

GRANDVIEW TEST REPORT

SCOPE OF WORK CAN/ULC S134, STANDARD METHOD OF FIRE TESTS OF EXTERIOR WALL ASSEMBLIES

REPORT NUMBER G104543835SAT-001 R0

TEST DATE(S) 08/05/21

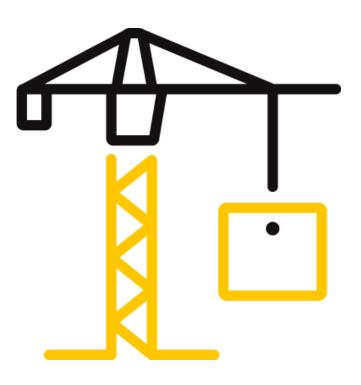
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 08/19/21
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DOCUMENT CONTROL NUMBER GFT-OP-10c (09/29/20) © 2017 INTERTEK





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Report No.: G1045438355AT-001 R0 Date: 08/19/21

REPORT ISSUED TO

GRANDVIEW #570-999 West Broadway Vancouver, BC V5Z 1K5 Canada

SECTION 1

SCOPE

Intertek Testing Services NA, Inc. dba Intertek Building & Construction (B&C) was contracted by Grandview EAS Building Systems Corp., #570-999 West Broadway, Vancouver, BC V5Z 1K5, to perform testing in accordance with CAN/ULC-S134, *Standard Method of Fire Test of Exterior Wall Assemblies*, on their Aluminum composite panel system. Results obtained are tested values and were secured by using the designated test method(s). Testing was conducted at Intertek Testing Services test facility in Elmendorf, Texas.

Unless differently required, Intertek reports apply the "Simple Acceptance" rule also called "Shared Risk approach," of ILAC-G8:09/2019, Guidelines on Decision Rules and Statements of Conformity.

Intertek B&C will service this report for the entire test record retention period. The test record retention period ends four years after the test date. Test records, such as detailed drawings, datasheets, representative samples of test specimens (where required by Certification or Accreditation bodies), or other pertinent project documentation, will be retained for the entire test record retention period.

For INTERTEK B&C	:		
COMPLETED BY:	Emmanuel Ogoe	REVIEWED BY:	Mike Dey
	Project Engineer –		
TITLE:	Building and Construction	TITLE:	Senior Project Engineer
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SECTION 2

SUMMARY OF TEST RESULTS

The assembly described and tested in this report **met** the Conditions of Acceptance of **CAN/ULC-S134**, **Standard Method of Fire Tests of Exterior Wall Assemblies**, 2nd **Edition**, **dated August 2013** (**R2018**). Construction of the full assembly is summarized in Section 8 of this test report.

SECTION 3

TEST METHOD(S)

The specimen was evaluated in accordance with the following:

CAN/ULC-S134-2013, Standard Method of Fire Test of Exterior Wall Assemblies; 2nd Edition, dated August 2013 (Reaffirmed 2018)

SECTION 4

MATERIAL SOURCE/INSTALLATION

Test samples were provided by the client. The results outlined in this report apply to the sample as received.

The test samples (sample ID SAT2107071727-001 & SAT2107071727-002) were received by the test facility on 07/7/21.

SECTION 5

EQUIPMENT

ASSET #	DESCRIPTION	MODEL	CAL DUE DATE
170199540	Stopwatch	Fisherbrand	02/24/22
HB9002195	DAQ Unit	Yokogawa	02/05/22
10340423	Thermo/Hygrometer	Omega	09/02/21
17331	Anemometer	Adafruit	08/24/21
17332	Anemometer	Adafruit	08/24/21
17334	Anemometer	Adafruit	08/24/21
189854	Radiometer	Medtherm	03/02/22
215262	Radiometer	Medtherm	10/30/21



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215263	Radiometer	Medtherm	03/02/22
2642089	Gas Flow Transducer	Rosemount	10/06/21
461564	E-Type TC	Omega	10/06/21
1217181017	Gas Pressure Transducer	Omega	10/06/21

SECTION 6

LIST OF OFFICIAL OBSERVERS

NAME	COMPANY
Adrian Law	Grandview (Remote witness Via Microsoft Teams)
Cherie Ho	Grandview (Remote witness Via Microsoft Teams)
Joseph DeRose	Intertek B&C (Remote witness Via Microsoft Teams)
Paul Tran	Intertek B&C (Remote witness Via Microsoft Teams)
Andres Olmos	Intertek B&C
Adriana Machuca	Intertek B&C
Emmanuel Ogoe	Intertek B&C

SECTION 7

TEST PROCEDURE

Testing was performed on 08/05/2021 in accordance with the CAN/ULC-S134 test method. Ambient conditions were 25.1°C and 90.3% relative humidity. Anemometers were used to verify ambient air velocity did not exceed 2 m/s as specified in the test method. Video recording, digital photographs, visual observations, and data collection were performed prior, during, and after testing was completed. All observations are recorded in the table located in Section 9.

In accordance with CAN/ULC-S134, once ambient conditions are met, the pilot burners are lit. The test then starts with the ignition of the burners. The burners proceed, controlled as specified in the test method, with a 5 min growth period, followed by a 15 min steady state period, followed by a 5 min ramp down period to zero.

Three water cooled heat flow transducers (0-100 kW/m²) were installed through the test specimen and the front wall of the test chamber 3.5 m above the top of the window opening; one within 0.2 m \pm 0.05 m horizontally of the center line of the opening and one on each side and within 0.5 \pm 0.1 m horizontally from the first. The transducers were installed so that their sensing faces were flush with the outer face of the test specimen. 24 GA (0.51 mm), Type K bare beaded thermocouples were used to monitor temperature of the specimen and were located approximately 89 mm to the right of the vertical center line and above the opening at 1.5 \pm 0.05 m, 2.5 \pm 0.05 m, 3.5 \pm 0.05 m, 4.5 \pm 0.05 m. At each of these levels, one thermocouple



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was installed on the outermost ridge of the test specimen, and one on the outer face of each representative layer within the specimen and one on the apparatus base wall surface.

The assembly was instrumented with fifteen (15) thermocouples, at the prescribed heights, as follows:

- TCs 1-5: (Layer 1) Flush with exterior ACM panels at 1.5 m, 2.5 m, 3.5 m, 4.5 m, and 5.5 m, respectively.
- TCs 6-10: (Layer 2) On the 2-inch thick mineral wool surface 1.5 m, 2.5 m, 3.5 m, 4.5 m, and 5.5 m, respectively
- TCs 11-15: (Layer 3) On the exterior Henry Blueskin SA water resistive barrier surface at 1.5 m, 2.5 m, 3.5 m, 4.5 m, and 5.5 m, respectively.

SECTION 8

TEST SPECIMEN DESCRIPTION

Exterior Sheathing

The concrete base wall was sheathed with one-layer of 1/2 in. thick type X gypsum sheathing.

Vapor Barrier

A thin coat of Henry Blueskin SA liquid primer was applied onto the sheathing with a roller. One layer of Henry Blueskin SA water resistive barrier (36" wide x 75' rolls) was installed over the primer with the long dimension oriented vertically on the wall and self-adhered into place.

Framing

18 GA galvanized steel, 1-1/2 in. x 2 in. x 1-1/2 in. z-bar was installed onto the vapor barrier, spaced at nominal 60 in. up the entire wall assembly. 18 GA galvanized steel, 3 in. x 2 in. x 2 in. J-bar was installed at the base of the wall, windowsill and header, and at the top of the wall. The Z-bars and J-bars were installed using 1/4 in. x 2 in. concrete screw anchors, spaced at 16 in. o.c.

Insulation

24 in. x 48 in. x 2 in. thick mineral wool, with a density of 4 pcf, was used between the vapor barrier and ACM panel, held in place with 3-3/4 in. long concrete anchors and 2-inch wide round washers, using two fasters and washers per piece of insulation

Exterior Panels

Exterior ACM panels were attached to the girts using 2 in. aluminum panel clip extrusions. These were spaced at 16 in. oc. The clip extrusions were installed using 1 in. long panhead self-drilling screws, one screw per panel clip. The panels were installed leaving a nominal 3/4" gap between panels edges, vertically and horizontally.

Window opening

The window opening jambs, sill and header were lined with 16GA steel flashing, width of 10 in. with 1 in. thick, 6 pcf ceramic fiber blanket.



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See Section 14 for detailed drawings of the test assembly.

SECTION 9

TEST OBSERVATIONS

FIRE-RESISTANCE TEST OBSERVATIONS		
Time		
(min:sec)	Observations	
00:00	Test start at 11:32 am	
03:27	Flames exiting window	
04:22	Panels above window opening warping	
04:40	Flame height at 1 meter above opening	
08:00	Panels above window opening burning	
09:00	Flaming at window header	
09:40	Center flame at 2.5 meters above opening	
10:20	Debris falling	
11:00	Flame tips at 3 meters in center	
11:50	Flaming behind panels	
15:20	Flaming behind panels at 3 meters	
25:00	Gas off, residual flaming at window header	
38:00	Flaming at header out	
60:00	End of observation period	

SECTION 10

TEST RESULTS

The acceptance criteria in accordance with Clause 10.2 of the standard has the following requirements:

- Flaming on or in the wall assembly shall not spread more than 5 m above the opening in the test specimen.
- The average heat flux shall not be more than 35 kW/m² measured 3.5 m above the opening in the test specimen.

Data for the three radiometers installed at the 3.5 m height above the window is listed in the table below. The maximum flame spread observed above the window opening was 3 m. The maximum average heat flux determined as required by the standard was 32.8 kW/m².



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Time	Left Radiometer	Right Radiometer	Center Radiometer	Visual Flame Height
(min)	1 min Avg. (kW/m ²)	1 min Avg. (kW/m ²)	1 min Avg. (kW/m ²)	(meters)
0:00	-1.55	-1.57	-1.44	0
1:00	-1.85	-1.54	-1.58	0
2:00	-1.24	-1.29	-1.38	0
3:00	-1.48	-0.60	-1.18	0
4:00	-0.53	2.19	0.23	1
5:00	0.81	4.07	1.64	1.5
6:00	2.45	4.29	1.62	2
7:00	3.17	7.13	3.05	2
8:00	2.60	8.28	3.46	2
9:00	2.22	10.44	2.03	2
10:00	3.16	9.75	1.65	2.5
11:00	3.43	15.46	2.12	3
12:00	3.54	26.88	2.78	3.5
13:00	2.99	26.42	4.23	3.5
14:00	4.30	23.53	4.30	3
15:00	5.93	22.42	6.92	2.5
16:00	10.10	20.75	11.46	3
17:00	11.06	19.41	14.04	3
18:00	13.10	21.76	16.61	3
19:00	12.37	23.48	15.79	2
20:00	11.74	25.22	15.00	2
21:00	12.23	17.46	16.02	1
22:00	7.95	11.83	11.14	0.5
23:00	5.39	8.54	7.53	0
24:00	5.17	6.09	5.69	0
25:00	2.97	4.25	4.32	0
26:00	1.77	2.50	3.21	0
27:00	1.00	1.91	2.24	0
28:00	-0.05	1.31	1.29	0
29:00	0.02	0.82	1.14	0
30:00	-0.20	0.54	0.82	0
31:00	-0.56	0.42	0.41	0

-0.79

32:00

0.41

0

0.32



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22.00	0.64	0.30	0.00	2
33:00	-0.64	0.39	0.29	0
34:00	-0.59	0.22	0.22	0
35:00	-0.74	0.06	0.19	0
36:00	-0.67	-0.08	0.07	0
37:00	-0.71	-0.21	-0.27	0
38:00	-0.83	-0.24	-0.14	0
39:00	-1.10	-0.06	-0.34	0
40:00	-0.71	-0.22	-0.03	0
41:00	-0.93	-0.29	-0.27	0
42:00	-0.74	-0.21	-0.32	0
43:00	-1.00	-0.37	-0.39	0
44:00	-1.00	-0.54	-0.57	0
45:00	-0.99	-0.48	-0.56	0
46:00	-0.89	-0.63	-0.43	0
47:00	-1.17	-0.48	-0.58	0
48:00	-0.95	-0.67	-0.71	0
49:00	-1.19	-0.69	-0.68	0
50:00	-1.35	-0.73	-0.70	0
51:00	-0.95	-0.80	-0.69	0
52:00	-1.09	-0.75	-0.74	0
53:00	-1.05	-0.73	-0.74	0
54:00	-1.19	-0.89	-0.84	0
55:00	-1.22	-0.85	-0.87	0
56:00	-1.30	-0.82	-0.76	0
57:00	-1.22	-0.90	-0.84	0
58:00	-1.19	-0.93	-1.18	0
59:00	-1.19	-0.91	-0.59	0
60:00	-1.05	-1.00	-0.83	0

SECTION 11

CONCLUSION

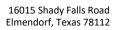
The Grandview EAS Building Systems wall system Grandview Series 35 ACM panels **met** the conditions of acceptance outlined in **CAN/ULC S134-2013**, Standard Method of Fire Test of Exterior Wall Assemblies 2nd Edition, dated August 2013 (Reaffirmed 2018).



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SECTION 12

PHOTOGRAPHS



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Photo No. 1 Primer installed



Photo No. 2 Vapor barrier



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Photo No. 3 Vapor barrier installed with z girts



Photo No. 4 Z girt attachment spacing



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Photo No. 5 Insulation installed



Photo No. 6 Panels installed



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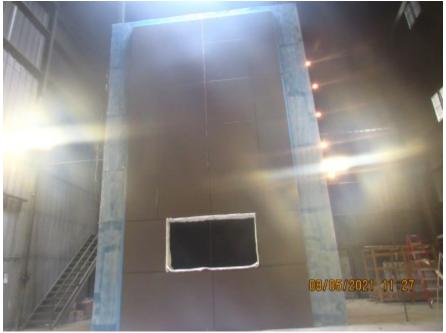


Photo No. 7 Test setup

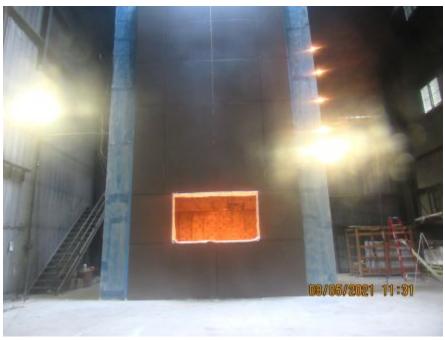


Photo No. 8 Start of test



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Photo No. 9 Flames exiting window opening



Photo No. 10 Flame tips at 1 meter



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Photo No. 11 Increased flaming



Photo No. 12 Flaming at window header



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Photo No. 13 Debris falling



Photo No. 14 Flaming up center to 3 meters



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Photo No. 15 Gas off, residual flaming at header



Photo No. 16 Window header post-test



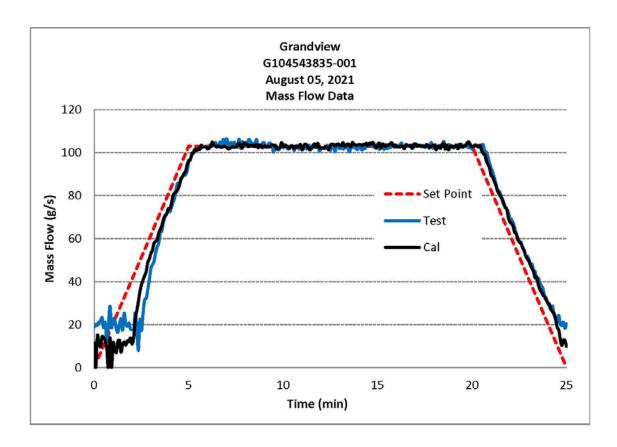
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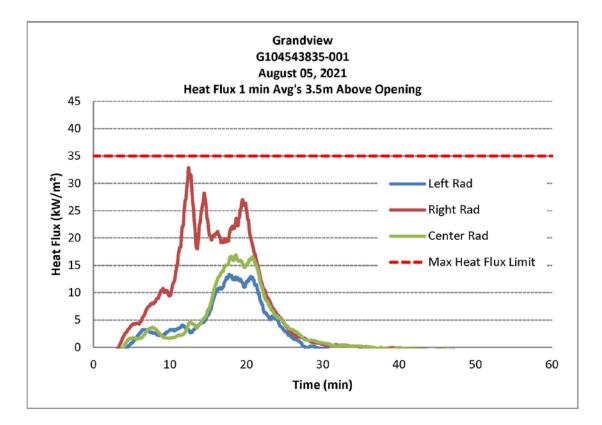
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GRAPHS





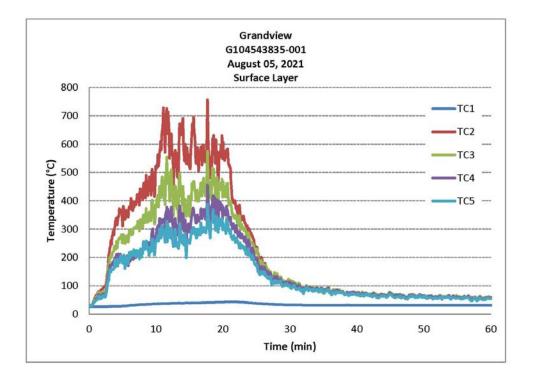
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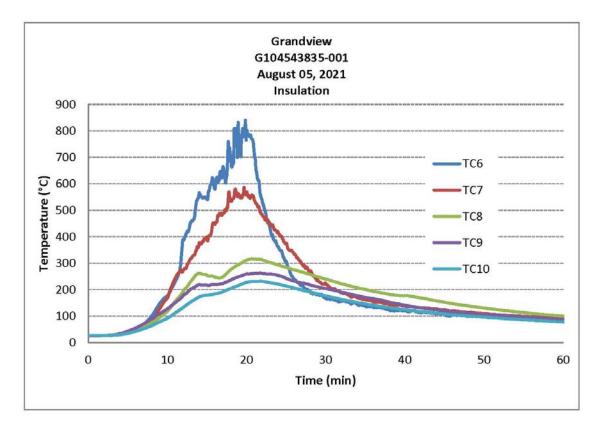
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NOTE: TC1 READING AMBIENT TEMPERATURES DUE TO TC WIRES CROSSED AT CONNECTOR

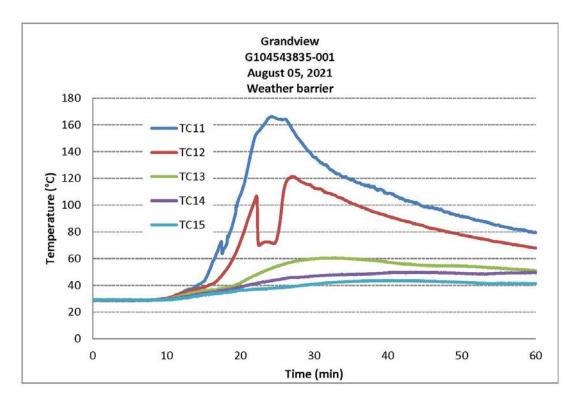


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SECTION 14

DRAWINGS

The "As-Built" drawings for the Grandview CAN/ULC S134 test; Sheet Nos. 1-4 and dated February 2021; which follow have been reviewed by Intertek B&C and are representative of the project reported herein. Project construction was verified by Intertek B&C per the drawings included in this report. Any deviations are documented herein or on the drawings.



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PROJECT GRANDVIEW SERIES 35 ACM PANEL SYSTEM ULC-S134 TESTING TABLE OF CONTENTS CLCOVER C2COVER P2DETAILS	PANEL INSTALLER INTERTEK LABRATORY PANEL SUPPLER GRANDVIEW EAS #570 - 999 WEST BROADWAY VANCOUVER, BC V5Z 1K5



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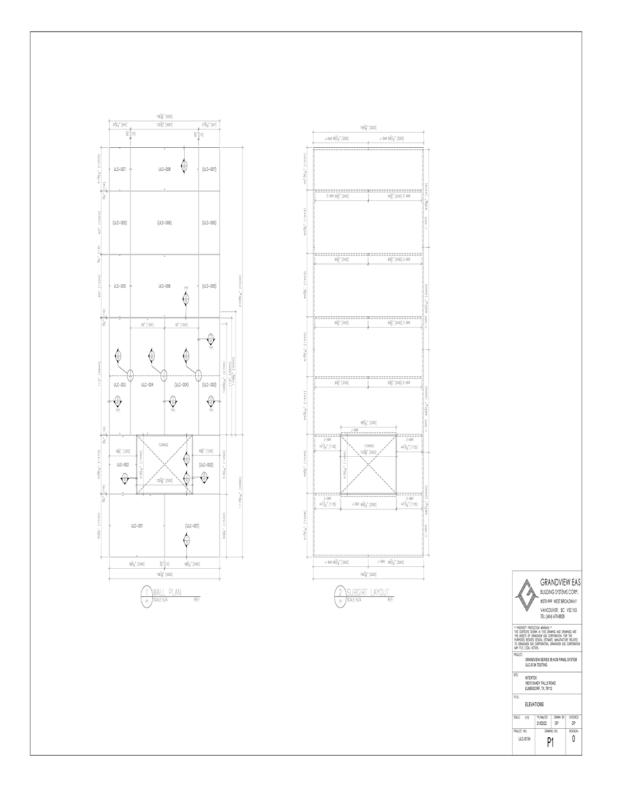
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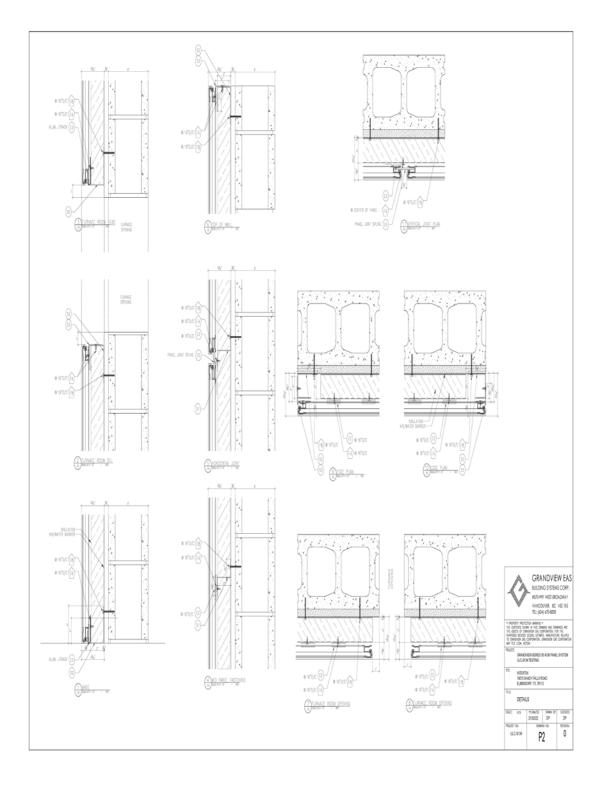
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SECTION 15

REVISION LOG

REVISION #	DATE	SECTION	REVISION
0	08/19/21	N/A	Original Report Issue