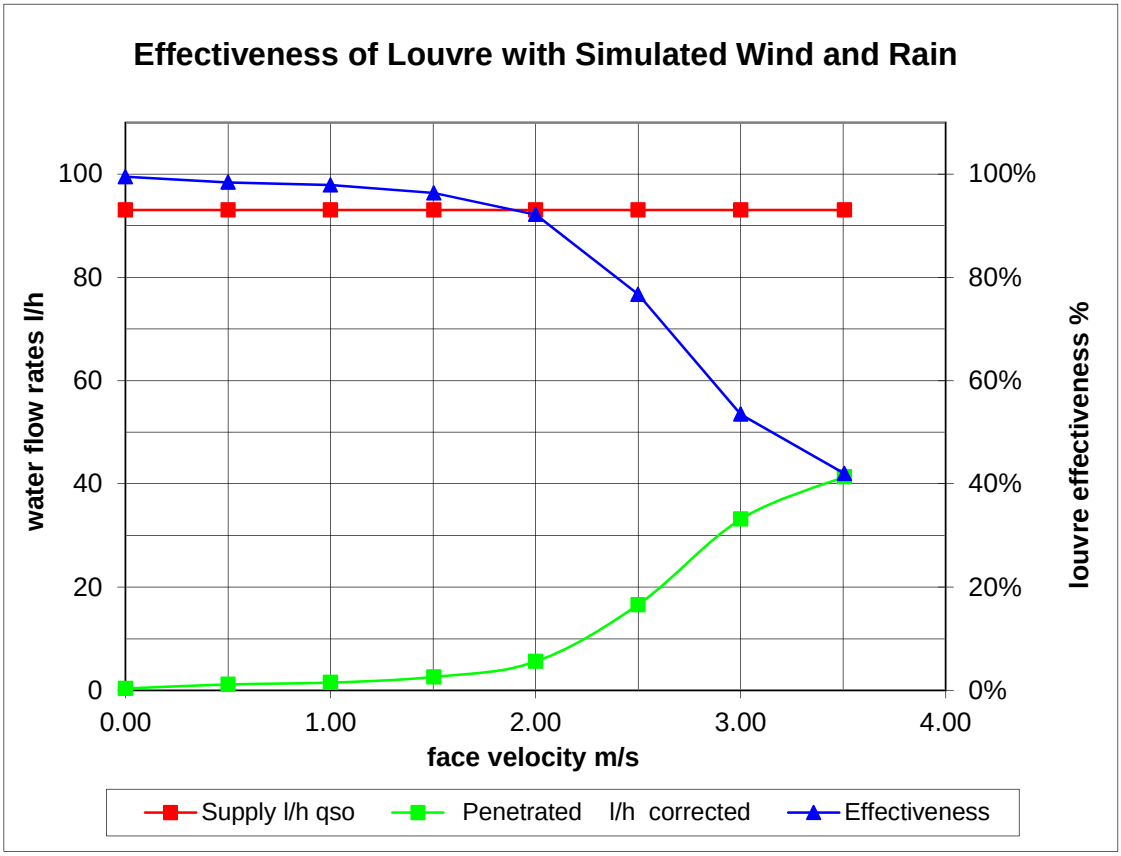
MANUFACTURER Architectural Profiles Ltd
MODEL AP70 LB4

Date 14/02/2012
Contract 55967

Simulated rainfall 75 mm/hr
Wind speed 13.0 m/s

louvre height 980 mm
louvre width 970 mm
louvre area 0.951 m^2

VENTILATION RATE		WATER FLOW RATES		Effectiveness	Class
Volume m^3/s	Velocity m/s	Supply l/h	Penetrated l/h		
0.00	0.00	93.0	0.4	99.5%	A
0.48	0.50	93.0	1.1	98.4%	B
0.95	1.00	93.0	1.5	97.9%	B
1.43	1.50	93.0	2.6	96.3%	B
1.90	2.00	93.0	5.6	92.1%	C
2.38	2.50	93.0	16.6	76.7%	D
2.85	3.00	93.0	33.2	53.5%	D
3.33	3.51	93.0	41.4	42.0%	D

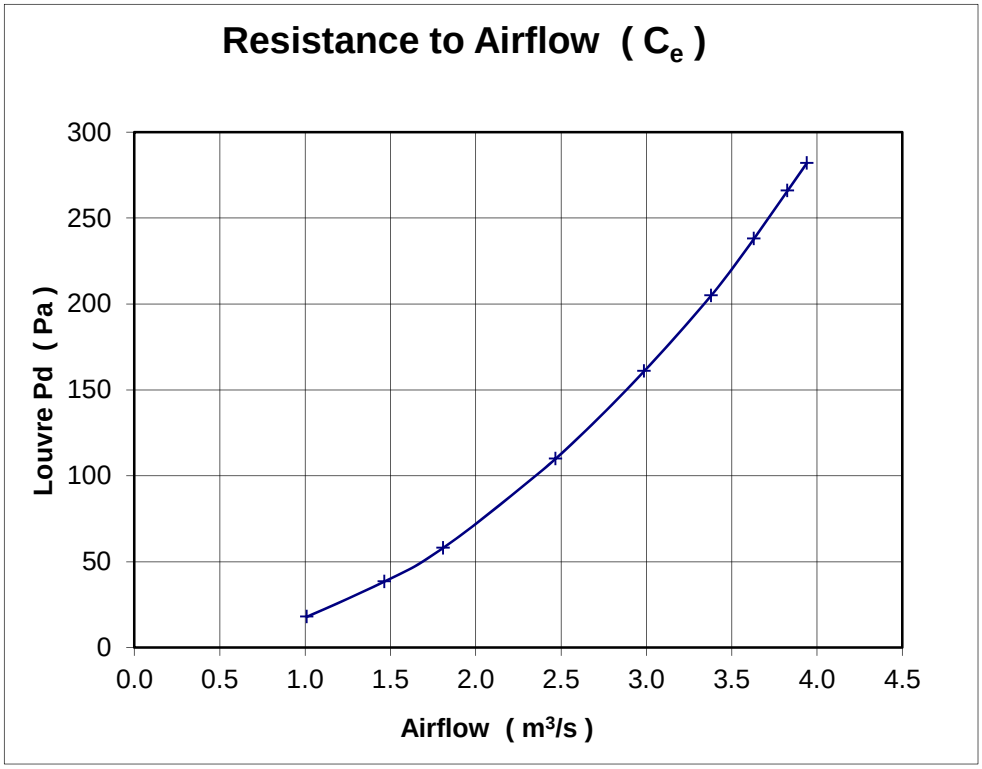


Coefficient of Entry

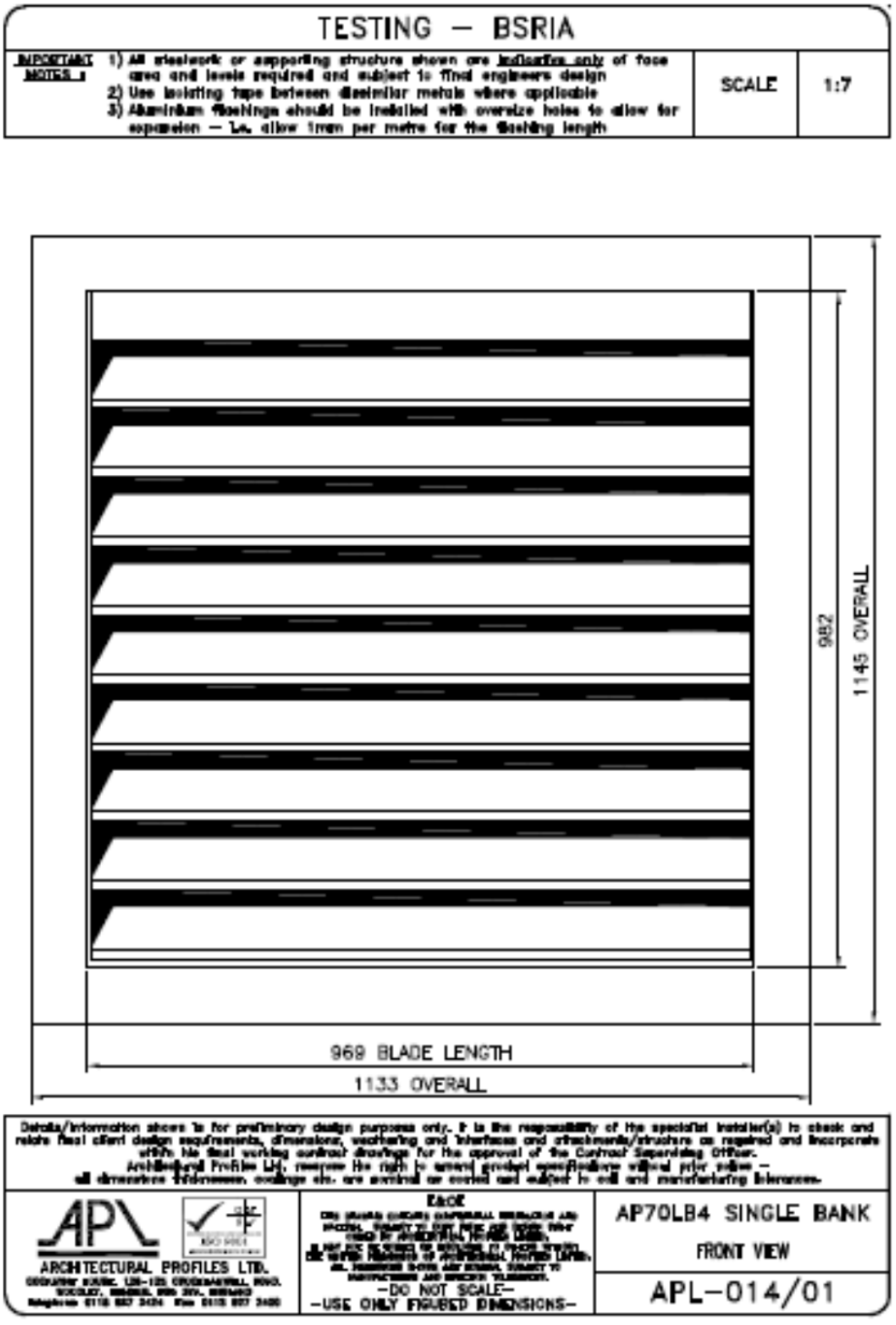
MANUFACTURER Architectural Profiles Ltd Date 14/02/2012
MODEL AP70 LB4 Contract 55967

air temperature	16	°C	louvre height	980	mm
barometer	1015	mbar	louvre width	970	mm
air density	1.218	kg/m^3	louvre area	0.951	m^2

	louvre face velocity	air flow rate		
louvre pd Pascals	m/s	test m^3/s	theoretical m^3/s	coefficient C_e
282.0	4.15	3.940	20.456	0.193
266.0	4.03	3.827	19.867	0.193
238.0	3.82	3.630	18.792	0.193
205.0	3.56	3.380	17.441	0.194
161.0	3.14	2.987	15.456	0.193
110.0	2.60	2.469	12.776	0.193
58.0	1.90	1.809	9.277	0.195
38.5	1.54	1.465	7.558	0.194
18.0	1.06	1.011	5.168	0.196
			mean C_e	0.194
			Class	4



APPENDIX: A MANUFACTURER'S DRAWING

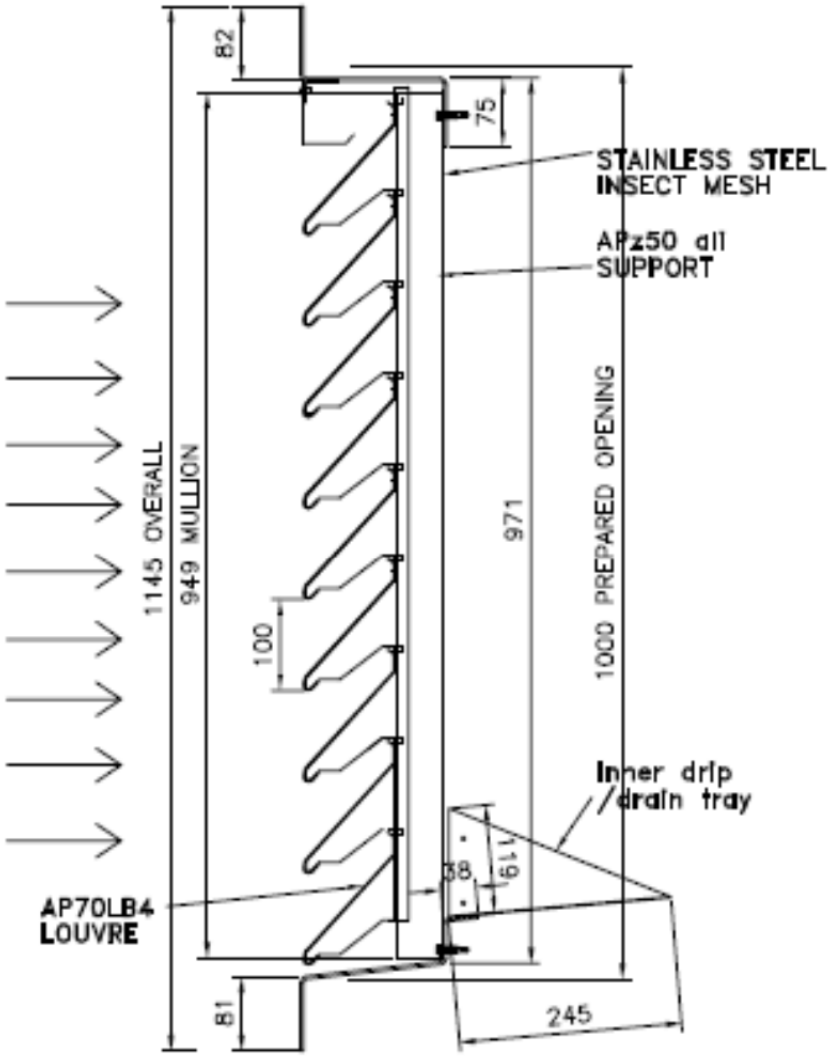


TESTING – BSRIA

IMPORTANT NOTES !

1) All steelwork or supporting structure shown are indicative only of face area and levels required and subject to final engineers design
2) Use isolating tape between dissimilar metals where applicable
3) Aluminium flashings should be installed with oversize holes to allow for expansion – i.e. allow 1mm per metre for the flashing length

SCALE 1:7



Details/information shown is for preliminary design purposes only. It is the responsibility of the specialist installer(s) to check and relate final client design requirements, dimensions, weathering and interfaces and attachments/structure as required and incorporate within his final working contract drawings for the approval of the Contract Supervising Officer.
Architectural Profiles Ltd. reserves the right to amend product specifications without prior notice – all dimensions thicknesses, coatings etc. are nominal as quoted and subject to mill and manufacturing tolerances.

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–DO NOT SCALE–
–USE ONLY FIGURED DIMENSIONS–

AP70LB4 SINGLE BANK
VERTICAL SECTION VIEW
APL–014/02

TESTING – BSRIA		
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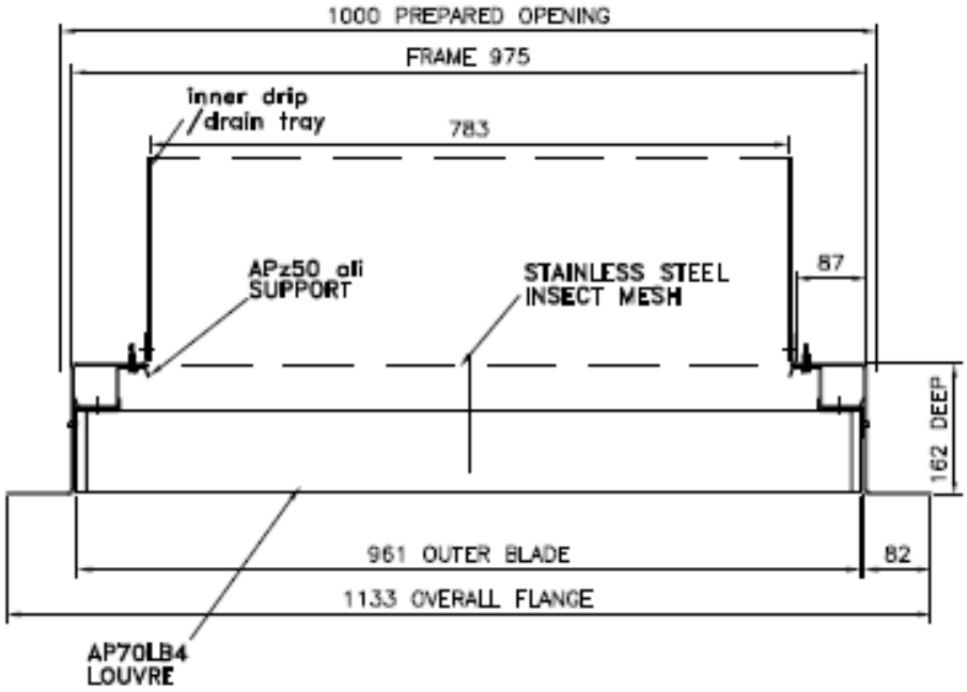

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AP70LB4 SINGLE BANK
PLAN SECTION VIEW
APL–014/03