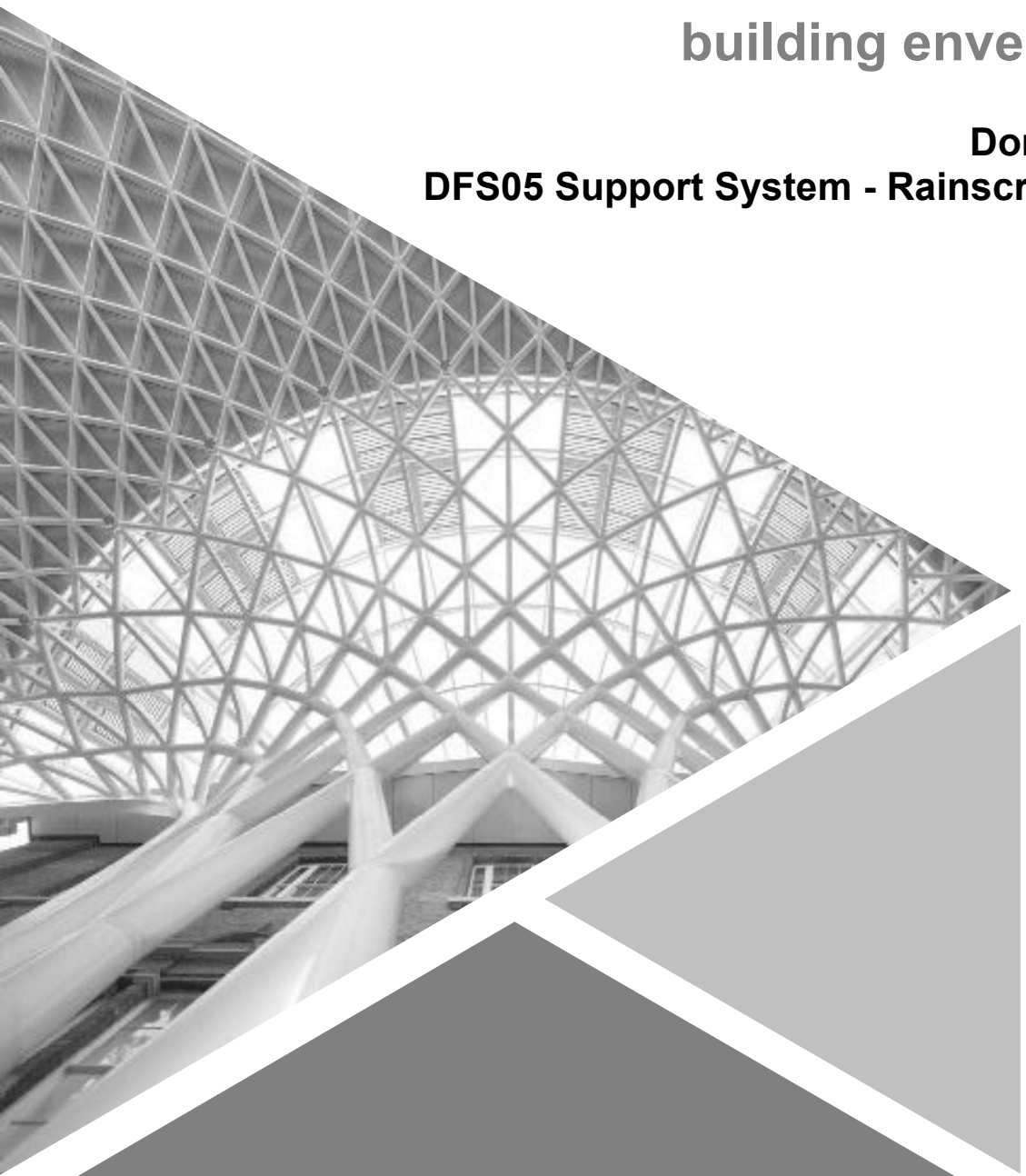
Technical Report – R20309 Rev 1
CWCT – Standard for systemised building envelopes – 2005

Domus Facades Ltd
DFS05 Support System - Rainscreen System Test



UL Telford UK Ltd, Halesfield 2, Telford, Shropshire, TF7 4QH
www.ul.com |Tel: +44 (0)1952 586580

Contents

Rev 1 (Revised Report) – this report has been amended as shown in Section 10 and it replaces previous report No. R20309 dated 15th July 2020.

1. Introduction

This report describes tests carried in order to determine the weather tightness of the sample with respect to water penetration, wind and impact resistance on sample supplied as follow:

Test Details	
Customer:	Domus Facades Ltd St Martin's House 27-29 Ormside Way Redhill RH1 2LT
Product Tested:	DFS05 Support System
Date of Test:	20th January 2020 29th February 2020 2nd March 2020
Test Conducted at:	UL Telford UK Ltd Halesfield 2 Telford Shropshire TF7 4QH
Test Conducted by:	K Alden- Senior Laboratory Assistant D Reynolds – Senior Test Engineer P Seymour – Laboratory Technician
Test Supervised by:	M Cox – Engineering Leader
Test Witnessed by:	C Appleby – Domus Facades Ltd

Report Authorisation	
Report Compiled by:	D Price – Senior Engineering Associate
Authorised by:	M Wass – Technical Manager

UL Telford UK Ltd is accredited by the United Kingdom Accreditation Service as UKAS Testing Laboratory No. 2223.

2. Summary of Results

2.1 The test methods

The test methods were in accordance with the following standards:

CWCT Standard Test Methods for Building Envelopes - December 2005	
Water Penetration – Dynamic Aero Engine	CWCT Section 7
Water Penetration – Hose	CWCT Section 9
Wind Resistance – Serviceability	CWCT Section 11
Wind Resistance – Safety	CWCT Section 12
Impact – Retention to Performance & Safety to Persons	CWCT TN 76

2.2 Summary of Results

The following summarises the results of testing carried out, in accordance with the relevant testing and classification standards.

The performance of the sample tested has been assessed against the criteria described in below standards. The results as reported will be used to determine the conformance or non-conformance with the specification without making any consideration of the uncertainty.

Test Type	Peak Test Pressure	Result	Date of Test
Test 1 – Water Penetration (Dynamic Aero Engine)	600 Pa	Pass	20.01.20
Test 2 – Water Penetration - Hose	-	Pass	20.01.20
Test 3 – Wind Resistance (Serviceability) – Backing Wall	2400 Pa	Pass	20.01.20
Test 4 – Wind Resistance (Serviceability) – Cavity	2400 Pa	Pass	20.01.20
Test 5 - Wind Resistance – Safety – Backing Wall	3600 Pa	Pass	20.01.20
Test 6 - Wind Resistance – Safety – Cavity	3600 Pa	Pass	29.02.20
Test 7 - Impact Resistance – Retention of Performance	Cat B	Class 3	02.03.20
Test 8 - Impact Resistance – Safety to Persons	Cat B	Neg Risk	02.03.20
Dismantle, Inspect & Report	**Sample Passed**		

More comprehensive details are reported in Section 6.

These results are valid only for the conditions under which the test was conducted.

All measurement devices, instruments and other relevant equipment were calibrated and traceable to National Standards.

3. Description of Test Sample

The description of the test sample in this section has been supplied by the customer and has not been verified by UL Telford UK Ltd.

See Section 7 for test sample drawings as supplied by Domus Facades Ltd.

Product Description

Full product name:	DFS05 Support System
Product type:	Rain screen cladding system
Product description:	Rain screen cladding system
Manufactured by:	Domus Facades Ltd

Support Framing and bracketry

Material:	6063 T6 Extruded Aluminium
Finish:	Milled
Vertical rail Ref:	Article #200-02 80*60*3mm
Horizontal rail Ref:	Article #300-00 38*60mm
Fixing method (Dead load bracket to backing wall):	A2 stainless nut and bolt assembly
Restraint bracket to backing wall	JT3-3-6.3 x 50 S16
Fixing Ref:	A2/SS/M12 x 50 bolt, nut and washer
Fixing method (rail to rail):	Self-drilling screws
Fixing Ref:	JT3-3-6.3 x 50 S16
Max Span between vertical rails:	600mm
Max Span between horizontal rails:	570mm
Brackets ref:	Dead Load Article #100-06 Restraint Article #100-07

Panels/tiles

Material:	Jordan's Whitbed Limestone
Material ref (source, spec):	Albion Stone
Finish:	Rubbed
Thickness:	50mm
Reinforcing:	None
Max height of panel:	564mm
Max width of panel:	994mm
Max size of panel by area (m2):	0.560m2
Fixing method:	Mortice Anchor
Bracket/clip ref:	Article #400-06 Base course bracket Article #400-07 Intermediate course bracket Article #400-08 Top course bracket Article #400-09 Intermediate top edge bracket Article #400-10 Cranked rear face bracket
Screws/fixings ref:	Security screw JT3-3-5.5 x 30 S15

Interface Details (curtain wall to window/door inserts)

Window interface detail:	Dummy window: pressed metal frame/cill

Backing Wall

Structural support type:	Steel primary structure with SFS infill 100*70*1.6mm
Insulation type:	Siderise fire barrier with Intumescent strip
Insulation thickness:	75mm
Airtight membrane:	Tyvek Supro Plus
Watertight membrane:	
Particle board detail:	12mm Cement Particle Board
Sealants and tapes:	Ottoseal S70 Sealant to Stone and Tyvek acrylic tape and aluminium foil tape to membrane
Fixings ref:	5*25mm wafer head screws

Drawings

Drawing/s must be provides covering the below; -Full drawing of sample including front elevation -Cross Sections (Panels/Rails Etc.) -Hardware Locations -Fixings -Drainage Points Note: drawings are required to show all relevant dimensions.	DFL-20309-101 DFL-20309-102 DFL-20309-103 DFL-20309-200 DFL-20309-201 DFL-20309-202 DFL-20309-203 DFL-20309-204 DFL-20309-205
Test sample size:	5m wide x 8m high

Confirmation

Customer is to confirm that the samples provided for testing are representative of standard production. Please note: the details given above, as well as the drawings supplied by the customer as confirmed as typical of normal production are not verified by UL Telford UK Ltd.

Company:	Domus Facades Ltd
Name:	Nic Shannon
Position:	Managing Director
Date:	2nd April 2020

Sample during testing

Photograph No. 1

Photograph No. 2

4. Test Arrangement

4.1 Test Chamber

A specimen, supplied for testing in accordance with CWCT requirements, was mounted on to a rigid test chamber constructed from steel, timber and plywood sheeting.

The pressure within the chamber was controlled by means of a centrifugal fan and a system of ducting and valves. The static pressure difference between the outside and inside of the chamber was measured by means of a differential pressure transmitter.

4.2 Instrumentation

4.2.1 Static Pressure

A differential pressure transmitter capable of measuring rapid changes in pressure to an accuracy within 2%, was used to measure the pressure differential across the sample.

4.2.2 Water Flow

An in-line flowmeter, mounted in the spray frame water supply system, was used to measure water flow to the test sample to an accuracy of ± 5%.

4.2.3 Deflection

Digital linear measurement devices with an accuracy of +/- 0.1 mm were used to measure deflection of principle framing members.

4.2.4 Temperature & Humidity

A digital data logger capable of measuring temperature with an accuracy of ± 1°C and humidity with an accuracy of ± 5 %Rh was used.

4.2.5 Barometric Pressure

A digital barometer capable of measuring barometric pressure with an accuracy of ± 1 kPa was used.

4.2.6 General

Electronic instrument measurements were scanned by a computer-controlled data logger, which processed and recorded the results.

4.3 Pressure Generation

4.3.1 Static Air Pressure

The air supply system comprised of a centrifugal fan assembly and associated ducting and control valves and was used to create both positive and negative static pressure differentials. The fan provided a constant airflow at the required pressure and period required for the tests.

Note: References are made to both positive and negative pressures in this document, it should be noted that in these instances, positive pressure is when pressure on the weather face of the sample is greater than that on the inside face and vice versa.

4.3.2 Dynamic Aero Engine

A wind generator was mounted adjacent to the external face of the test sample and used to create positive pressure differential during dynamic testing.

4.4 Water Spray System

4.4.1 Spray frame arrangement

A water spray system was used which comprised of nozzles spaced on a uniform grid, not more than 700 mm apart and mounted approximately 400 mm from the face of the sample. The nozzles provided a full cone pattern, as per the requirements outlined by CWCT. The system delivered water uniformly to the entire surface of the test sample at a rate of not less than 3.4 lt/m^2/min.

4.4.2 Hose arrangement

The water was applied using a brass nozzle which produced a solid cone of water droplets with a nominal spread of 30°. The nozzle was provided with a control valve and a pressure gauge between the valve and the nozzle. The water flow to the nozzle was adjusted to produce 22 $\pm$ 2 litre/min when the water pressure at the nozzle inlet was 220 $\pm$ 20kPa

4.5 Impactors

4.5.1 Soft (S1) Body Impactor

A spherical/conical, glass bead filled impactor with a mass of 50 Kg, as required in CWCT TN76

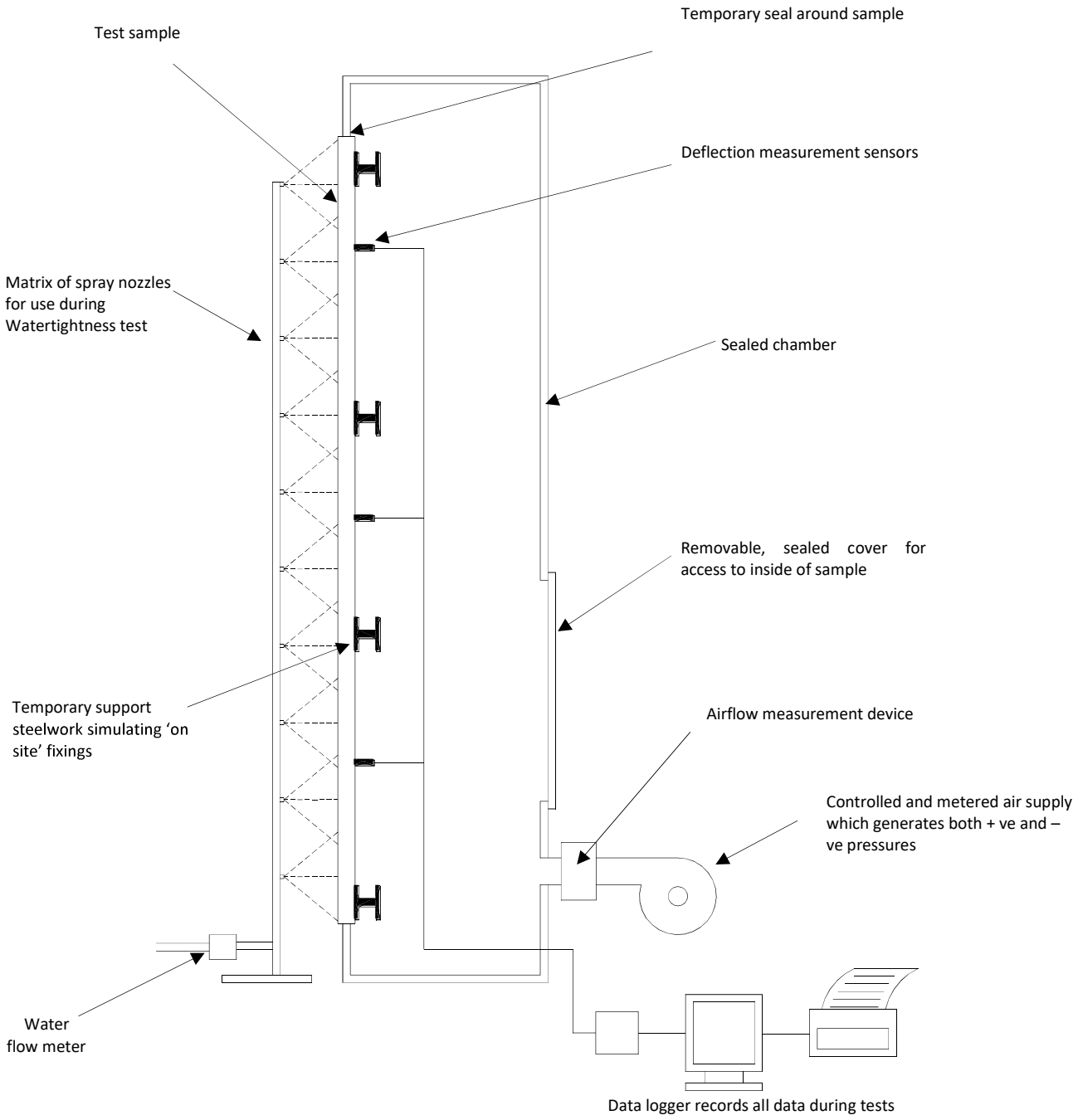
4.5.2 Hard (H2) Body Impactor

A steel ball with a diameter of 62.5 mm and a mass of 1.135 Kg, was released from the height, calculated to result in the required impact energies and allowed to fall under gravity until it impacted the designated test zone of the sample.

All measurement devices, instruments and other relevant equipment were calibrated and are traceable to National Standards.

Figure 1 – Test arrangement

General Arrangement of a Typical Test Assembly



5. Test Procedures

5.1 Sequence of Testing

Test 1 – Water Penetration - Dynamic Aero Engine
Test 2 – Water Penetration - Hose
Test 3 – Wind Resistance - Serviceability – Backing Wall
Test 4 – Wind Resistance - Serviceability - Cavity
Test 5 – Wind Resistance – Safety – Backing Wall
Test 6 – Wind Resistance – Safety – Cavity
Test 7 – Impact Resistance – Retention of Performance
Test 8 – Impact Resistance - Safety to Persons

5.2 Water Penetration

5.2.1 Water Penetration – Dynamic Aero Engine

Water was sprayed on to the sample as described in section 4.4.1.

The sample was subjected to airflow from the wind generator, as described in 4.3.2, which achieved average deflections equal to those produced at a static pressure differential of 600 Pa and these conditions were met for the specified 15 minutes.

The interior face of the sample was continuously monitored for water ingress throughout the test.

5.2.2 Water Penetration – Hose

Working from the exterior, the window pod interface detail between the window and SFS backing wall was wetted from the bottom up, progressing from the lowest horizontal joint then the intersecting vertical joints.

Water was applied to the sample for 5 mins per 1.5 m length of joint, as described in section 4.4.2.

Throughout the water penetration testing, and for 30 minutes following the cessation of spraying, the internal face of the sample was examined for water penetration. The emergence of any water on the inside face would be recorded, and the location and extent of any leakage noted on a drawing of the test specimen.

5.3 Wind Resistance

5.3.1 Wind Resistance - Serviceability

Three (3) preparatory pulses of 1200 Pa (50% of design wind load) positive pressure were applied to the test sample. Upon returning to 0 Pa, any opening parts of the test specimen were opened and closed five (5) times, secured in the closed position. All deflection sensors were then zeroed.

The sample was then subjected to positive pressure stages of 600, 1200, 1800 and 2400 Pa (25%, 50%, 75% and 100% of design wind load) and held at each step for 15 seconds (± 5 secs).

The deformation status of the sample was recorded at each step at characteristic points as stated in the standard, following which the pressure was reduced to 0 Pa and any residual deformations recorded within 1 hour of the test.

The above test sequence was then repeated, including preparation pulses, at a negative pressure differential.

Following each of the above tests, the sample was inspected for permanent deformation or damage.

5.3.2 Wind Resistance - Safety

Three preparatory positive air pressure pulses of 1200 Pa (50% of design wind load) positive pressure were applied to the test sample, and the deflection sensors were zeroed.

The sample was subjected to a positive pressure pulse of 3600 Pa (2400 Pa x 150%). The pressure was applied as rapidly as possible but in not less than 1 second and was maintained for 15 seconds (± 5 secs).

Following this pressure pulse and upon returning to zero (0) pressure, residual deformations were recorded and any change in the condition of the specimen was noted.

After the above sequence, a visual inspection was conducted, any moving parts were operated and any damage or functional defects noted.

The above test sequence was then repeated, including preparation pulses, at a negative pressure differential. The deflection sensors were zeroed following the preparation pulses.

Following each of the above tests, the sample was inspected for any permanent deformation or damage.

5.4 Impact Resistance

5.4.1 Impact Test Procedure – Retention of performance – CWCT TN 76

The test sample was tested using a drop height which corresponded with the required performance level.

The Impactors, as described in section 4.5.1 and 4.5.2, were suspended on a wire/Nylon cord and allowed to swing freely, without initial velocity, in a pendulum motion until they hit the sample normal to its face. Only one impact was performed at any single position during the hard body impacting and three times at each position during the soft body impacting.

Tests were conducted at the required impact energies as shown in section 6.3.1 and 6.3.2 to the selected impact points.

Drop heights were set to an accuracy of ± 10 mm.

5.4.2 Impact Test Procedure – Safety to persons – CWCT TN 76

The test sample was tested using a drop height which corresponded with the required performance level.

The Impactors, as described in section 4.5.1 and 4.5.2 were suspended on a wire/Nylon cord and allowed to swing freely, without initial velocity, in a pendulum motion until they hit the sample normal to its face. Only one impact was performed at any single position.

Tests were conducted at the required impact energies as shown in section 6.3.3 and 6.3.4 to the selected impact points and the impactors were not allowed to strike the sample more than once.

Drop heights were set to an accuracy of ± 10 mm.

6. Test Results

6.1 Water Penetration

6.1.1 Test 1 - Water Penetration – Dynamic Aero Engine

Temperatures (°C)	**Water**	7.3
	Ambient	2.0

Time Tested - Minutes	15

Observations

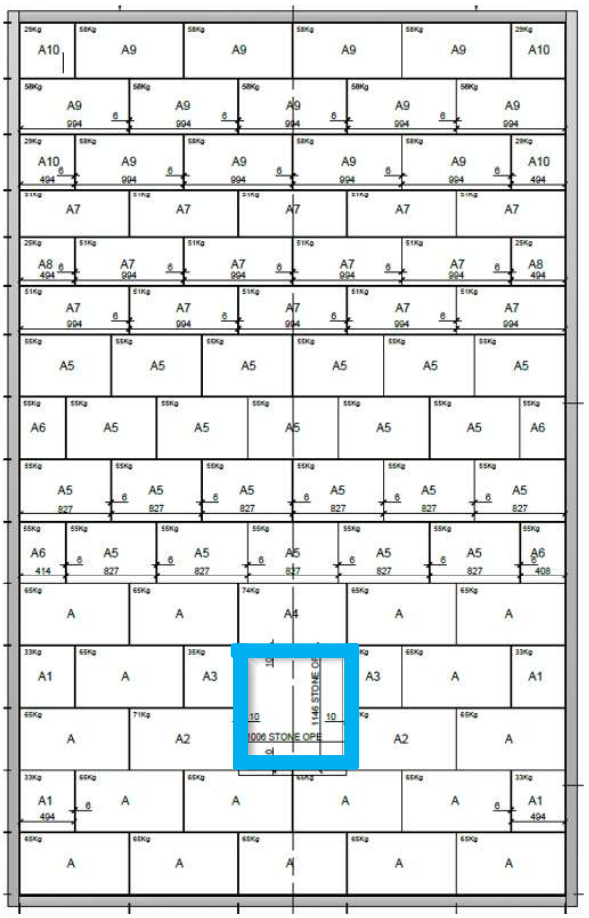
The sample was subjected to testing as described in section 5.2.1, for a period of not less than 15 minutes, during which no water leakage was observed through the sample.

6.1.2 Test 2 – Water Penetration – Hose

The sample was subjected to hose testing, as described in section 5.2.2. During the test, and for 30 minutes following the cessation of spraying, the sample was monitored for water ingress and none was found.

Figure 2

Hose Test Areas



View from Outside
Not to Scale

- Hose test position

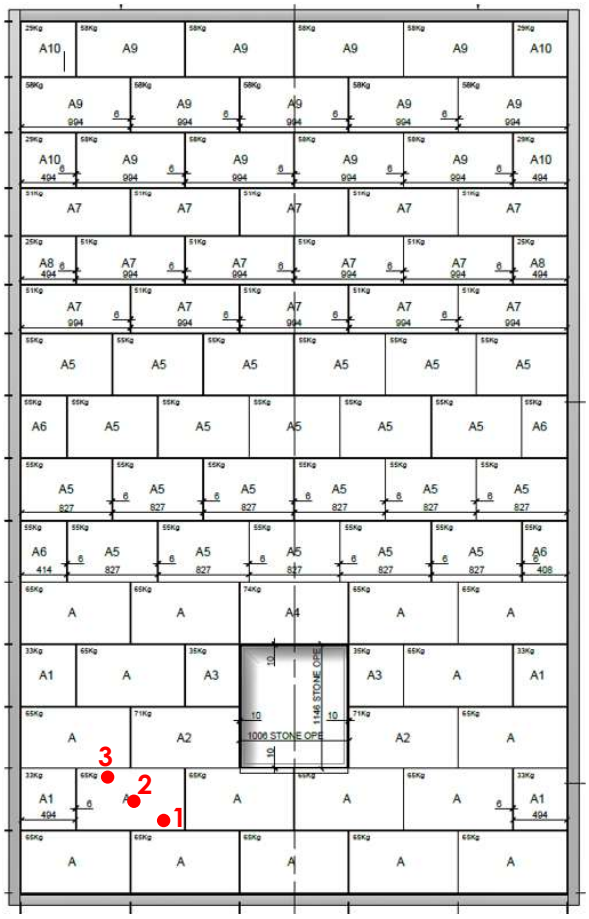
6.2 Wind Resistance

Probe Group Identification	Calculation of deflection
Group A comprised of probes 1, 2 & 3	= Probe 2 – ((Probe 1 + Probe 3)/2)

An inspection carried out following tests 3, 4, 5 and 6, after both positive and negative pressure testing, showed no evidence of any permanent deformation or damage to the test sample.

Figure 3

Positions of Deflection Measurement Probes



- Deflection probe position

View from Outside
Not to Scale

6.2.1 Tests 3 & 4 - Wind Resistance, Serviceability

Temperatures (°C)	Ambient	5.5

Measured Length of Framing Member (mm)		Allowable Deflection	
		Ratio	Calculated (mm)
Group A	800	L/360 or 3mm	2.2

Frontal deflection shall recover by either 95%, or 1mm, whichever the greater.

6.2.1.1 Wind Resistance, Serviceability - Positive Pressure

Positive Pressure Pa	Results Group A
0	0.0
600	0.1
1200	0.2
1800	0.1
2400	0.1
Residuals Immediately following test	0.1

6.2.1.2 Wind Resistance, Serviceability - Negative Pressure

Negative Pressure Pa	Results Group A
0	0.0
600	0.1
1200	0.1
1800	0.2
2400	0.0
Residuals Immediately following test	0.0

6.2.2 Tests 5 & 6 - Wind Resistance, Safety

Test Date	20.01.20	29.02.20
Temperatures (°C)	6.0	8.4

Measured Length of Framing Member (mm)		Allowable Residual Deformation	
		Ratio	Calculated (mm)
Group A	800	L/500	1.6

6.2.2.1 Wind Resistance, Safety - Positive Pressure

Positive Pressure Pa	Results Group A
0	0.0
3600	0.9
Residuals Immediately following test	0.1

6.2.2.2 Wind Resistance, Safety - Negative Pressure

Negative Pressure Pa	Results Group A
0	0.0
3600	0.0
Residuals Immediately following test	0.9

Note: The standard uncertainty multiplied by a coverage factor k = 2, providing a level of confidence of approximately 95%, for the above measurements is ± 2.4 % of the reading

6.3 Impacting

6.3.1 Test 7 – Impact – Retention of Performance & Safety to Persons (Soft Body S1)

Ambient Temperatures (°C)	8.8
Humidity (%RH)	60

Impact Category	Cat B	
Impact Energy	120 Nm	500 Nm
Class Achieved	Class 1	Negligible Risk

Retention of Performance						
Impact Reference	Test Category	Impactor Type	Impact Energy (Nm)	Drop Height (mm)	Observations	Result
1A	Cat B	Soft Body (S1)	120	245	No Damage	Class 1
2B	Cat B	Soft Body (S1)	120	245	No Damage	Class 1
3C	Cat B	Soft Body (S1)	120	245	No Damage	Class 1
4D	Cat B	Soft Body (S1)	120	245	No Damage	Class 1
5E	Cat B	Soft Body (S1)	120	245	No Damage	Class 1
6F	Cat B	Soft Body (S1)	120	245	No Damage	Class 1
7G	Cat B	Soft Body (S1)	120	245	No Damage	Class 1
8H	Cat B	Soft Body (S1)	120	245	No Damage	Class 1
9I	Cat B	Soft Body (S1)	120	245	No Damage	Class 1
10J	Cat B	Soft Body (S1)	120	245	No Damage	Class 1
11K	Cat B	Soft Body (S1)	120	245	No Damage	Class 1
12L	Cat B	Soft Body (S1)	120	245	No Damage	Class 1
13M	Cat B	Soft Body (S1)	120	245	No Damage	Class 1

14N	Cat B	Soft Body (S1)	120	245	No Damage	Class 1
15O	Cat B	Soft Body (S1)	120	245	No Damage	Class 1
16P	Cat B	Soft Body (S1)	120	245	No Damage	Class 1
17Q	Cat B	Soft Body (S1)	120	245	No Damage	Class 1
18R	Cat B	Soft Body (S1)	120	245	No Damage	Class 1
19S	Cat B	Soft Body (S1)	120	245	No Damage	Class 1
20T	Cat B	Soft Body (S1)	120	245	No Damage	Class 1

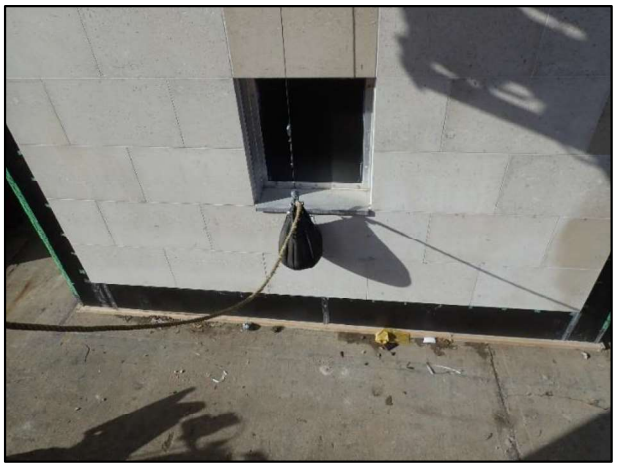
Safety to Persons						
Impact Reference	**Test Category**	**Impactor Type**	**Impact Energy (Nm)**	**Drop Height (mm)**	**Observations**	**Result**
21A	Cat B	Soft Body (S1)	500	1020	No Damage	Negligible Risk
22B	Cat B	Soft Body (S1)	500	1020	No Damage	Negligible Risk
23C	Cat B	Soft Body (S1)	500	1020	No Damage	Negligible Risk
24D	Cat B	Soft Body (S1)	500	1020	No Damage	Negligible Risk
25E	Cat B	Soft Body (S1)	500	1020	No Damage	Negligible Risk
26F	Cat B	Soft Body (S1)	500	1020	No Damage	Negligible Risk
27G	Cat B	Soft Body (S1)	500	1020	No Damage	Negligible Risk
28H	Cat B	Soft Body (S1)	500	1020	No Damage	Negligible Risk
29I	Cat B	Soft Body (S1)	500	1020	No Damage	Negligible Risk
30J	Cat B	Soft Body (S1)	500	1020	No Damage	Negligible Risk
31K	Cat B	Soft Body (S1)	500	1020	No Damage	Negligible Risk
32L	Cat B	Soft Body (S1)	500	1020	No Damage	Negligible Risk
33M	Cat B	Soft Body (S1)	500	1020	No Damage	Negligible Risk
34N	Cat B	Soft Body (S1)	500	1020	No Damage	Negligible Risk
35O	Cat B	Soft Body (S1)	500	1020	No Damage	Negligible Risk
36P	Cat B	Soft Body (S1)	500	1020	No Damage	Negligible Risk
37Q	Cat B	Soft Body (S1)	500	1020	No Damage	Negligible Risk
38R	Cat B	Soft Body (S1)	500	1020	No Damage	Negligible Risk
39S	Cat B	Soft Body (S1)	500	1020	No Damage	Negligible Risk
40T	Cat B	Soft Body (S1)	500	1020	No Damage	Negligible Risk

Photograph No. 3

Showing Soft Body (S1) impact of 120Nm.

During the above test, no damage was observed.

Photograph No. 4



During the above test, no damage was observed.

Photograph No. 5

During the above test, no damage was observed.

6.3.2 Test 7 – Impact – Retention of Performance & Safety to Persons (Hard Body H2)

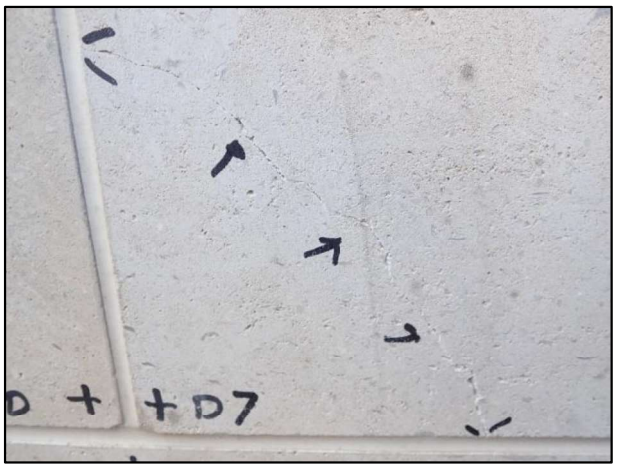
Ambient Temperatures (°C)	8.8
Humidity (%RH)	60

Impact Category	Cat B	
Impact Energy	10 Nm	10 Nm
Class Achieved	Class 3	Negligible Risk

Retention of Performance						
Impact Reference	**Test Category**	**Impactor Type**	**Impact Energy (Nm)**	**Drop Height (mm)**	**Observations**	**Result**
41A	Cat B	Hard Body (H2)	10	898	No Damage	Class 1
42B	Cat B	Hard Body (H2)	10	898	No Damage	Class 1
43C	Cat B	Hard Body (H2)	10	898	No Damage	Class 1
44D	Cat B	Hard Body (H2)	10	898	No Damage	Class 1
45E	Cat B	Hard Body (H2)	10	898	No Damage	Class 1
46F	Cat B	Hard Body (H2)	10	898	No Damage	Class 1
47G	Cat B	Hard Body (H2)	10	898	Cracked across corner 130mm up 140mm across	Class 3
48H	Cat B	Hard Body (H2)	10	898	Cracked corner up 30mm across 40mm, powder fell away 23g	Class 3
49I	Cat B	Hard Body (H2)	10	898	Dint in face of stone	Class 2
50J	Cat B	Hard Body (H2)	10	898	Dint in face of stone	Class 2
51K	Cat B	Hard Body (H2)	10	898	Cracked corner 20mm by 20mm	Class 3
52L	Cat B	Hard Body (H2)	10	898	Surface crack	Class 2
53M	Cat B	Hard Body (H2)	10	898	Dint in face of stone	Class 2
54N	Cat B	Hard Body (H2)	10	898	Scuff	Class 2
55O	Cat B	Hard Body (H2)	10	898	Scuff	Class 2
56P	Cat B	Hard Body (H2)	10	898	Scuff	Class 2
57Q	Cat B	Hard Body (H2)	10	898	Dint in face of stone and surface crack	Class 2
58R	Cat B	Hard Body (H2)	10	898	No Damage	Class 1
59S	Cat B	Hard Body (H2)	10	898	Dint	Class 2
60T	Cat B	Hard Body (H2)	10	898	No Damage	Class 1

Safety to Persons						
Impact Reference	**Test Category**	**Impactor Type**	**Impact Energy (Nm)**	**Drop Height (mm)**	**Observations**	**Result**
41A	Cat B	Hard Body (H2)	10	898	No Damage	Negligible Risk
42B	Cat B	Hard Body (H2)	10	898	No Damage	Negligible Risk
43C	Cat B	Hard Body (H2)	10	898	No Damage	Negligible Risk
44D	Cat B	Hard Body (H2)	10	898	No Damage	Negligible Risk
45E	Cat B	Hard Body (H2)	10	898	No Damage	Negligible Risk
46F	Cat B	Hard Body (H2)	10	898	No Damage	Negligible Risk
47G	Cat B	Hard Body (H2)	10	898	Cracked across corner 130mm up 140mm across	Negligible Risk
48H	Cat B	Hard Body (H2)	10	898	Cracked corner up 30mm across 40mm, powder fell away 23g	Negligible Risk
49I	Cat B	Hard Body (H2)	10	898	Dint in face of stone	Negligible Risk
50J	Cat B	Hard Body (H2)	10	898	Dint in face of stone	Negligible Risk
51K	Cat B	Hard Body (H2)	10	898	Cracked corner 20mm by 20mm	Negligible Risk
52L	Cat B	Hard Body (H2)	10	898	Surface crack	Negligible Risk
53M	Cat B	Hard Body (H2)	10	898	Dint in face of stone	Negligible Risk
54N	Cat B	Hard Body (H2)	10	898	Scuff	Negligible Risk
55O	Cat B	Hard Body (H2)	10	898	Scuff	Negligible Risk
56P	Cat B	Hard Body (H2)	10	898	Scuff	Negligible Risk
57Q	Cat B	Hard Body (H2)	10	898	Dint in face of stone and surface crack	Negligible Risk
58R	Cat B	Hard Body (H2)	10	898	No Damage	Negligible Risk
59S	Cat B	Hard Body (H2)	10	898	Dint	Negligible Risk
60T	Cat B	Hard Body (H2)	10	898	No Damage	Negligible Risk

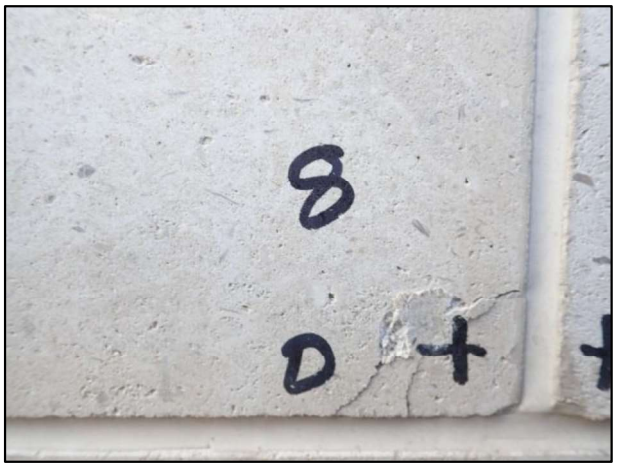
Photograph No. 6



Showing damage caused following hard body (H2) impact of 10 Nm.

The above damage resulted in a Class 3 being achieved during the Retention of performance test.

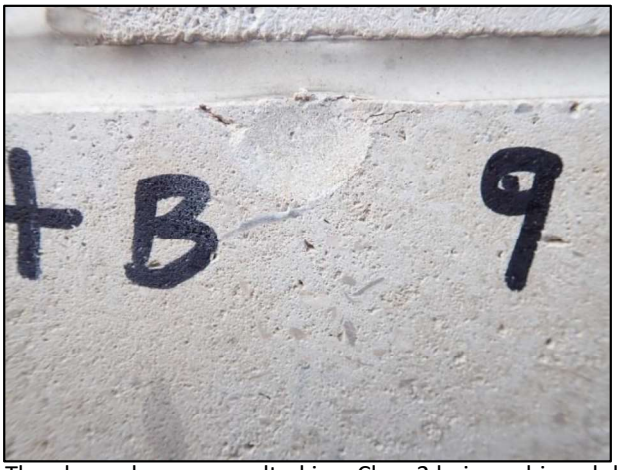
Photograph No. 7



Showing damage caused following hard body (H2) impact of 10 Nm.

The above damage resulted in a Class 3 being achieved during the Retention of performance test.

Photograph No. 8



Showing damage caused following hard body (H2) impact of 10 Nm.

The above damage resulted in a Class 2 being achieved during the Retention of performance test.

Photograph No. 9

The above damage resulted in a Class 2 being achieved during the Retention of performance test.

6.3.3 Impact Locations