

**PERFORMANCE EVALUATION OF CARTER ARCHITECTURAL PANELS, INC.
“CORE CONNECT RAINSCREEN PANEL SYSTEM”
IN ACCORDANCE WITH AAMA 509-22 & ASTM E330/E330M-14(2021)**

Report to: Carter Architectural Panels, Inc.
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Report No.: 26-06-B0105-2
9 Pages, 3 Appendix

Proposal No.: 26-006-866273 RV1

Report Date: September 22, 2026

1.0 INTRODUCTION

At the request for Carter Architectural Panels, Inc., Element was retained to evaluate the "CORE CONNECT Rainscreen Panel System" rainscreen systems in accordance with AAMA 509-22 and ASTM E330/E330M-14(2021) as outlined in Proposal Number 26-006-866273 RV1.

Upon construction, the specimen was assigned the following Element Specimen Number:

Client Specimen Description

CORE CONNECT Rainscreen Panel System

(Equal panel scheme / 4 panels, not individually pressure isolated)

Element Specimen No.

26-06-B0105-2

Note: The panels used in the "CORE CONNECT Rainscreen Panel System" by Carter Architectural Panels, Inc., were "4 mm etalbond®." A complete bill-of-materials and details for the specimen identified above is located in Appendix A. Data Provided by the client and can affect the validity of the results

2.0 PROCEDURE

Test Method	Test Description
AAMA 509-22	Voluntary Test Method and Classification Method for Drained and Back ventilated Rain Screen Wall Cladding Systems
ASTM E330/E330M-14(2021)	Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference

Note 1: SI units are the primary units of measure. IP units shall be used as references.

Note 2: The above methods are included in Element Materials Technology Canada Inc.'s scope of accreditation (ACCREDITATION: (A2LA 6524-01))

Test Wall Construction:

The back-up test wall section (air / water barrier) was constructed in an Element test frame as per the detail drawing below in accordance with AAMA 509-22, Section 5.0:

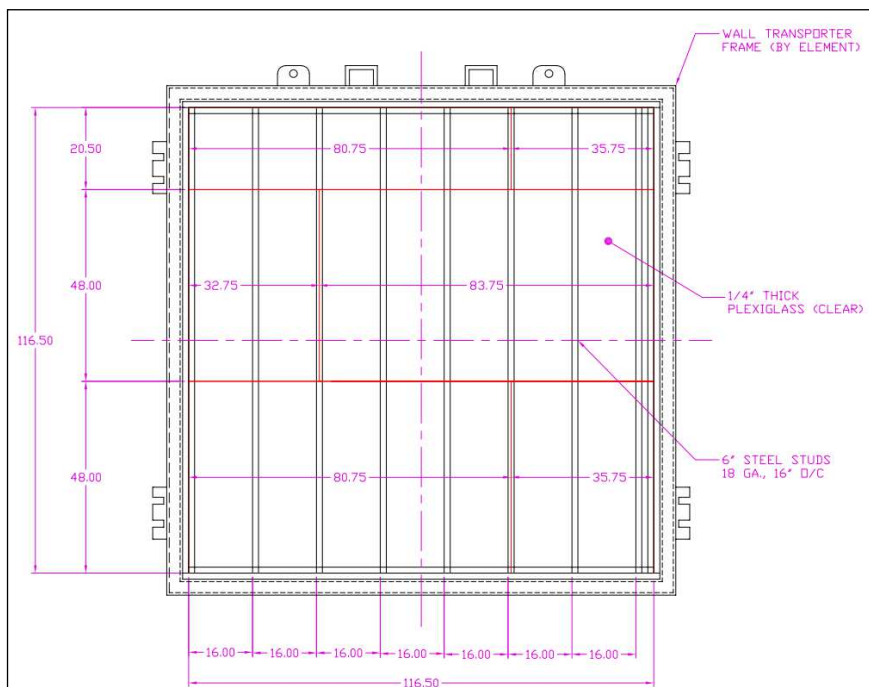


Figure 1 – Back-up Test Wall Framing Construction (dimensions in inches)

Air Leakage Testing

Upon completion of the back-up wall, the Plexiglas joints and screw-heads were sealed to ensure the assembly was air-tight. After the air leakage validation for tightness was completed, as prescribed by AAMA 509-22, Section 6.4, a series of 3 mm (*1/8 in*) diameter holes were introduced equally spaced in each quadrant in order for the air/water barrier to have an air leakage rate of 0.6 L/s·m² (*0.12 cfm/ft²*).

The application of the cladding system on the test back-up wall was performed by Carter Architectural Panels, Inc. authorized personnel on August 26, 2026. The perimeter of the specimen was sealed to the fixture that the wall section was constructed into. No drainage/vent holes or critical areas of the specimen that would be affected by water infiltration / drainage or differential pressure were obstructed.

Using the procedure outlined in AAMA 509-22, Section 6.7, all the joints of the specimen were sealed and an air infiltration test using ASTM E283 at 26 Pa (0.55 psf) was performed to measure the gross air flow through the specimen and chamber. Tape was removed to isolate and measure the gross air flow through the specimen for each subsequent joint of the cladding.

Water Penetration Testing

Upon completion of the air infiltration at reduced static pressure test, the AAMA 509-22, Section 6.8.3, static water penetration test (ASTM E331) at 300 Pa (*6.27 psf*) and 577 Pa (*12.00 psf*) for fifteen (15) minutes each was conducted.

Upon completion of the static water penetration test as outlined in AAMA 509-22, Section 6.8.3, dynamic water penetration test (AAMA 501.1) was performed at 300 Pa (*6.27 psf*) and 577 Pa (*12.00 psf*) for fifteen (15) minutes each was conducted.

Structural Load Testing

Following the completion of the dynamic water penetration test, the rainscreen system was then tested for structural loading in accordance with ASTM E330/E330M-14(2021) as per client's request. The system was subjected to positive and negative pressure at increments of 480 Pa (10 psf), starting at 960 Pa (20 psf) and was loaded until failure. These pressures were held for ten seconds, and were released for one minute, with deflection readings recorded once every second.

3.0 TEST EQUIPMENT

Table 1 - Element Test Equipment		
Equipment Description:	Asset No. (MII):	Calibration Due Date:
Manometer	P00205	2026-12-23
Manometer	B12064	2026-11-14
Pressure Transducer	B14767	2026-10-30
Portable Air-Water Test Kit	P00225	2027-01-28
Traceable Temp/RH/Barometer	P00233	2027-05-27
Humidity & Temp Transmitter	B14138	2026-11-25
Spray Rack	B16728	2026-12-08
String Gauge 1	B08611	2027-08-04
String Gauge 2	B16656	2027-08-04
String Gauge 3	B08606	2027-08-04

4.0 RESULTS

Table 2 – Gross Air Flow Measurement and Calculated Air Leakage Rates Across the Cladding Elements at Reduced Static Test Pressure of 26 Pa (0.55 psf)					
Data	Sill	Horizontal	Vertical	Sum L/s (cfm)	L/s/m ² (cfm/ft ²)
Gross Air Flow Chamber and Specimen	N/A	N/A	N/A	2.9 (6.10)	N/A
Cladding Tare	N/A	N/A	N/A	1.2 (2.52)	N/A
Gross Air Flow Each Joint L/s (cfm)	2.5 (5.26)	2.1 (4.42)	2.3 (4.84)	N/A	N/A
Net Air Flow Each Joint L/s (cfm)	1.3 (2.73)	0.9 (1.89)	1.1 (2.31)	3.3 (6.94)	0.37 (0.073)⁽¹⁾
Net Air Flow Per Unit Length L/s/m (cfm/ft)	0.44 (0.284)	0.30 (0.194)	0.37 (0.239)	N/A	N/A

(1) Use the results for classification purposes. This number is used to determine the "V-axis". (Appendix B)

Table 3 – Water Collected Off/Through the AWB							
Data	300 Pa (6.24 psf) static	577 Pa (12.00 psf) static	300 Pa (6.24 psf) dynamic	577 Pa (12.00 psf) dynamic	TTL l (oz)	Sum l/m ² (oz/ft ²)	Average l/m ² (oz/ft ²)
Liquid l (oz)	0.18 (5.93)	0.72 (24.43)	0.03 (0.89)	0.17 (5.59)	1.09 (36.84)	N/A	N/A
l/m ² (oz/ft ²)	0.020 (0.063)	0.082 (0.258)	0.003 (0.009)	0.019 (0.059)	N/A	0.124 (0.389)	0.031 (0.097)⁽¹⁾

(1) Use the result for classification purposes. This number is used to determine the "W-axis". (Appendix B)

Outdoor conditions during dynamic water test (September 14, 2026):

Temperature: 24 °C (75.2 °F)
Relative Humidity: 56 % R.H.
Barometric Pressure: 99.70 kPa

Table 4 – Structural Results, Positive Wind Load Direction ASTM E330/E330M-14(2021) – SI & IP Units Element Specimen No.: 26-06-B0105-2 (Test Date: September 15, 2026)				
Test Pressure	Gauge No. and Deflection			
	1	2	3	Net Deflection
5,760 Pa ⁽¹⁾ (120 psf)	7.5 mm (0.295 inches)	22.8 mm (0.898 inches)	7.1 mm (0.280 inches)	15.5 mm (0.610 inches)
Residual Deflection	0.2 mm (0.008 inches)	0.3 mm (0.012 inches)	0.2 mm (0.008 inches)	0.1 mm (0.004 inches)

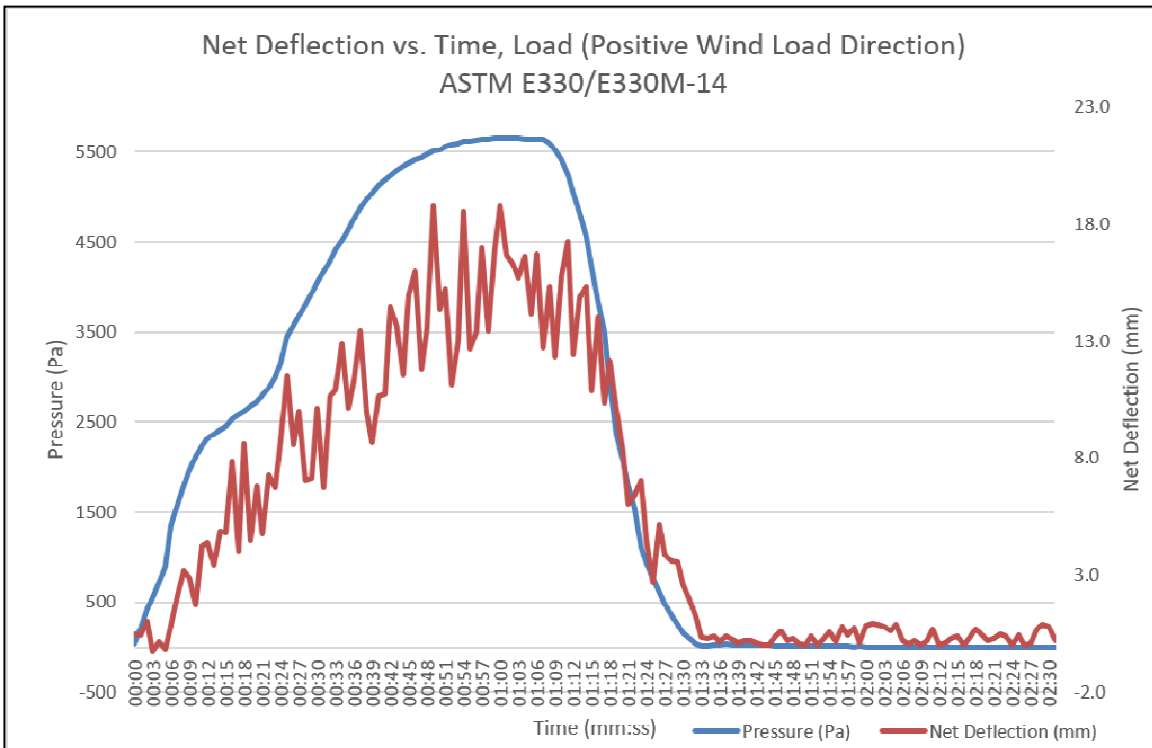


Figure 3 – Net Deflection vs Time, Positive Wind Direction, SI Units

Table 5 – Structural Results, Negative Wind Load Direction ASTM E330/E330M-14(2021) – SI & IP Units Element Specimen No.: 26-06-B0105-2 (Test Date: September 15, 2026)				
Test Pressure	Gauge No. and Deflection			
	1	2	3	Net Deflection
5,760 Pa ⁽¹⁾ (120 psf)	10.2 mm (0.402 inches)	25.2 mm (0.992 inches)	9.6 mm (0.378 inches)	15.3 mm (0.602 inches)
Residual Deflection	2.7 mm (0.106 inches)	4.8 mm (0.189 inches)	2.6 mm (0.102 inches)	2.2 mm (0.087 inches)

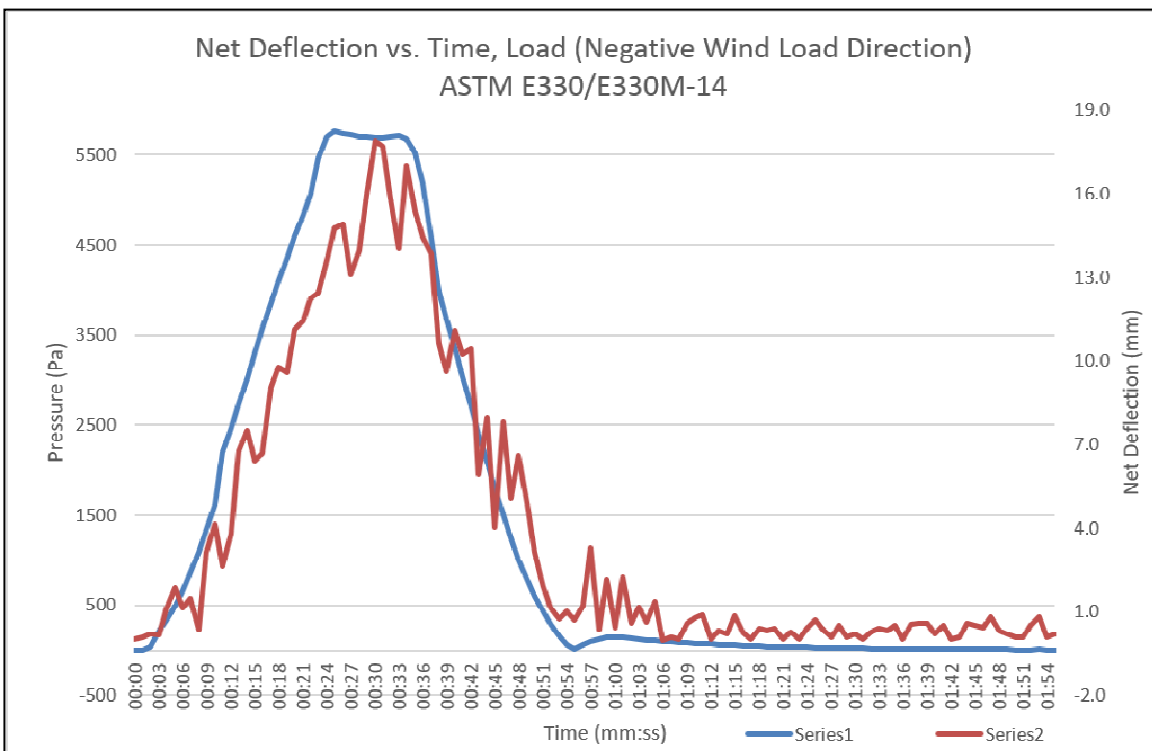


Figure 4 – Net Deflection vs Time, Negative Wind Direction, SI Units

Positive Loading Net Deflection Design Load: (+5760 Pa) = 15.5 mm
Negative Loading Net Deflection Design Load (-5760 Pa) = 15.3 mm

Positive Loading Net Deflection Design Load: (+120 psf) = 0.610 inches
Negative Loading Net Deflection Design Load (-120 psf) = 0.602 inches

Note: The default deflection limit of the support framing was restricted to L/180 referencing AAMA 509, Section 5.8.1.

⁽¹⁾ 5,760 Pa = 97.5 m/s or 351 km/h (218 mph).

Calculation based on the Enswiler formula, where $P = 0.613 \cdot V^2$, V is m/s & P is N/m²

Note: Deflection measurement (gauge) locations employed during structural loading are shown below.

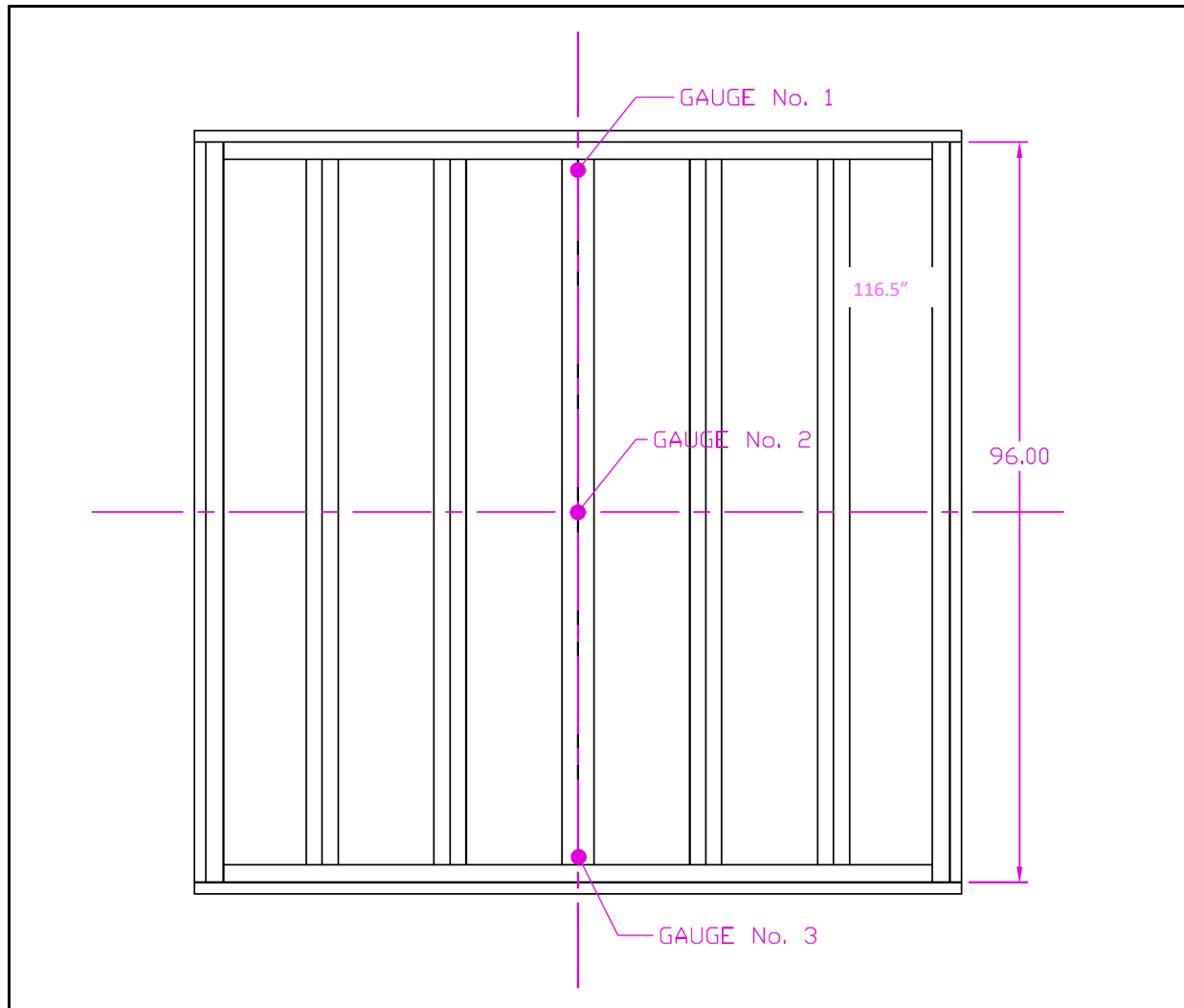


Figure 5 – Deflection Gauge Locations

Table No. 6 - Summarized Structural Results ASTM E330/E330M-14(2021) – SI & IP Units Element Specimen No.: 26-06-B0105-2 (Test Date: September 15, 2026)	
Test Pressure Sustained/Achieved	Comments
+ 5,760 Pa ⁽¹⁾ (120 psf)	Cladding System did not disengage from wall assembly. Structural framing members remained intact.
- 5,760 Pa ⁽¹⁾ (120 psf)	Cladding System did not disengage from wall assembly. Structural framing members remained intact.

⁽¹⁾ 5,760 Pa = 97.5 m/s or 351 km/h (218 mph).

Load Calculation based on the Ensewiler formula, where $P = 0.613 \cdot V^2$, V is m/s & P is N/m²

*Note: Design loads are building and location specific. Please refer to architect or design engineer for specific building load requirements.

Structural Testing to Failure:

At the request of Carter Architectural Panels Inc., structural testing to failure in the negative wind load direction was conducted. The testing outlined in this section was not for a project specific condition, and a target design pressure was not specified. Structural testing of the rainscreen system was conducted in general accordance with ASTM E330-14(2021) and negative differential pressure was gradually applied to the exterior face of the wall assembly until failure.

Table 7 – Client Specific (Requested) Testing Test to Failure in the Negative Wind Load Direction ASTM E330-14(21) Element Specimen Number: 26-06-B0105-2 (Test Date: September 15, 2026))	
Maximum Pressure Achieved	Comments
6,045 Pa ⁽³⁾	Cladding System did not disengage from wall assembly. However, the vertical supporting steel studs buckled in the center.
126.3 psf	

⁽³⁾ 6,045 Pa = 99.7 m/s or 359 km/h (223 mph).

Load Calculation based on the Enswiler formula, where $P = 0.613 \cdot V^2$, V is m/s & P is N/m²

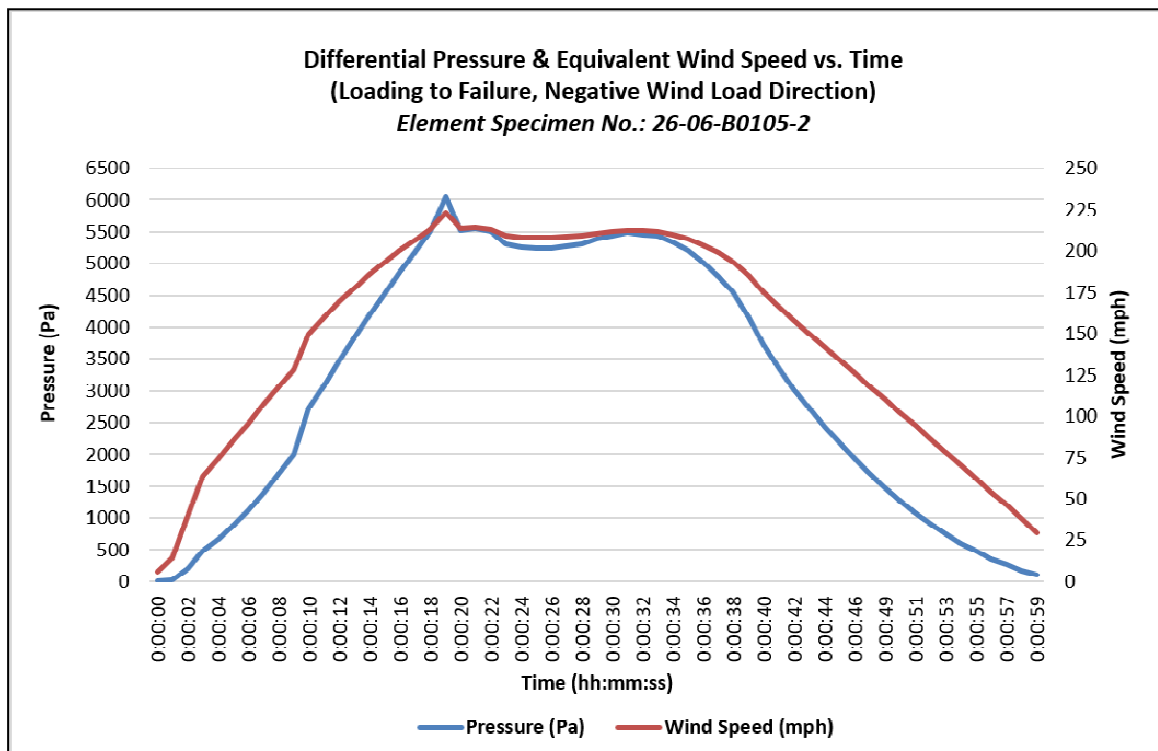


Figure 9 – Differential Pressure & Equivalent Wind Speed vs. Time (during testing to failure)

5.0 SYSTEM MODIFICATIONS

No modifications were made to the system as shown respectively in Appendix A.

6.0 CONCLUSION

Carter Architectural Panels, Inc.'s rainscreen system identified as "CORE CONNECT Rainscreen Panel System" was subjected to air infiltration, water penetration tests in accordance with AAMA 509-22 and additional structural testing in accordance with ASTM E330/E330M-14(2021). The system achieved a total net air flow of 0.37 L/s/m² (0.073 cfm/ft²) and an average of 0.031 l/m² (0.097 oz/ft²). This resulted in a V1/W1 Classification as per the chart in Appendix B.

7.0 REPORT REVISION HISTORY

Report No:

26-06-B00105-2

Date:

September 22, 2026

Description of Revisions:

Original report

Tested by:



Emmanuel Siapno
Senior Testing Technician
Building Science Division
P: 289-888-4880

Reviewed by:



Scott Hallam, B.Eng
Building Systems & Components Manager
Building Science Division
P: 416-577-3668

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APPENDIX A

Specimen Bill of Materials and Detailed Drawing

(5 Pages)



**4MM etalbond® with CORE Connect Attachment System ASTM and AAMA Test Wall
B.O.M**

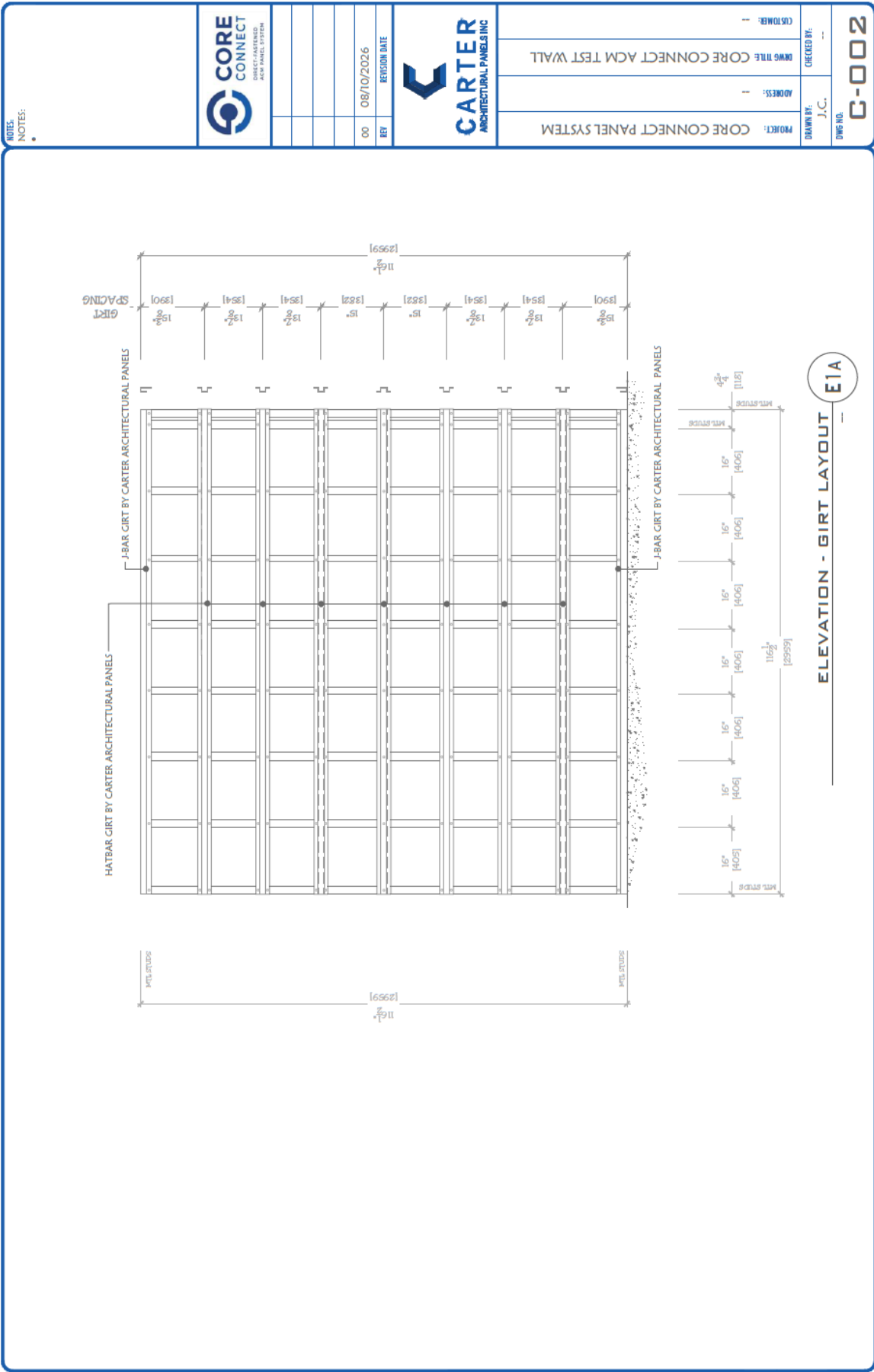
Sub Framing for Base Wall:

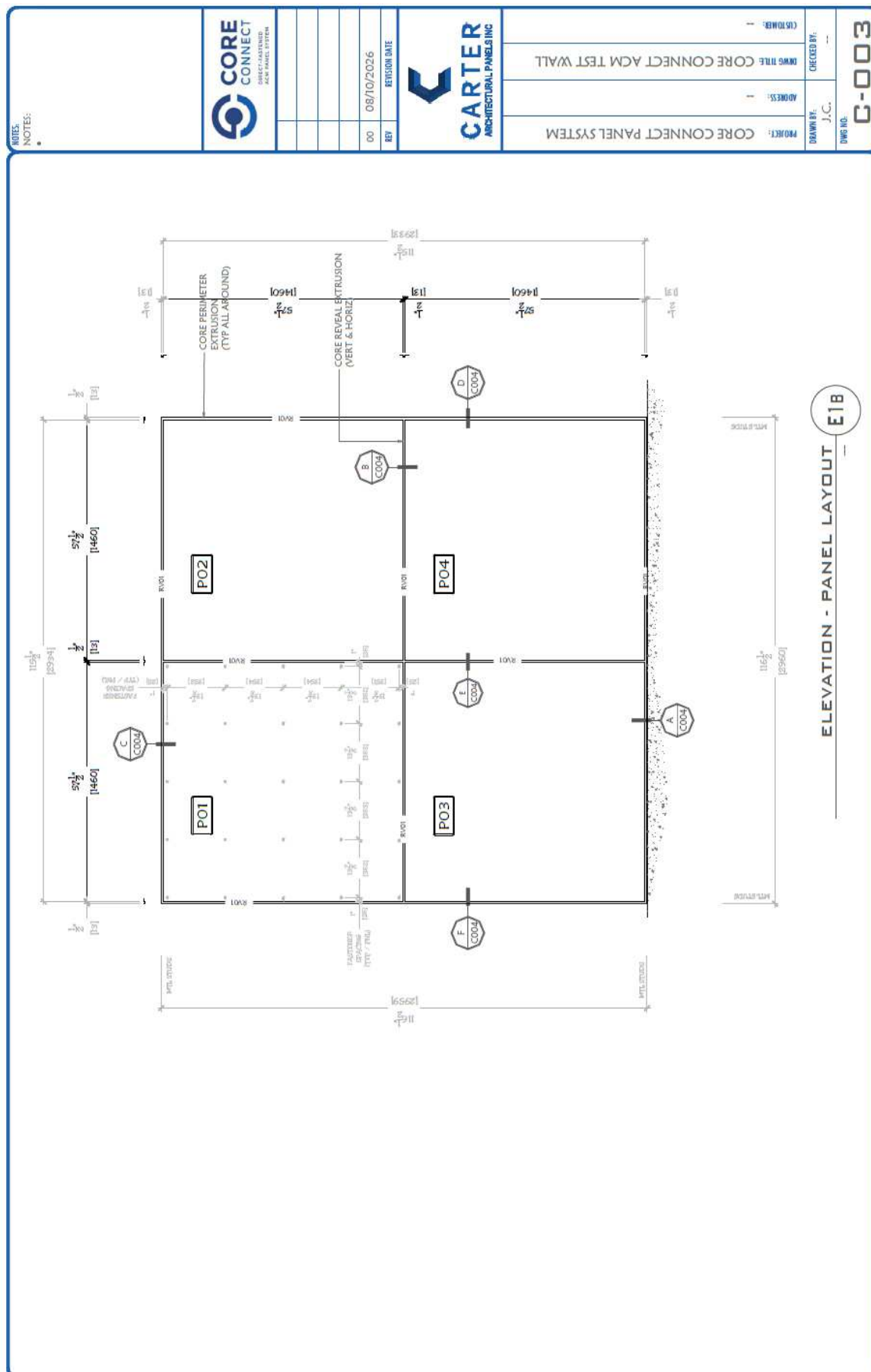
2 Pcs .100" Carter Shadow Extruded 6063 T5 Black Aluminum 1" J- Bars @ 116.5"
7 Pcs .100" Carter Shadow Extruded 6063 T5 Black Aluminum 1" Hat- Bars @ 116.5"
#12 x 1" HWH, SS Screws 16" O.C

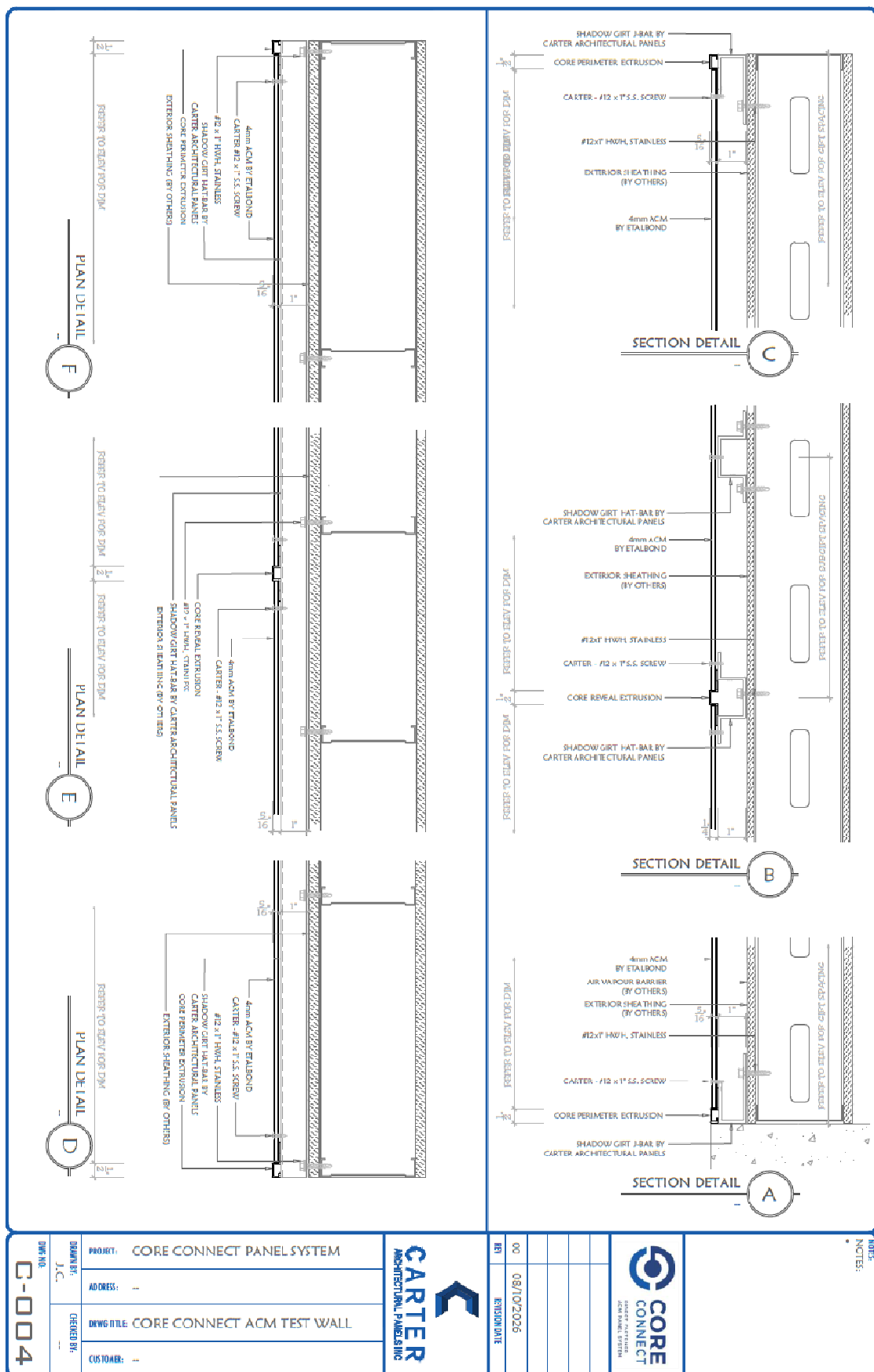
Panel Assemblies:

4 Pcs etalbond® 4MM FR Core ACM 57.5" x 57.5"
25 Pcs Carter- #12 x 1" SS @ 13.875" O.C (Per Panel x4)
4 Pcs CORE Perimeter Extrusion @ 116.5"
2 Pcs CORE Reveal Extrusion @ 116.5"

[illegible]







APPENDIX B

Classification System for D&BV Wall Cladding Systems

(2 Pages)

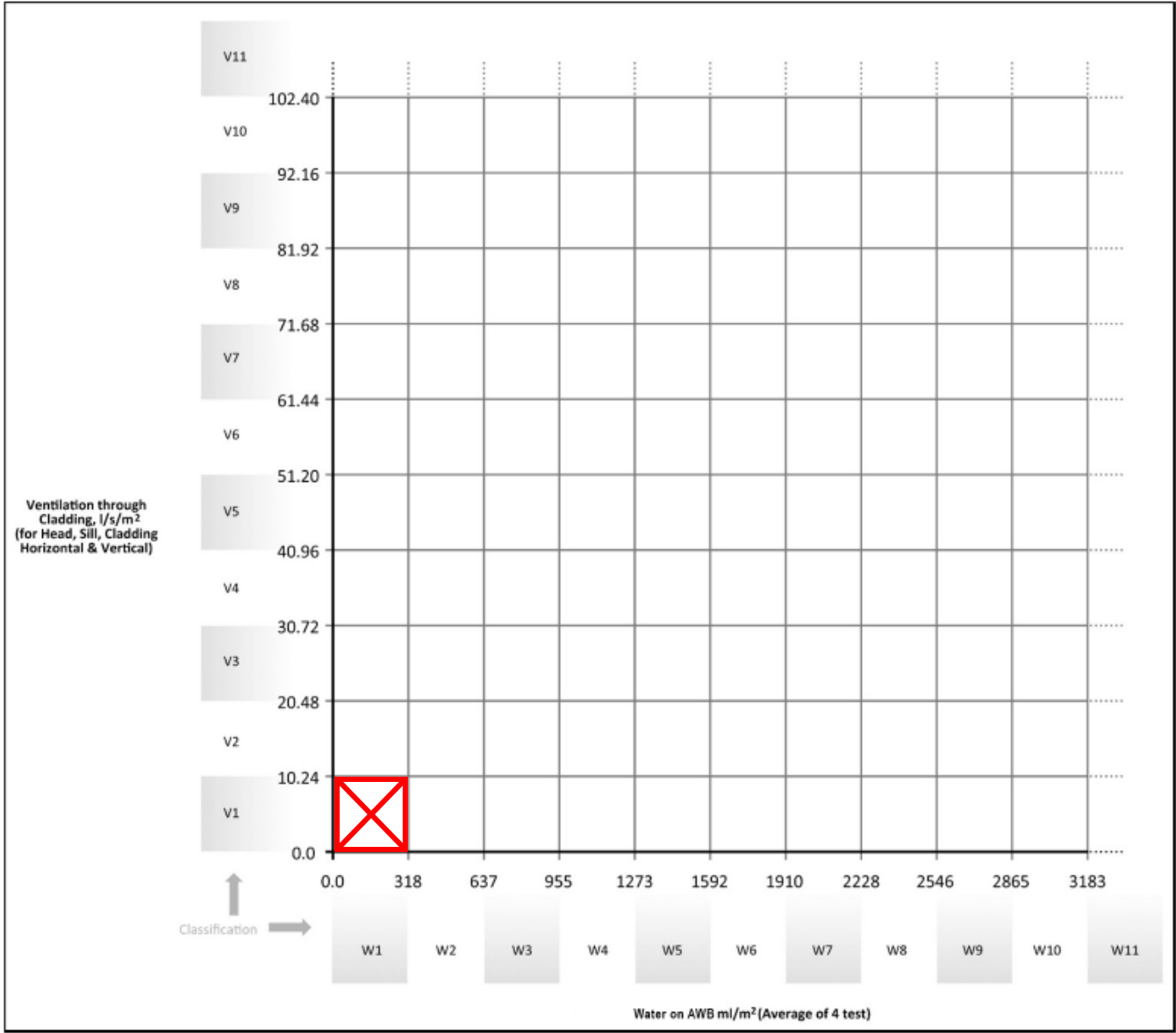


Figure B1 – Classification System for D&BV Wall Cladding Systems (SI Units)

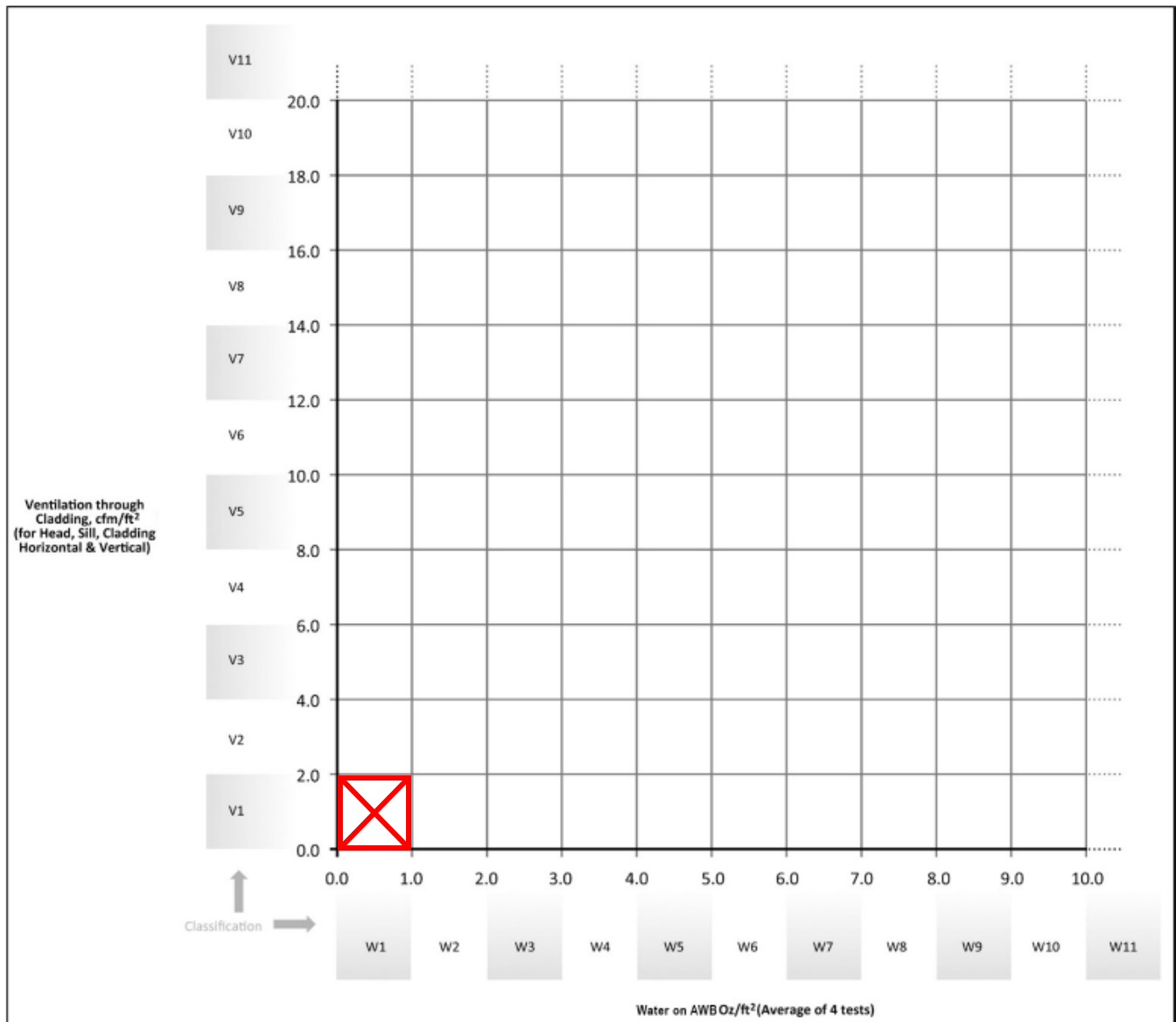


Figure B2 – Classification System for D&BV Wall Cladding Systems (IP Units)

APPENDIX C

Photographs of Rain Screen System Post Structural

(1 Page)



Figure C1 – Test Specimen Post Structural (Exterior View)



Figure C2 – Test Specimen Post Structural (Interior View)