

ARCONIC ARCHITECTURAL PRODUCTS FIRE TEST REPORT

SCOPE OF WORK

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

REPORT NUMBER

104231720SAT-001

TEST DATE(S)

03/04/20

03/06/20

ISSUE DATE

03/25/20

REVISED DATE

05/18/20

RECORD RETENTION END DATE

03/25/30

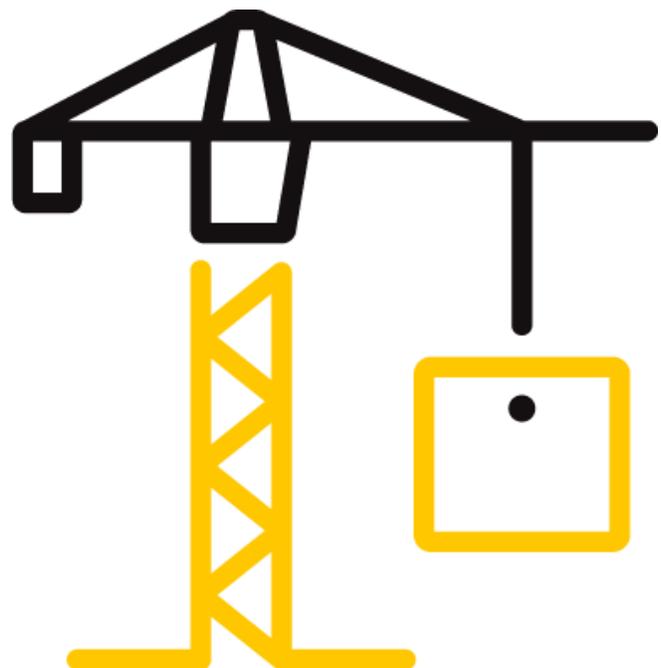
PAGES

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DOCUMENT CONTROL NUMBER

GFT-OP-10C

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TEST REPORT FOR ARCONIC ARCHITECTURAL PRODUCTS

Report No.: 104231720SAT-001

Date: 03/25/20

REPORT ISSUED TO

Arconic Architectural Products

50 Industrial Drive
Eastman, GA 31023
U.S.A

SECTION 1

SCOPE

Intertek Building & Construction (B&C) was contracted by Arconic Architectural Products to evaluate resistance to flame propagation in accordance with **CAN/ULC-S134, Standard Method of Fire Test of Exterior Wall Assemblies, 2nd Edition, dated August 2013 (R2018)**, on their 3mm Pre-painted Bonded Sheet AS3000B Panel assembly. Testing was conducted at the Intertek B&C test facility in Elmendorf, Texas, USA. Results obtained are tested values and were secured by using the designated test method.

This report does not constitute certification of this product nor an opinion or endorsement by this laboratory.

SECTION 2

SUMMARY OF TEST RESULTS

Wall System: Exterior Non-load-bearing Aluminum Composite Panel Assembly

Combustible Components: WrapShield SA[®] vapor barrier

CAN/ULC-S134 Test Results

The assembly described and tested in this report **did meet** 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 10 of this test report.

For INTERTEK B&C:

COMPLETED BY:	Emmanuel Ogoe	REVIEWED BY:	Herbert W. Stansberry II
TITLE:	Project Engineer – Building and Construction	TITLE:	Program Manager, Building & Construction
SIGNATURE:		SIGNATURE:	
DATE:	03/23/20	DATE:	03/25/20

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SECTION 3

TEST METHOD(S)

The assembly was evaluated in accordance with the following:

CAN/ULC-S134, *Standard Method of Fire Test of Exterior Wall Assemblies, 2nd Edition, dated August 2013 (R2018)*

SECTION 4

DEVIATIONS

The CAN/ULC-S134 exposure performed on 03/04/2020 successfully met the criteria of the test method in that the flaming on or in the wall assembly did not spread more than 5 m above the opening in the test specimen and the maximum average heat flux visually observed during the exposure was approximately 21 kW/m² measured 3.5 m above the opening in the test specimen. However, the datafile for this test exposure was corrupted and was irretrievable.

Due to the corruption of data of the first fire test, the assembly underwent an additional fire exposure to capture empirical numerical and graphical data. The exterior panels were removed and reinstalled such that the area subjected to the flame cone was the material least affected by the initial exposure. All other aspects of the sample remained unchanged and were reused as originally tested. All numerical and graphical data presented within this test report represent the fire resistance performance of the full assembly. Photo evidence is from both exposures as captioned.

SECTION 5

MATERIAL SOURCE/INSTALLATION

The components of the 3mm Pre-painted Bonded Sheet AS3000B panels were witnessed in construction by Intertek inspector Ronald Cole at the Arconic Facility in Eastman, GA USA on November 19, 2019. Intertek verified the composition, manufacturing techniques, and quality assurance procedures for the samples. The witnessing and sampling is documented in Intertek Sampling Report K3682.03-103-15. The samples were received at the Evaluation Center on 03/02/20 in good condition and were assigned Intertek Sample ID No. SAT2003021029-001.

Test sample wall assembly was constructed by the client and client-provided contractors.

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CALIBRATED INSTRUMENTATION USED FOR TESTING

Description	Serial No.	Calibration Due Date
Stopwatch	181512638	08/10/20
DAQ Unit	HB9002195	07/25/20
Thermo/Hygrometer	10340409	7/31/20
Anemometer	17339	10/02/20
Anemometer	17338	10/02/20
Anemometer	173310	10/02/20
Radiometer	215261	10/07/20
Radiometer	215262	10/07/20
Radiometer	215263	10/07/20
Gas Flow Transducer	2642089	10/04/20
E-Type TC	461564	10/02/20
Gas Pressure Transducer	1026161022	10/04/20

SECTION 7

LIST OF OFFICIAL OBSERVERS

NAME	COMPANY
Amanda Woodard	Arconic
Emmanuel Ogoe	Intertek B&C
Abel DeHoyos	Intertek B&C
Adriana Machuca	Intertek B&C
Philip Casso	Intertek B&C

SECTION 8

TEST PROCEDURE

Testing was performed on 03/04/2020 in accordance with the CAN/ULC-S134 test method. Ambient conditions were 20°C and 64% 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. The test was performed at 11:39 a.m. All observations are recorded in the table located in Section 9.

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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 ± 0.05 m horizontally of the center line of the opening and one on each side and within 0.5 ± 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 ± 0.05 m, 2.5 ± 0.05 m, 3.5 ± 0.05 m, 4.5 ± 0.05 m, 5.5 ± 0.05 m. At each of these levels, one thermocouple 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: Flush with exterior panels at 1.5 m, 2.5 m, 3.5 m, 4.5 m, and 5.5 m, respectively.
- TCs 6-10: (Layer 1) In the insulation material at 1.5 m, 2.5 m, 3.5 m, 4.5 m, and 5.5 m, respectively.
- TCs 11-15: (Layer 2) On the exterior sheathing surface 1.5 m, 2.5 m, 3.5 m, 4.5 m, and 5.5 m, respectively.

The output of the transducers and thermocouples were monitored by a National Instruments CDAQ-9188 Data Acquisition Unit. The data acquisition system was programmed to scan and save data every 5 seconds. Following the test, the files were imported into MS Excel for tabular and graphical display. The graphical display data can be found in Section 14.

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SECTION 9

TEST OBSERVATIONS

FIRE-RESISTANCE TEST OBSERVATIONS (03-04-2020)	
Time (min:sec)	Observations
00:00	Test Start at 11:39
3:28	Flame tips exiting opening
4:00	Flame tips at 1m
5:00	Flame tips at 2m
7:00	Flame tips at 2m
7:35	Flame on surface left side as viewed
10:00	Left fan on
10:40	Sustained flaming above opening, tips at 2-1/2 m
12:30	Panel melting – flame on bottom
14:00	Flame tips at 3m
15:40	Flame on panel at 1m
16:40	Large piece falls
17:20	Flame behind panels at 1m, tips at 2.5 m
19:05	Another large piece falls
21:00	Tips at 2m
22:00	Tips at 1m
23:00	Tips at 1m
25:00	No sustained flaming

FIRE-RESISTANCE TEST OBSERVATIONS (03-06-2020)	
Time (min:sec)	Observations
00:00	Test start at 10:38 am
3:20	Flames exiting window
7:30	Paint on panels flare up
11:00	Flaming above window
11:30	Panels melting above window
15:30	Flame tips at 1m

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FIRE-RESISTANCE TEST OBSERVATIONS (03-06-2020) – continued:	
17:00	Flame tips at 1.5m
17:30	Flame tips at 2m
19:50	Pieces falling down
20:30	Flame tips at 2m
25:00	Gas off – test concluded

SECTION 10**TEST SPECIMEN DESCRIPTION**

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

WrapShield SA[®] vapor barrier was applied to the surface of the gypsum sheathing. 16GA, 2 in. galvanized zee clips were then installed to the weather barrier using #14 x 1-3/4 in. Tapcon concrete fasteners, spaced at nominal 21.5 in. oc. 2 in. mineral wool insulation was then installed between the zee clips, having a density of 4.3 pcf.

The 3mm Pre-painted Bonded Sheet AS3000B ACM panels were installed to the wall assembly using 3 in. wide aluminium extrusions clips, spaced at nominal 36 in. oc, attached using #12 x 1 in. Tek2 fasteners.

The window opening jambs, sill and header were lined with .040 in. thick aluminum flashing, width of 4 in. This flashing was also used to seal the sides and top of the wall assembly.

See Section 15 for detailed drawings of the test assembly.

SECTION 11**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 16.6 kW/m². Plots of the data can be found in Section 14.

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Time (min)	Left Radiometer (1 min. Avg.)	Center Radiometer (1 min. Avg.)	Right Radiometer (1 min. Avg.)	Visual Flame Height (in meters)
0:00	0.0	0.0	0.0	0
1:00	0.0	0.0	0.0	0
2:00	0.0	0.1	0.0	0
3:00	0.0	1.2	0.6	0
4:00	0.2	5.2	3.6	1
5:00	1.5	5.5	4.3	1
6:00	2.2	7.1	5.3	1
7:00	3.7	8.6	6.6	1
8:00	4.8	8.5	6.8	1.5
9:00	3.8	9.3	8.5	1.5
10:00	4.8	8.1	9.2	1.5
11:00	4.3	7.9	10.0	1.5
12:00	4.6	9.5	11.8	1.5
13:00	4.5	8.8	10.4	1.5
14:00	4.0	8.8	12.6	1.5
15:00	4.8	11.0	10.2	1.5
16:00	4.7	10.2	11.9	1.5
17:00	5.0	9.6	12.4	2
18:00	4.8	13.6	11.8	2
19:00	4.8	15.2	14.8	2
20:00	6.0	15.0	14.7	2
21:00	4.9	11.3	14.0	2
22:00	4.4	8.5	11.1	1
23:00	3.8	6.3	8.1	1
24:00	2.6	5.1	6.7	0
25:00	2.0	4.2	5.3	0
26:00	1.4	2.4	3.7	0
27:00	0.9	2.2	2.3	0
28:00	1.4	2.1	2.1	0
29:00	0.0	2.0	1.7	0

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Time (min)	Left Radiometer (1 min. Avg.)	Center Radiometer (1 min. Avg.)	Right Radiometer (1 min. Avg.)	Visual Flame Height (in meters)
30:00	1.0	1.5	1.3	0
31:00	0.4	1.2	1.0	0
32:00	0.3	0.3	1.4	0
33:00	0.0	1.4	1.0	0
34:00	0.6	1.6	0.9	0
35:00	0.7	0.9	1.1	0
36:00	0.0	1.6	1.1	0
37:00	0.0	1.0	0.8	0
38:00	0.4	0.4	0.8	0
39:00	0.0	0.9	0.6	0
40:00	0.0	0.5	0.7	0
41:00	0.0	0.2	0.5	0
42:00	0.0	0.4	0.6	0
43:00	0.0	0.3	0.5	0
44:00	0.0	0.0	0.4	0
45:00	0.0	0.1	0.4	0
46:00	0.0	0.1	0.1	0
47:00	0.0	0.2	0.6	0
48:00	0.0	0.1	0.3	0
49:00	0.0	0.2	0.2	0
50:00	0.0	0.0	0.0	0
51:00	0.0	0.0	0.1	0
52:00	0.0	0.0	0.1	0
53:00	0.0	0.0	0.1	0
54:00	0.0	0.0	0.1	0
55:00	0.0	0.0	0.0	0
56:00	0.0	0.0	0.0	0
57:00	0.0	0.0	0.0	0
58:00	0.0	0.0	0.1	0
59:00	0.0	0.0	0.0	0
60:00	0.0	0.0	0.0	0

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Max Values

Location:	Max. Value (kW/m ²)	Time at Max. Value (min.)
Left Radiometer:	6.2	20.1
Center Radiometer:	16.6	19.6
Right Radiometer:	15.5	19.0

Maximum flame spread was 2 meters above the window opening at 17 minutes into test.

SECTION 12

CONCLUSION

The Aluminum Composite 3mm Pre-painted Bonded Sheet AS3000B Panel Assembly as described in this report **did meet** the conditions of acceptance outlined in **CAN/ULC-S134, Standard Method of Fire Test of Exterior Wall Assemblies, 2nd Edition, dated August 2013 (R2018)**.

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SECTION 13 PHOTOGRAPHS



Photo No. 1
Panels received



Photo No. 2
Front of panels

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Photo No. 3
Back of panels

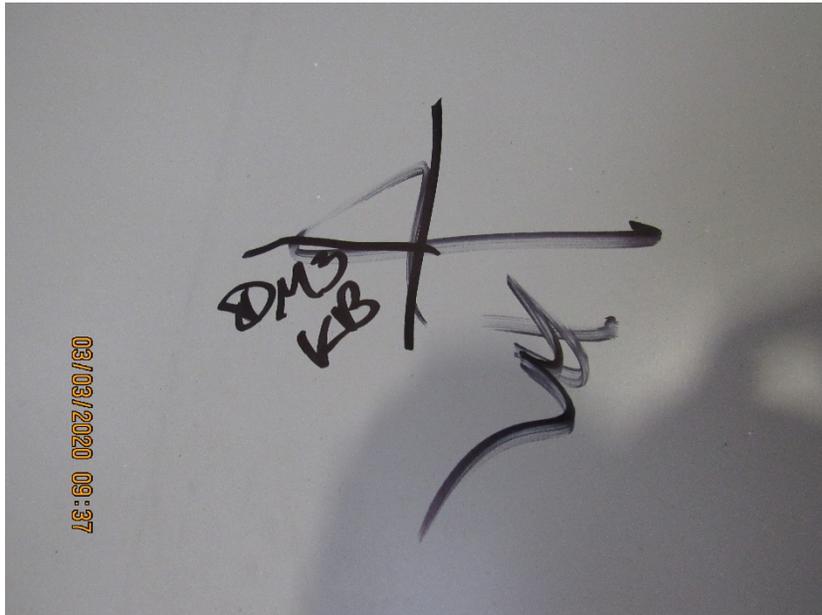


Photo No. 4
Sampling Inspector signature

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Photo No. 5
Steel zees and flashing

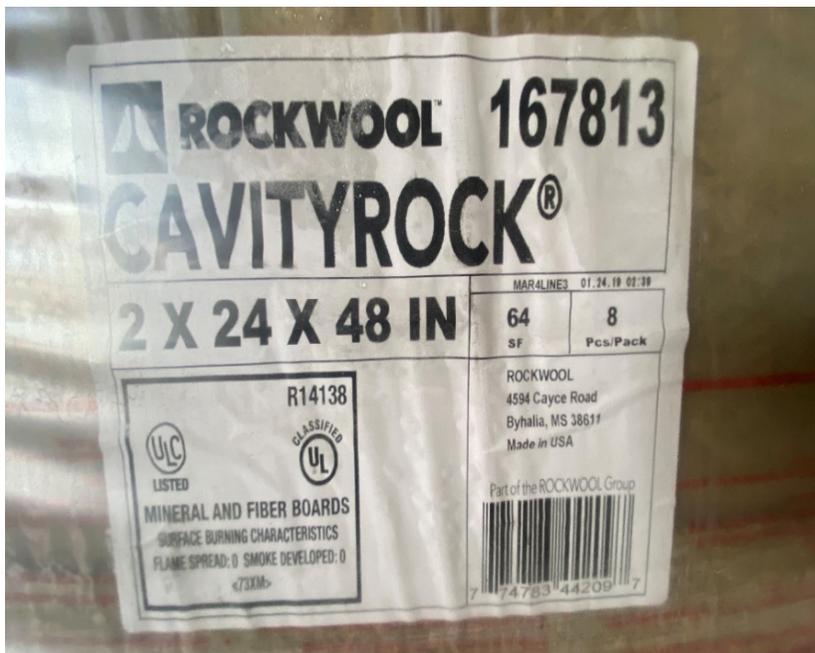


Photo No. 6
Insulation

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Photo No. 7
Installation of WRB



Photo No. 8
Steel Zee Installation

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Photo No. 9
Insulation installed



Photo No. 10
Panel Installation

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Photo No. 11
Horizontal Joint View

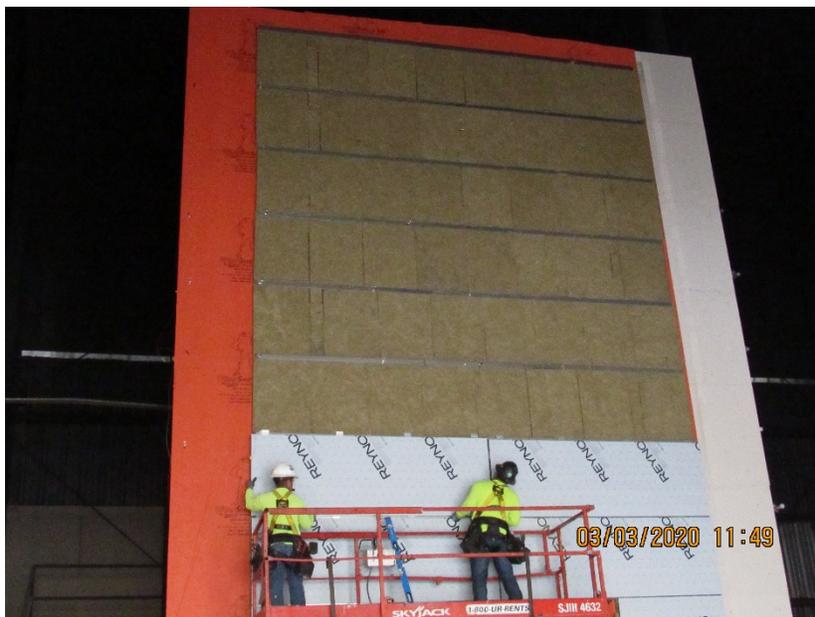


Photo No. 12
Panel Assembly

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Photo No. 13
Window opening



Photo No. 14
Completed Assembly

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Photo No. 15
Start of Test

Photo No. 16
Flame tips exiting window

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Photo No. 17
Panels starting to burn



Photo No. 18
Flaming above window

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Photo No. 19
Flaming behind panels



Photo No. 20
Post-test #1

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Photo No. 21
Post-test #1 insulation

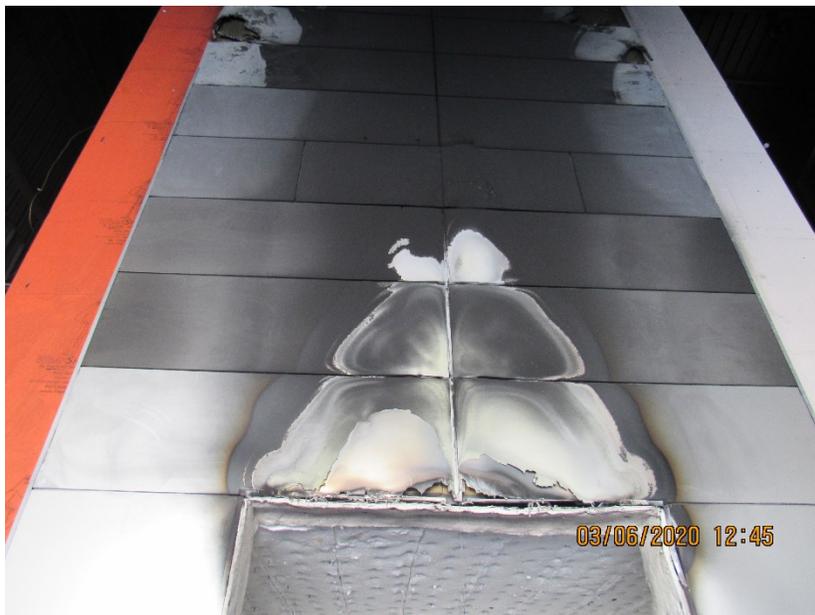


Photo No. 22
Post-test #2

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Photo No. 23
Post-test WRB #2

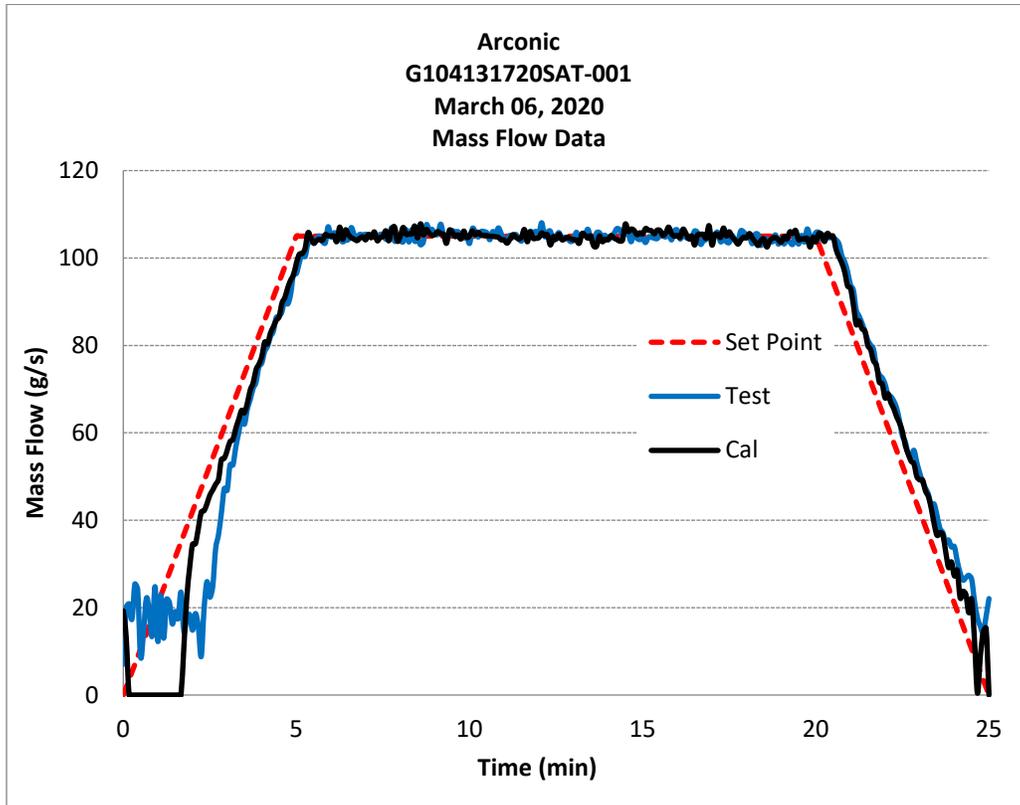
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SECTION 14

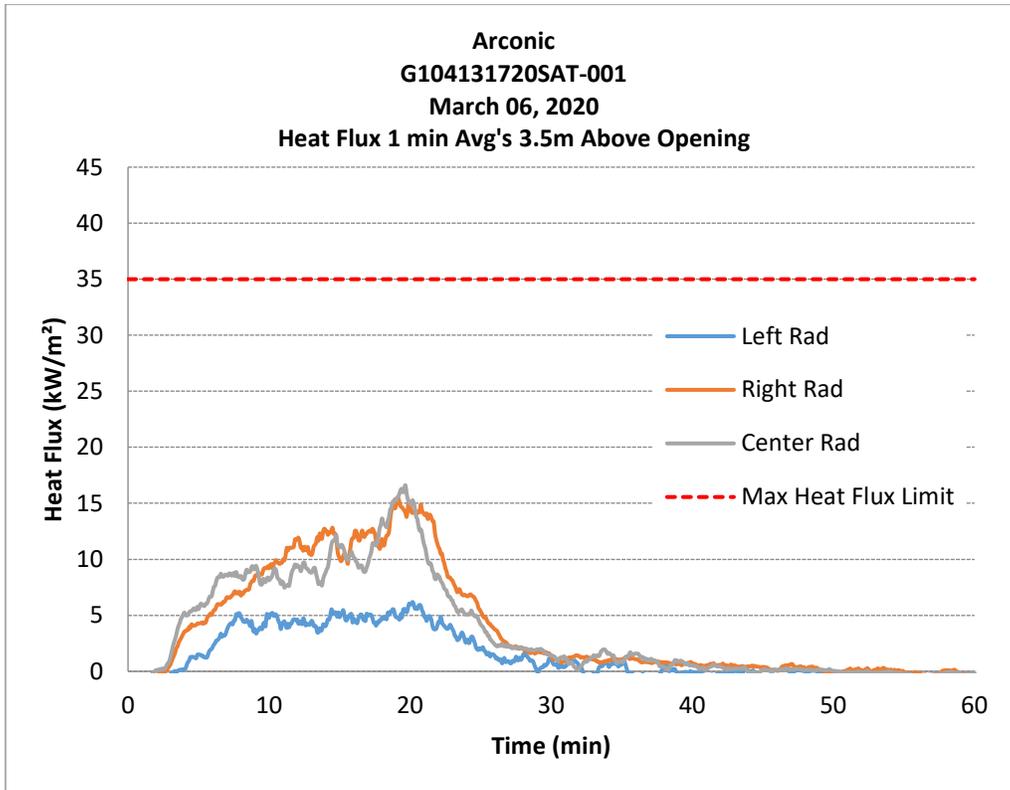
GRAPHS



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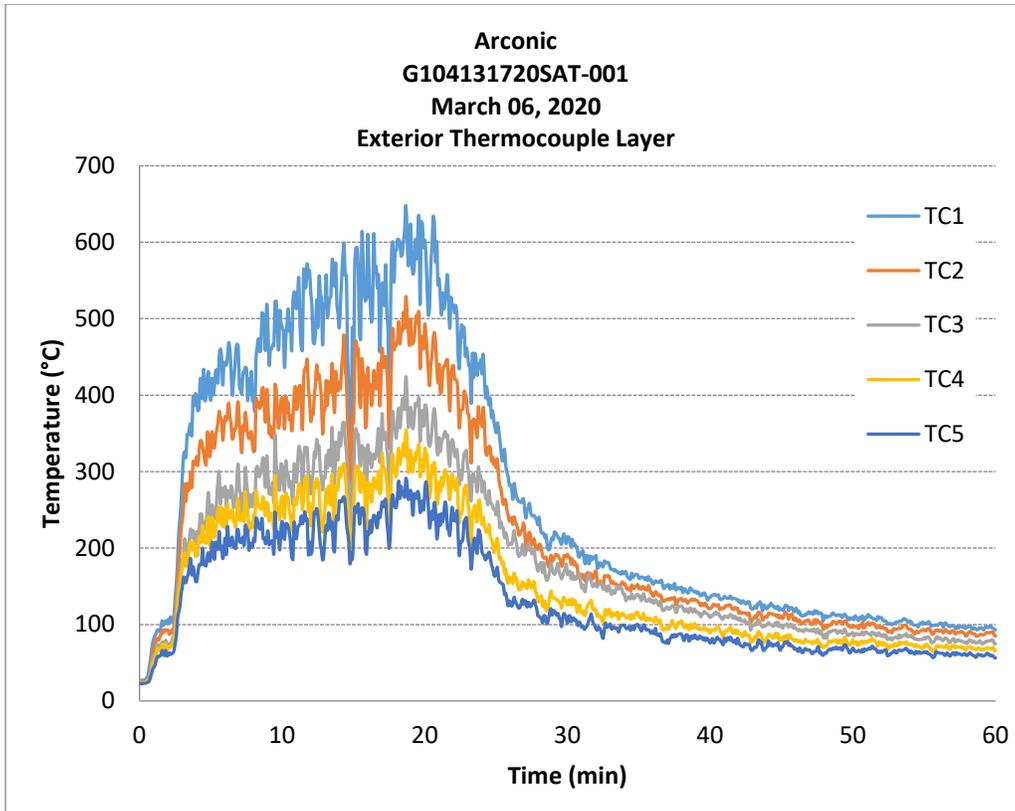
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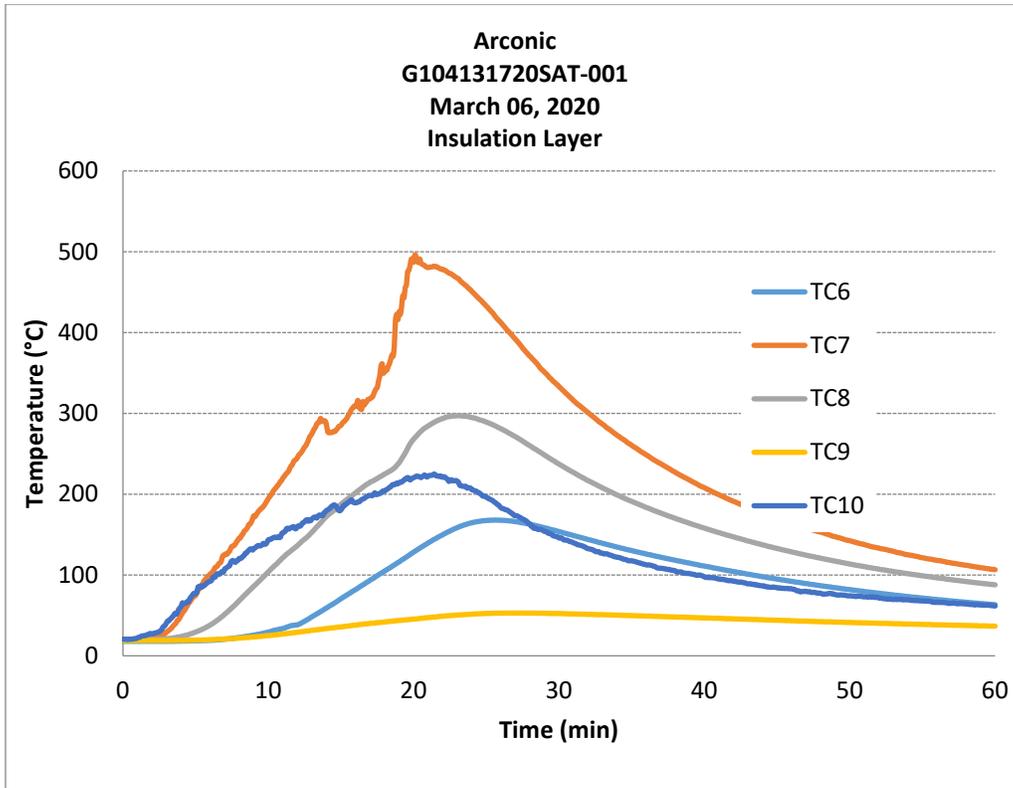
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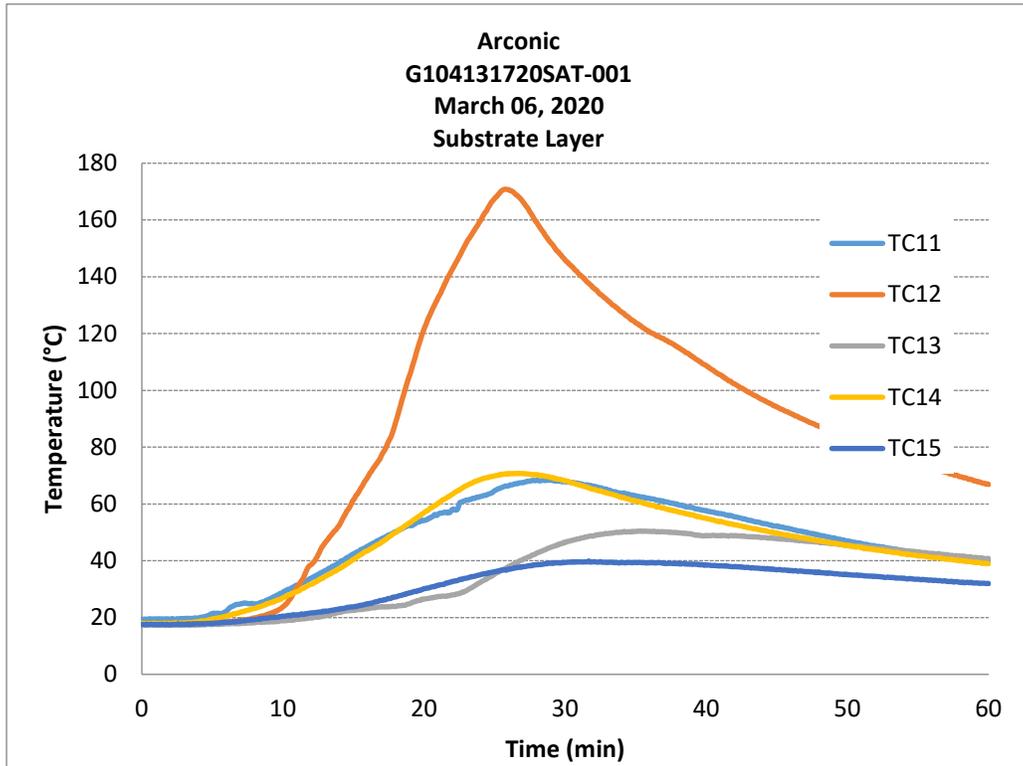
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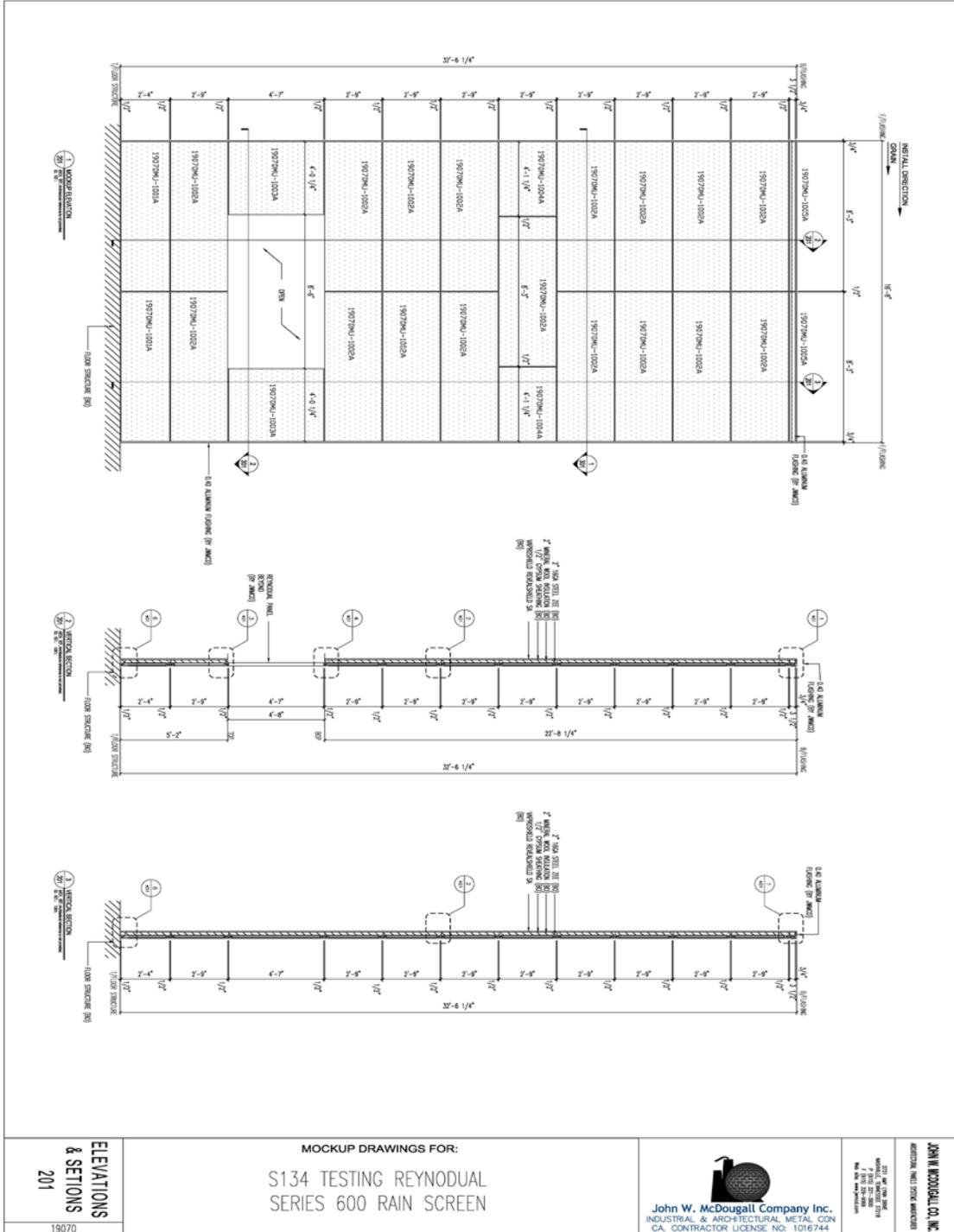
DRAWINGS

The "As-Built" drawings 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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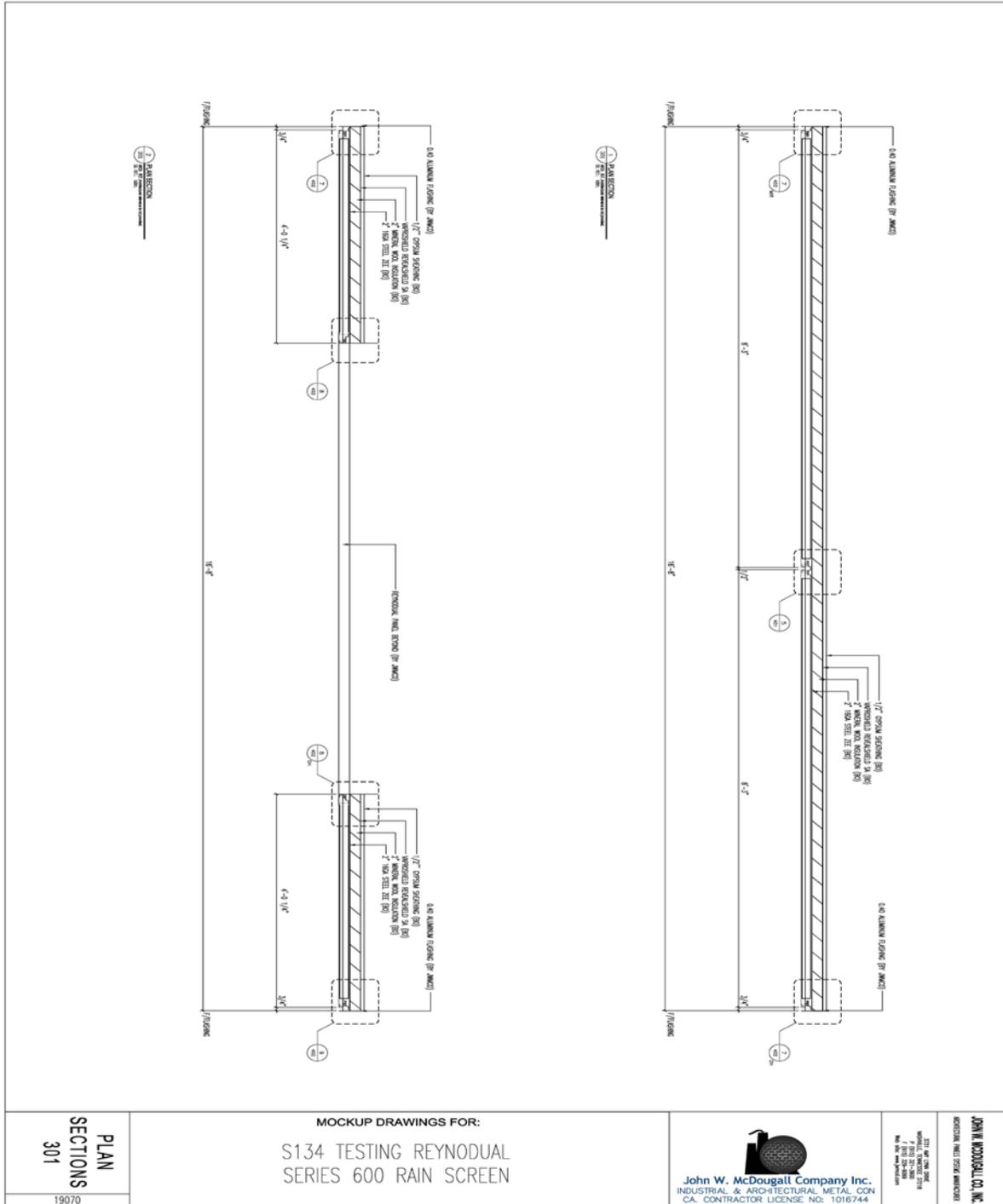
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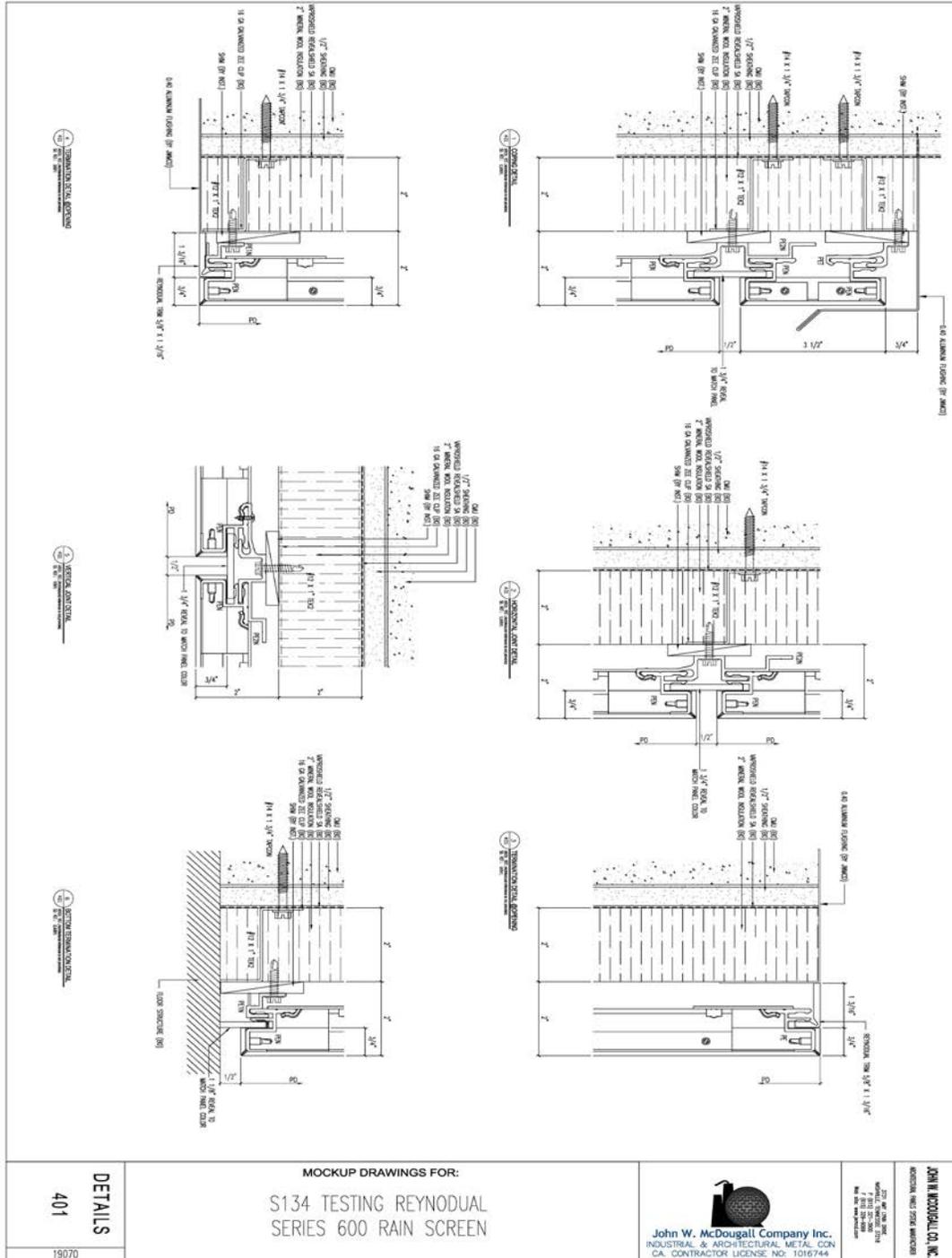
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SECTION 16

REVISION LOG

REVISION #	DATE	PAGES	REVISION
0	03/25/20	N/A	Original Report Issue Updated product name
1	05/18/20	2, 3, 10	E.O. HWS