



LB
ALUMINIUM
BERHAD

198501006093 (138535-V)

PERFORMANCE LOUVRE SYSTEMS

Screening, Ventilation and Rain Defence



ALBESiana[®] PL-SB01



ALBESiana[®] PL-DB01



ALBESiana[®] PL-TB01



ALBESiana[®] PL-TB02

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PERFORMANCE LOUVRES

By definition, a performance louvre system is a stack of specially designed louvre blades spaced out in such a way as to regulate air flow while restricting water leakage across the louvre panel.

APPLICATIONS

1. Building envelope over spaces
2. HVAC facility rooms (heating ventilation and air conditioning)
3. Electrical switch rooms
4. Plant rooms with special machineries
5. Warehouses and distribution centres
6. Staircase landing and protected walkway
7. Car parks

BS EN 13030

The BS EN 13030 standard sets the guidelines for testing and provides useful classifications for the water ingress levels and pressure drop coefficients of a louvre system. This is a well recognised industry standards for louvre system in Europe.

ALBESiana Performance louvres are fully tested at BSRIA to establish their performance levels.

PROPERTIES

- Fabricated from alloy 6063-T5 extruded aluminium profiles
- Require minimum maintenance
- Are available in anodised, powder-coated or PVDF finishes
- Are fully tested to the BS EN 13030 standard at BSRIA - The Building Services Research and Information Association, UK.

ALBESiana PERFORMANCE LOUVRES SYSTEMS

(a) *Single Bank Aluminium Louvre* :

Provides basic weather protection and ventilation, allowing airflow while reducing rain and debris entry.

(b) *Double Bank Aluminium Louvre* :

Offers improved rain defense and airflow control with staggered blades for enhanced weather protection.

(c) *Triple Bank Aluminium Louvre* :

Delivers maximum weather protection and significant airflow, ideal for harsh conditions with superior performance.

RAIN DEFENSE CLASSIFICATION

Class	Effectiveness	Max. allowed rain penetration l/h/m ²
A	99% to 100%	0.75
B	95% to 98.9%	3.75
C	80% to 94.9%	15
D	Below 80%	Greater than 15.00

Note : Water penetration effectiveness is measured for each of eight face velocities from 0 m/s to 3.5 m/s. Louvre penetration class should always be expressed in the context of the face velocity it was measured at.

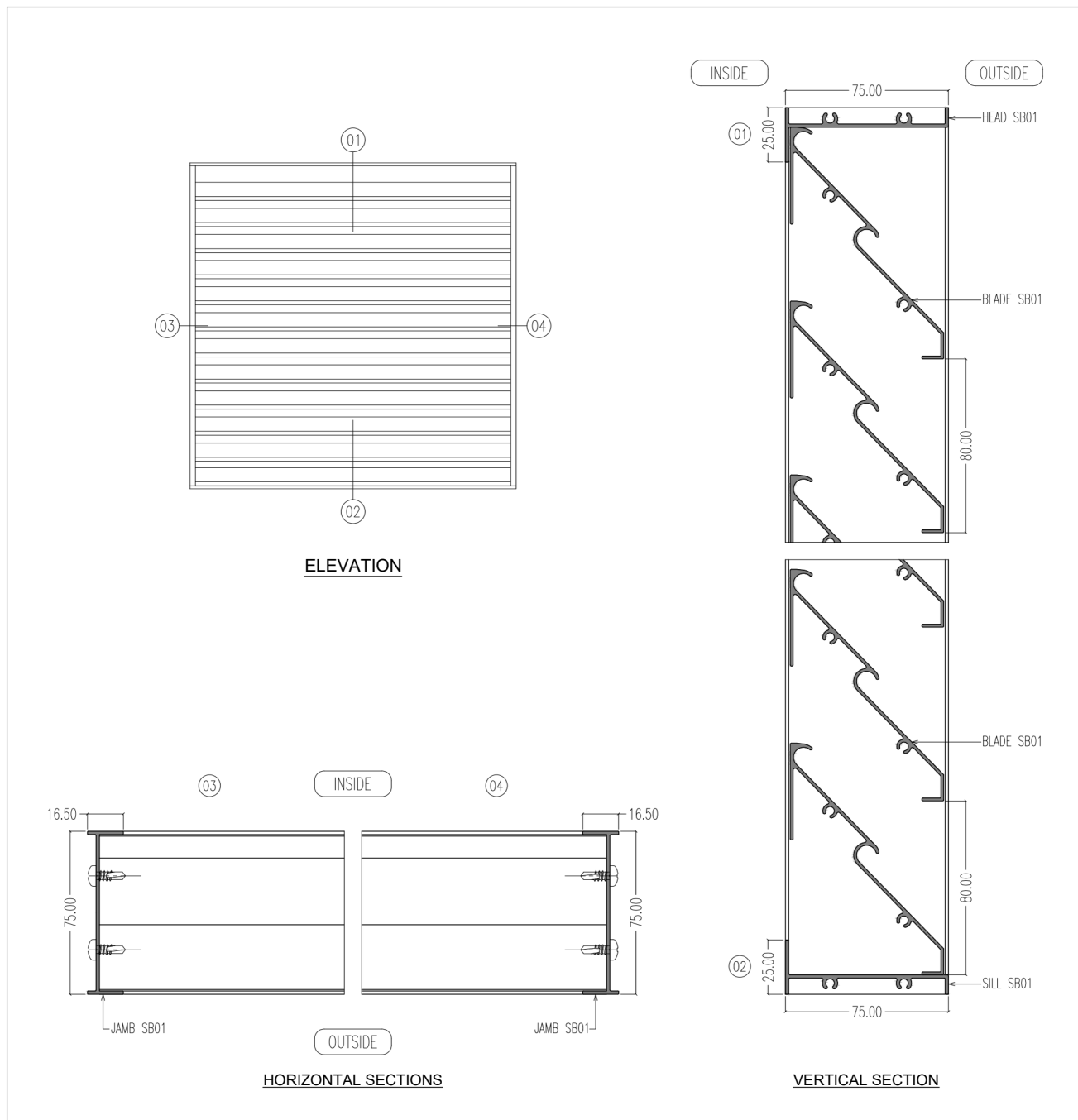
AIR FLOW CLASSIFICATION

Class	Airflow Effectiveness	Performance Rating
1	0.4 to 1	Excellent
2	0.3 to 0.399	Very Good
3	0.2 to 0.299	Good
4	0.199 & below	Fair

Note : Discharge / entry loss coefficient is expressed as a single class, based on an average result over a range of face velocities. The higher the coefficient, the less resistant the louvre : allowing air to pass more freely.



TYPICAL ASSEMBLY SECTIONAL DETAILS





RAINWATER PENETRATION

Simulated Rainfall	75 (+10% / -0%)	mm/hr	Core Area Height	987	mm
Wind Speed	13 (+/-10%)	m/s	Core Area Width	969	mm
			Core Area Area	0.956	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	97.2	5.0	93.6	C
0.48	0.50	97.2	10.1	87.0	C
0.96	1.00	97.2	13.7	82.4	C
1.44	1.50	97.2	18.2	76.6	D
1.91	2.00	97.2	27.4	65.0	D
2.39	2.50	97.2	43.8	43.9	D
2.87	3.00	97.2	58.5	25.5	D
3.35	3.50	97.2	68.6	12.0	D

COEFFICIENT OF ENTRY

Air Temperature	17.9	°C	Core Area Height	987	mm
Barometer	979.5	mbar	Core Area Width	969	mm
Air Density	1.168	kg/m ³	Core Area Area	0.956	m ²

Louvre p.d. Pa	Louvre Face Velocity	Air Flow Rate		Coefficient C _e
	m/s	Test m ³ /s	Theoretical m ³ /s	
10.0	0.80	0.769	3.958	0.194
28.9	1.32	1.264	6.729	0.188
59.5	1.88	1.798	9.655	0.186
90.3	2.31	2.213	11.894	0.186
120.0	2.67	2.551	13.711	0.186
152.0	2.99	2.860	15.431	0.185
183.0	3.28	3.134	16.932	0.185
213.0	3.54	3.385	18.267	0.185
246.0	3.79	3.623	19.632	0.185
280.0	4.03	3.855	20.944	0.184
Mean C _e				0.186
Class				4



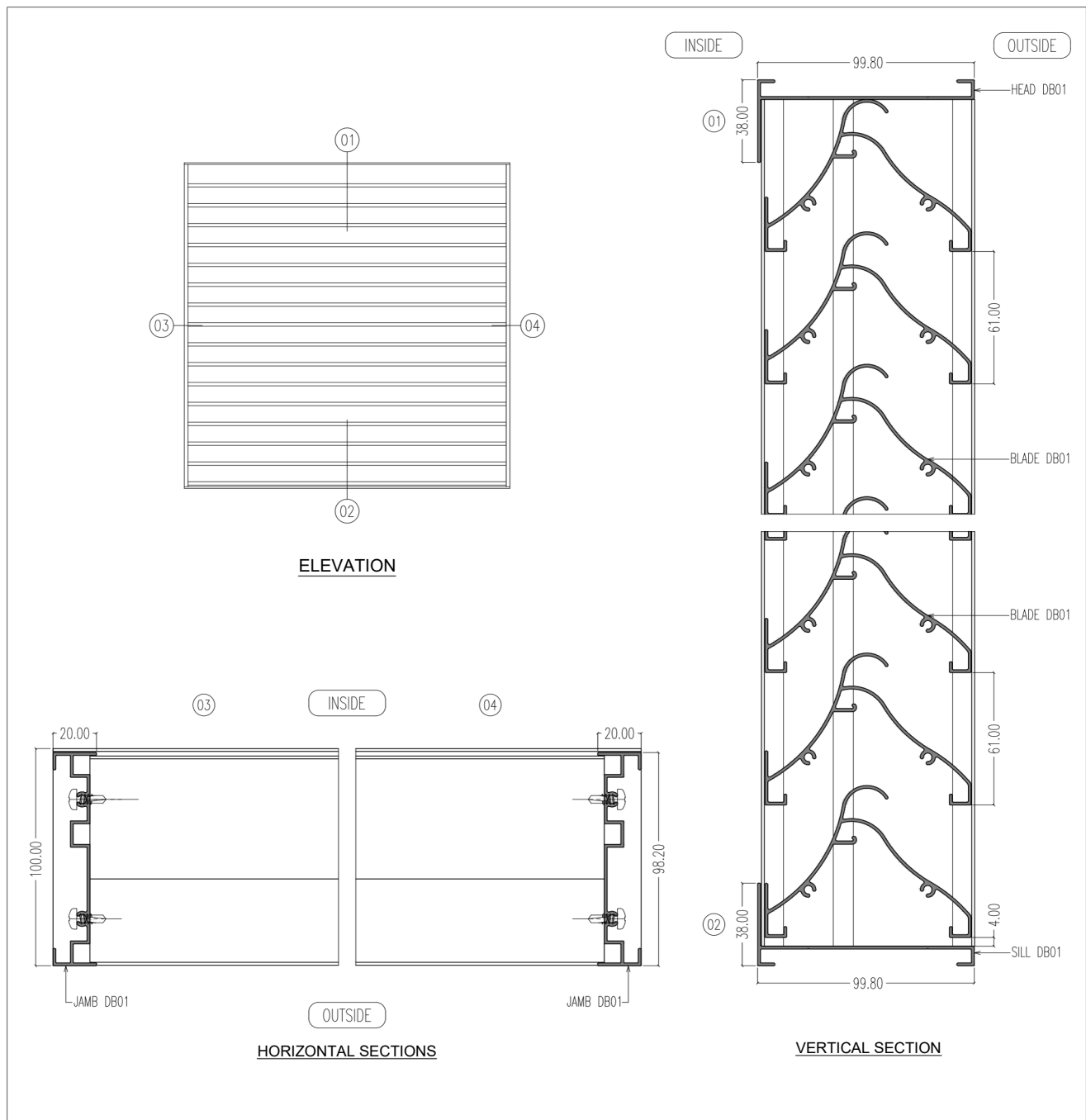
COEFFICIENT OF DISCHARGE

Air Temperature	18.5	°C	Core Area Height	987	mm
Barometer	980.0	mbar	Core Area Width	969	mm
Air Density	1.166	kg/m ³	Core Area Area	0.956	m ²

Louvre p.d. Pa	Louvre Face Velocity	Air Flow Rate		Coefficient C _d
	m/s	Test m ³ /s	Theoretical m ³ /s	
10.0	0.93	0.890	3.961	0.225
25.5	1.48	1.415	6.325	0.224
44.5	1.97	1.887	8.356	0.226
65.8	2.39	2.288	10.161	0.225
86.3	2.74	2.616	11.637	0.225
107.0	3.06	2.925	12.957	0.226
126.0	3.34	3.194	14.061	0.227
146.0	3.59	3.431	15.136	0.227
172.0	3.88	3.711	16.428	0.226
198.0	4.17	3.988	17.626	0.226
Mean C _d				0.226
Class				3



TYPICAL ASSEMBLY SECTIONAL DETAILS





RAINWATER PENETRATION

Simulated Rainfall	75 (+10% / -0%)	mm/hr	Core Area Height	988	mm
Wind Speed	13 (+/-10%)	m/s	Core Area Width	962	mm
			Core Area Area	0.950	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	97.2	0.0	100.0	A
0.48	0.50	97.2	0.0	100.0	A
0.95	1.00	97.2	2.3	97.0	B
1.43	1.50	97.2	8.8	88.7	C
1.90	2.00	97.2	16.1	79.4	D
2.38	2.50	97.2	41.2	47.1	D
2.85	3.00	97.2	59.4	24.3	D
3.33	3.50	97.2	68.1	12.7	D

COEFFICIENT OF ENTRY

Air Temperature	17.7	°C	Core Area Height	988	mm
Barometer	978.5	mbar	Core Area Width	962	mm
Air Density	1.167	kg/m ³	Core Area Area	0.950	m ²

Louvre p.d. Pa	Louvre Face Velocity	Air Flow Rate		Coefficient C _e
	m/s	Test m ³ /s	Theoretical m ³ /s	
10.1	0.73	0.696	3.954	0.176
32.8	1.33	1.262	7.125	0.177
66.0	1.86	1.770	10.107	0.175
102.0	2.33	2.213	12.565	0.176
136.0	2.69	2.558	14.508	0.176
168.0	3.01	2.861	16.125	0.177
203.0	3.29	3.129	17.725	0.177
238.0	3.57	3.391	19.193	0.177
270.0	3.81	3.620	20.442	0.177
309.0	4.07	3.869	21.869	0.177
Mean C _e				0.177
Class				4



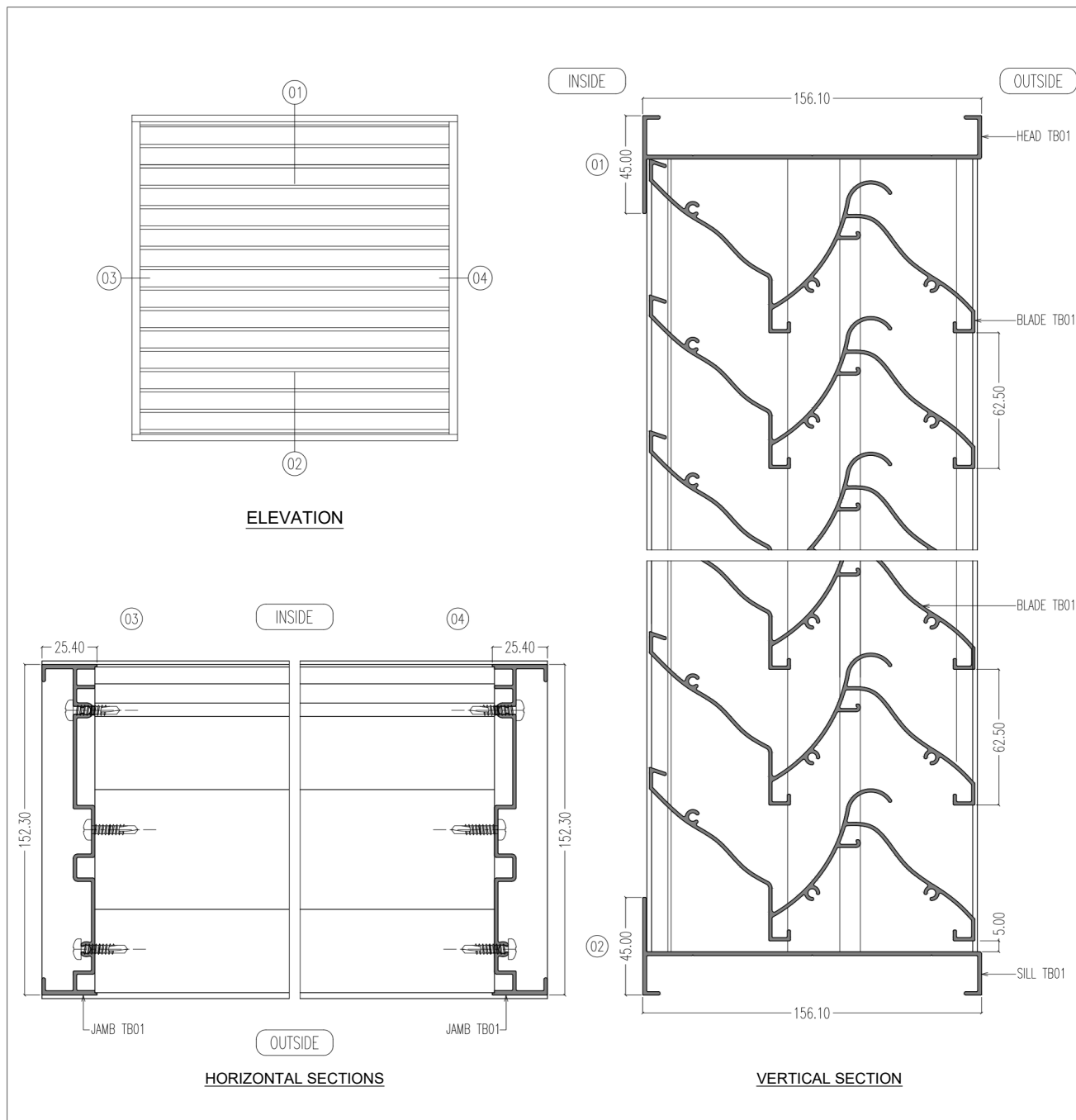
COEFFICIENT OF DISCHARGE

Air Temperature	18.3	°C	Core Area Height	988	mm
Barometer	978.7	mbar	Core Area Width	962	mm
Air Density	1.165	kg/m ³	Core Area Area	0.950	m ²

Louvre p.d. Pa	Louvre Face Velocity	Air Flow Rate		Coefficient C _d
	m/s	Test m ³ /s	Theoretical m ³ /s	
10.0	0.72	0.683	3.938	0.173
33.7	1.33	1.268	7.229	0.175
67.2	1.89	1.792	10.208	0.176
103.0	2.33	2.215	12.638	0.175
138.0	2.70	2.566	14.628	0.175
171.0	3.01	2.864	16.284	0.176
205.0	3.31	3.143	17.829	0.176
238.0	3.56	3.384	19.211	0.176
273.0	3.81	3.623	20.575	0.176
308.0	4.04	3.843	21.854	0.176
Mean C _d				0.176
Class				4



TYPICAL ASSEMBLY SECTIONAL DETAILS





RAINWATER PENETRATION

Simulated Rainfall	75 (+10% / -0%)	mm/hr	Core Area Height	958	mm
Wind Speed	13 (+/-10%)	m/s	Core Area Width	949	mm
			Core Area Area	0.909	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	97.2	0.0	100.0	A
0.45	0.50	97.2	0.0	100.0	A
0.91	1.00	97.2	0.0	100.0	A
1.36	1.50	97.2	0.0	100.0	A
1.82	2.00	97.2	1.4	98.2	B
2.27	2.50	97.2	16.4	79.2	D
2.73	3.00	97.2	74.8	5.6	D
3.18	3.50	97.2	75.6	4.5	D

COEFFICIENT OF ENTRY

Air Temperature	25.8	°C	Core Area Height	958	mm
Barometer	1003.7	mbar	Core Area Width	949	mm
Air Density	1.165	kg/m ³	Core Area Area	0.909	m ²

Louvre p.d. Pa	Louvre Face Velocity	Air Flow Rate		Coefficient C _e
	m/s	Test m ³ /s	Theoretical m ³ /s	
11.1	0.63	0.571	3.969	0.144
56.8	1.42	1.291	8.978	0.144
103.0	1.90	1.727	12.090	0.143
146.0	2.27	2.062	14.394	0.143
192.0	2.60	2.359	16.506	0.143
237.0	2.88	2.617	18.339	0.143
286.0	3.15	2.864	20.146	0.142
346.0	3.46	3.143	22.158	0.142
402.0	3.73	3.389	23.884	0.142
458.0	3.99	3.628	25.493	0.142
			Mean C _e	0.143
			Class	4



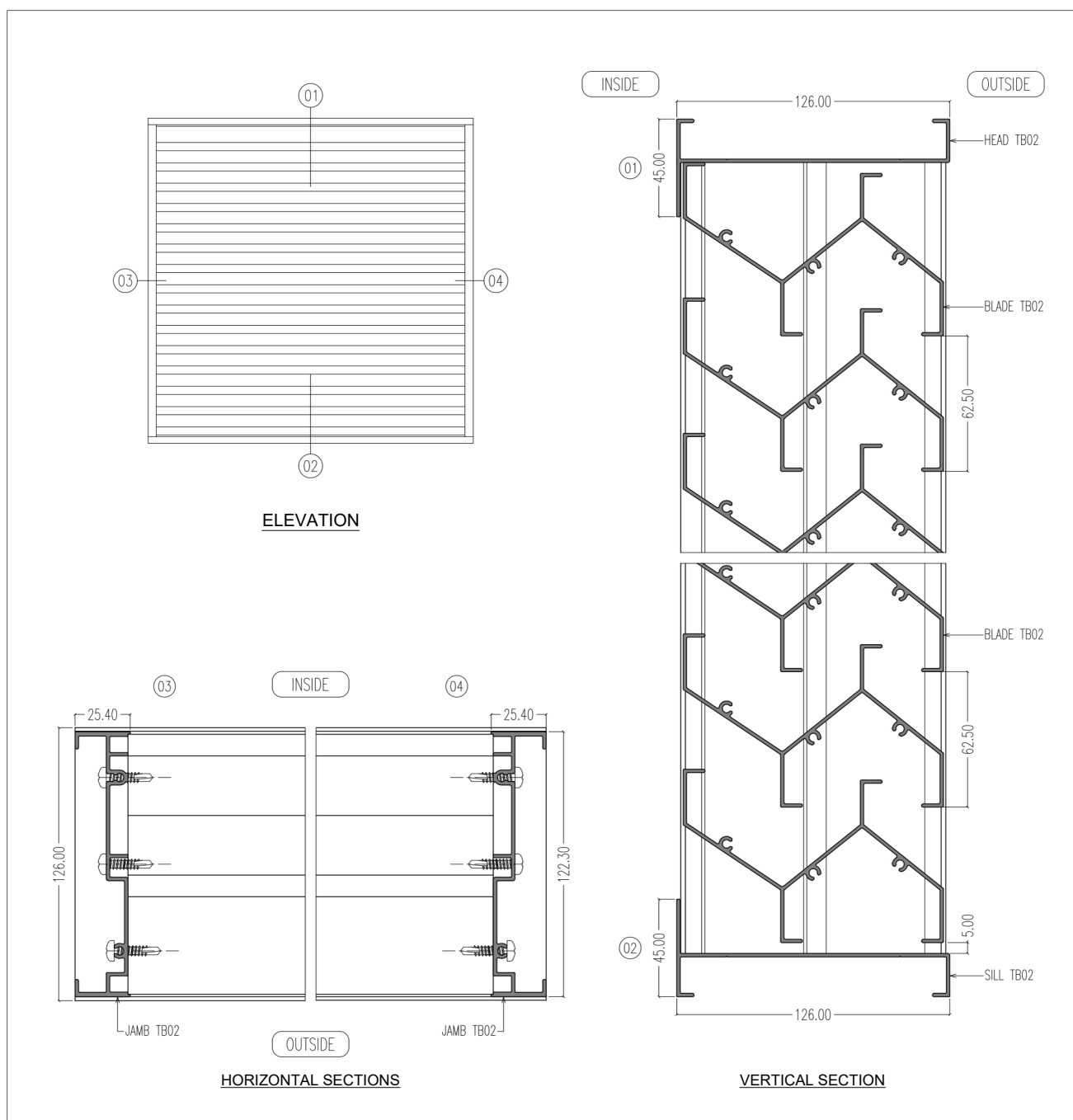
COEFFICIENT OF DISCHARGE

Air Temperature	25.8	°C	Core Area Height	958	mm
Barometer	1003.2	mbar	Core Area Width	949	mm
Air Density	1.164	kg/m ³	Core Area Area	0.909	m ²

Louvre p.d. Pa	Louvre Face Velocity	Air Flow Rate		Coefficient C _d
	m/s	Test m ³ /s	Theoretical m ³ /s	
10.1	0.63	0.574	3.787	0.152
49.5	1.39	1.267	8.383	0.151
91.0	1.89	1.716	11.366	0.151
130.0	2.27	2.062	13.585	0.152
171.0	2.60	2.360	15.581	0.151
220.0	2.96	2.692	17.673	0.152
267.0	3.27	2.977	19.470	0.153
312.0	3.57	3.241	21.047	0.154
355.0	3.83	3.485	22.450	0.155
400.0	4.09	3.722	23.831	0.156
Mean C _d				0.153
Class				4



TYPICAL ASSEMBLY SECTIONAL DETAILS





RAINWATER PENETRATION

Simulated Rainfall	75 (+10% / -0%)	mm/hr	Core Area Height	959	mm
Wind Speed	13 (+/-10%)	m/s	Core Area Width	942	mm
			Core Area Area	0.903	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	97.2	0.0	100.0	A
0.45	0.50	97.2	0.0	100.0	A
0.90	1.00	97.2	0.0	100.0	A
1.36	1.50	97.2	0.1	99.9	A
1.81	2.00	97.2	9.2	88.5	C
2.26	2.50	97.2	69.4	12.1	D
2.71	3.00	97.2	70.3	11.3	D
3.16	3.50	97.2	70.9	10.5	D

COEFFICIENT OF ENTRY

Air Temperature	25.4	°C	Core Area Height	959	mm
Barometer	1004.5	mbar	Core Area Width	942	mm
Air Density	1.167	kg/m ³	Core Area Area	0.903	m ²

Louvre p.d. Pa	Louvre Face Velocity	Air Flow Rate		Coefficient C _e
	m/s	Test m ³ /s	Theoretical m ³ /s	
23.6	0.63	0.568	5.744	0.099
90.2	1.25	1.126	11.230	0.100
160.0	1.66	1.498	14.956	0.100
240.0	2.04	1.841	18.318	0.101
320.0	2.35	2.122	21.152	0.100
399.0	2.62	2.371	23.619	0.100
480.0	2.89	2.608	25.905	0.101
560.0	3.12	2.820	27.981	0.101
641.0	3.35	3.023	29.936	0.101
724.0	3.56	3.212	31.815	0.101
Mean C _e				0.100
Class				4



COEFFICIENT OF DISCHARGE

Air Temperature	25.9	°C	Core Area Height	959	mm
Barometer	1004.1	mbar	Core Area Width	942	mm
Air Density	1.165	kg/m ³	Core Area Area	0.903	m ²

Louvre p.d. Pa	Louvre Face Velocity	Air Flow Rate		Coefficient C _d
	m/s	Test m ³ /s	Theoretical m ³ /s	
29.3	0.63	0.568	6.407	0.089
110.0	1.20	1.088	12.414	0.088
200.0	1.62	1.460	16.739	0.087
290.0	1.95	1.759	20.157	0.087
380.0	2.25	2.030	23.073	0.088
470.0	2.49	2.252	25.661	0.088
561.0	2.73	2.468	28.035	0.088
650.0	2.95	2.661	30.177	0.088
740.0	3.14	2.840	32.198	0.088
830.0	3.33	3.009	34.100	0.088
Mean C _d				0.088
Class				4

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