



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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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	45°
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)

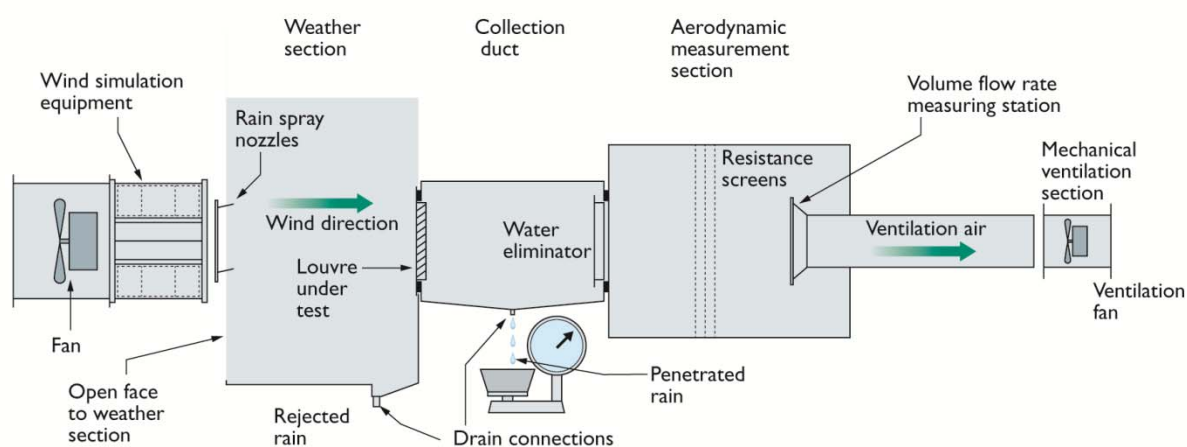


Photograph 3 Close-up of mesh



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

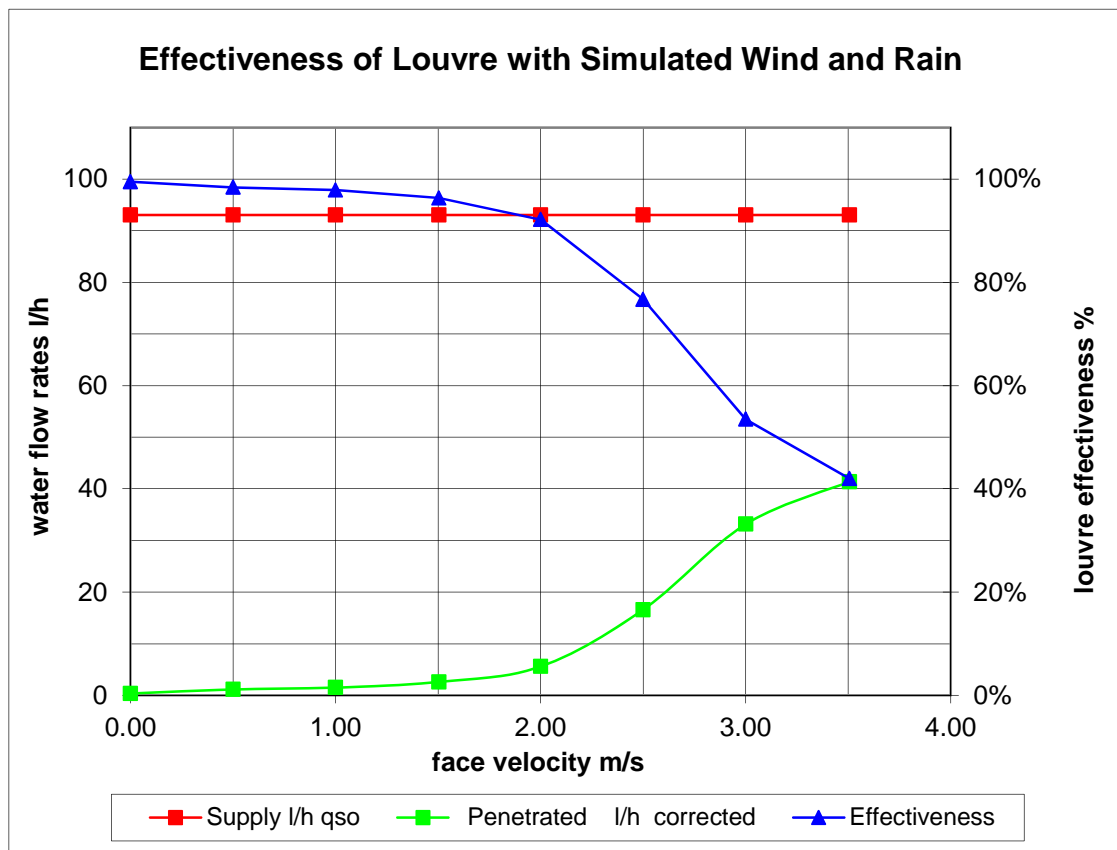
Rainwater Penetration

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 m²

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



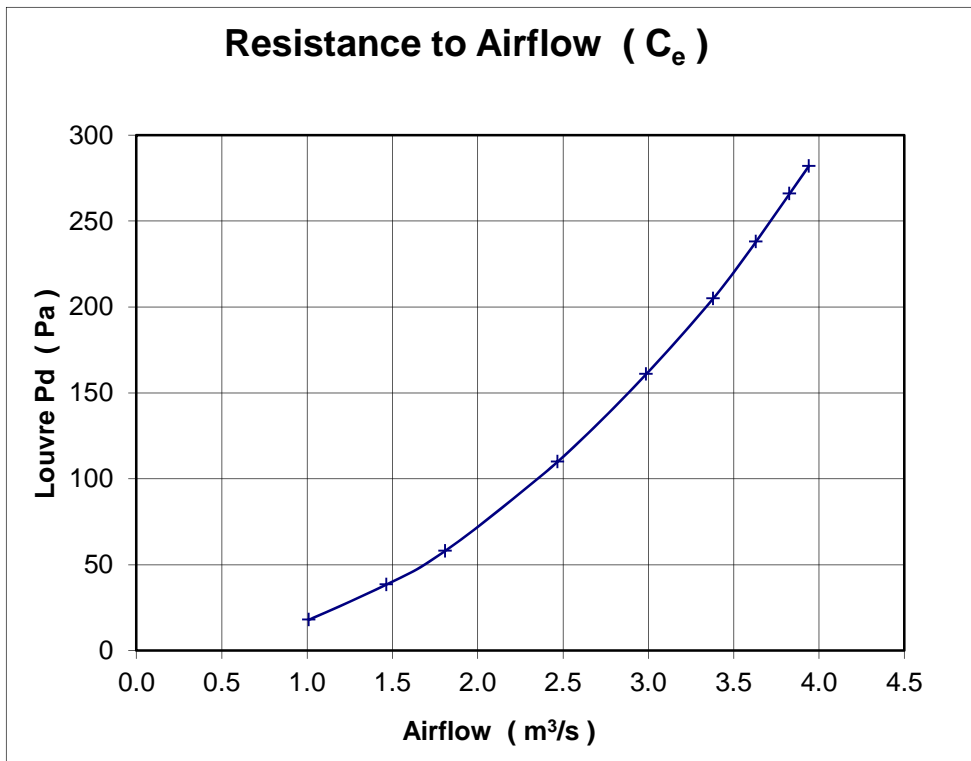
Coefficient of Entry

MANUFACTURER Architectural Profiles Ltd
 MODEL AP70 LB4

Date 14/02/2012
 Contract 55967

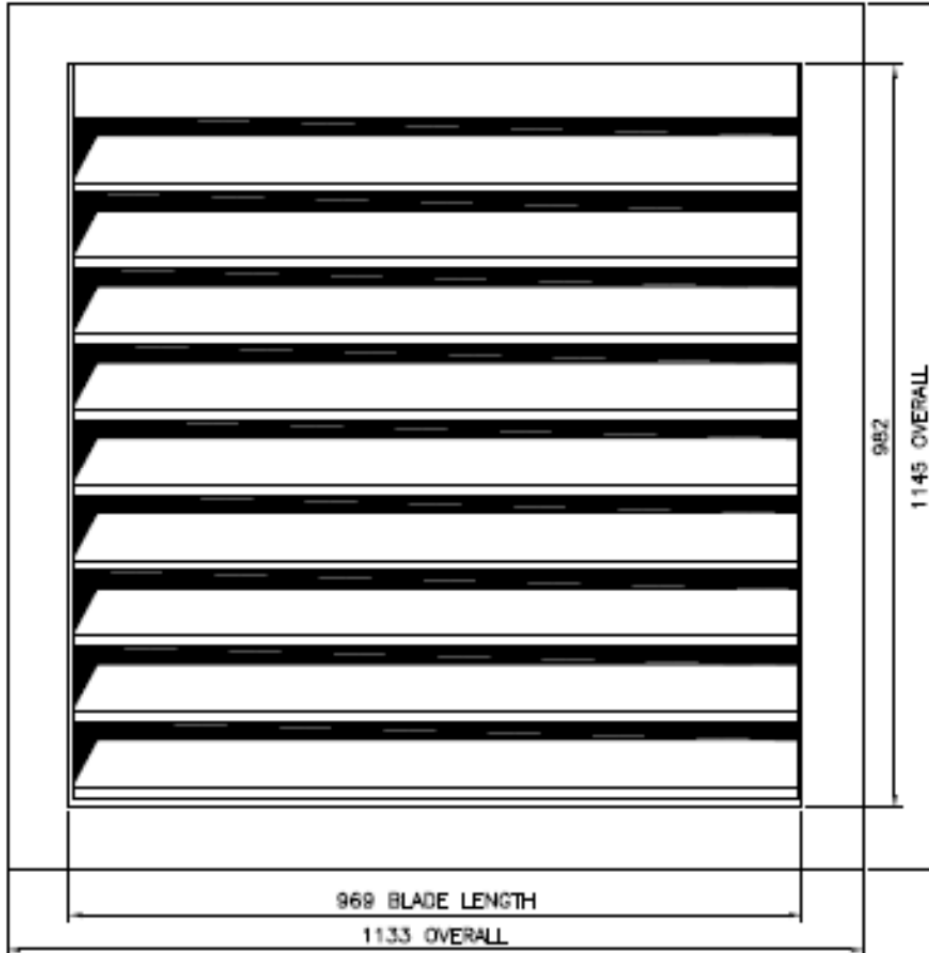
air temperature 16 °C louvre height 980 mm
 barometer 1015 mbar louvre width 970 mm
 air density 1.218 kg/m³ louvre area 0.951 m²

louvre pd Pascals	louvre face velocity	air flow rate		coefficient C _e
	m/s	test m ³ /s	theoretical m ³ /s	
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		
<p>IMPORTANT NOTES:</p> <ol style="list-style-type: none"> 1) All steelwork or supporting structure shown are <u>indicated only</u> of face area and levels required and subject to final engineers design 2) Use insulating tape between dissimilar metals where applicable 3) Aluminium fixings should be installed with oversize holes to allow for expansion — i.e. allow 1mm per metre for the fastening length 	<p>SCALE</p>	<p>1:7</p>

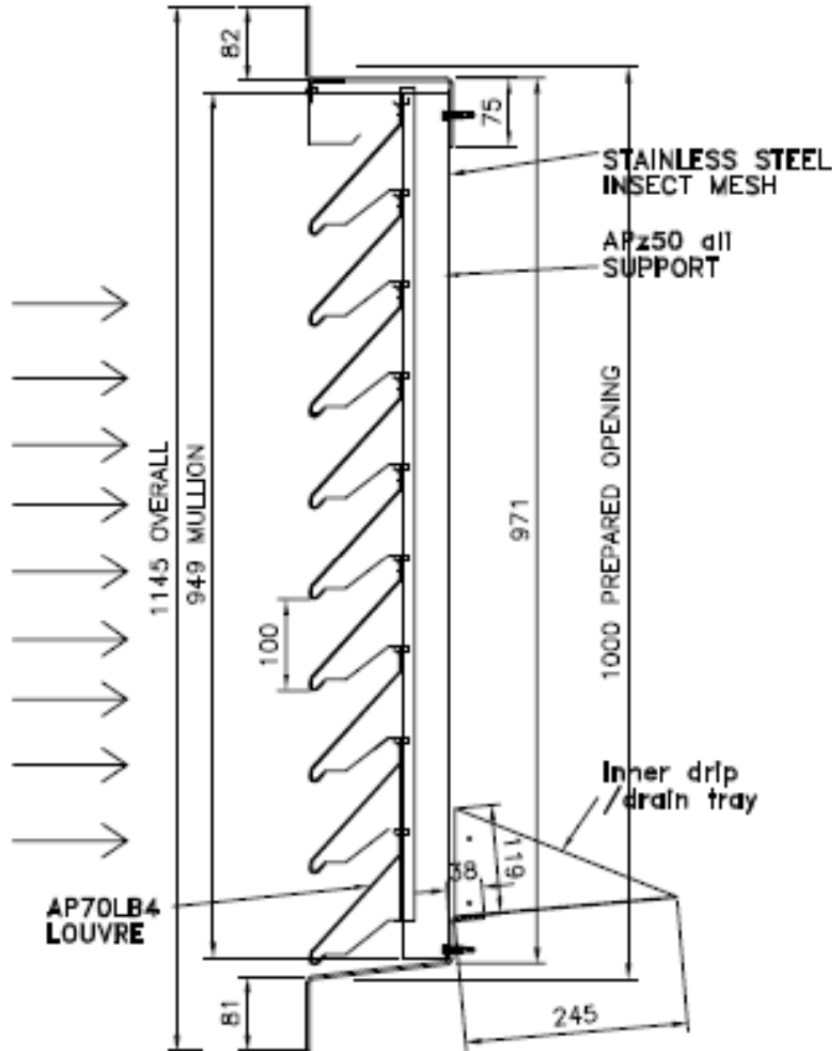


Details/Information shown is for preliminary design purposes only. It is the responsibility of the specialist installer(s) to check and relate final client design requirements, dimensions, weathering and interfaces and attachments/structure as required and incorporate with his final working contract drawings for the approval of the Contract Supervising Officer.

Architectural Profiles Ltd, reserves the right to amend product specifications without prior notice — all dimensions dimensions, drawings etc. are printed on vector and subject to mill and manufacturing tolerances.

 <p>ARCHITECTURAL PROFILES LTD. OSWALD'S BARRACKS, LANE-125 OSWALDSTOWN ROAD, WOODLEY, BRISTOL, BS20 2JL, ENGLAND Telephone 01174 827 2424 Fax 01174 827 2426</p>	<p>NOTE</p> <p>DO NOT SCALE DIMENSIONS. DIMENSIONS ARE GIVEN IN MILLIMETERS UNLESS OTHERWISE STATED. DIMENSIONS ARE GIVEN TO FACE UNLESS OTHERWISE STATED. DIMENSIONS ARE GIVEN TO FACE UNLESS OTHERWISE STATED.</p> <p>— DO NOT SCALE — — USE ONLY FIGURED DIMENSIONS —</p>	<p>AP70LB4 SINGLE BANK</p> <p>FRONT VIEW</p> <p>APL-014/01</p>
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TESTING - BSRIA		
<p>IMPORTANT NOTES:</p> <ol style="list-style-type: none"> 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 	<p>SCALE</p>	<p>1:7</p>

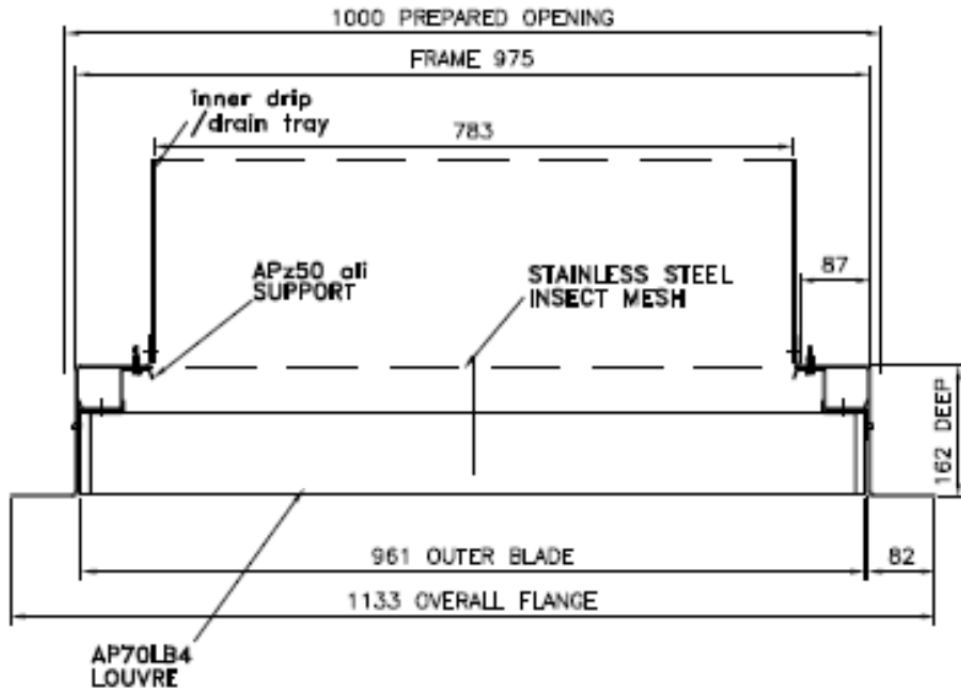


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		<p>VERTICAL SECTION VIEW</p>
		<p>APL-014/02</p>

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 fixings should be installed with oversize holes to allow for expansion - i.e. allow 1mm per metre for the fixing length	SCALE 1:7



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		<p>APL-014/03</p>	