

CLICKBRICK NZ – VM1

Shelby Wright Test Report

Report Writer:
Bernard Farrington

Report Date:
10 September 2024

SWTL Reference:
J0089

Client Information	
Client Name and Address	David Salenius (Director), 177 Marua Rd, Mt Wellington, Auckland, 1060 , New Zealand
Report Administered to	David Salenius
Test Report Number	SWTL - R0048
Testing	
Test Location	Shelby Wright Test Labs – 515 Rosebank Road, Avondale Auckland 1026
Test Date	13/3/2024
Report Date	10/09/2024
Project Name	Clickbrick VM1
Test Procedure	SWTM-2.0 NZBC E2_VM1 Test Procedure v2
Testing Officer	Bernard Farrington
Observers	Dave Salenius, Johan van Dyk (Clickbrick), Richard Hollard (ProClima), Matt Lewis (SWTL)
Sample	
Sample	Click brick Panels Faux Panels 40mm
Manufacturer	Clickbrick Limited
Specifier	N/A
Sample Designer	Clickbrick Limited
Sample Installer	Clickbrick Limited
IANZ	
IANZ Accredited KTP	Bernard Farrington
IANZ Accreditation No	1438

REVISION CONTROL

Revision number	Date published	Reviewed by
1	10 September, 2024 – Issued as Draft	BF
2	10 September, 2024 – Issued as Final	SM

Tested By Bernard Farrington & Mark Ashforth Report Writer Bernard Farrington
Authorised by Shawn Mclsaac



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All tests reported herein
have been performed in
accordance with the
laboratory's scope of
accreditation



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2 EXECUTIVE SUMMARY

Testing of the Clickbrick Limited Clickbrick Panel system comprised two variations of wall layup.

Sample A, installed over a 20mm cavity onto a peel and stick membrane.

Sample B, directly fixed over a peel and stick membrane where the cavities in the panel manufacture provide a vented space between the cladding and wall creating a drainable air-tightness and vapour control plane.

The Clickbrick panels did not allow any water to pass through the panel joints under static and cyclic water penetration testing.

After the introduction of 6mm diameter holes to create a simulated failure of the panel system, water running down the inside of the panels did travel across the cavity to the peel and stick membrane. The water did not however pool and freely drained.

Whilst the water travelling across the cavity would normally constitute a failure, with the incorporation of the peel and stick membrane in the wall assembly makeup, both Sample A and Sample B met the requirements for compliance with NZBC E2/VM1.

3 REQUEST FOR TESTING

Clickbrick Limited requested testing to NZBC E2/VM1

4 METHOD

The tests were carried out in accordance with Shelby Wright Test Labs procedures:

SWTM-2.0 NZBC E2_VM1 Test Procedure v2



5 TEST SAMPLE

The test sample is as per the drawings in Appendix A of this report.

5.1 Description

The sample subframe was comprised of a timber framed wall of 90x45 SG8 H1.2 structural pine, incorporating modular Clickbrick panel 40mm product constructed with PIR and installed over two adjacent sample wall assembly types:

Sample A

A 20mm H3.1 pine cavity batten over an acrylic wall underlay, fixed aluminium window with Clickbrick integrated flashing assembly

Sample B

Direct fix over Solitex Extasana Adhero with naideck flashing tape between Clickbrick and Adhero, 12mm ply wall sheathing and internal corner with 38mm Bitufoam seal at corner flashing.

The two wall assembly details can be found in appendix A.

For the purpose of description in this report:

- Reference to the “Exterior” side of the sample refers to the side of the sample facing inwards to the test booth and would normally represent the external faces of the building.
- Reference to the “Interior” side of the sample refers to the side of the sample facing outwards from the test booth and would normally represent the internal faces of the building.

Table 1 Test Sample Setup

Photo/Figure Reference	Description
	<p>Figure 1- Interior of Sample..</p>
	<p>Figure 2 Exterior – Sample as constructed immediately prior to testing.</p>



*Figure 3 Exterior –
Approx 15mm gap
between panels at
internal corner junction*



*Figure 4 – Head
flashing overlap to jamb
of only 35mm*

	<p><i>Figure 5 – Head flashing overlap to jamb of approximately 50mm</i></p>
	<p><i>Figure 6 – Sample A, View of cavity closer. Note the Proclima Extasana.</i></p>
	<p><i>Figure 7 – Sample B, View of cavity closer. Note the Proclima Extasana Adhero.</i></p>

5.2 Client Documentation

Test request and parameters form. Refer to Appendix B

Drawings. Refer to Appendix A

Certificate of Identification. Refer to Appendix E

5.3 Components

The main components of the sample are:

Sample A:

- Wall frame from 90*45 SG8-H1.2 structural pine
- 12mm CD structural ply
- Solitex Extasana Adhero wall underlay membrane.
- Clickbrick Panels Faux Panels
- Fixed aluminium window and integrated flashing system
- Tescon Extora flashing tape
- 38mm & 25mm Bitufoam
- Internal and external corner flashing
- Naideck tape
- Spax 8 x 50mm screws

Sample B:

- Wall frame from 90*45 SG8-H1.2 structural pine
- Acrylic wall underlay membrane (4mm)
- 20mm pine cavity batten
- Clickbrick Panels Faux Panels 40mm

Component details are as per the “As Built” drawings in Appendix A of this report.

5.4 Modifications of Sample

Preliminary testing showed the window fixings to have a minor leak. The window was re-fitted with repair to the rough opening flashing tapes and the inclusion of Bitufoam along the jamb flashing to cladding interface.

6 TEST PROCEDURE

The test procedure was carried out following SWTM-2.0 AS_NZS 4284 2008 Test Procedure v2

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6.1 Test Sequence

6.1.1 NZBC E2/VM1

- (a) Pre-conditioning test +/- 1515 Pa:
- (b) Series 1 Static water penetration test: +/- 455 Pa
- (c) Series 1 Cyclic water penetration test: +/- 455 – 910 Pa
- (d) Series 2 Static water penetration test: +/- 455 Pa
- (e) Series 2 Cyclic water penetration test: +/- 455 – 910 Pa
- (f) Series 3 Wetwall Test: +/- 50 Pa

6.2 Deviation, variation, or exclusion to the test procedure

As the Sample B layup comprised a direct fix of the Clickbrick panels to the Extasana Adhero peel and stick membrane, the series 3 test on this sample was not applicable and therefore not carried out.

7 TESTING EQUIPMENT

Table 2 Testing Equipment

Item	Description	ID	Calibration
Manometer	DG 1000	SWTL - 067 (Serial No: 11039)	Date of next calibration: 18 May 2024
Manometer	Dwyer	SWTL - 019 (Serial No: T13AG670003)	Date of next calibration: 29 March 2024
Anemometer	FL Schmidt	SWTL - 018 (Serial No: 000010820)	Date of next calibration: 06 June 2024
Anemometer	FL Schmidt	SWTL - 050 (Serial No: 000011234)	Date of next calibration: 17 Jan 2025
Thermometer	RTD	SWTL - 047 (Serial No: 200108244)	Date of next calibration: 21 June 2024
Test Booth Water System	16 nozzles	SWTL – 082 (B1/4H- SS14WSO)	Date of next calibration: 29 August 2024

8 ENVIRONMENTAL CONDITIONS

Table 3 Environmental Conditions

13/3/2024			
Temperature °C	Barometric Pressure hPa	Humidity	Calm / Windy
23	1013	73%	Calm

9 TEST RESULTS

9.1 Results




9.1.1 NZBC E2/V1


- a) Pre-conditioning test +/- 1515 Pa at 3:34 pm
- b) Series 1 Static water penetration test: +/- 455 Pa, SWTL - T0125 at 404pm
 - a. Window leaking at fixings (409pm). **PASS**
- c) Series 1 Cyclic water penetration test: +/- 455 – 910 Pa, SWTL – T0126
 - a. No water observed past cladding (431pm) **PASS**
- d) Series 2 Static water penetration test: +/- 455 Pa, SWTL - T0127
 - a. No water visible (455pm) **PASS**
- e) Series 2 Cyclic water penetration test: +/- 455 – 910 Pa, SWTL – T0128
 - a. No water visible (527pm) **PASS**
- f) Series 3 Wetwall Test: +/- 50 Pa, SWTL – T0130 **PASS*** After the introduction of 6mm diameter holes to create a simulated failure of the panel system, water running down the inside of the panels did travel across the cavity to the peel and stick membrane. The water did not however pool and freely drained.

Whilst the water travelling across the cavity would normally constitute a failure, with the incorporation of the peel and stick membrane in the wall assembly makeup, both Sample A and Sample B met the requirements for compliance with NZBC E2/VM1.

9.2 Observations

Table 4 Observations

Obs. No:	Test	Observation	Photo
1	Series 1 – Cyclic Water	No water penetration of the Clickbrick panels evident on either sample.	
2	Series 3 wetwall test	Water not pooling within the panel cavities. Water generally following a drainage plane along the inner face of the cladding panels, however this was splattering across to the membrane side of the cavity battens.	
3	Post all tests	Removal of the Clickbrick panels around the window revealed that all of the jamb and head area surfaces were completely dry.	

4	Post all tests	As above. Note the window sill flashing tape extending onto the Clickbrick panel.	
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10 DISCLOSURE/QUALIFICATIONS

On instruction of Clickbrick Limited

- Clickbrick drawings attached to this report have been provided by the client and SWTL accepts no liability with regards to the accuracy of the drawings.
- SWTL has not been provided with any other test reports from the manufacture or manufacturing instructions.
- This report has been prepared solely for the party of who it was addressed within the terms of the brief provided to this company. This report may not be used for any other context or for any other purpose without prior agreement.
- This report may not be read or reproduced other than as a complete document.



11 IANZ ACCREDITATION

This testing has been produced under IANZ accreditation number: **1438**

12 TESTING OFFICERS

Name: Bernard Farrington

Date: 10 September 24

Signature:

A handwritten signature in black ink, appearing to read 'Bernard Farrington'.

Name: Mark Ashforth

Date: 10 September 24

Signature:

A handwritten signature in black ink, appearing to read 'Mark Ashforth'.

13 REPORT WRITER

Name: Bernard Farrington

Date: 10 September 24

Signature:

A handwritten signature in black ink, appearing to read 'Bernard Farrington'.

14 PEER REVIEWED BY

Name: Shawn Mclsaac

Date: 10 September 24

Signature:

A handwritten signature in black ink, appearing to read 'SM'.



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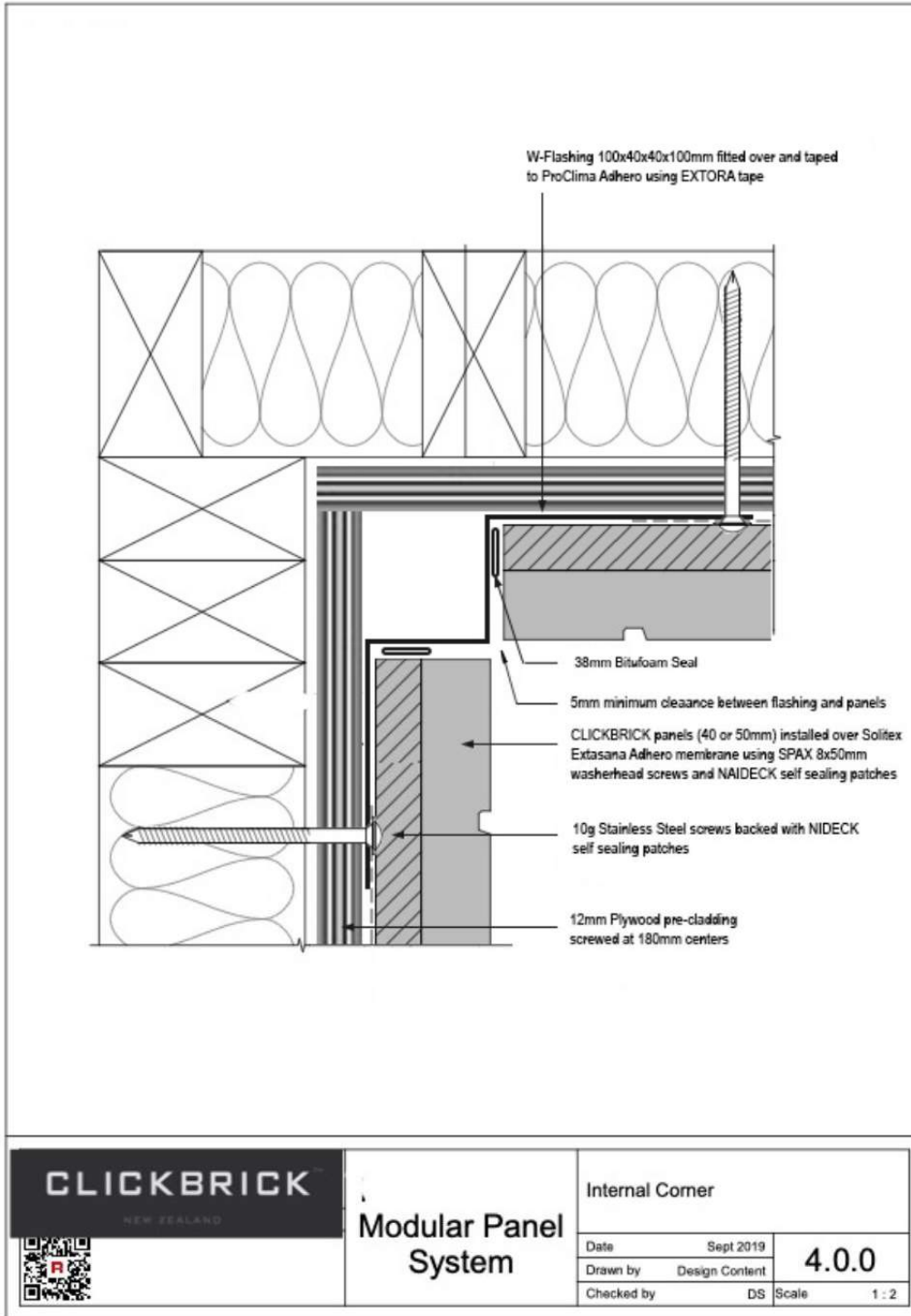
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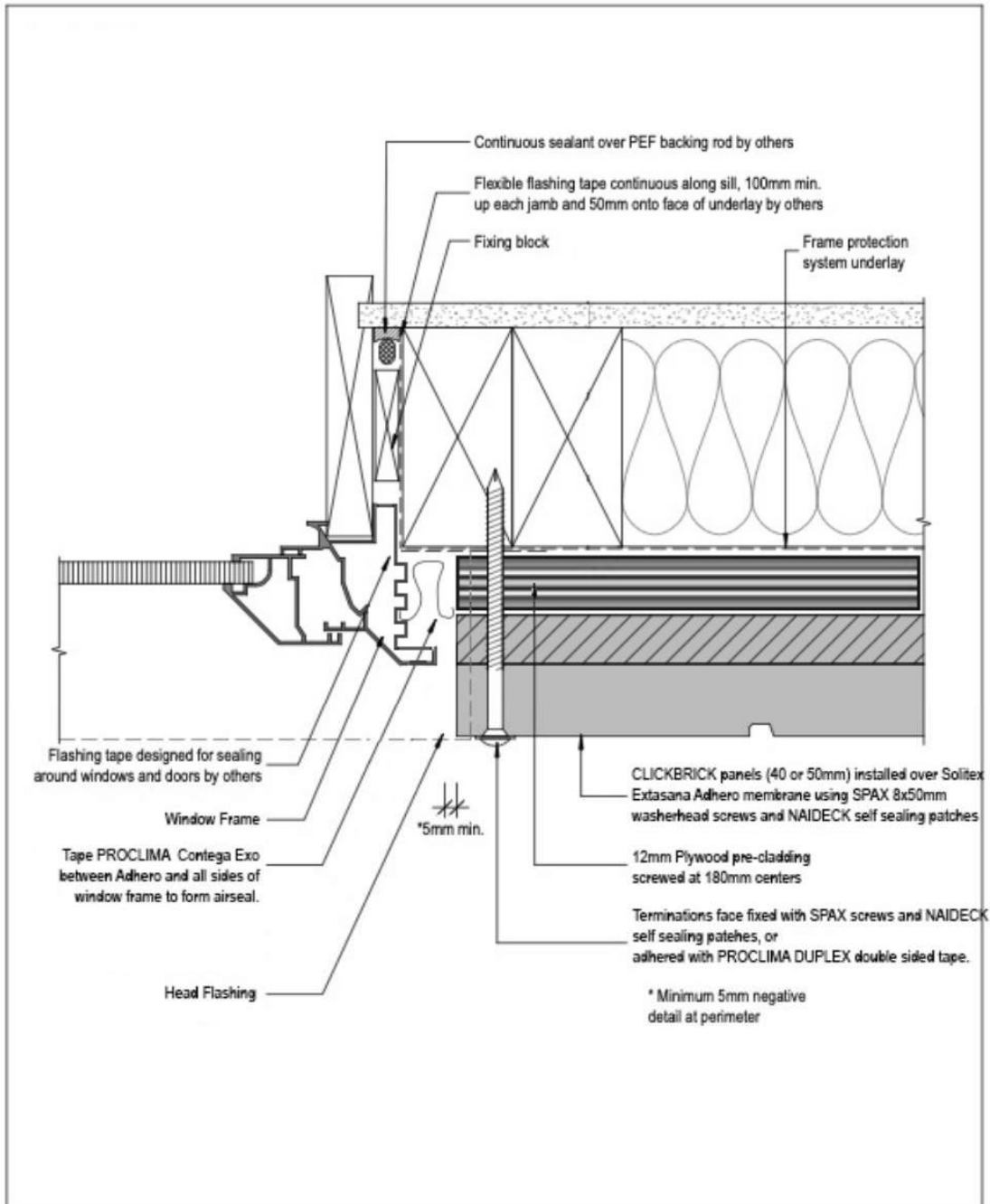
15 Appendix A – Test Request Form


The E2-VM1 testing was carried out to the prescribed test pressures as noted in the verification method, and therefore no additional parameters were required.

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Appendix B – Drawings

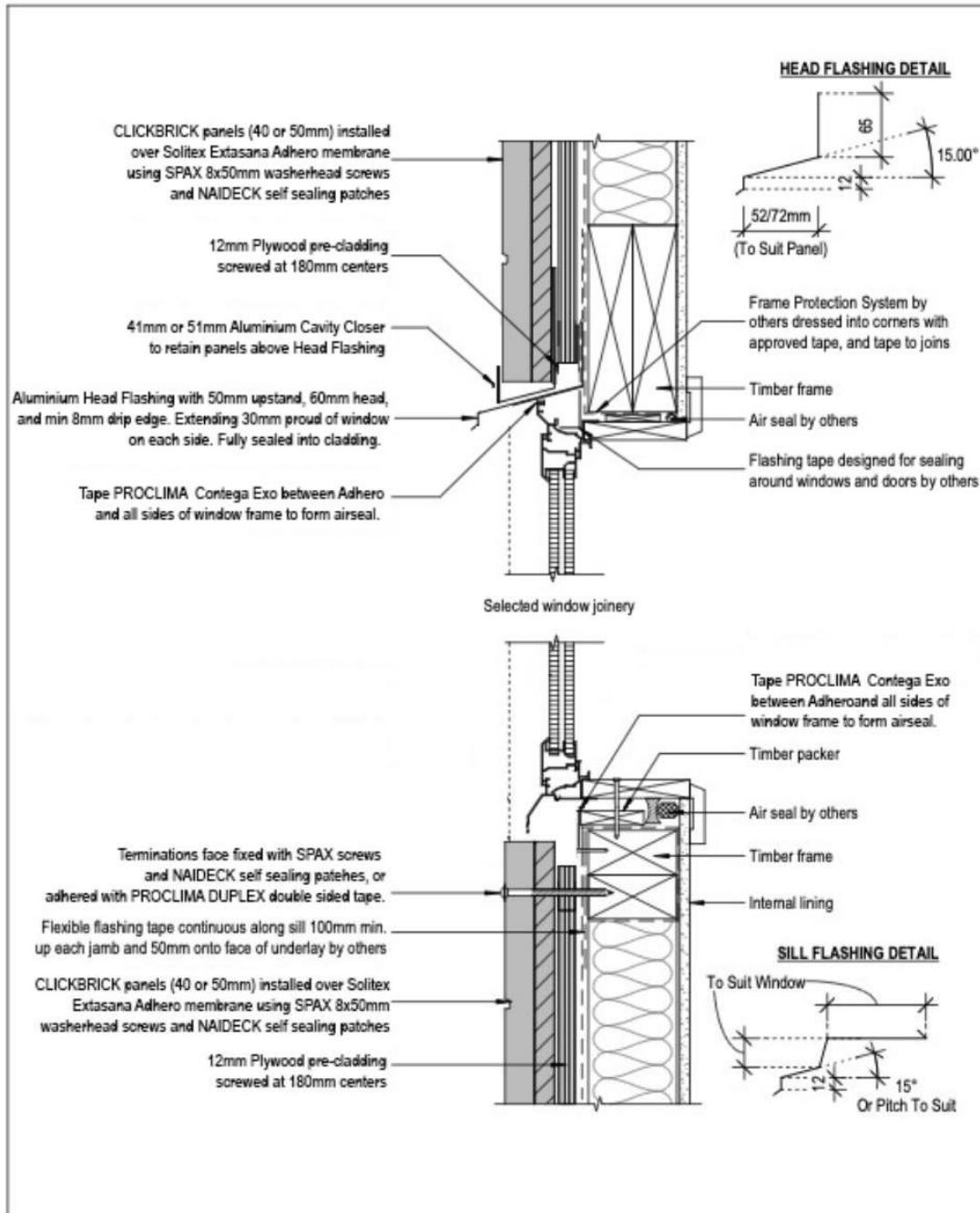





	<h2>Modular Panel System</h2>	Window Detail-Jamb-Abutting Panel-Timber Frame	
		Date: Sept 2019 Drawn by: Design Content Checked by: DS	<h1>3.1.1</h1> <p>Scale: 1 : 2</p>

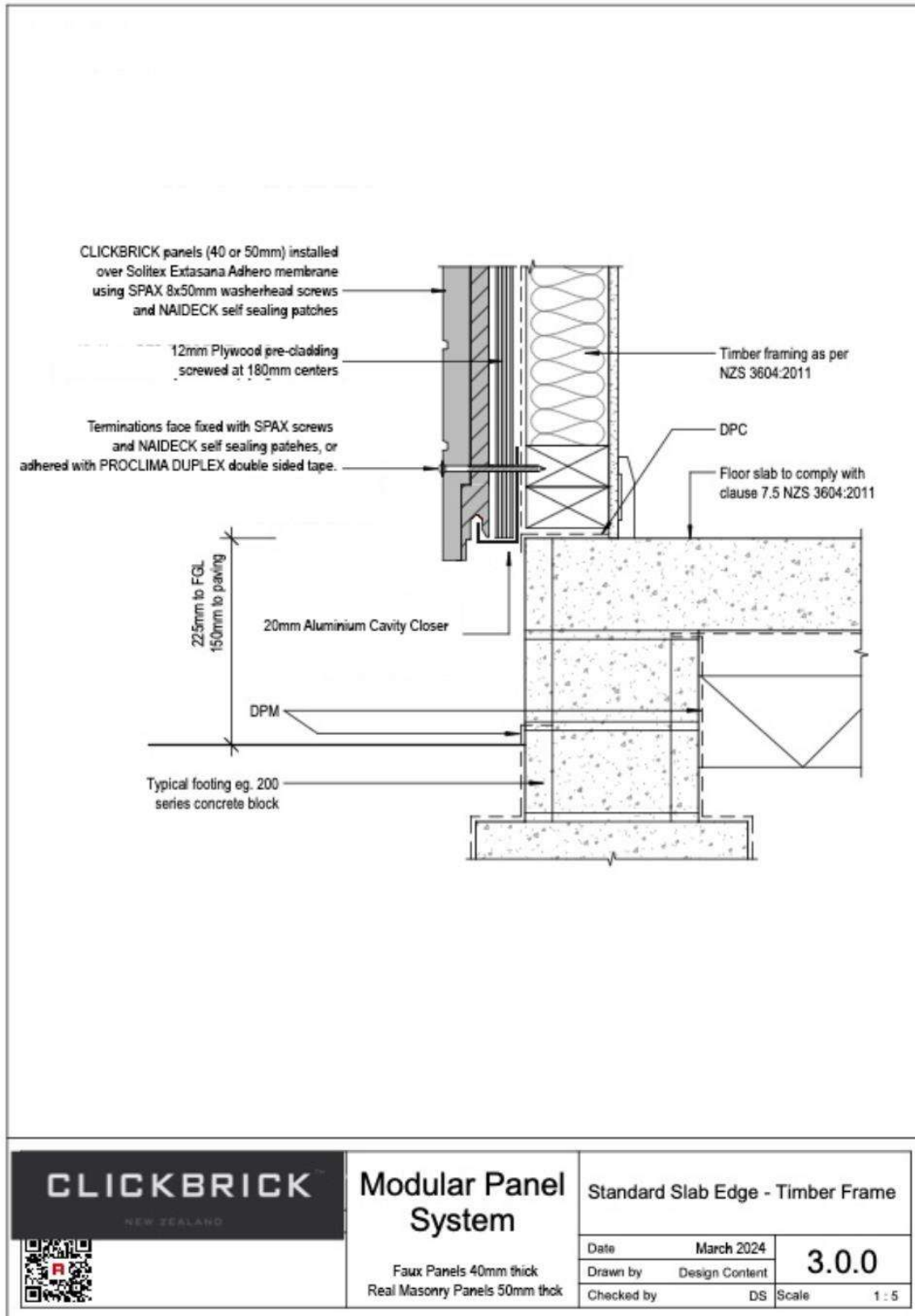
9/09/2019 12:57:09 PM

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	<p>Modular Panel System</p>	<p>Window Detail-Abutting Panel-Timber Frame (No Sill)</p>	
		<p>Date: Sept 2019</p>	<p>3.1.0 A</p>
		<p>Drawn by: Design Content</p>	<p>Scale: 1 : 5</p>
		<p>Checked by: DS</p>	

9/09/2019 12:57:07 PM



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16 Appendix C – Worksheets

SWTL-R0048

Doc Ref:	SWTM - 2.1
Version:	2.0
Date:	AUG 2022

SHELBY WRIGHT TEST LABS
 NZBC E2/VM1 Worksheet



MARIC, MATT, RICHARD HOLLAND, DAVID SALEMUS

Sheet 1 of 2

CLIENT CLICKBRICK LTD TEST NO: SWTL T. 0125
 TEST OPERATOR B.F. DATE OF TEST 13/3/2024
 DESCRIPTION OF SAMPLE CLICKBRICK SHUTTERED CONCRETE
MADE FROM P.I.D. ON A 2.4 X 2.4 SG8 FRAME.
 CLIENT DRAWING REF(S) REF APPENDIX

NZBC E2/VM1 - PRECONDITIONING TEST

Booth Test Pressure / Pa	Time	Comments
+ 1515 Pa	1 minute	✓
- 1515 Pa	1 minute	✓

3:4 PM

NZBC E2/VM1 - SERIES 1 STATIC PRESSURE WATER PENETRATION TEST

Specified Test Pressure: 455 Pa	Water flow meter settings
5 minutes at zero test pressure with water sprays on	1 x 4 nozzle bar = 21 psi
15 minutes at 100% test pressure with water sprays on	2 x 4 nozzle bar = 25 psi
5 minutes at zero test pressure with water sprays off	3 x 4 nozzle bar = 30 psi
	4 X 4 nozzle bar = 30 psi

Number of Nozzles / bar used 2/2 Required flow per spray bar = l/min

Booth Test Pressure Pa	Time	Comments
0 Pa	5 min.	4:04 PM
455 pa	15 min.	4:09 PM - WINDOW LEAKING AT SCREW PENETRATION.
0 Pa	5 min.	4:26 PM

NZBC E2/VM1 - SERIES 1 CYCLIC PRESSURE WATER PENETRATION TEST

Based on the AS/NZS 4284 Stage 3 Cyclic Water Penetration Test Procedure:
 5 mins @ 455 - 910 Pa

Cyclic test Pressure range	Water On/Off	Time	Comments
0.0 Pa		min.	NOT REQ'D
455 - 910 Pa	On	5 min.	4:31. NO WATER PAST CLADDING.
0.0 Pa	Off	5 min.	4:38



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Date:	AUG 2022

SHELBY WRIGHT TEST LABS NZBC E2/VM1 Worksheet



SH 2 of 2

E2/VM1 - SERIES 2 WATER MANAGEMENT STATIC WATER PENETRATION TEST

Specified Test Pressure: 455 Pa	Water flow meter settings
5 minutes at zero test pressure with water sprays on	1 x 4 nozzle bar = 21 psi
15 minutes at 100% test pressure with water sprays on	2 x 4 nozzle bar = 25 psi
5 minutes at zero test pressure with water sprays off	3 x 4 nozzle bar = 30 psi
	4 X 4 nozzle bar = 35 psi

Number of Nozzles / bar used *2/2* Required flow per spray bar = l/min

Booth Test Pressure Pa	Time	Comments
0 Pa	5 min.	<i>4:50 PM</i>
455 pa	15 min.	<i>4:55 PM</i>
0 Pa	5 min.	<i>5:10 PM</i>

NO WATER VISIBLE

E2/VM1 - SERIES 2 WATER MANAGEMENT CYCLIC WATER PENETRATION TEST

Based on the AS/NZS 4283 Stage 3 Cyclic Water Penetration Test:
 5 mins @ 455 - 910 Pa

Cyclic test Pressure range	Water On/Off	Time	Comments
0.0 Pa		min.	<i>NA</i>
455 - 910 Pa	On	5 min.	<i>5:22 NO WATER VISIBLE</i>
0.0 Pa	Off	5 min.	<i>5:28 - 11 -</i>

SERIES 2 WETWALL TEST E2/VM1

Specified Test Pressure: 50 Pa	Water flow meter settings
5 minutes at zero test pressure with water sprays on	1 x 4 nozzle bar = 21 psi
15 minutes at 100% test pressure with water sprays on	2 x 4 nozzle bar = 25 psi
5 minutes at zero test pressure with water sprays off	3 x 4 nozzle bar = 30 psi
	4 X 4 nozzle bar = 30 psi

Number of Nozzles / bar used *2/2* Required flow per spray bar = l/min

Booth Test Pressure Pa	Time	Comments
0 Pa	5 min.	<i>5:37</i>
50 pa	15 min.	<i>WATER SPLATTER TO AIR BARRIER</i>
0 Pa	5 min.	

BATTEN AREA - FAIL.




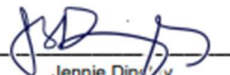

RESULT: *NON BATTEN AREA - PASS* CHECKED: *[Signature]*

G:\Shared drives\Shelby Wright Test Labs\Technical Records\2.0 Testing Procedures, Worksheets and Logs\Test Methods Worksheets\SWTM-2.1
 NZBC E2_VM1 Worksheet v2 .docx v2

Page 2 of 2

ON BATTEN LOCATION (SIDE OF SAMPLE)

17 Appendix D – Uncertainty of Measurement

 		Teltherm Instruments Ltd Accredited Calibration Laboratory No. 644				
CALIBRATION CERTIFICATE						
Report:	330983/01	Calibration Date:	5/04/2023			
Customer Name:	OCULUS ARCHITECTURAL ENGINEERING LTD					
Customer Address:	515 ROSEBANK ROAD AVONDALE AUCKLAND					
Type of Instrument:	DG-1000 Pressure & Air Flow Controller					
Manufacturer:	The Energy Conservatory					
Serial Number:	11037	Medium of Test:	Air			
Range:	-2500 Pa to 2500 Pa					
Graduations:	0.1 Pa, 1 Pa	Temp. of Test °C:	20 ± 2			
Test Method:	<p>The instrument was calibrated at Teltherm (Test Method TILLPM) by comparison with a pressure calibrator (serial no. 811140B0026). Measurements relate only to the items tested and are traceable to the SI via international standards of measurements as held by NMIA via APL. An overload test was not performed. The reported instrument readings represent averages of two test runs.</p> <p>The instrument under test (IUT) was turned on and allowed to warm up for at least 10 minutes prior to testing. The auto-zero interval of the IUT was set to 60 minutes during testing, using TECLOG4 software. The sample rate remained at 1.0 per second.</p> <p>The IUT was zeroed between each test point, in keeping with the instrument's normal operation. Readings were taken from the IUT display.</p>					
CALIBRATION RESULTS - CHANNEL A						
SCALE UNITS: Pa						
<i>Increasing Pressure</i>			<i>Decreasing Pressure</i>			
IUT	Applied	Correction	IUT	Applied	Correction	Uncertainty
			-2496	-2485	+11	1
-1005	-1000	+5	-1005	-1000	+5	1
-502.1	-500.0	+2.1	-502.2	-500.0	+2.2	0.7
-251.0	-250.0	+1.0	-251.0	-250.0	+1.0	0.7
-125.4	-125.0	+0.4	-125.5	-125.0	+0.5	0.7
-50.2	-50.0	+0.2	-50.2	-50.0	+0.2	0.7
0.0	0.0	0.0	0.0	0.0	0.0	0.7
50.2	50.0	-0.2	50.3	50.0	-0.3	0.7
125.4	125.0	-0.4	125.5	125.0	-0.5	0.7
251.0	250.0	-1.0	250.9	249.9	-1.0	0.7
502.0	499.9	-2.1	502.0	499.9	-2.1	0.7
1004	1000	-4	1004	1000	-4	1
2495	2485	-10				1
Issued By:			Checked By:			
		Jennie Dimy			Liz Li	
This report shall not be reproduced except in full, without written approval of this laboratory. Teltherm Instruments Ltd 5/343 Church Street, Onehunga, Auckland 1061. Phone 09 633 0040						
					Page 1 of 2	

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18 Appendix E – Certificate of Identification

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