

Certificate of Testing



Certificate Number: 2018/80

Date: 12 March 2018

System: Valcan rainscreen

System supplier: Valcan Ltd
Unit 7 Robins Drive
Castlefields Industrial Estate
Bridgewater
TA6 4DL

Tests performed:

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

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

 Test Witness

 Director

CWCT Services Ltd, The Studio, Entry Hill, Bath, BA2 5LY
Tel: 01225 330945, email: cwct@bath.ac.uk www.cwct.co.uk

Company registered in England at Baker Tilly, 25 Farringdon Street, London, EC4 4AB
Number 2536548; VAT number: 600 9915 52

Description of system tested

Rainscreen system: Valcan rainscreen with Vitrabond A2 and Vitracore G2 panels supported on Vitrafix vertical rails

Panel material: 4mm ACM, Vitrabond A2 and Vitracore G2

Panel description: Flat sheet and cassette

Flat sheets face fixed to rails with 4.8 mm diameter stainless steel rivets with 16 mm diameter head at maximum spacing of 425 mm

Cassettes 32/33.5mm deep formed by folding over edges. Extruded aluminium Z sections 1.5mm thick riveted to panel edges at 400mm max centres with 4.8mm dia stainless steel rivets ref R-SS-LF-4.8x16.

Cassettes fixed to rails by screws through flanges of Z sections; 1 screw per rail in horizontal joints and max 350c/c in vertical joints.

Cassettes with shorter dimension greater than 350mm provided with stiffeners across the short dimension of the panel. Stiffeners bonded to back of cassettes with Soudaflex 40FC adhesive centres shown below (spacings shown are the maximum value for each cassette). Stiffeners formed of 3mm 5005 aluminium folded to form top hats with overall width of 150mm and height of 28mm. Stiffeners not fixed to rails.

Panel size:	Height (mm)	Width (mm)	Stiffeners	Material
Flat panel	2170	905	None	Vitrabond
	2170	650	None	Vitrabond
	2170	455	None	Vitrabond
	2170	935	None	Vitracore
	2170	650	None	Vitracore
	2170	455	None	Vitracore
	450	2495	None	Vitracore
	450	1580	None	Vitracore
	450	935	None	Vitracore
	Cassette	1160	2495	7No vertical, 390 c/c
1075		2495	7No vertical, 390 c/c	Vitracore
960		2523	6No vertical, 395 c/c	Vitracore
875		2523	6No vertical, 395 c/c	Vitracore
800		2523	6No vertical 395 c/c	Vitracore
400		2495	7No vertical, 390 c/c	Vitracore
2310		935	7No horizontal.385 c/c	Vitrabond
2310		905	7No horizontal 380 c/c	Vitrabond
2310		516	7No horizontal, 380 c/c	Vitrabond
2310		450	7No horizontal, 385 c/c	Vitrabond
350		2522	7No vertical, 360 c/c	Vitrabond

- Horizontal joint: Flat panel system- 10 mm gap closed with bird's beak profile
Cassette system – closed joint formed by overlap of Z sections
- Vertical joint: Flat panel system – closed joint formed by vertical rails
Cassette system – closed joint formed by overlap of Z sections
- Support rails: Vitrafix L (60x40x2) and T (60x100x2) vertical rails supported by Vitrafix 140DB brackets. Spacing between rails and span between brackets vary as shown on drawings.
- Fixings: Face fixed panels: R-SS-LF-4.8x16 rivets
Cassettes: DF3-SS-A15-5.5x55 self tapping screws
Rails to brackets: DF3-SS-4.8x25 self tapping screws
- Drainage and ventilation: Rainscreen cavity drained by holes in closer at bottom of cavity and above window. Ventilation provided by open joint between top panel and coping at top of wall and below window cill.
- Backing wall: Steel 50 x100 studs at 500mm centres with 12mm Ywall sheathing. All joints taped. Tyvek Structureguard breather membrane on outer face of sheathing.
- Window: PVC window incorporated in section of wall with Vitrabond cassettes. Window sealed to sheathing board of back wall with epdm membrane. Window sealed to rainscreen panels with sealant. Rainscreen cavity above window drained by perforations in rainscreen soffit closer above window

Test arrangements

Date of test: 29/30 November 2017

Testing laboratory: Wintech Engineering Ltd
Halesfield 2,
Telford,
TF7 4QH

Registration No: UKAS No 2223

Independent testing authority: Wintech Engineering Ltd
Halesfield 2,
Telford,
TF7 4QH

Witness: Alan Keiller
CWCT
The Studio
Entry Hill
Bath
BA2 5LY

Fabricator: Central Fabrications and Facades Ltd
Wallows lane
Off Bescroft Crescent
Walsall
West Midlands
WS1 4AG

Installer: Intex Facades Ltd
Unit 5
Block 2
Millenium Business Park
Concorde Way
Mansfield

Summary of results

Watertightness - dynamic: PASS

Note:

During the test some water entered the rainscreen cavity. 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 waterproof membrane.

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

Watertightness - hose PASS

Note:

Hose test carried out on joint between rainscreen and window. No water penetrated seal between window and back wall.

Wind resistance: PASS

Serviceability test pressure: 2400Pa (max)

All panels remained secure at 2400Pa but some gave unacceptable deflection. Details of serviceability wind load tests and how these results may be applied to different panel sizes are given in the Table on the next page.

Safety test pressure: 3600Pa

All panels showed acceptable performance for safety at 3600Pa

Soft body impact test to CWCT Technical Note 76:

No visible damage under a serviceability impact of 120Nm. This is classified as Class 1.

No visible damage under a safety impact test of 500Nm. This is classified as negligible risk.

Hard body impact test to CWCT Technical Note 76:

Small dents were caused by to 10Nm hard body impacts

This is classified as negligible risk at the safety level or Class 3 at the serviceability level (visible from 5m but not requiring immediate remedial action).

Note:

Impacts were carried out at representative locations on both cassettes and flat panels of both Vitrabond and Vitracore

Wind resistance test results

Panel details		Deflection limit (mm)	Measured deflection at acceptable serviceability wind load		Acceptable serviceability wind load (Pa)
	Span (mm)		Positive (mm)	Negative (mm)	
Vitracore flat panel	570	6.3	1.9	2.7	2400
Vitrabond flat panel	570	6.3	1.8	2.8	2400
Vitracore cassette	1060	11.8	11.3	6.5	1800
Vitrabond cassette	940	10.4	4.2	2.8	2400

Notes:

Span has been taken as diagonal dimension of panel or panel bay. The true span would be measured between fixings; the value given is the measured value between gauge positions.

For the flat panels, deflection was measured on 455mm wide panels with rows of fixings along both edges at 425mm c/c. A bay has been taken as the area bounded by 4 fixings. Larger panels would be expected to give deflections no greater than those measured provided that fixings are on grid no greater than 425mm in both directions.

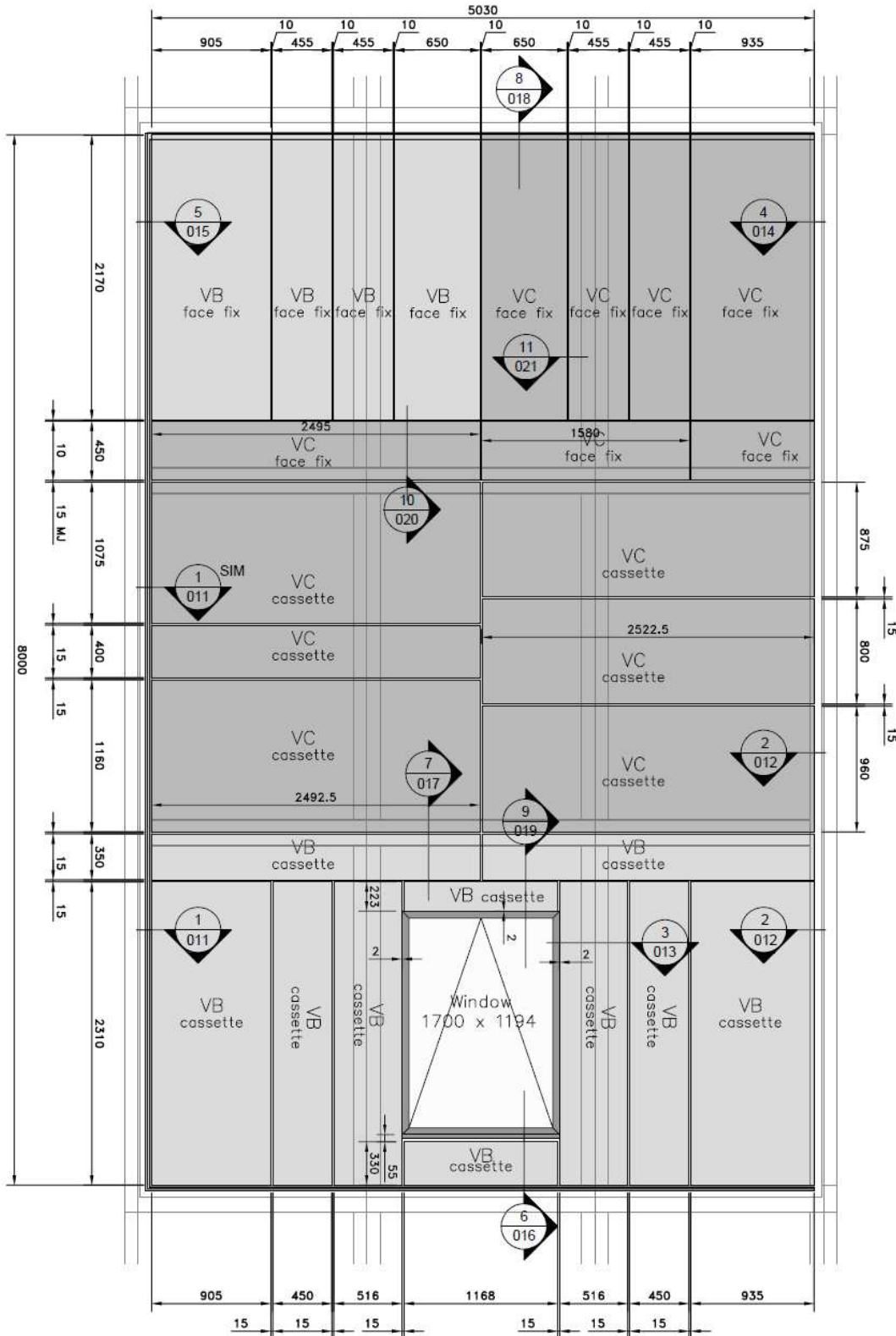
Deflection was measured on a Vitrabond 935mm wide portrait cassette with horizontal stiffeners at 385 mm c/c. A bay has been taken as the area bounded by two stiffeners and the panel edges. Landscape panels 935mm high with vertical stiffeners at 385mm c/c and fixed to rails at 350mm c/c along their horizontal edges would be expected to give similar deflections. Reducing either the width of the panel or the spacing of the stiffeners would be expected to reduce the deflection which would therefore be acceptable. Increasing either the width of the panel or the spacing of the stiffeners would be expected to increase the deflection which may therefore become unacceptable.

Deflection was measured on a Vitracore 1160mm high landscape cassette with vertical stiffeners at 390 mm c/c. A bay has been taken as the area bounded by two stiffeners and the panel edges. Portrait panels 1160 mm wide with horizontal stiffeners at 390mm c/c and fixed to rails at 495 mm c/c along the panel edges would be expected to give similar deflections. Reducing either the width of the panel or the spacing of the stiffeners would be expected to reduce the deflection which would therefore be acceptable. Increasing either the width of the panel or the spacing of the stiffeners would be expected to increase the deflection which may therefore become unacceptable.

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

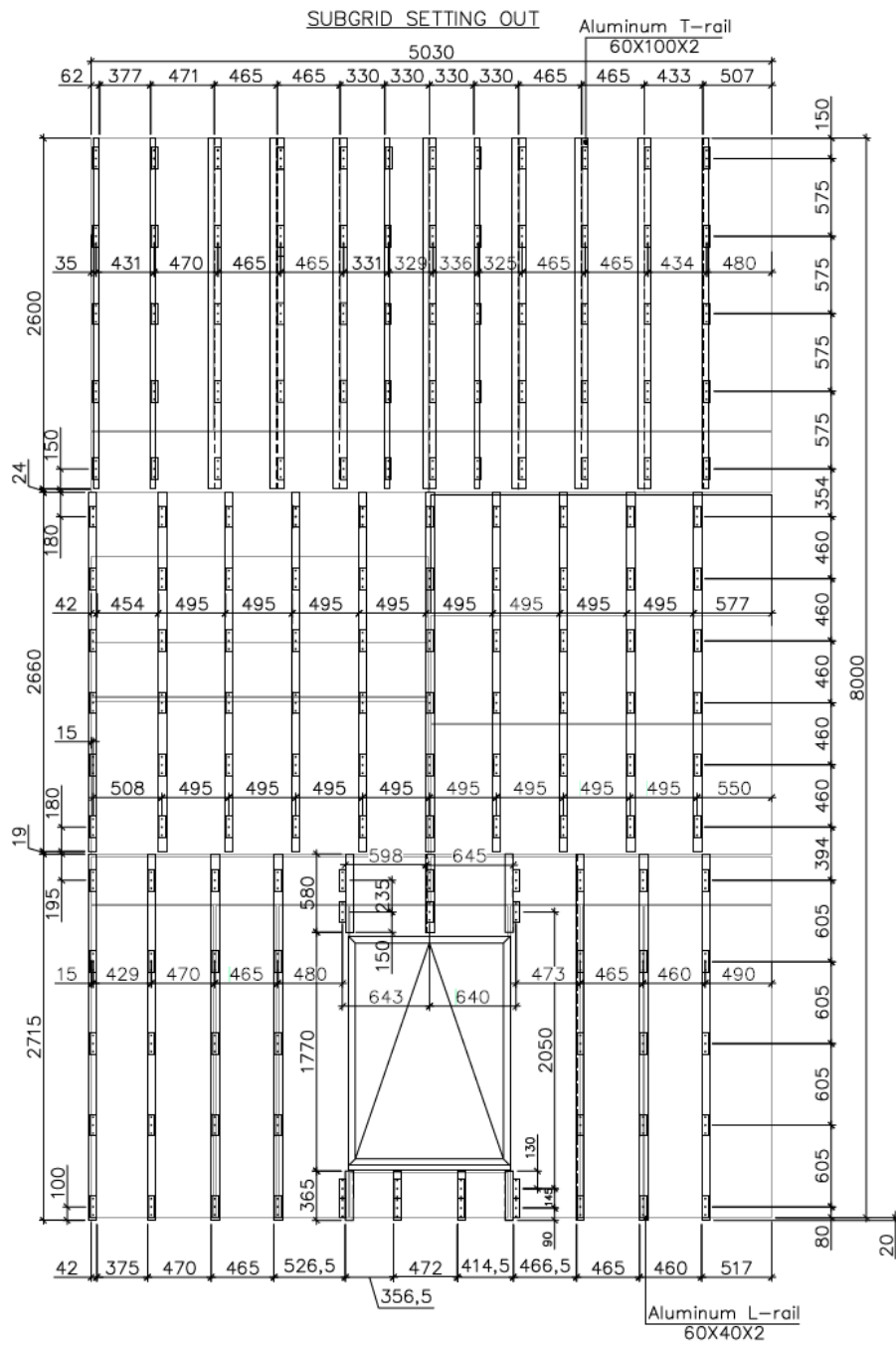
Failure to recover from deflection on unloading may indicate plastic deformation which could lead to fatigue failure after a number of load cycles. In all cases acceptable recovery was obtained after loading to 2400Pa.

Drawings

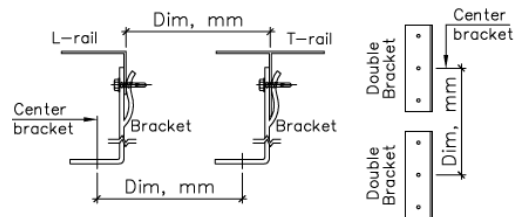


NOTE:
 VB: Vitrabond A2, Thick 4mm
 VC: Vitracore G2, Thick 4mm

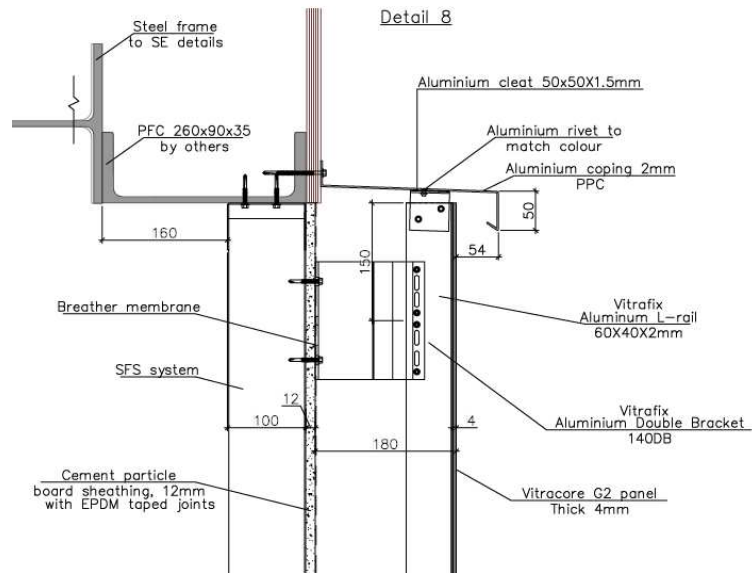
Elevation of wall showing arrangement of panels



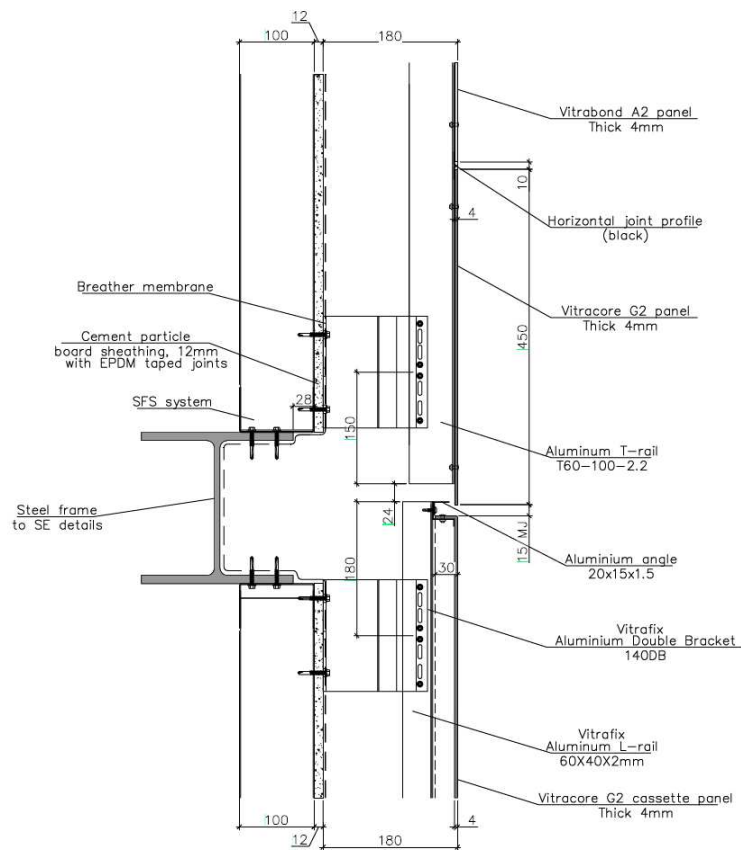
SUBGRID LEGEND



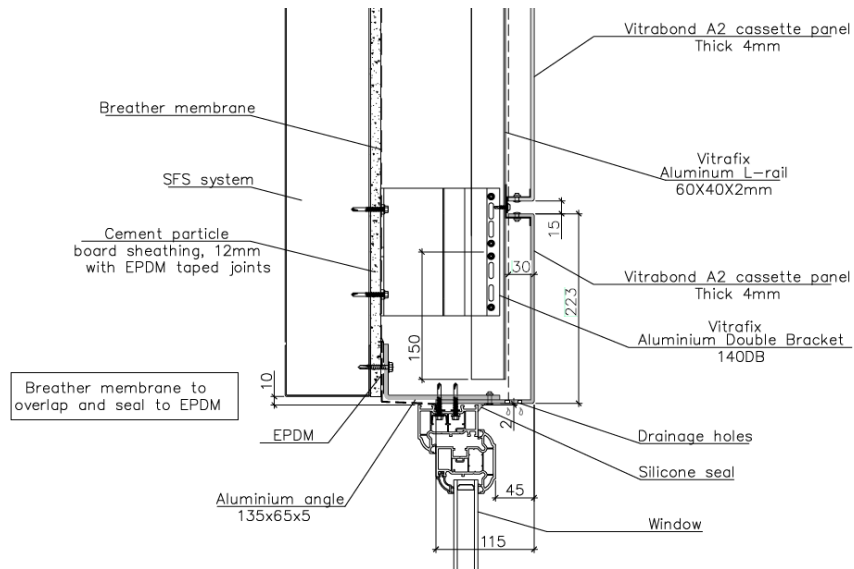
Elevation of test wall showing panel support details



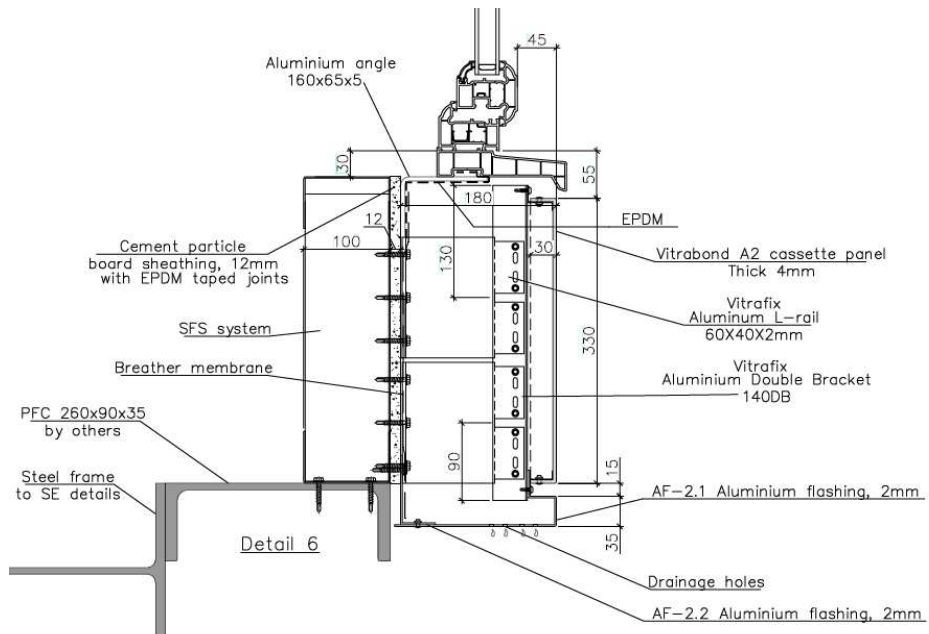
Vertical section through top flashing



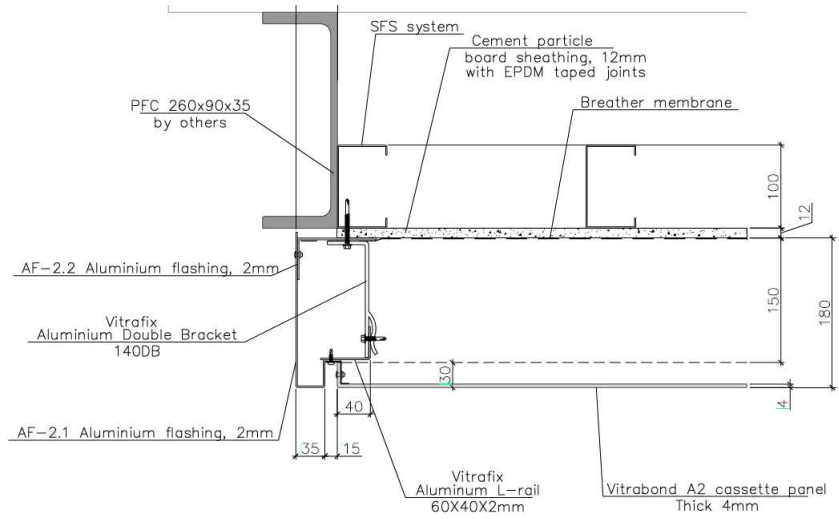
Vertical section at junction between flat panels and cassettes



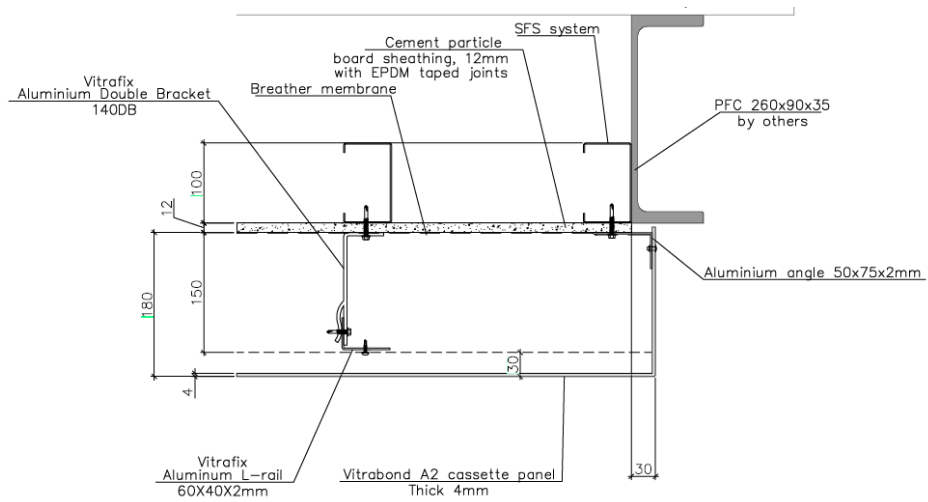
Vertical section through window head



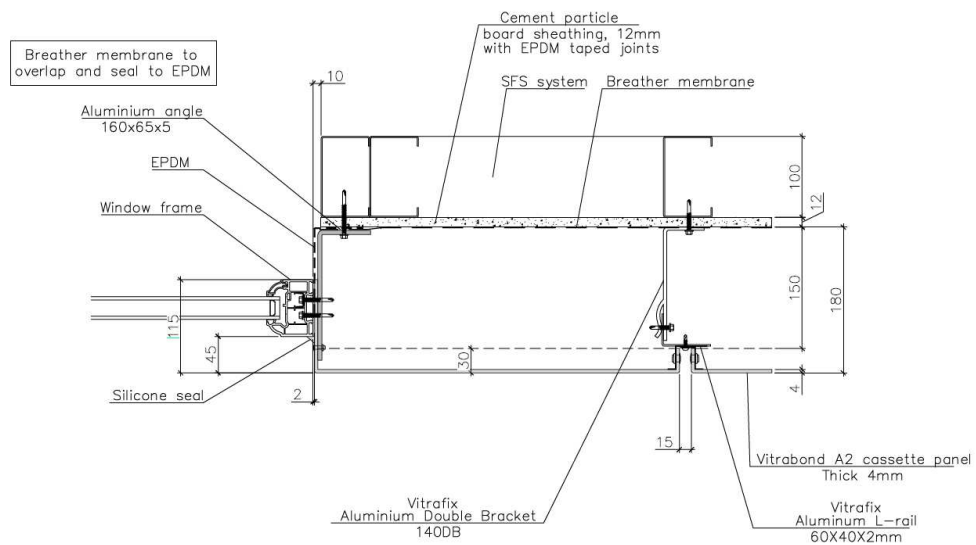
Vertical section at window cill and bottom of sample



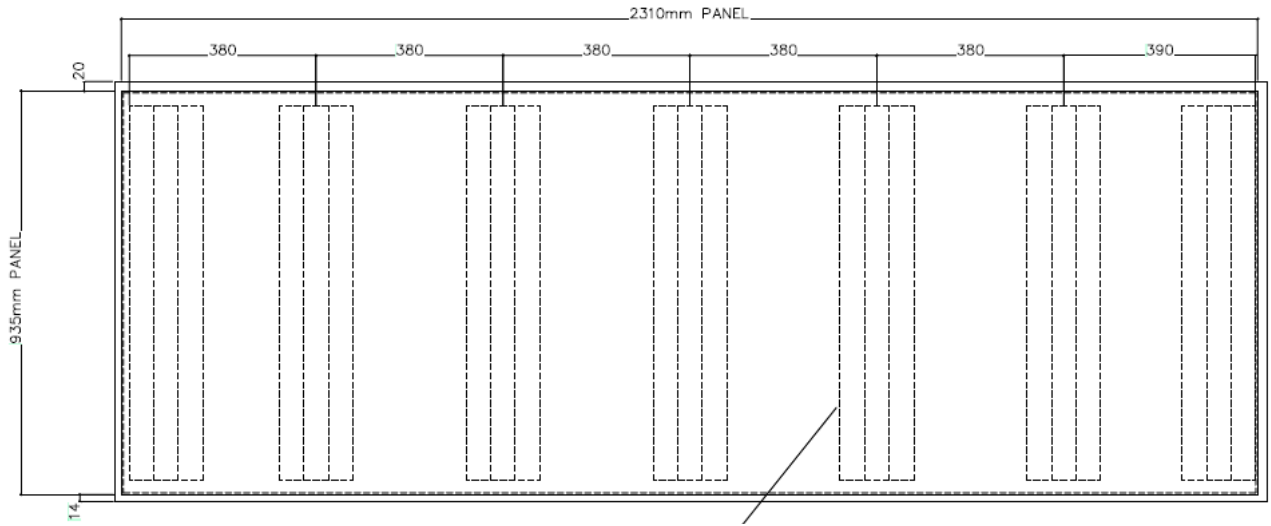
Closure detail at left side of sample



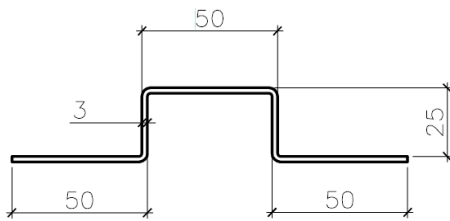
Closure detail at right side of sample



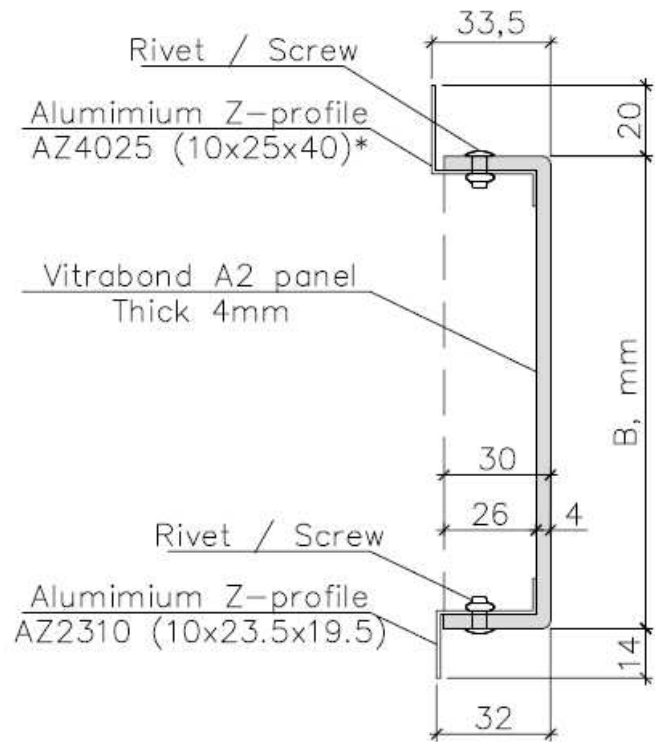
Window jamb Detail



Back of cassette showing stiffeners



Stiffener profile



Details of Z profile at top and bottom of panel

Details of cassette panel construction