

Certificate of Testing



Certificate Number: 2017/77

Date: 25 September 2017

System: **AMS Screw through reveal rainscreen**

System supplier: Architectural Metal Solutions Ltd
Bentalls House
Bentalls
Basildon
Essex, SS14 3BS

Tests performed:

Watertightness – dynamic	✓
Wind resistance – serviceability	✓
Wind resistance – safety	✓
Soft body impact	✓
Hard body impact	✓

In accordance with 'Standard for Systemised building envelopes CWCT, 2006

A handwritten signature in blue ink, appearing to read 'Mr P. Keller'.

Test Witness

A handwritten signature in blue ink, appearing to read 'P. Keller'.

Director

Description of system tested

Rainscreen system: AMS screw through reveal rainscreen panels supported by Nvelope NV1 support rail system

Panel material 2mm and 3mm thick 1050 aluminium

Panel description: 40mm deep aluminium cassette panels.
Larger panels provided with top hat stiffeners bonded with double sided 3M VHB tape 18mm wide 1mm thick, mechanically fixed to the panel by 6mm studs at mid length and riveted to wall of cassette at end
Corners of 2mm aluminium panels welded.

Panel size	height	width	stiffeners	thickness
	1150	2380	2 horizontal	3
	1150	2380	2 horizontal	2
	2860	1180	5 horizontal	2
	2860	1180	5 horizontal	3
	1860	660	none	3
	1860	660	None	2
	2820	420	none	2
	480	1340	None	2
	480	1340	None	3
	1150	1180	1 horizontal	3
	1150	1180	1 horizontal	2
	1150	1180	2 horizontal	3
	1150	1180	2 horizontal	2
	1420	580	None	3
	1420	580	none	2

Horizontal joint Closed joint; panel edges screwed together at 600mm centres

Vertical joint Closed joint; joints held closed by panel fixing screws

Support rails: Nvelope NV1 support rails and brackets.

Fixings: Panels fixed to rails with Fix fast DF3-SS-PL-5.5x50 screws in vertical panel edges. Additional fixing screws in horizontal edges for wide panels

Rails fixed to brackets with Ejot JT4-4-4.8x19 screws

Drainage and ventilation: Rainscreen cavity drained by flashing and open joint at bottom of wall and ventilation provided by open joint at top of wall.

Backing wall: Steel studs at 600mm centres with plywood sheathing
Horizontal top hats of 2mm galvanised steel provided on face of back wall to transfer load from rainscreen rails to studs of back wall.

Test arrangements

Date of test	9 March 2017
Testing laboratory	Technology Centre VINCI Construction UK Ltd Stanbridge Road Leighton Buzzard Bedfordshire LU7 4QH
Registration No:	UKAS No 0057
Independent testing authority	Technology Centre VINCI Construction UK Ltd Stanbridge Road Leighton Buzzard Bedfordshire LU7 4QH
Witness:	Alan Keiller CWCT University of Bath Claverton Down Bath BA2 7AY
Fabricator	Architectural Metal Solutions Ltd Bentalls House Bentalls Basildon Essex, SS14 3BS
Installer	Paneltec Services Ltd Bentalls House Bentalls Basildon Essex, SS14 3BS

Summary of results

Watertightness - dynamic: PASS

Note:

During the test some water entered the rainscreen cavity. This was sufficient to cause wetting of the face of the back wall but insufficient to cause streaming of water.

The amount of water reaching the back wall was small however it is recommended that any surfaces that would be adversely affected by the presence of water should be protected by a waterproof membrane.

Flashings are also required to drain water from the bottom of the cavity.

Wind resistance: PASS

Serviceability test pressure: 2400Pa (max)

Although all the panels were subject to a serviceability wind load of 2400Pa not all panels gave acceptable deflections at this level. Full details of acceptable wind loads for the panels tested are given below.

Safety test pressure: 3600Pa

All panels remained secure after loading to +/- 3600Pa.

Soft body impact test to CWCT Technical Note 76 No visible damage after a serviceability impact of 120Nm.

All panels remained secure after a safety impact test of 500Nm. This is classified as negligible risk. Some panels damaged and would require replacement.

Hard body impact test to CWCT Technical Note 76 Damage due to 3Nm hard body impact was generally undetectable.

At 6Nm and 10Nm dents were visible on on close inspection.

Wind resistance – Serviceability test

Panel details			Deflection limit (mm)	Measured deflection at acceptable serviceability wind load		Acceptable serviceability wind load (Pa)
Height (panel/bay) (mm)	Width (Panel/bay) (mm)	Span (mm)		Positive (mm)	Negative (mm)	
2mm aluminium panels						
1150/383	2380/1190	1250	13.9	6.2	-10.3	1800
2860/477	1180	1273	14.1	7.8	-9.6	2400
2820	420	2851	20	6.5	-8.5	2400
480	1340	1423	15.8	9.0	-13.4	2400
1150/575	1180	1313	14.6	6.2	-10.3	2400
1150/383	1180	1240	13.8	11.4	-10.1	2400
1420	580	1534	17.0	11.2	-8.1	2400
3mm aluminium panels						
1150/383	2380/1190	1250	13.9	5.8	-10.2	2400
2860/477	1180	1273	14.1	8.4	-9.5	2400
480	1340	1423	15.8	14.5	-14.5	2400
1150/575	1180	1313	14.6	3.1	-9.4	2400
1420	580	1534	17.0	12.4	-11.8	2400

Notes:

Panel bay is area bounded by panel edges or stiffeners

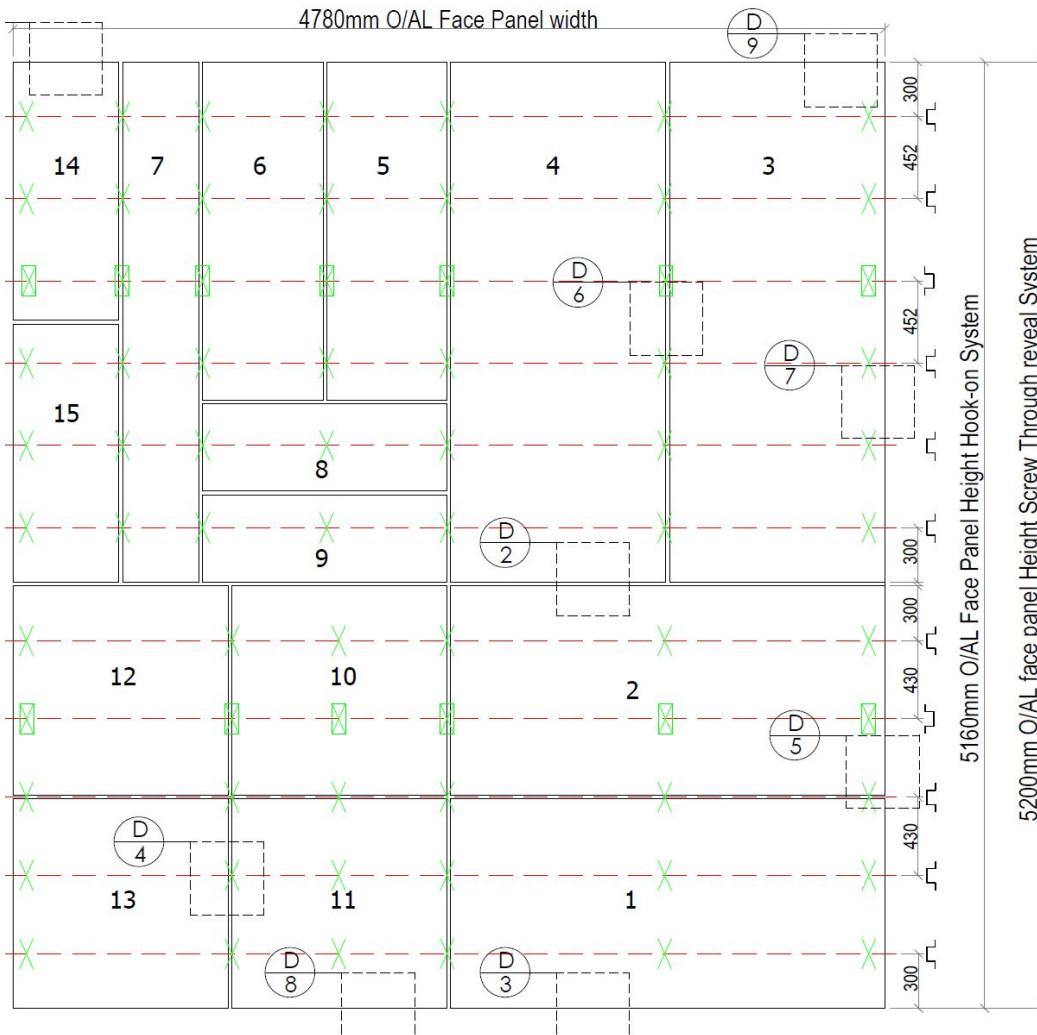
Span has been taken as diagonal dimension of panel or panel bay

The criteria for serviceability are maximum deflection under load and recovery of deflection on unloading.

The deflection limit is span/90 with an upper limit of 20mm. This is subjective and higher deflection may be acceptable in some cases provided full recovery is obtained.

Failure to recover from deflection on unloading may indicate plastic deformation which could lead to fatigue failure after a number of load cycles. In all cases acceptable recovery was obtained after loading to 2400Pa.

The measured deflection has not been corrected for movement of the supports. The true deflection may therefore be slightly less than that recorded.



ALUMINIUM SCREW THROUGH PANEL LAYOUT					
Panel Ref	Height		Length	Thickness	Sequence
1	1150	X	2380	3	11
2	1150	X	2380	2	10
3	2860	X	1180	2	1
4	2860	X	1180	3	2
5	1860	X	660	3	3
6	1860	X	660	2	4
7	2820	X	420	2	7
8	480	X	1340	2	5
9	480	X	1340	3	6
10	1150	X	1180	3	12
11	1150	X	1180	2	13
12	1150	X	1180	3	14
13	1150	X	1180	2	15
14	1420	X	580	3	8
15	1420	X	580	2	9

Key

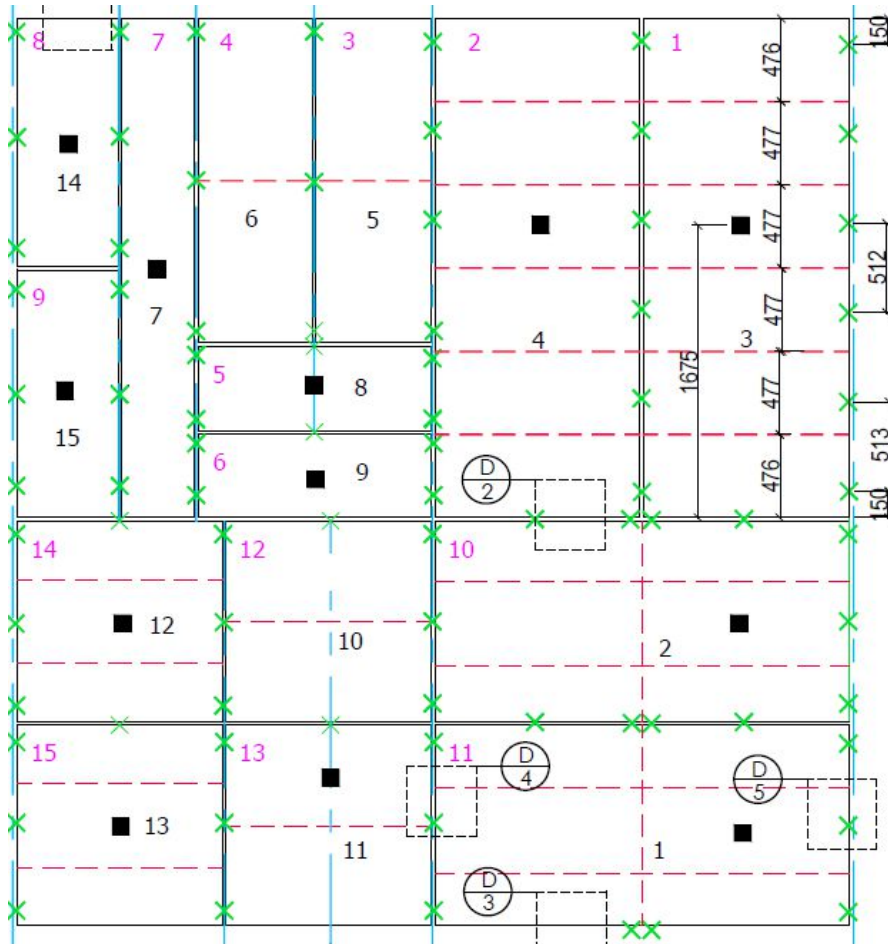
Horizontal top hats indicated by red dashed lines

Vertical rails supported by brackets shown in green as follows;

 Sliding Point Nvelope Bracket


 Fixed Point Nvelope Bracket

Elevation of test wall showing details of support structure



ALUMINIUM SCREW THROUGH PANEL LAYOUT					
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1	1150	X	2380	3	11
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3	2860	X	1180	2	1
4	2860	X	1180	3	2
5	1860	X	660	3	3
6	1860	X	660	2	4
7	2820	X	420	2	7
8	480	X	1340	2	5
9	480	X	1340	3	6
10	1150	X	1180	3	12
11	1150	X	1180	2	13
12	1150	X	1180	3	14
13	1150	X	1180	2	15
14	1420	X	580	3	8
15	1420	X	580	2	9

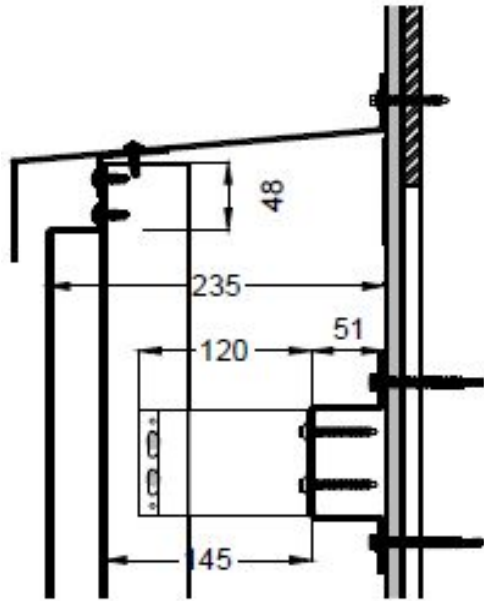
Key

 Screw Pos

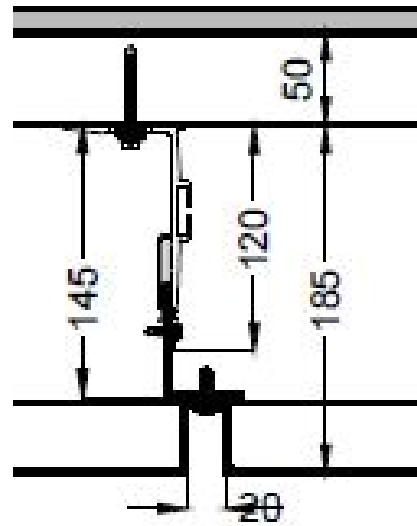
 Gauge Pos

 Stiffener

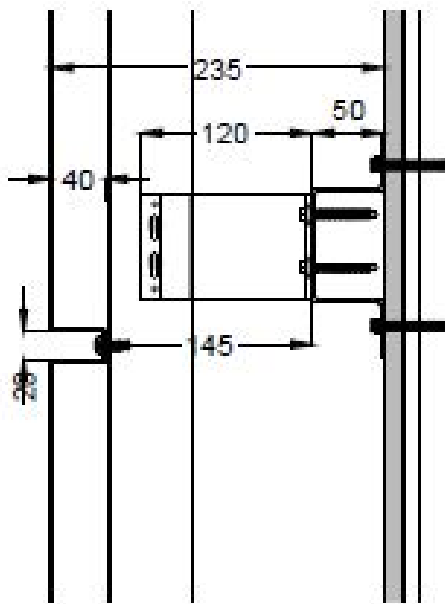
Elevation of test wall showing panel support details.



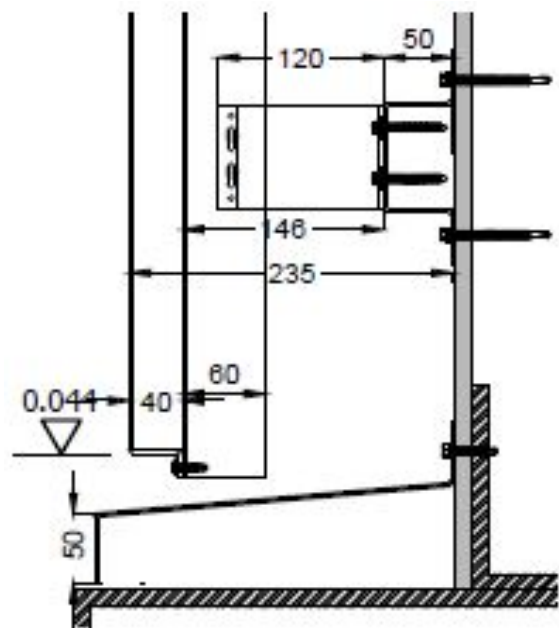
Vertical section through top flashing



Horizontal section through panel joint

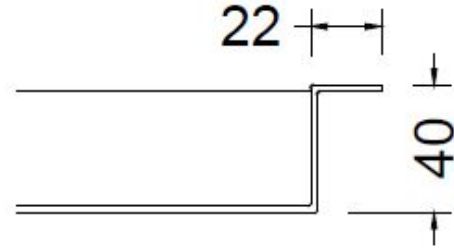
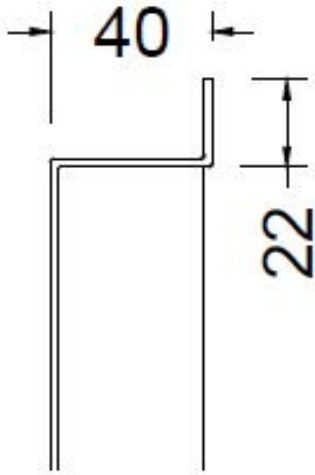


Vertical section through panel joint

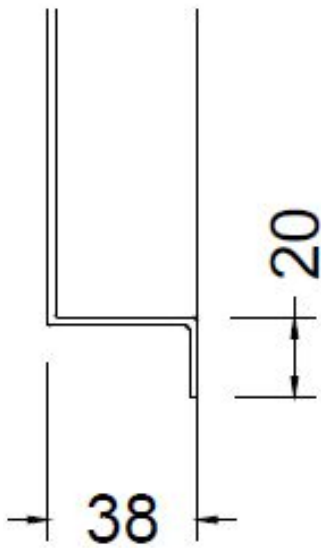


Vertical section through base flashing

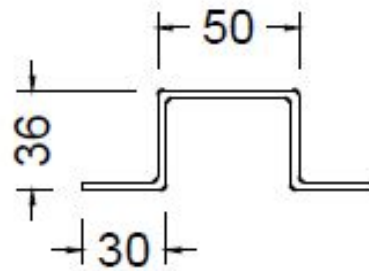
Detail drawings of test wall



Horizontal section through panel edge



Vertical section through panel



Section through panel stiffener

Drawing shows stiffener for panel of 3mm aluminium. For 2mm aluminium the dimensions shown would be the same except the depth would be increased to 37 mm.

Stiffener composed of 3mm 1050 aluminium.

Details of panels