

# NORTHCLAD RAINSCREEN SOLUTIONS TEST REPORT

SCOPE OF WORK

AAMA 508 TESTING ON PRESSURE EQUALIZED RAIN SCREEN WALL CLADDING SYSTEM/ ALUMINUM CLADDING SYSTEM

**REPORT NUMBER** I5461.01-901-44 R1

**TEST DATE(S)** 10/16/18 - 11/10/18

 ISSUE DATE
 REVISION DATE

 11/29/18
 12/12/18

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## TEST REPORT FOR NORTHCLAD RAINSCREEN SOLUTIONS

Report No.: I5461.01-901-44 R1 Date: 12/12/18

#### **REPORT ISSUED TO**

## NORTHCLAD RAINSCREEN SOLUTIONS

11831 Beverly Park Road, Building C Everett, Washington 98204

## **SECTION 1**

#### SCOPE

Intertek Building & Construction (B&C) was contracted by NorthClad Rainscreen Solutions to perform testing in accordance with AAMA 508 on their Aluminum Cladding System. Results obtained are tested values and were secured by using the designated test method(s). Testing was conducted at the Intertek B&C test facility in Kent, WA. This report does not constitute certification of this product nor an opinion or endorsement by this laboratory. This report is not intended as a comprehensive evaluation of the system regarding performance and application to specific buildings.

## SECTION 2

## SUMMARY OF TEST RESULTS

**Product Type:** Pressure Equalized Rain Screen Wall Cladding System **Series/Model:** Aluminum Cladding System

TITLE	RESULTS	PASS/FAIL
Air Infiltration (ASTM E283)	0.61 L/s/m <sup>2</sup> (0.12 cfm/ft <sup>2</sup> )	PASS
Pressure Cycling (ASTM E1233)	3.28 sec. / ±1197 Pa (±25.00 psf)	PASS
Static Water Penetration (ASTM E331)	1197 Pa (25.00 psf)	PASS
Dynamic Water Penetration (AAMA 501.1)	1197 Pa (25.00 psf)	PASS
Uniform Load Deflection (ASTM E330)	±2880 Pa (±60.15 psf)	PASS

## For INTERTEK B&C:

COMPLETED BY:	Guillermo Silva	<b>REVIEWED BY:</b>	Tyler L. Westerling, P.E.
TITLE:	Laboratory Manager	TITLE:	Senior Project Engineer
SIGNATURE:		SIGNATURE:	
DATE:	12/12/18	DATE:	12/12/18
GS:pac			

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## SECTION 3

## TEST METHOD(S)

The specimens were evaluated in accordance (general accordance if deviated from method; all deviations must be described within test report) with the following:

**AAMA 508-14,** Voluntary Test Method and Specification for Pressure Equalized Rain Screen Wall Cladding Systems

**AAMA 501.1-05**, Standard Test Method for Water Penetration of Windows, Curtain Walls, and Doors Using Dynamic Pressure. Testing was conducted with a dynamic pressure equivalent of 1197 Pa (25.0 psf) for a 15-minute duration. Water was applied to the mock-up at a minimum rate of 5 gal/hr/ft2.

**ASTM E283-04(2012)**, Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen. Testing was conducted at 75 Pa (1.57 psf) positive static air pressure difference.

**ASTM E330/E330M-14**, Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference

**ASTM E331-00(2016)**, Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference. Testing was conducted at 1197 Pa (25.0 psf) positive static air pressure difference for a 15-minute duration. Water was applied to the mock-up at a minimum rate of 5 gal/hr/ft2.

**ASTM E1233/E1233M-14,** Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights, and Curtain Walls by Cyclic Static Air Pressure Differential. Testing was conducted for 100, three-second cycles from 240 Pa (5.0 psf) to 1200 Pa (25.0 psf) to 240 Pa (5.0 psf).

## **SECTION 4**

## MATERIAL SOURCE/INSTALLATION

Test specimen was provided by the client. Representative samples of the test specimen(s) will be retained by Intertek B&C for a minimum of four years from the test completion date.

Installation of the tested product was performed by the client in accordance with the attached system drawings.



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## **SECTION 5**

#### EQUIPMENT

Computerized control panel to run positive pressures, cyclic pressures, and measure air leakage rates

Structural test chamber to mount the test wall, as to evaluate the performance of the wall panel system for static and cyclic pressures, as well as water penetration. The wall was situated such that the interior side of the test wall was accessible to observe air and water leakage.

Dynamic wind generator to create a wind pressure to test the wall panel system for dynamic water penetration

Computerized data management equipment to read, log, and graph differential pressures

## **SECTION 6**

## LIST OF OFFICIAL OBSERVERS

NAME	COMPANY
Michael Evers	Northclad Rainscreen Solutions
Guillermo Silva	Intertek B&C
Che Rodriguez	Intertek B&C

## **SECTION 7**

## **TEST SPECIMEN DESCRIPTION**

**Product Type:** Pressure Equalized Rain Screen Wall Cladding System **Series/Model:** Aluminum Cladding System

## **Product Size(s):**

OVERALL AREA:	WIDTH		HEIGHT	
5.9 m <sup>2</sup> (64.0 ft <sup>2</sup> )	millimeters	inches	millimeters	inches
Overall size	2438	96	2438	96
Panels (4)	1213	47-3/4	1213	47-3/4



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## Panel Construction:

**Test Wall Construction**: The 96" wide by 96" high test wall was constructed of Spruce-fir 2" x 4" studs. The studs were spaced 16" on center inside a 2" x 8" wood buck. The stud wall was covered with 1/8" thick clear Lexan, sealed, and secured to the exterior of the wall to simulate an air/water barrier. The wall panel system was then installed onto the clear polycarbonate in a manner consistent with normal construction procedures for the system. The clear Lexan was calibrated to a pre-determined air leakage rate by drilling 1/8" diameter holes on the backside in a uniform pattern, making sure to create an even pressure drop and leakage rate across the wall and in each quadrant. The exterior of the test unit was sealed to the wood buck with silicone.

## **SECTION 8**

## **TEST RESULTS**

The temperature during testing was 21°C (70°F). The results are tabulated as follows:

<b>The Leakage</b> (minimution per Astri E200)				
PRESSURE	RESULTS	ALLOWED	PASS/FAIL	NOTE
75 Pa (1.57 psf)	0.60 L/s/m <sup>2</sup>	0.6 L/s/m <sup>2</sup> (0.11 cfm/ft <sup>2</sup> ) min.	PASS	1
	(0.12 cfm/ft <sup>2</sup> )	0.7 L/s/m <sup>2</sup> (0.13 cfm/ft <sup>2</sup> ) max.		

## Air Leakage (Infiltration per ASTM E283)

## Pressure Cycling (per ASTM E1233)

## 100 cycles from 240 Pa (5 psf) to 1200 Pa (25 psf) to 240 Pa (5 psf)

COMPARTMENT	RESULTS	ALLOWED	PASS/FAIL	NOTE
Cycle Time Lag	0.07 sec.	0.08 sec. max.	DACC	<b>,</b> ,
Cycle Pressure Difference	11.5 Pa (0.24 psf)	600 Pa (12.5 psf) max.	rass	2, 5

## Static Water Penetration (per ASTM E331)

PRESSURE	RESULTS	ALLOWED	PASS/FAIL	NOTE
1197 Pa (25.00psf)	0.03 m <sup>2</sup> (0.30 ft <sup>2</sup> )	0.30 m <sup>2</sup> (3.20 ft <sup>2</sup> )	PASS	4, 5

## Dynamic Water Penetration (per AAMA 501.1)

PRESSURE	RESULTS	ALLOWED	PASS/FAIL	NOTE
1197 Pa (25.00 psf)	0.05 m <sup>2</sup> (0.50 ft <sup>2</sup> )	0.30 m <sup>2</sup> (3.20 ft <sup>2</sup> )	PASS	4, 5



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## **Uniform Load Deflection**

PRESSURE	RESULTS	PASS/FAIL	NOTE
taken on vertical support			
+2880 Pa (+60.15 psf)	17.5 mm (0.69")		
-2880 Pa (-60.15 psf)	22.0 mm (0.87")	PASS	6, 7
taken at panel edge between studs			
+2880 Pa (+60.15 psf)	0.3 mm (0.01")		
-2880 Pa (-60.15 psf)	0.8 mm (0.03")	PASS	6, 7

## **Uniform Load Structural**

PRESSURE	RESULTS	PASS/FAIL	NOTE
taken on vertical support			
+4320 Pa (+90.23 psf)	0.5 mm (0.02")		
-4320 Pa (-90.23 psf)	0.8 mm (0.03")	PASS	6, 7
taken at panel edge between studs			
+4320 Pa (+90.23 psf)	0.3 mm (0.01")		
-4320 Pa (-90.23 psf)	0.8 mm (0.03")	PASS	6, 7

Note 1: The calibrated leakage was achieved with 43, 1/8" diameter holes drilled through the polycarbonate. All holes were evenly distributed in each stud cavity and were located 6" above the bottom and mid-span of the wall.

*Note 2:* Pressure tap was attached through the air barrier at right panel cavity.

Note 3: Reference Pressure Cycling graph.

*Note 4: Water percolated at the bottom of the panel at the weeps. Water was visibly present on the polycarbonate.* 

*Note 5: Water on the polycarbonate air/water barrier surface was in the form of mist or droplets.* 

Note 6: Loads were held for 10 seconds.

Note 7: Tape and film were used to seal against air leakage during structural testing. In our opinion, the tape and film did not influence the results of the test.



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## **SECTION 9**

#### CONCLUSION

The specimen met the specified performance requirements.

## **SECTION 10**

#### GRAPH



## **SECTION 11**

#### DRAWINGS

The test specimen drawings have been reviewed by Intertek B&C and are representative of the test specimen(s) reported herein. Test specimen construction was verified by Intertek B&C per the drawings included in this report. Any deviations are documented herein or on the drawings.

Attachment (pages): Drawings (6)

## SECTION 12

## **REVISION LOG**

REVISION #	DATE	PAGES	REVISION
0	11/29/18	N/A	Original Report Issue
			Corrected Test Results - Static Water
1	12/12/18	5	Penetration (per ASTM E331)











