

GRAND VIEW DISTRIBUTION CORP. TEST REPORT

TEST REPORT ISSUED TO

Grand View Distribution Corp.
570-999 West Broadway
Vancouver, BC V5Z 1K5
Canada

SPECIFICATION

AAMA 508-14
ASTM E330/E330M-14

PRODUCT SERIES & TYPE

Grand View Rainscreen Pressure Equalized Series 35 ACM and Aluminum Metal Panel System

REPORT NUMBER

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TEST REPORT FOR GRAND VIEW DISTRIBUTION CORP

Report No.: 103406451COQ-001Arev1


Date: 20-June-2019


CONCLUSION

The Grand View Rainscreen Pressure Equalized Series 35 ACM and Aluminum Metal Panel System, submitted by Grand View Distribution Corp., had met the performance requirements as noted in Section 7 of this report when tested in accordance with AAMA 508 and ASTM E330.

Note – This report is not intended as a comprehensive evaluation of the system regarding performance and application to specific buildings.

For INTERTEK B&C:

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SECTION 2

OBJECTIVE

Intertek Testing Services NA Ltd. (Intertek) has conducted testing for **Grand View Distribution Corp.** (Grand View) on the Grand View Rainscreen Pressure Equalized Series 35 ACM and Aluminum Metal Panel System. Testing was conducted in accordance with following standard / specification:

- AAMA 508-14, *Voluntary Method and Specification for Pressure Equalized Rain Screen Wall Cladding Systems* (AAMA 508)
- ASTM E330/E330M-14 “*Standard Test Method for Structural Performance of Exterior Windows, Skylights, Doors and Curtain Walls by Uniform Static Air Pressure Difference*” (ASTM E330)

This evaluation was started on May 01, 2018 and completed on May 02, 2018.

SECTION 3

SAMPLE SELECTION

The client submitted the samples to the Evaluation Center on April 20, 2018. Samples were not independently selected for testing. The system/specimen was provided by Grand View Distribution Corp. located at 570-999 West Broadway, Vancouver, BC, Canada, V5Z 1K5.

The specimen was installed and as provided by the client. Intertek has not verified the composition, manufacturing techniques, or quality assurance procedures, and accepts no responsibility for any inaccuracies therein.

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SECTION 4

SAMPLE ASSEMBLY AND DESCRIPTION

Series/Model: Grand View Rainscreen Pressure Equalized Series 35 ACM and Aluminum Metal Panel System

Product Type: Rain Screen Wall Panel System

Overall Size: 98-1/4" wide by 98-1/4" high

Configuration: 4'x 4' panels with vertical and horizontal seams

Rain Screen Construction: The test specimen consisted of 2x 4' x 4' - 4 mm Aluminum Composite Panels (ACM) and 2x 4' x 4' - 3 mm Aluminum Plate Panels. The panels on the right side of the wall when viewed from the exterior were ACM panels, the panels on the left were Aluminum plate. Each panel has a square stock of aluminum oriented vertically, approximately 22 mm (7/8") x 22 mm (7/8") x 1.6 mm (1/16") adhered to the back side of each panel with 3M tape and Dow 795 Adhesive. The system was installed with a 1mm thick aluminum base flashing and a length of aluminum "J-track" was installed to the bottom of the wall with the use of #14 x 1-1/2" stainless steel HWH screws in 6x locations each going in to a stud. Each panel clip is secured in to a stud with the use of a #14 x 1-1/2" stainless steel HWH screw. The bottom right panel has 2x clips used on both sides and the top of the panel. The clips on the sides are centered approximately 482 mm (19") from the bottom of the panel and 178 mm (7") from the top of the panel. The clips along the top are centered approximately 381 mm (15") from either side. A length of 76 mm (3") wide x 3 mm (0.12") thick aluminum flat stock "AL Joint Spline" of various lengths was inserted into the tongue of the panels where one panel meets another instead of clips. The bottom left panel has 2x clips used along the top and 2x along the exposed side with spacing the same as the bottom right panel except where necessary to penetrate into a stud. The top left panel had 6x clips used, in the same positions as the bottom right except where necessary to penetrate into a stud. The top right panel had 2x clips used along the top and 2x along the exposed side with spacing the same as the bottom left panel except where necessary to penetrate into a stud.

Test Set-Up: A 99" wide by 99" high steel stud wall was constructed using 16 ga. 2x6 steel studs placed at 16" on center. The wall was then sheathed with 1/2" thick clear poly carbonate sheet. The wall panel system was then installed onto the clear polycarbonate in a manner consistent with normal construction procedures for the system. The exterior of the test unit was sealed to the wood buck with silicone.

A second wall was constructed for Structural Performance testing only. This 98-1/4" wide by 98-1/4" high wall was constructed using nominal 2x6 #2 or better SPF with the studs placed at 16-1/8" on center. The wall was then sheathed with 5/8" SPF sheathing. The wall panel system was then installed in a manner consistent with normal construction procedures for the system. The exterior of the test unit was sealed to the wood buck with silicone

Drawings supplied by Grand View Distribution Corp. are included in Appendix A.

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SECTION 5

TESTING AND EVALUATION METHODS

AIR LEAKAGE

The Air Leakage tests (Air Infiltration) were conducted in accordance with ASTM E283. The tests were performed using a test pressure of 75 Pa (1.57 psf). As per AAMA 508, air leakage was induced in the system to provide a leakage rate of $0.6 \text{ L/s}\cdot\text{m}^2$.

PRESSURE EQUALIZATION

The Pressure Equalization test was tested in accordance with ASTM E1233 and evaluated to AAMA 508. The test was performed at a specified pressure differential of 240 Pa (5 psf) to 1200 Pa (25 psf) for a minimum of 100 cycles.

WATER PENETRATION RESISTANCE – STATIC

The Static Water Penetration test was tested in accordance with ASTM E331 and evaluated to Section 6.1 of AAMA 508. This test was performed at the specified pressure differential of 730 Pa (15 psf) and a water spray rate of at least 204 L/m^2 per hour (5.0 U.S. gal/ft² per hour). The test was run for fifteen minutes, during which the pressure and water spray were continuously applied.

WATER PENETRATION RESISTANCE – DYNAMIC

The Dynamic Water Penetration test was tested in accordance with AAMA 501.1 and evaluated to Section 6.1 of AAMA 508. The test was performed at the specified pressure differential of 720 Pa (15 psf), or 120 kph (75 mph) wind speed equivalent, generated using a Wind Generator, and a water spray rate of at least 204 L/m^2 per hour (5.0 U.S. gal/ft² per hour). This test consisted of fifteen minutes, during which the wind and water spray were continuously applied.

STRUCTURAL PERFORMANCE

The Structural Performance testing was conducted in accordance with ASTM E330/E330M-14 *“Standard Test Method for Structural Performance of Exterior Windows, Skylights, Doors and Curtain Walls by Uniform Static Air Pressure Difference”* (ASTM E330), Procedure A. The test was performed in the negative wind load direction only. After the 10 second preload (50% of the first test load), followed by 1 minute with the pressure released, the full test load was applied for 10 seconds and then released. The test loads had started at 960 Pa (20 psf) and continued upwards in 240 Pa (5 psf) increments until failure. A grid of 32 mm (1-1/4”) diameter holes were drilled through the plywood sheathing, then polyethylene film was applied over top in order to apply a uniform load across the panel system. In order to ensure the maximum load was transferred to the specimen and that the polyethylene film did not prevent movement or failure of the specimen, the polyethylene film was applied loosely with extra folds of material at each corner and at all offsets and recesses.

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Deflection readings were recorded in order to establish deformation on the two panel systems. 10x gauges were set on the test assembly, 5x on the bottom right ACM panel and 5x on the top left Aluminum Plate panel. Each panel had 3x gauges placed in a vertical line, along the inside edge of the panel, each spaced 25 mm (1") away from the inside edge. The span between the end gauges was 1150 mm (43.5"). The 4th gauge was placed mid-span along the horizontal line along the inside edge. The 5th gauge was placed at the center of the panel. See appendix A for a diagram of deflection gauge locations.

DEVIATION FROM STANDARD METHOD

There were no noted deviations from the test standards used in the evaluation reported herein.

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SECTION 6**TEST EQUIPMENT**

Equipment used during testing is listed as follows:

Test	Equipment	Intertek ID#
Air Leakage, Pressure Equalization, Static Water Penetration, Structural	Fenestration Testing Control Unit	60650
	Water Spray Assembly	60651
		60652
	Micro Mule	63170
	Rain Screen Pressure Box	INT00712
	20" Line Gauge	60673
		64928
		64926
		64923
		64920
Dynamic Water Penetration	Wolf Wind Generator	63339
	Spray Rack Assembly	ITS-1

SECTION 7**RESULTS AND OBSERVATIONS****AIR LEAKAGE**

Air leakage test data is indicated in the following table:

Test Pressure for all samples	75 Pa
Overall Area of each sample	6.23 m ² (67.04 ft ²)
Air Leakage	0.60 L/s*m ² (0.12 cfm/ft ²)

PRESSURE EQUALIZATION

During the Pressure Equalization test cycling at a pressure differential from 240 Pa (5 psf) to 1200 Pa (25 psf) for 100 cycles the systems lag times was below the required 0.08 seconds and the differential between the cavities and cyclic wind pressure did not exceed 50% of the maximum test pressure. Refer to Appendix B for a graph on 1 cycle. The tested specimen **met** the performance requirements for Pressure Equalization of AAMA 508.

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WATER PENETRATION RESISTANCE – STATIC

During the 15-minute test period, using a pressure differential of 730 Pa (15 psf), there was no water leakage observed through the tested sample. The sample **met** the performance requirements for Static Water Penetration of ASTM E331.

WATER PENETRATION RESISTANCE – DYANMIC

During the 15-minute test period, using wind speed 120 kph (75 mph), no water leakage was observed through the tested sample. The sample **met** the performance requirements for Dynamic Water Penetration of AAMA 501.1.

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STRUCTURAL PERFORMANCE

After the test loads were released, the samples were inspected and there was found to be no permanent deformation or structural distress in the assembly. The assembly had **met** the performance requirements of ASTM E330 at the load specified in the table below:

Table 1. ACM Panel Test Results					
	Gauges (mm)				
Load (psf)	1	2	3	4	5
10 -Preload	N/A	N/A	N/A	N/A	N/A
0	0.00	0.00	0.00	0.00	0.00
20	7.42	5.06	2.75	4.43	13.34
0	0.35	0.25	0.20	0.15	0.20
25	9.35	5.96	3.30	5.45	15.49
0	0.65	0.40	0.15	0.65	0.20
30	11.98	7.62	4.27	7.50	18.56
0	0.85	0.50	0.30	0.55	0.55
35	14.00	8.90	5.05	8.79	20.74
0	1.20	0.70	0.50	0.80	0.70
40	16.51	10.56	6.18	10.43	23.51
0	1.45	0.90	0.70	1.25	0.80
45	19.11	12.22	7.07	12.17	25.99
0	2.10	1.10	0.80	1.65	1.20
50	21.75	13.47	7.92	13.71	28.08
0	2.65	1.30	0.90	2.10	1.60
55	24.64	15.27	9.14	15.59	30.58
0	2.95	1.50	1.00	2.50	1.90
60	28.50	17.38	10.18	18.14	33.58
0	4.30	2.00	1.15	3.25	2.20
65	31.21	18.76	11.18	19.93	35.64
0	5.45	2.40	1.45	3.90	2.60
70	34.69	20.82	12.14	21.85	38.48
0	7.25	2.95	1.65	5.10	3.25
75	38.13	22.87	13.59	24.30	40.83
0	8.00	3.70	1.90	5.90	3.80
80	42.30	24.39	13.59	26.26	43.65
0	9.10	3.60	1.05	6.50	3.80
85	47.01	27.17	14.78	29.72	46.50
0	1.90	4.50	1.25	7.70	4.50
90	48.79	28.51	15.53	31.00	48.12
0	11.80	4.90	1.40	8.50	4.95
95	55.48	31.96	17.19	37.12	52.30
0	14.60	6.50	1.80	6.85	6.60
Ultimate Load		95 psf			

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Table 2. Aluminum Plate Panel Test Results					
	Gauges (mm)				
Load (psf)	1	2	3	4	5
10 -Preload	N/A	N/A	N/A	N/A	N/A
0	0.00	0.00	0.00	0.00	0.00
20	1.94	4.96	9.64	11.04	14.28
0	0.10	0.35	0.40	0.15	0.40
25	2.32	6.04	12.27	13.50	17.06
0	0.15	0.55	0.60	0.45	0.50
30	3.50	7.83	15.33	16.61	20.24
0	0.25	0.70	0.85	0.60	0.65
35	4.06	8.95	18.15	18.92	22.37
0	0.30	0.90	1.30	1.05	0.95
40	5.10	10.73	21.16	21.11	25.05
0	0.35	1.20	1.85	1.25	1.30
45	6.10	12.62	24.25	23.56	28.07
0	0.50	1.50	2.60	1.75	1.50
50	6.85	14.20	27.21	25.41	30.15
0	0.60	1.85	3.30	2.30	1.80
55	8.11	16.23	30.46	27.65	32.61
0	0.40	2.10	4.10	2.80	2.10
60	9.53	18.78	34.84	30.78	35.77
0	0.50	2.80	5.90	3.80	2.80
65	10.60	20.61	38.10	32.86	37.86
0	0.60	3.40	7.20	4.60	3.20
70	11.55	22.99	42.09	35.28	40.83
0	0.55	4.30	9.20	5.75	3.80
75	13.28	25.26	45.89	38.22	43.55
0	0.80	5.10	10.90	7.10	4.50
80	13.28	27.13	50.91	40.29	45.77
0	0.70	5.20	12.90	7.50	4.10
85	16.11	31.16	56.00	43.39	49.18
0	0.40	6.50	15.35	8.70	5.00
90	17.04	32.40	58.45	45.00	50.73
0	0.60	7.20	16.60	9.45	5.50
95	20.85	38.39	66.26	49.35	56.00
0	1.70	9.70	21.00	12.00	7.30
Ultimate Load		95 psf			

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SECTION 8 CONCLUSION

The Grand View Rainscreen Pressure Equalized Series 35 ACM and Aluminum Metal Panel System, submitted by Grand View Distribution Corp., had met the performance requirements as noted in Section 7 of this report when tested in accordance with AAMA 508 and ASTM E330.

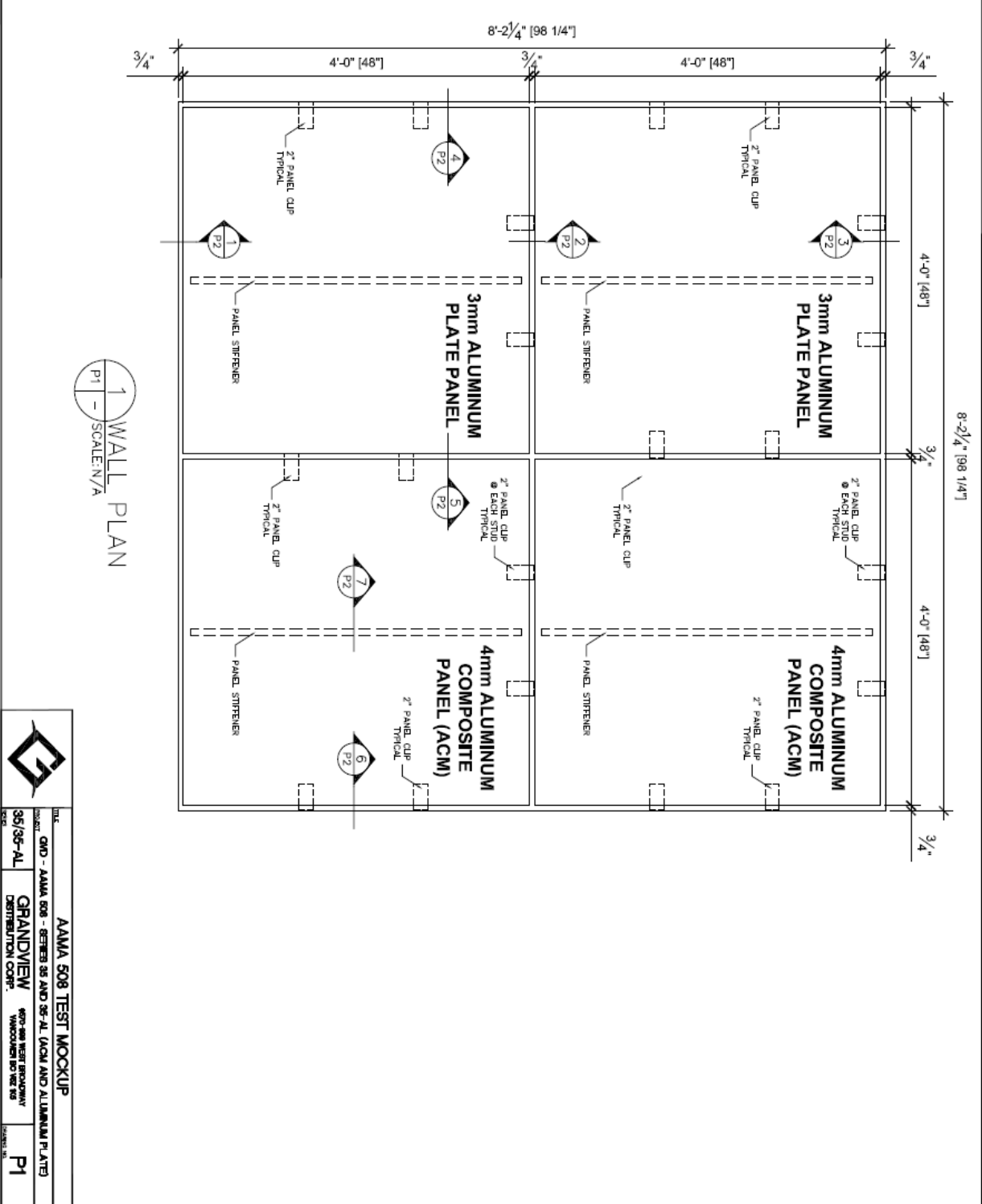
Note – This report is not intended as a comprehensive evaluation of the system regarding performance and application to specific buildings.

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SECTION 9

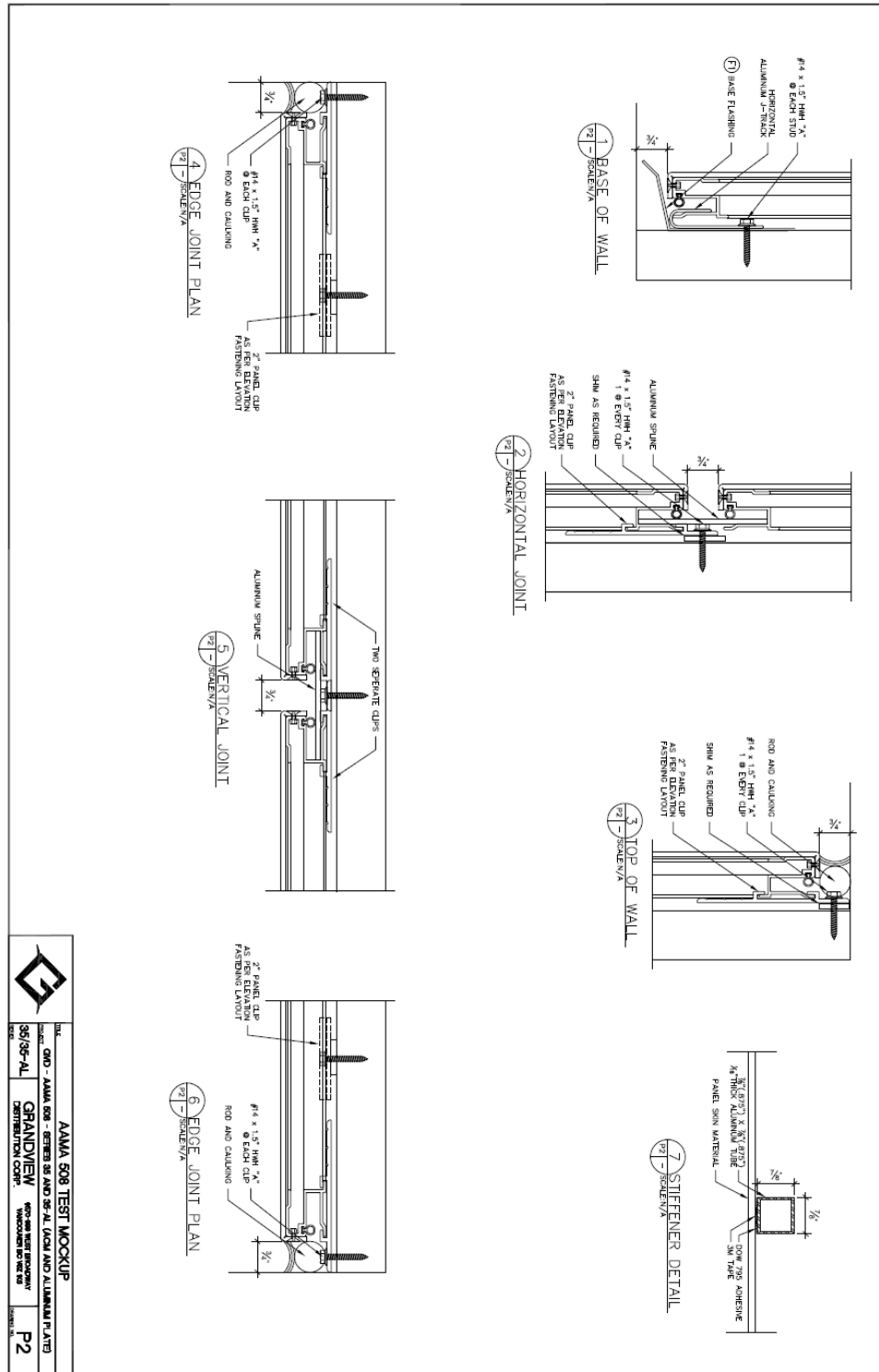
APPENDIX A: DRAWINGS

(3 Pages)

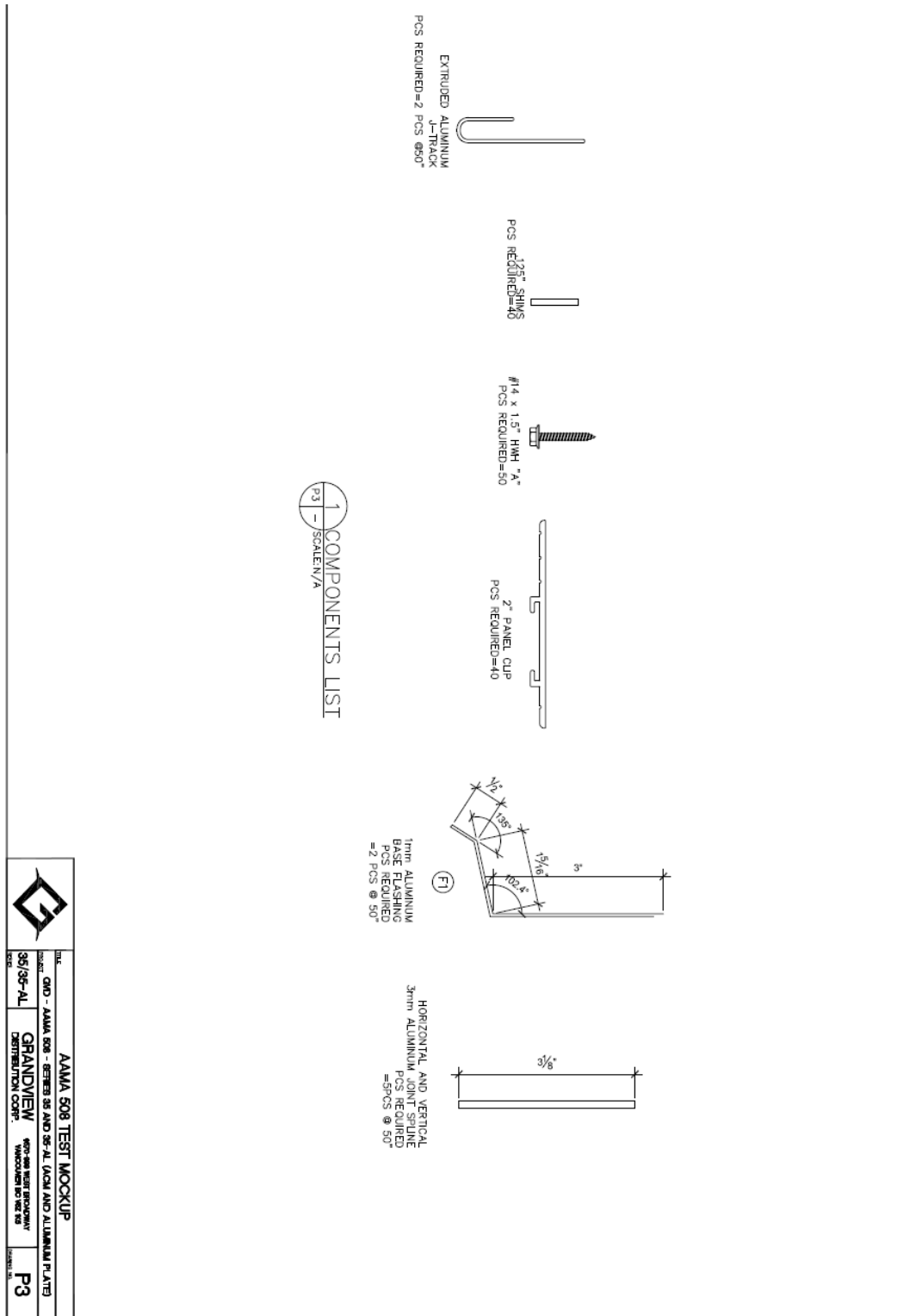


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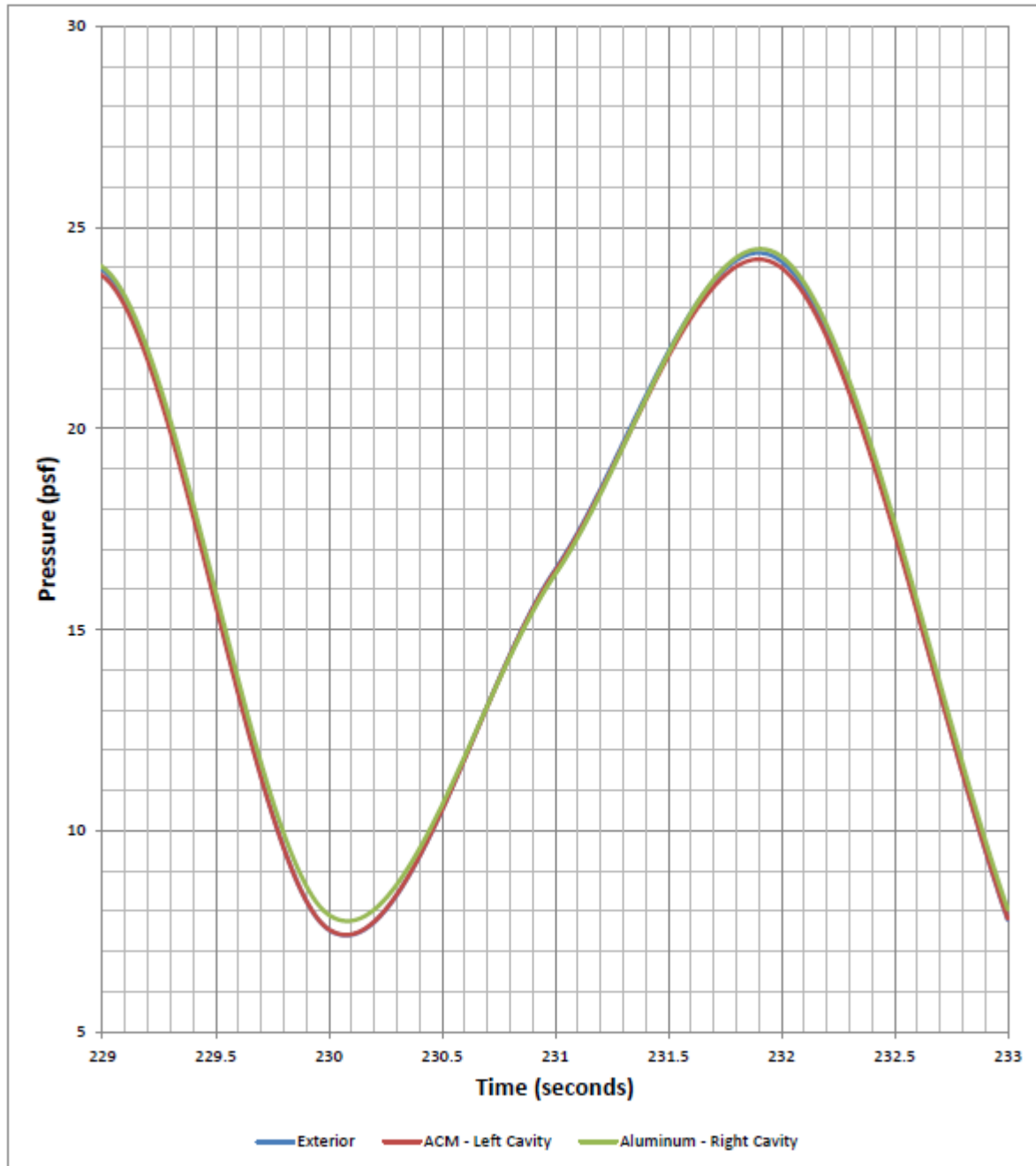
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SECTION 10

APPENDIX B: PRESSURE EQUALIZATION GRAPH

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SECTION 11

**APPENDIX B: PHOTOGRAPHS
(5 Pages)**

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Structural Performance, Test Setup



Structural Performance, Gauge locations

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Air Leakage and Pressure Equalization - Test Setup

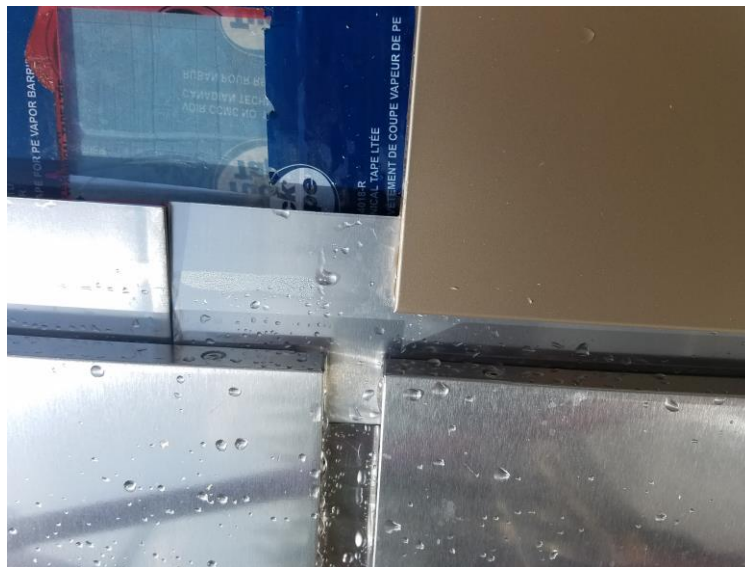


Static Water Penetration - Test Setup

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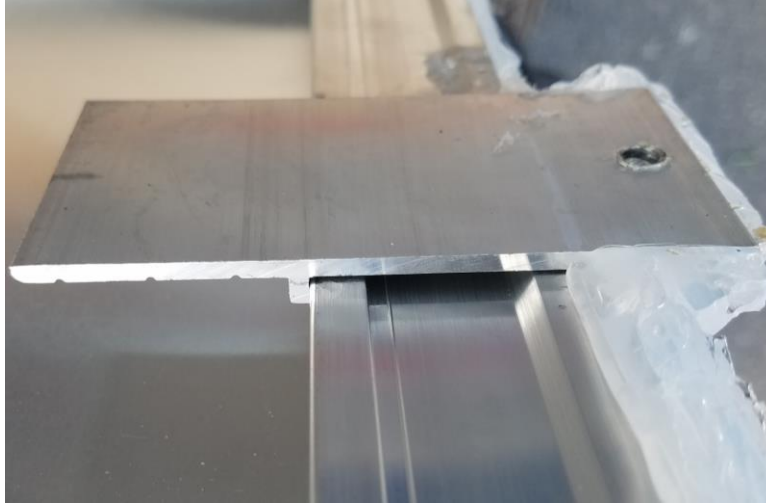


Dynamic Water Penetration – Test Setup



Panel Intersection with Joint Spline

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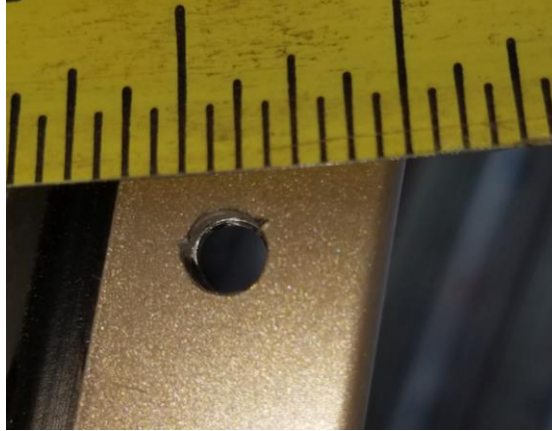


Panel Clip



Panel Stiffener

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Weep Hole in Bottom of ACM Panel



Rivets and gaskets on panel

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SECTION 12

APPENDIX C: REVISION TABLE

(1 Page)

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Revision Table				
Date	Section	Description	Technician	Reviewer
09-May-2018	---	Original Issue Date	---	---
20-June-2019	All	Corrected "Series 32" to "Series 35"	