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BRANZ FIRE TEST REPORT

FF12829-001

BS 8414-2:2015+A1:2017 TEST OF ALUCOLUX FAÇADE SYSTEM IN ACCORDANCE WITH BR 135 ANNEX B

CLIENT

The Building Agency
4 Link Drive
Wairau Valley
Auckland, 0627
New Zealand

TEST SUMMARY

Objective

To determine the fire performance of an external facade system when tested in accordance with BS 8414-2:2015+A1:2017 '*Fire performance of external cladding systems' – Part 2: 'Test method for non-loadbearing external cladding systems fixed to and supported by a structural steel frame' (*the test standard) when assessed to the criteria specified in BR 135 '*Fire performance of external thermal insulation for walls of multi-storey buildings' Third* edition Annex B 2013.

Test Sponsor

The Building Agency
4 Link Drive
Wairau Valley
Auckland, 0627
New Zealand

Description of Test Specimen

The test specimen was described by the client as Alucolux Solid Aluminium Façade System, comprising Alucolux 3 mm thick solid aluminium panel and extruded aluminium rail fixing system on a plasterboard rigid air barrier supported by a lightweight timber frame.

Date of Test

15 December 2020

Test Results

Document	Classification
BR 135 Fire performance of external thermal insulation for walls of multi-storey buildings, Third edition Annex B 2013	Pass

LIMITATIONS

The results reported here relate only to the item/s tested.

TERMS AND CONDITIONS

This report is issued in accordance with the Terms and Conditions as detailed and agreed in the BRANZ Services Agreement for this work.

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1. INTRODUCTION

This report provides the fire performance of a non-loadbearing external façade system fixed to and supported by a timber frame when exposed to an external fire under the conditions of the test standard. The fire exposure is representative of a fully developed (post flashover) fire in a room, venting through an opening that exposes the façade system to the effects of external flames.

The extent of damage caused to the external façade system is evaluated, particularly the ability of the external facade system to resist the propagation of the fire upwards or penetration through the system. Any falling debris and fire penetration are recorded.

The tested system was defined by the test sponsor.

All measurements quoted in this report are nominal unless otherwise stated.

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2. EXPERIMENTAL PROCEDURE

2.1 Test Standard

The test was conducted in accordance with the test specifications and procedure described in BS 8414-2: 2015 *'Fire performance of external cladding systems' – Part 2: 'Test method for non-loadbearing external cladding systems fixed to and supported by a structural steel frame'* except as follows:

- The ignition source was constructed from Pinus Radiata.
- The external façade system was fixed to and supported by a structural timber frame.

2.2 Test Date

The test was conducted on 15 December 2020 and supervised by Mr. Lukas Hersche at BRANZ Limited laboratories, Judgeford, New Zealand.

2.3 Test Conditions

The ambient ground level temperature at the beginning of the test was 24°C.

The wind speed was between 0.3 m/s and 1.3 m/s measured at Level 2, 1,000 mm forward from the centre line of the combustion chamber.

2.4 Test Apparatus

The product was installed onto Rig B of the BRANZ fire façade test facility. The test apparatus is a vertical structural steel frame, representative of a structural steel framed building, with a vertical main test wall measuring 9,300 mm high x 3,100 mm wide and a vertical return wall (wing) measuring 9,300 mm high by 1,800 mm wide at a 90° angle to, and at one side of the main test wall. At the base of the main wall is located a combustion chamber measuring nominally 1,000 mm deep x 2,000 mm wide in plan and 2,000 mm high.

2.5 Ignition Source

Alternating layers of 50 mm x 50 mm softwood sticks of Pinus Radiata were nailed together to form a timber crib nominally 1,500 mm x 1,000 mm in plane and 1,000 high. A mean moisture content of 11.3% and nominal density of 480 kg/m³ were measured prior to ignition.

2.6 Instrumentation and Data Recording

All thermocouples were Type K (Chromel/Alumel) mineral insulated metal sheathed (MIMS) thermocouples of 1.5 mm diameter and insulated junctions and complied with the requirements of BS 8414-2:2015.

Data recording logging at 5 second intervals was commenced at least 5 minutes before ignition of the timber crib and continued at least 30 minutes after extinguishment of the crib.

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3. DESCRIPTION OF TEST SPECIMEN

3.1 General

The test comprised a main and wing wall of an external façade system with aperture at the base of the main wall.

3.2 Specimen Selection

BRANZ was not involved in the selection of the materials, or installation of the specimen submitted for testing. The test materials used for construction of the test specimen were supplied to the laboratory by the client. Copies of the client supplied specifications are given in Section 4. Further details of the tested specimen and components are held on file by BRANZ. Where discrepancies between the details in the report text and those shown in the attached drawings exist, the text takes precedence.

3.3 Specimen Conditioning

After installation of the test specimen to the test apparatus, at the request of the client the specimen was protected from adverse environmental conditions prior to testing.

3.4 Description of Specimen

The test specimen as described by the client as Alucolux Solid Aluminium Façade System, comprising Alucolux 3 mm thick solid aluminium panel and extruded aluminium rail fixing system on a plasterboard rigid air barrier supported by an insulated lightweight timber frame.

3.5 Specimen Dimensions

In accordance with the requirements of the test standard, the facade system measured:

Requirement	**Measurement**
≥6,000 mm above top of combustion chamber opening	6,600 mm
≥2,400 mm across the main wall width	2,725 mm
≥1,200 mm across the wing wall width	1,440 mm
260 mm (± 100 mm) between wing wall and combustion chamber	330 mm
2,000 x 2,000 mm (± 100 mm) combustion chamber opening	2,080 x 2,060 mm

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3.6 Schedule of Components

The following table provides a complete list of the component parts used in the construction of the test specimen, as provided by the client, and verified by BRANZ.

Table 1. Schedule of Components

Test Specimen – Alucolux Façade System		
Item		**Description**
1	**Name**	**Interior Lining**
	Material	GIB Fyreline® T.E. Plasterboard (1,200 x 3,000 x 10 mm)
	Installation	A single layer of GIB Fyreline® was screw fixed to the unexposed face of the test specimen in accordance with manufacturer specifications.
2	**Name**	**Structural Wall Frame**
	Material	SG8 Radiata Pine treated to Hazard Class H3.2 (90 x 45 mm)
	Installation	The frame was constructed with top and bottom plates fixed to the steel floor slab beams, studs were spaced between plates at maximum 600 mm centres and nogs at maximum 1,350 mm spacing mid stud height for fixing of the rigid wall underlay.
3	**Name**	**Insulation**
	Material	R2.3 Eco Insulation Glasswool Insulation (1160 x 580 x 90 mm)
	Installation	The timber frame cavity was fully insulated.
4	**Name**	**Rigid Wall Underlay**
	Material	GIB Weatherline® Rigid Air Barrier (RAB) (3,000 x 1,200 x 13 mm)
	Installation	The RAB was installed over the exposed face of the test wall frame in accordance with manufacturer specifications. All sheet edges were supported by timber framing. A double layer of RAB was returned into the window jamb and window head to cover the exposed timber frame.
5	**Name**	**Water-proofing Membrane**
	Material	ProClima Solitex Extasana Adhero® Self-Adhesive Weather Resistive Barrier
	Installation	The self-adhesive membrane was applied to the entire rigid air barrier surface and returned into the combustion chamber opening and around

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		main and wing wall edges in accordance with manufacturer specifications.
6	**Name**	**Joinery Angle at combustion chamber head**
	Material	Aluminium (135 x 20 x 3 mm)
	Installation	The joinery angle was installed to replicate window joinery. The angle was screwed fixed against the RAB around the perimeter of the underside of the interface between test specimen and combustion chamber opening.
7	**Name**	**Head Flashing**
	Material	Aluminium (1.2 mm thick)
	Installation	The head flashing was installed over the Weatherline RAB at the window head and extended over the 3 mm joinery angle. The flashing was the full width of the combustion chamber opening head with a nominally 30 mm return over the joinery angle.
8	**Name**	**Panel Fixing Rails (L-shaped)**
	Material	Aluminium (40 x 40 x 3 mm)
	Installation	L shaped panel fixing rails were screw fixed around the perimeter of the combustion chamber opening on the main wall face, and vertically along the length of the outer edge of the main and wing walls and central
9	**Name**	**Panel Fixing Rails (C-shaped)**
	Material	Aluminium (45 x 20 x 3 mm)
	Installation	A C-shaped panel fixing rail was screw fixed to the RAB centrally to the main wall face from the combustion chamber opening to top edge of the test specimen.
10	**Name**	**Horizontal Open State Cavity Fire Barrier**
	Material	Siderise® RH50 30/30 (1,200 x 75 x 20 mm)
	Installation	The Siderise® Horizontal Cavity Barriers were installed to the full width of the main and wing walls between vertical fire barriers at inter-storey floor levels of nominally 2.7 m spacing. The barriers were fixed to the wall with 75 mm stainless steel screws and 20 mm round washers at maximum 400 mm centres.
11	**Name**	**Vertical Cavity Fire Barrier**

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	Material	Siderise® RV90 90/30 (1,200 x 75 x 80 mm)
	Installation	The Siderise® Vertical Cavity Barriers were installed along both vertical outer edges of the main wall face and along the single vertical outer edge of the wing wall. The vertical cavity barriers were attached to the wall with Siderise® RV Fixing Brackets to 75% depth of barrier width at nominal 600 mm centres. All barrier abutments and penetrations were sealed with Foil Tape RFT 120/45.
12	**Name**	**Horizontal Inter-storey Drainage Channel**
	Material	Extruded aluminium (nominally 2 mm thick)
	Installation	The drainage channel was installed across the width of the test specimen main and wing walls located 3,500 mm above combustion chamber opening. The channel was screw fixed to the panel fixing rail at nominally 300 mm centres with self-tapping screws and lapped with a 200 mm strip of water-proofing membrane to the nominally 8 mm perforations at 50 mm centres.
13	**Name**	**Sika PEF Rod**
	Material	15 mm closed cell polyethylene joint rod
	Installation	PEF Rod was pushed into all panel fixing extrusions to provide a uniform base for application of water-proof sealant. A single rod was inserted per panel edge extrusion, while two rods were inserted per inter-panel fixing extrusion.
14	**Name**	**Sikaflex AT Façade Sealant**
	Material	Elastic silane terminated polymer sealant.
	Installation	Sikaflex® AT Façade sealant was applied into all PEF rod backed panel edges at nominally 15 mm depth excluding horizontal drainage channels above the combustion chamber and inter-storey drainage channels.
15	**Name**	**Alucolux Solid Aluminium Panel**
	Material	A 3 mm thick grey and white painted solid aluminium cladding panel with aluminium panel stiffeners adhered to internal face with ends mechanically fixed.
	Installation	A total of eighteen individual panels were installed on the main wall (12) and wing wall (6) of the test specimen. Panels were mounted to fixing rails in horizontal rows from the base of the wall to the upper edge. Each panel incorporated a 45 mm down-turned perimeter edge and 20 mm

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		deep return edge. All return edges incorporated a rivet fixed extruded aluminium rail. Individual panel dimensions are provided in Section 5. Panel edges located at the head of the combustion chamber included ventilation slots (6 x 25 mm) at 120 mm centers.
16	**Name**	**Alucolux Panel Fixings (to rail)**
	Material	10g x 25 mm stainless-steel square drive pan head screws
17	**Name**	**Panel Rail Fixings (to frame)**
	Material	8g x 65 mm stainless-steel square drive pan head screws
18	**Name**	**Rigid Air Barrier Fixing**
	Material	6 x 41 mm GIB Grabber Gib Weatherline Collated Bugle Head Screws
	Installation	As per manufactures technical specifications.
19	**Name**	**Horizontal Cavity Fire Barrier Fixings**
	Material	75 x 20mm stainless-steel screw and washer
	Installation	Fixed at 400 mm centres nominally 20 mm below the top (upper) edge of all horizontal cavity barriers.
20	**Name**	**Vertical Cavity Fire Barrier Brackets**
	Material	B65 Siderise® 1 mm thick galvanised steel Z-folded support brackets
	Installation	Fire cavity support brackets were screw fixed to the wall at maximum 600 mm centres (300 mm from each end) and inserted at mid-depth to 75% of the cavity barrier width and sealed on the surface with cavity barrier foil tape.
21	**Name**	**Cavity Barrier Foil Tape**
	Material	RFT 120/45 foil tape
	Installation	All cavity barrier joints were tightly abutted and sealed with Siderise® RFT 120/45 foil tape.
22	**Name**	**High Impact Plastic Packer**
	Material	Fox H Packer 80% Polyethylene, 20% polystyrene
	Installation	Packers were screw fixed between panel fixing rails and RAB at 450 mm centres to provide a level panel finish.

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23	**Name**	**Sill Tape**
	Material	Tescon Extoseal 150 mm wide self-adhering butyl rubber-based sill tape
	Installation	Sill tape was installed into and around the corner interface between combustion chamber and external wall face to both upper corners in nominal 300 mm lengths.

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4. TEST RESULTS

4.1 Peak Temperatures

The following temperatures were measured during the 60-minute test period.

Table 1. Peak Temperatures

Parameter	Result
Start Temperature (T_s)	22 ^{0}C
Start Time (t_s)	1 minutes 25 seconds after ignition of crib
Peak Temperature/time at Level 2, External	563 ^{0}C (12 minutes 30 seconds after start time)
Peak Temperature/time at Level 2, Cavity	192 ^{0}C (14 minutes 25 seconds after start time)
Peak Temperature/time at Level 2, Insulation	38 ^{0}C (37 minutes 45 seconds after start time)

4.2 Test Observations

Observations related to the performance of the specimen were at the times stated in minutes and seconds. Height measurements are approximate and given relative to a zero at the top of the combustion chamber. Unless otherwise specified, observations refer to the centre line above the combustion chamber on the main wall.

Table 1: Test Observations

Time (Min:Sec)	Observations
00:00	Timber crib ignited.
01:25	Start time criteria $\mathbf{t_s}$ achieved
01:30	Intermittent flaming occurred on face of specimen approximately 1 metre above combustion chamber opening.
02:53	There was sustained flaming in the vertical panel to panel junction located centrally to the combustion chamber opening to nominally 500 mm height.
03:10	There was flaming debris from centrally located to vertical panel to panel junction fell to the ground in front of the specimen.

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03:36	Painted surface of panels located within flame 2 metres above chamber opening had burnt back.
04:00	Audible creaking was heard from aluminium panels as they deflect into the heat.
04:30	Flaming of sealant extends to 2 metres above centrally located vertical panel junction.
05:20	Smoke was being emitted from left-hand corner of the horizontal drainage joint on the main wall nominally 3.2 metres above chamber opening.
05:52	There was continuous flaming on the ground for more than 20 secs from molten debris.
06:38	There was charring of exposed panel face directly above the chamber opening in a triangular area up to 2.5 metres in height.
08:17	Molten aluminium dripped onto the ground in front of the specimen.
09:00	There was charring of wing wall surface finish 400 mm above combustion chamber opening.
09:20	Temperature nominally 5 metres above combustion chamber opening (Level 2) greater than 300 °C.
09:28	There was sustained flaming along the vertical main wall to wing wall junction from combustion chamber opening to 2.5 metres.
10:00	There was horizontal flame spread beyond the confines of the specimen along wing wall panel junction from combustion chamber head to wing wall outer edge.
11:30	There was horizontal flame spread along wing wall panel junction at 2.5 metres above combustion chamber opening.
12:43	Flames were generated by timber crib extend nominally 5.0 metres above the combustion chamber opening (Level 2).
14:30	There was vertical flame spread along the main wall to wing wall junction extends from nominally 1 metre above ground level to 4 metres high.
16:00	Triangular area of rigid air barrier was exposed above combustion chamber opening nominally 2 m². There was yellow discolouration of the aluminium panel edge.
18:00	There was flame spread up the outer vertical edge of the wing wall.
30:00	The crib trolley was extracted from chamber.
60:00	End of test.

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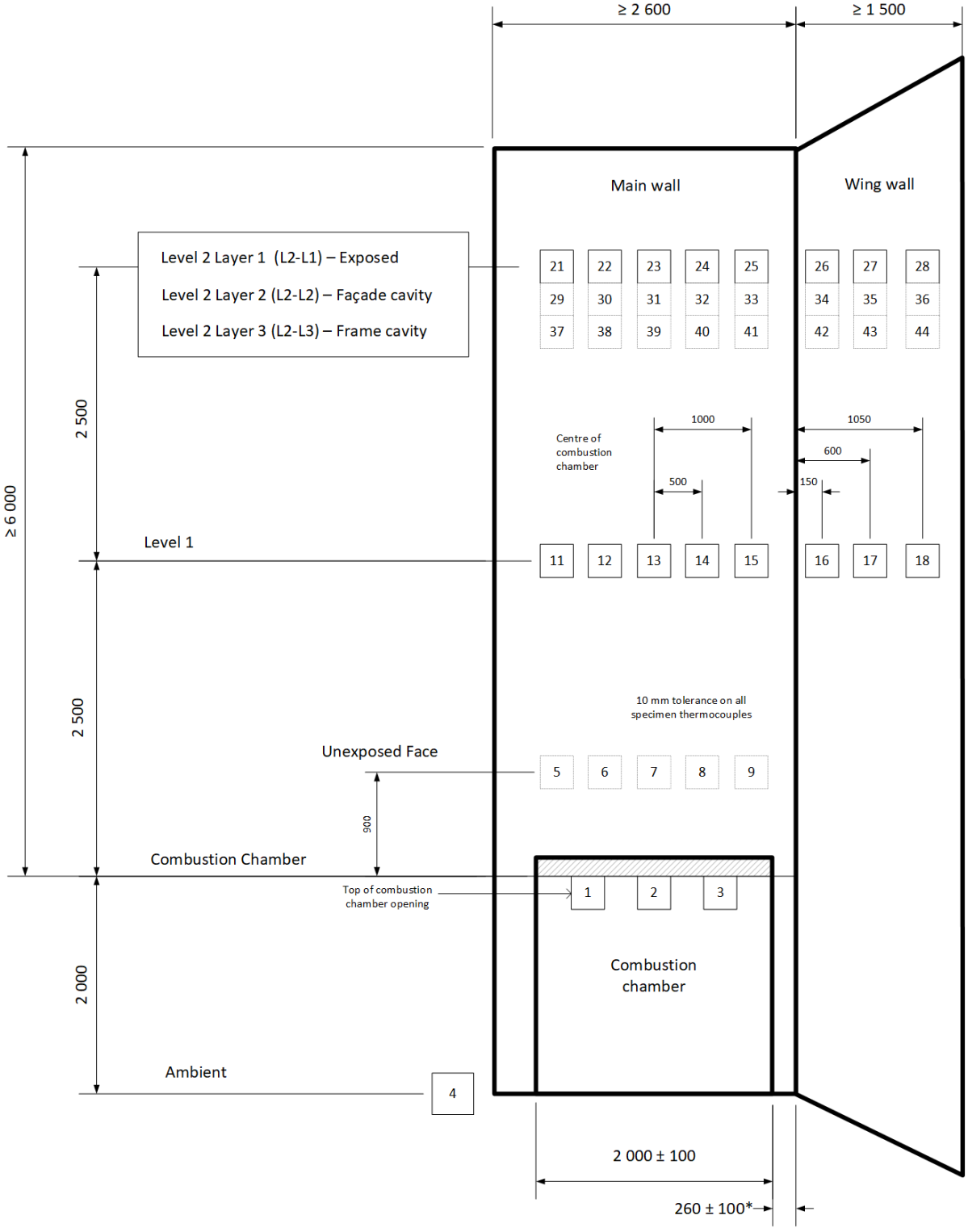
Figure 1: Thermocouple Locations



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4.3 Temperature Data

Figure 2: Level 1 External thermocouples

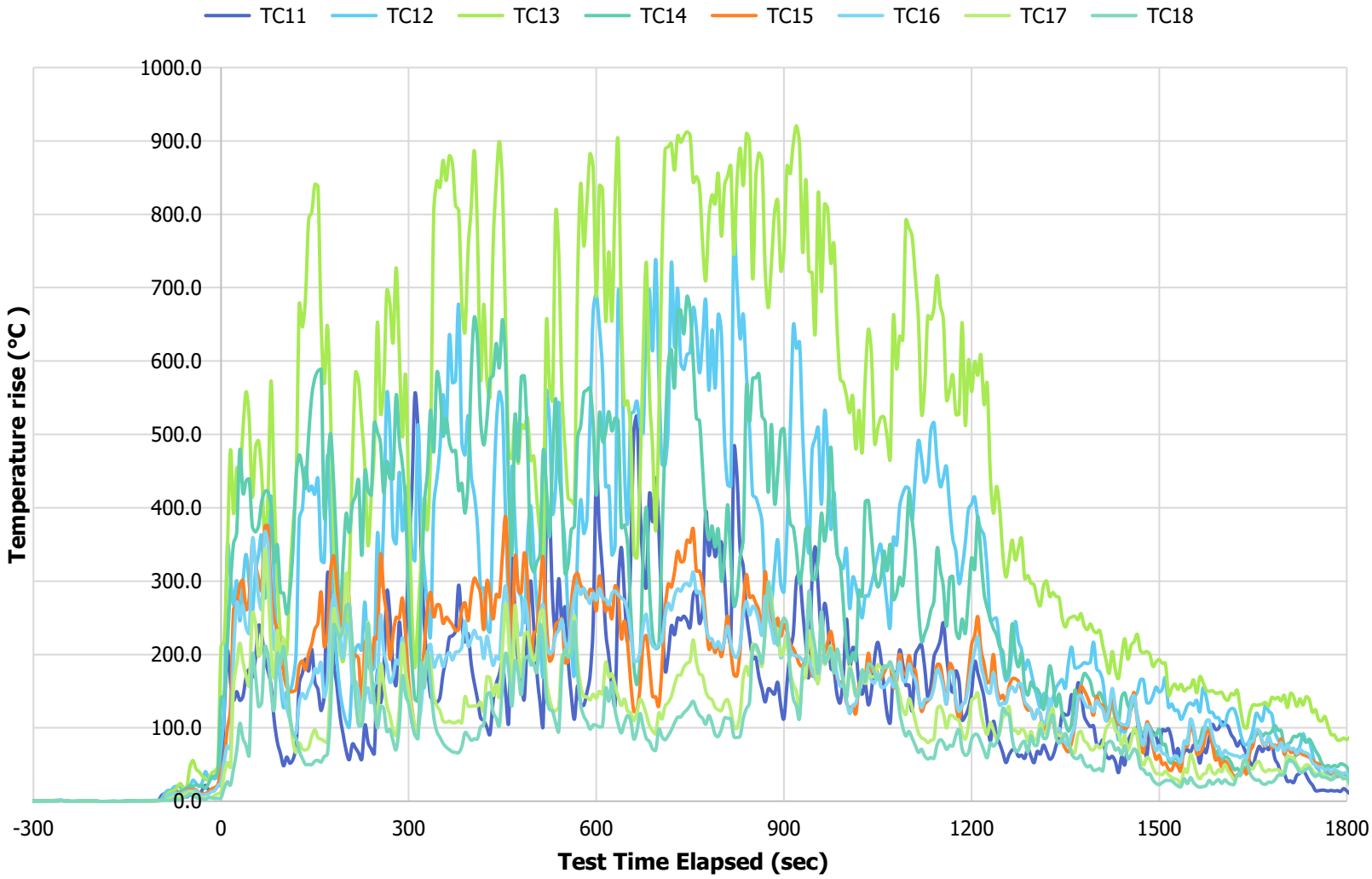

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Figure 3: Level 2 External thermocouples

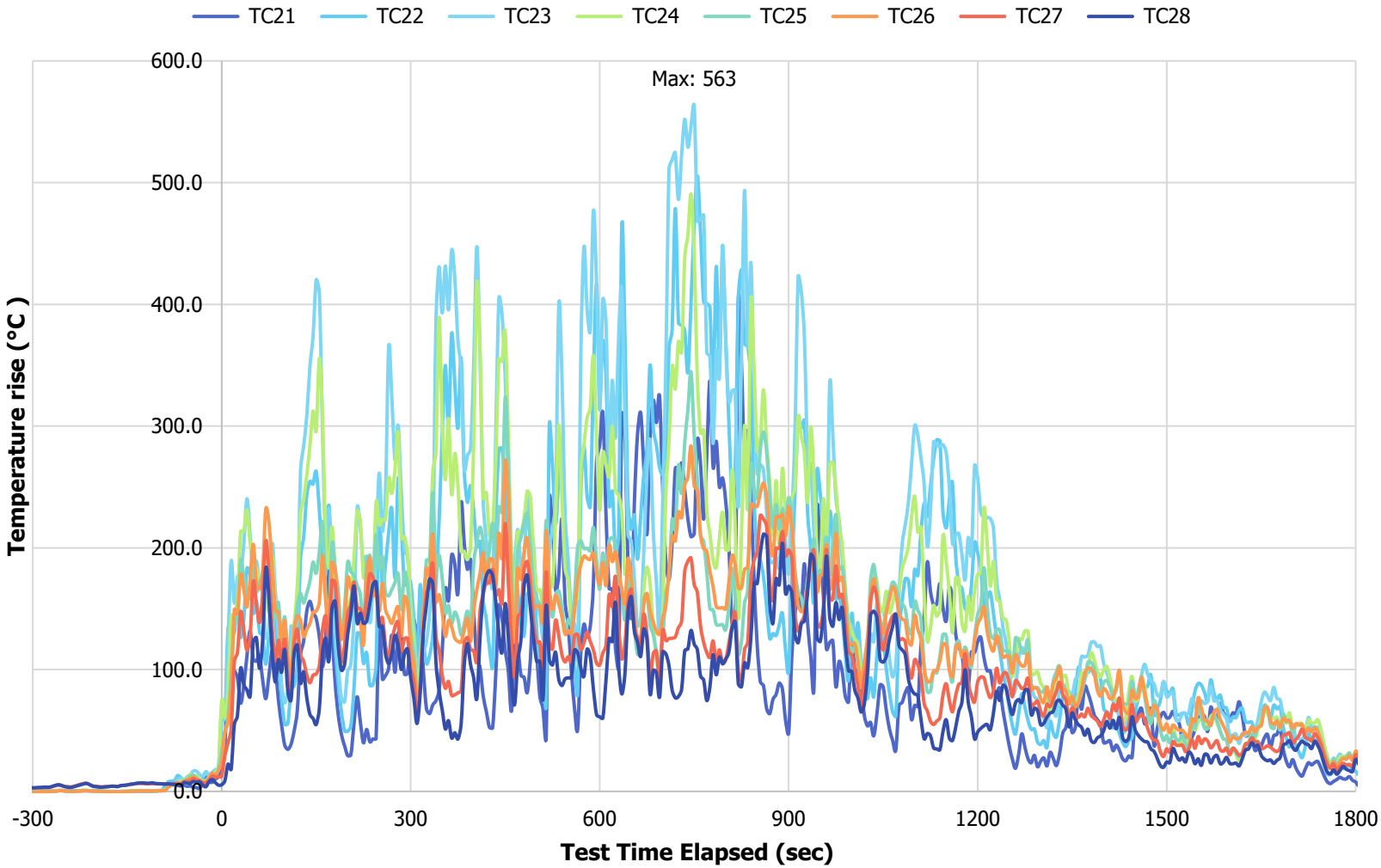

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Figure 4: Level 2 Façade cavity thermocouples

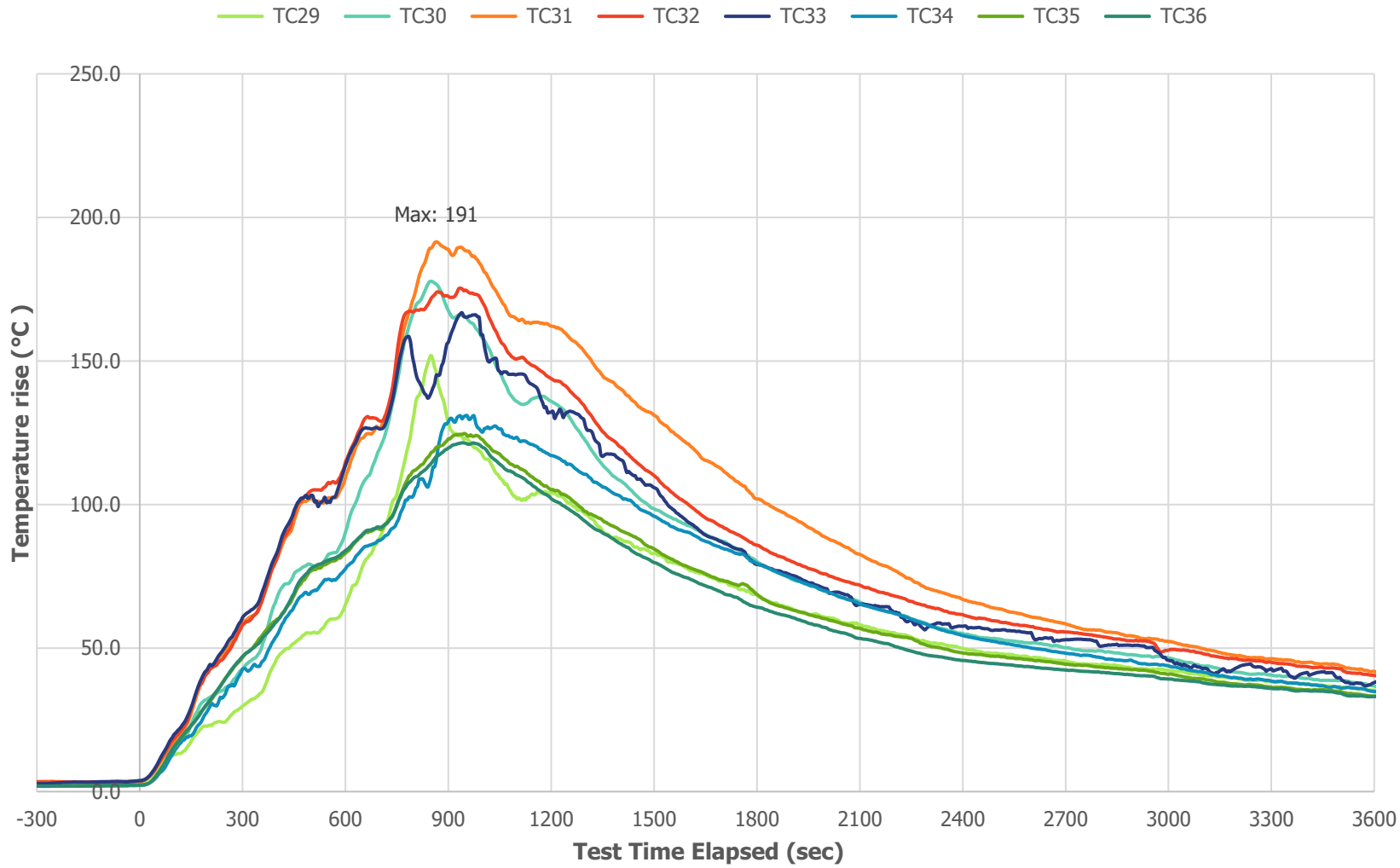

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Figure 5: Level 2 Frame cavity thermocouples

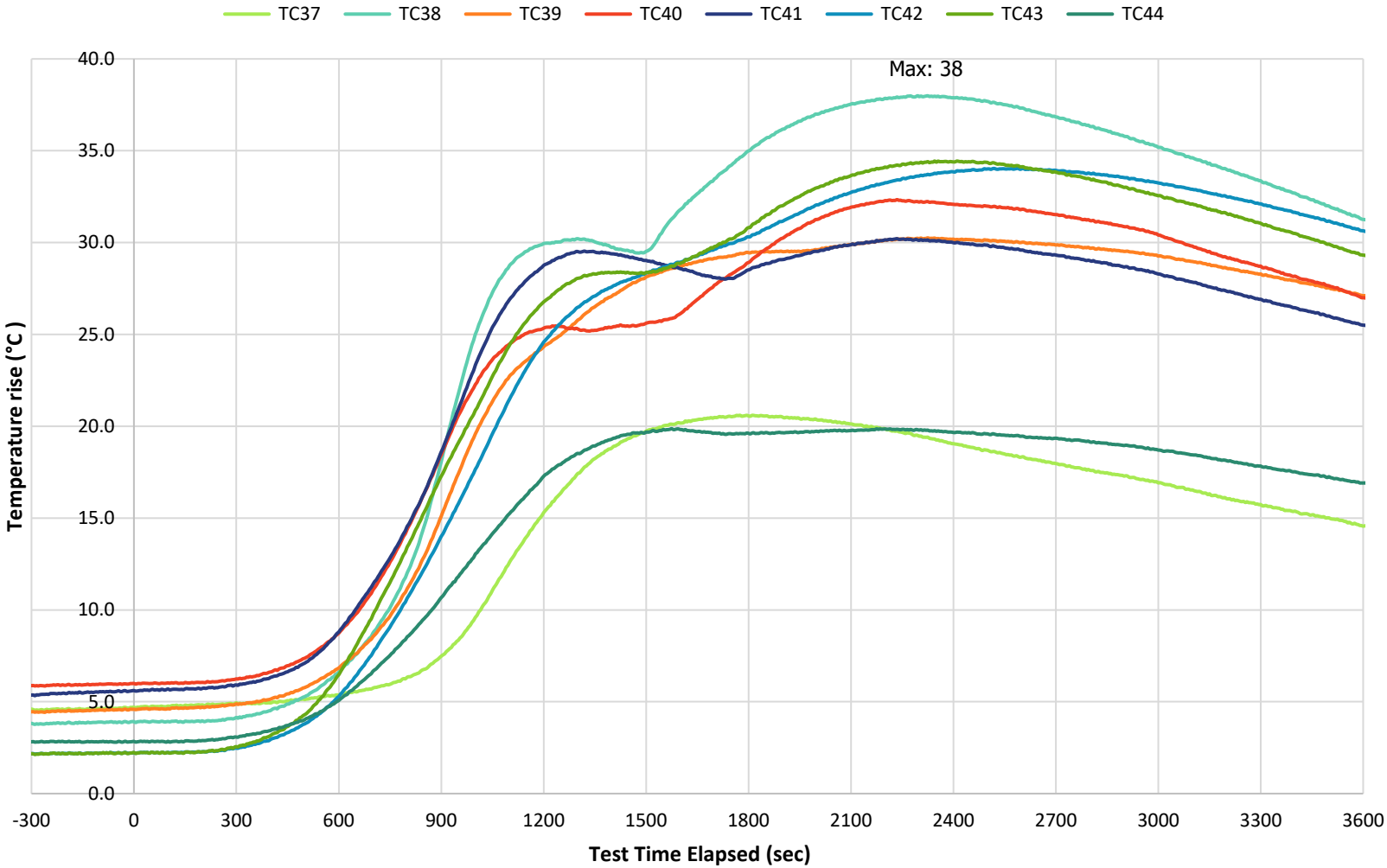

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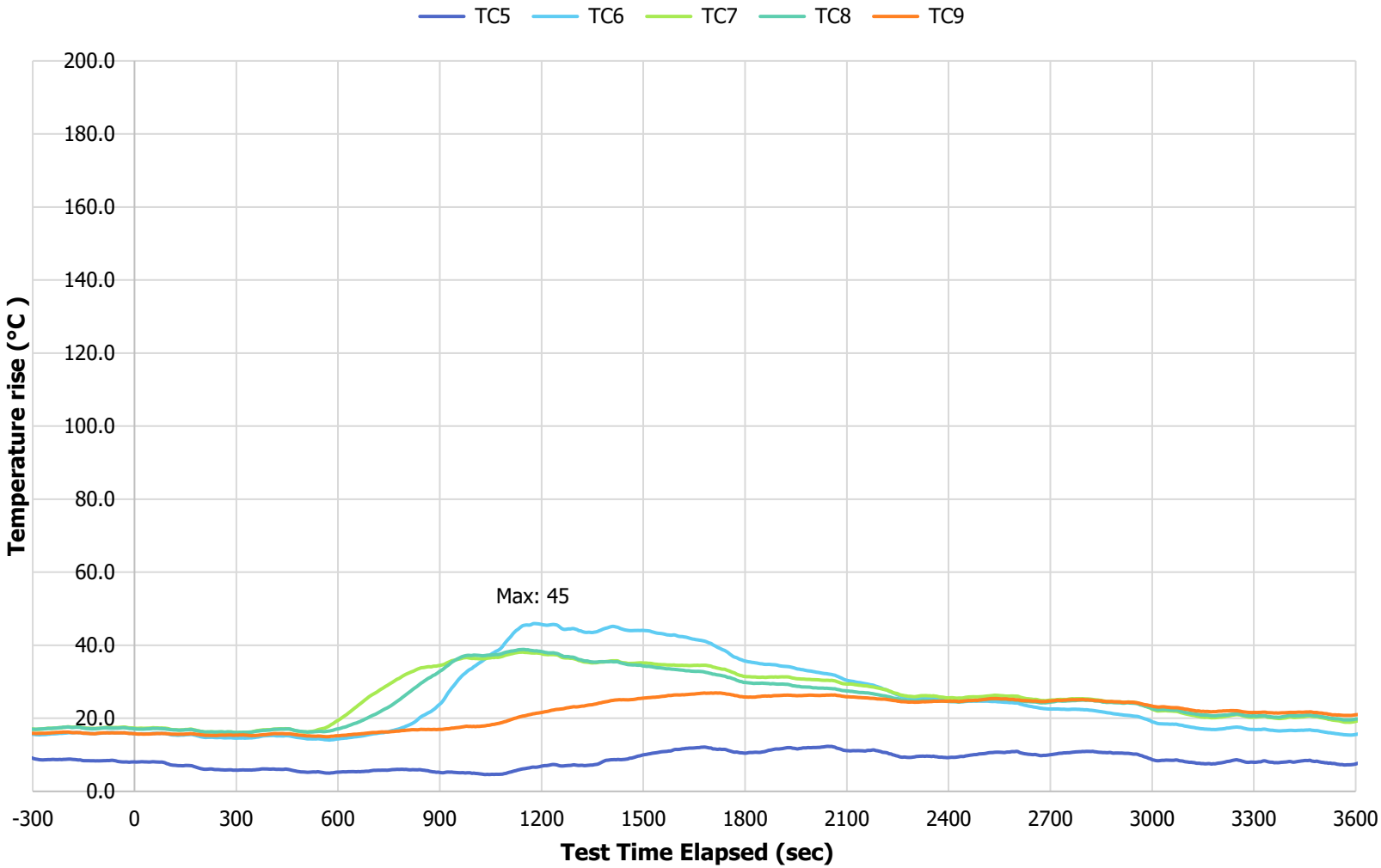
Figure 6: Unexposed face thermocouples, 900 mm above combustion chamber



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4.4 Post-test Examination (within 24 hours of test)

4.4.1 Façade Cladding

4.4.1.1 Main Wall

A triangular section of aluminium cladding directly above the combustion chamber opening of total nominal area 2 m² melted down and collected on the ground in front of the test specimen during the test period.

Charring extended to nominally 0.5 m around the perimeter of the aluminium melt back and extended to nominally 5 m above the combustion chamber opening (Level 2).

Gap sealant and PEF backing rod within the panel-to-panel junctions burned vertically up the centre of the combustion chamber opening to 5 m in height (Level 2) and along horizontal junctions from left side of specimen to wing wall junction, up to 2.5 m above the chamber opening.

4.4.1.2 Wing Wall

Surface charring of the aluminium cladding panels on the wing wall extended from the wing to main wall junction to specimen right side edge with nominal 3 m² total area.

Gap sealant with PEF backing rod in panel-to-panel rebates up to 2.5 m above the combustion chamber opening burned horizontally from main wall corner junction to the right-side edge of the test specimen. Sealant in the outer right side edge junction burned vertically to 2.5 m above combustion chamber opening (Level 1).

4.4.2 Cavity

4.4.2.1 Main Wall

The water-proof membrane within the façade cavity melted to nominally 3.5 m above the combustion chamber opening. All the membrane to the right-side of the combustion chamber melted back while the left-side melt back was limited to 50% of the total area.

The intumescent horizontal cavity barriers located nominally 1 m above the combustion chamber activated along its whole length. The horizontal barrier above the drainage cavity located at 3.5 m above the combustion chamber opening activated 0.5 m each side of the central vertical panel-to-panel junction.

The rigid air barrier cracked in two vertical fissures 600 mm above the combustion chamber opening nominally 300 mm each side of the main wall centre junction.

4.4.2.2 Wing Wall

The water-proof membrane melted from ground level to 2.5 m height above combustion chamber opening (Level 1).

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The intumescent horizontal cavity barrier located 1 m above the combustion chamber opening activated along its entirety.

4.4.3 Flashings

The entire 2 m long aluminium head flashing melted and fell to the ground in front of the specimen during the test period.

4.4.4 Insulation

The insulation in the main wall up to 2 m above the combustion chamber opening was discoloured by heat during the test period.

4.4.5 Framing System

The timber framing encapsulating the floor slab beam nominally 600 mm above the combustion chamber was affected by burn-through nominally 100 mm high by 1.8 m in length, centrally located on the main wall of the test specimen. The left-side timber jamb of the combustion chamber opening burned away nominally 500 mm below the lintel. After-glow, smouldering, and reignition was observed up to 24 hrs after the test ended.

4.4.6 Internal Lining

The internal plasterboard lining showed no signs of flame or smoke damage.

4.4.7 Debris

The total mass of collected debris from in front of the specimen was nominally 20 kg. The mass was a collection of smaller globules of molten aluminium panels and panel stiffeners which solidified into a single mass prior to measurement.

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4.5 Test results in accordance with BR 135

The test results in accordance with BS 8414-2:2015 and complied with the performance criteria detailed in BR135:2013 Annex B.

Table 2: BR 135:2013 results

Classification Criteria	Related classification measure	Result in test	Pass/Fail
B2.2: External Fire Spread	Temperature rises above T_s of any of external thermocouples at Level 2 exceeds 600ºC for a period of at least 30 s, within 15 mins of the start time t_s.	Maximum 562 °C at 12 minutes 30 seconds after t_s.	Pass
B2.3: Internal Fire Spread (Panel Cavity)	Temperature rises above T_s of any of internal thermocouples at Level 2 exceeds 600ºC for a period of at least 30 s, within 15 mins of the start time t_s.	Maximum 191 °C at 14 minutes 25 seconds after t_s.	Pass
B2.3: Internal Fire Spread (Frame Cavity)	Temperature rises above T_s of any of internal thermocouples at Level 2 exceeds 600ºC for a period of at least 30 s, within 15 mins of the start time t_s.	Maximum 18 °C at 15 minutes 0 seconds after t_s.	Pass
B2.3: Internal Fire Spread	Flaming for more than 60 s on the internal surface above a height of 0.5m above the combustion chamber within 15 mins of t_s.	No Flaming	Pass
B.2.4: Mechanical Performance	Ongoing system combustion following extinguishing of the ignition source. Melting and detachment of exterior aluminium directly impinged by flame.		N/A

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5. CLIENT SUPPLIED DRAWINGS

Figure 7: Combustion chamber head detail – section view

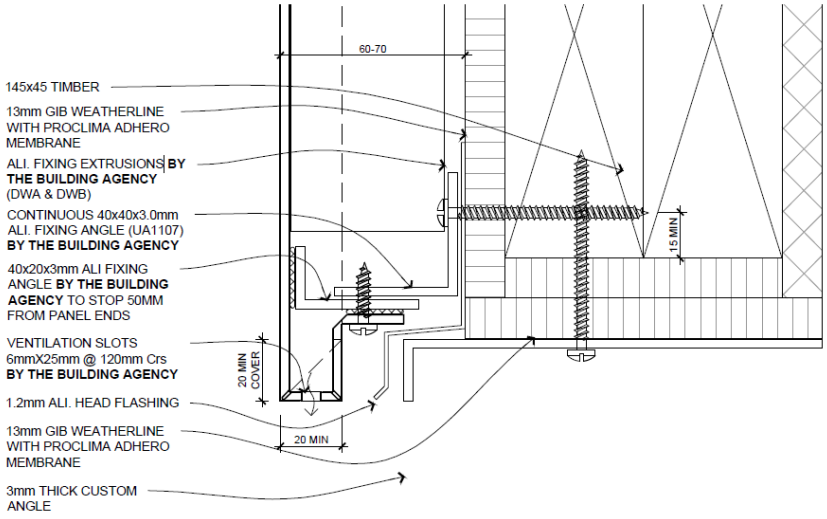

Figure 8: Level 2 Combustion chamber jamb – plan view

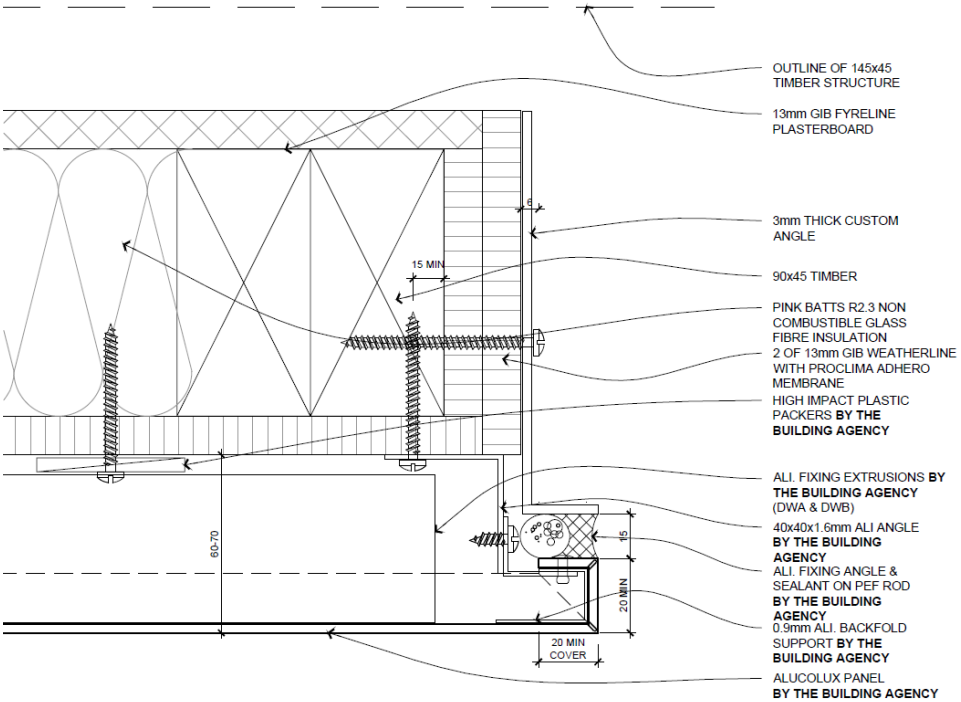

Figure 9: Horizontal drained joint – section view

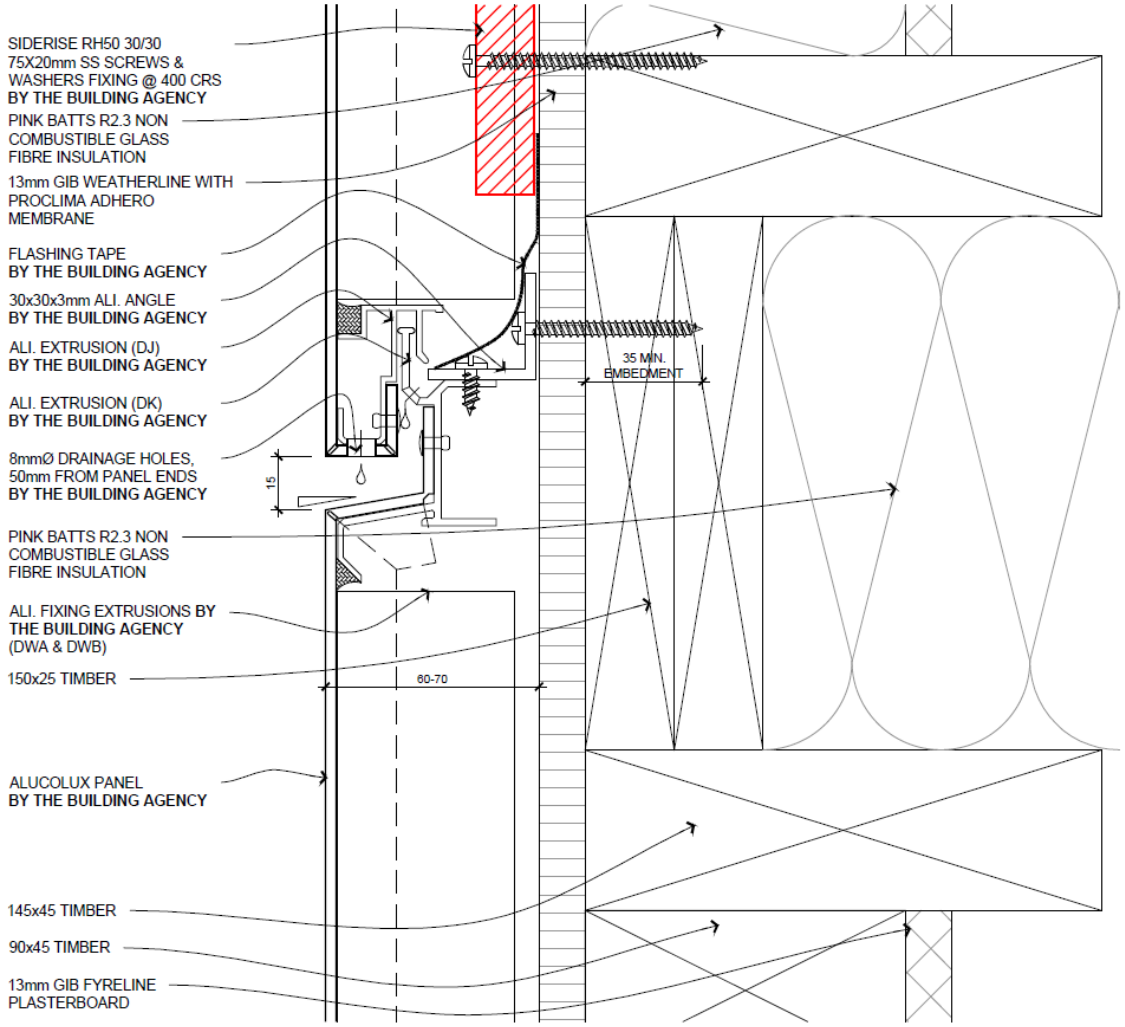

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Figure 10: Internal corner-combustion chamber junction – plan view

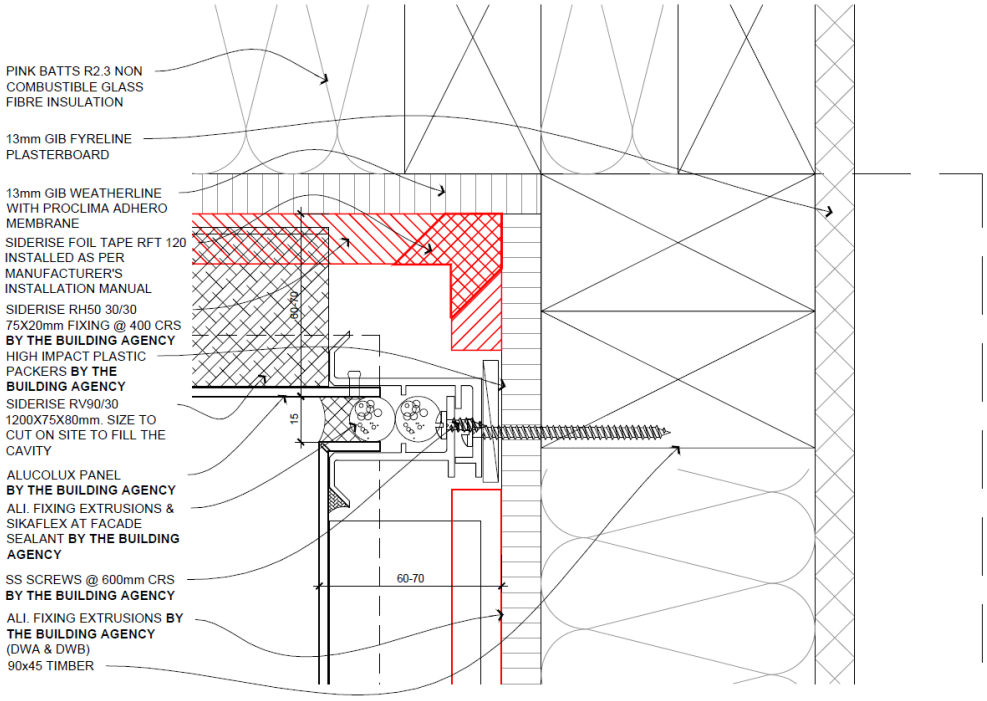

Figure 11: Panel edge – Main wall – Plan view

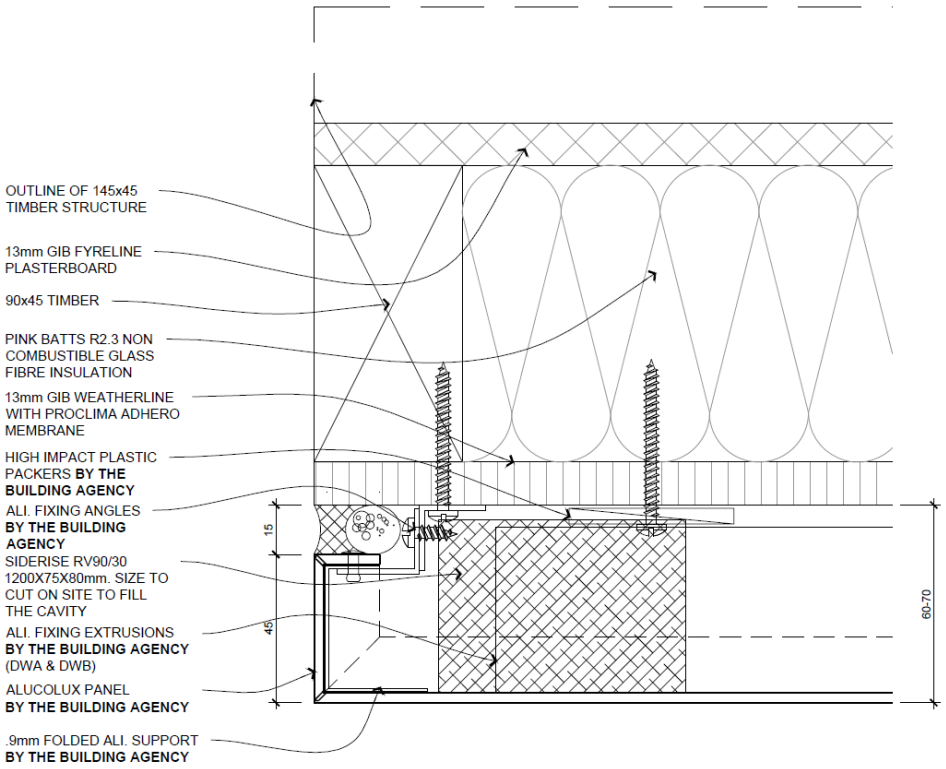

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Figure 12: Panel edge – Wing wall – Plan view

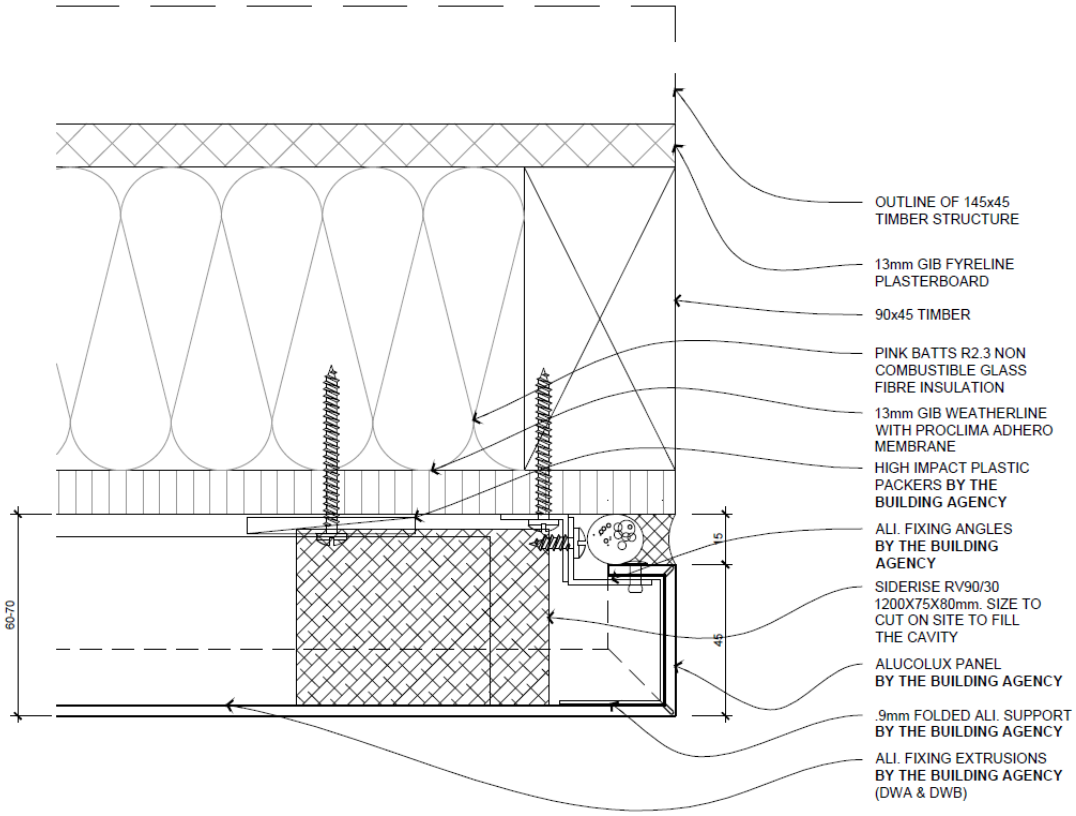

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Figure 13: Panel fixing rails layout – Elevation

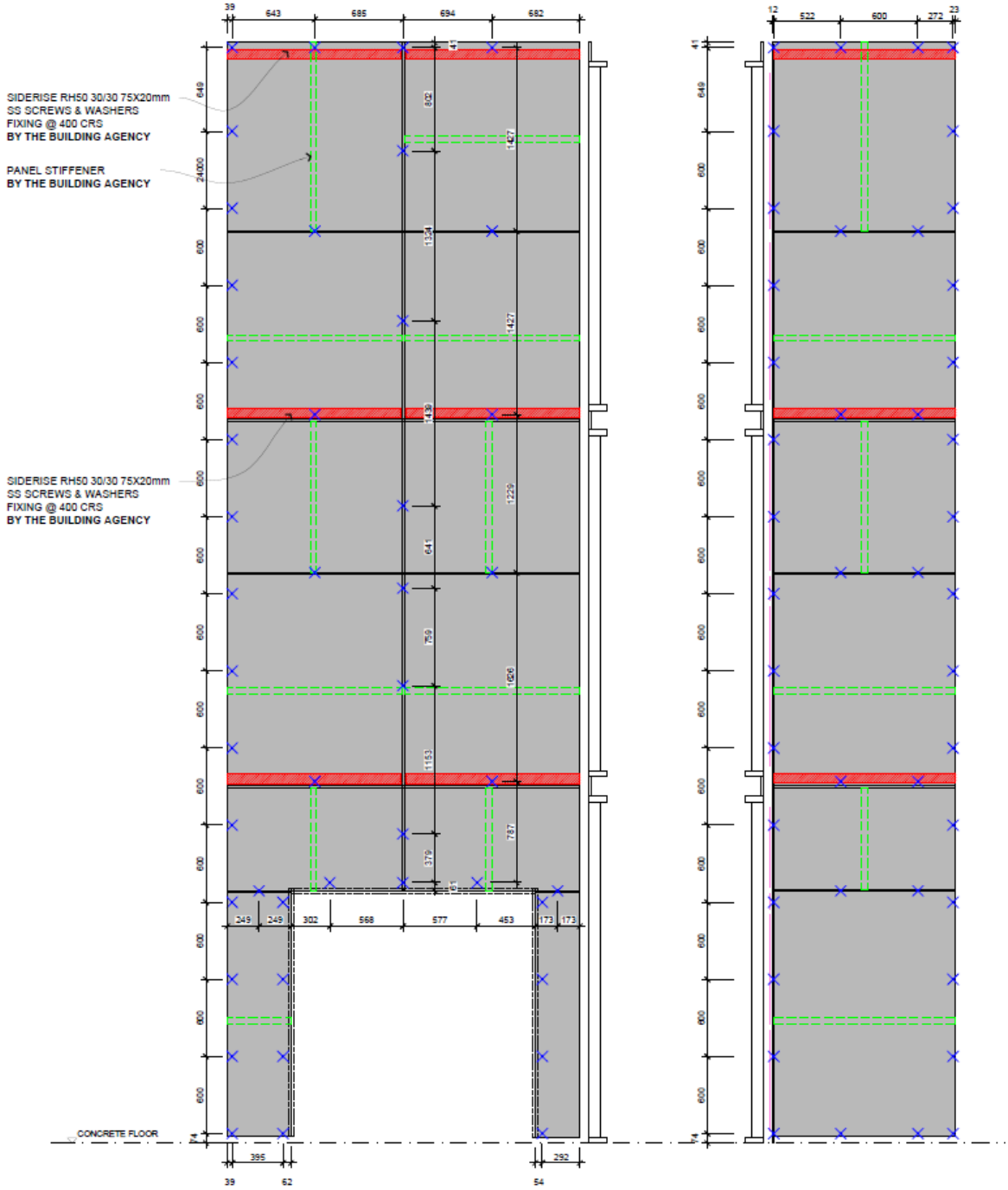

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Figure 14: Framing, RAB, and Vertical fire cavity barrier layout – Elevation

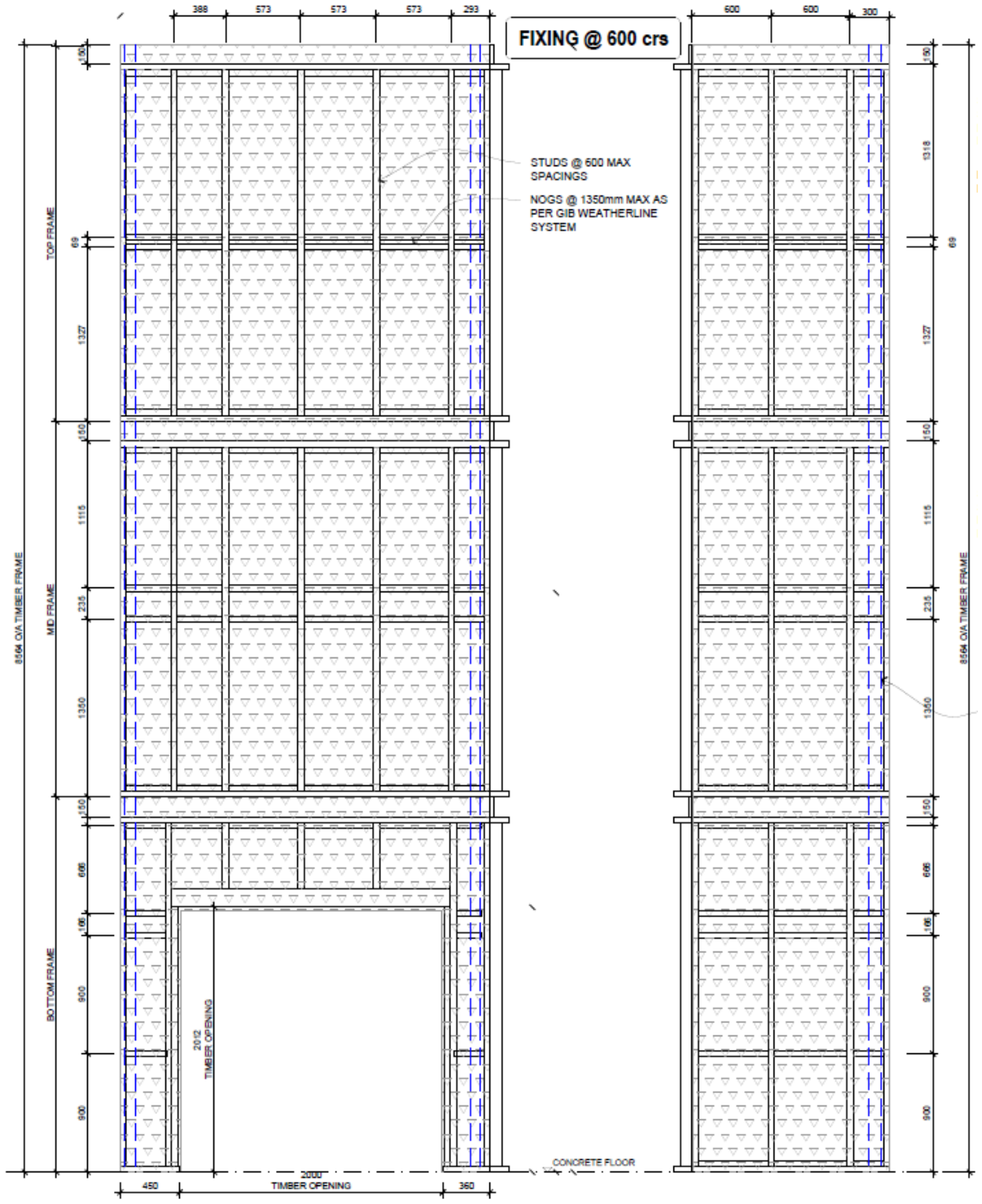
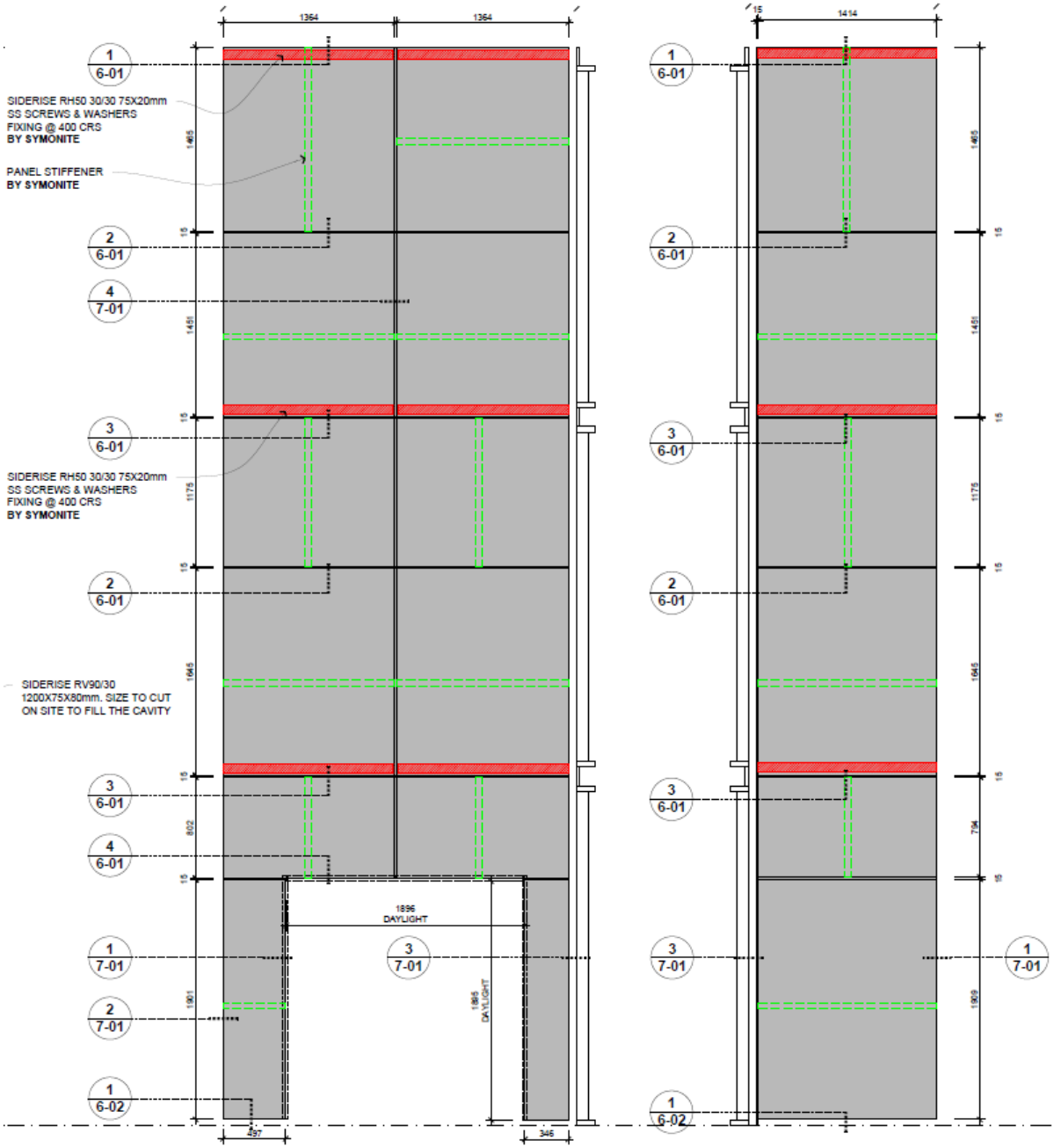


Figure 15: Panel, Stiffener, and Horizontal fire cavity barrier layout - Elevation



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PHOTOS

Photo 1: Structural wall frame

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Photo 2: Rigid wall underlay

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Photo 3: Rigid wall underlay expansion gap and fixings

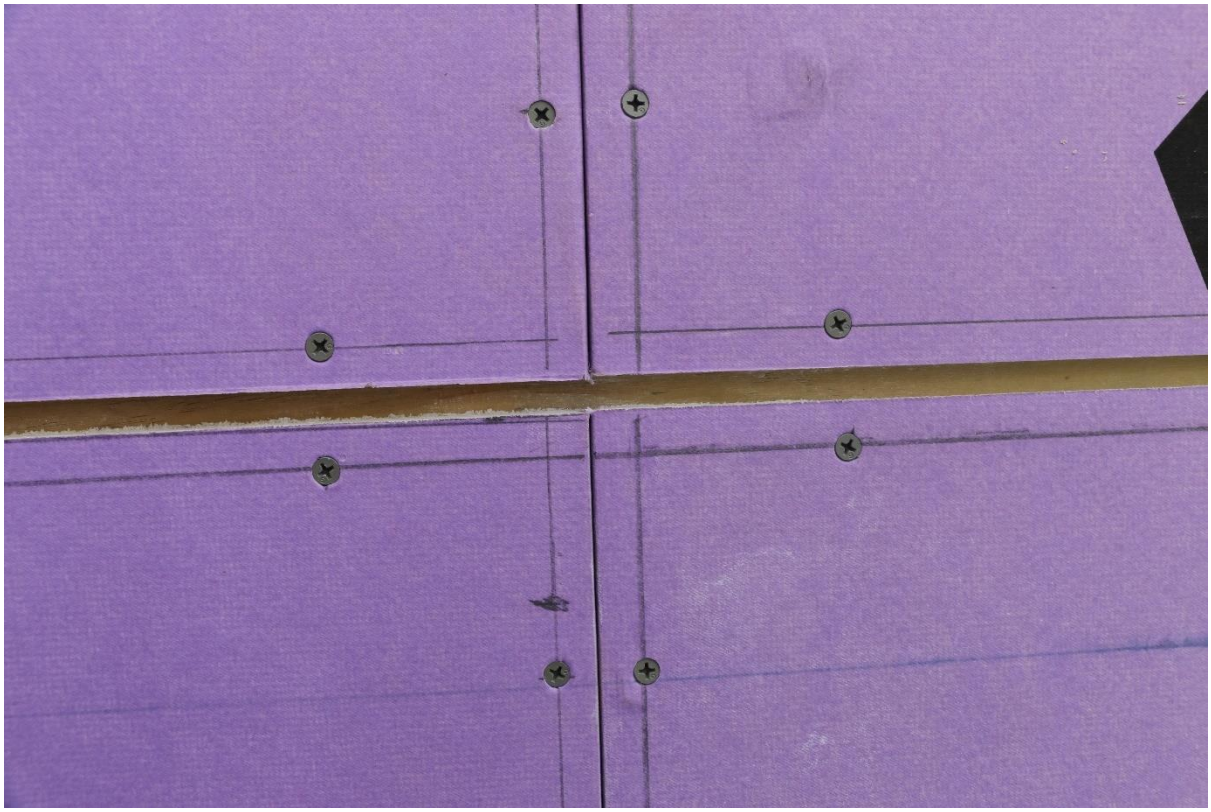

Photo 4: Combustion chamber opening – internal junction

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Photo 5: Waterproofing membrane

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Photo 6: Combustion chamber opening sill tape

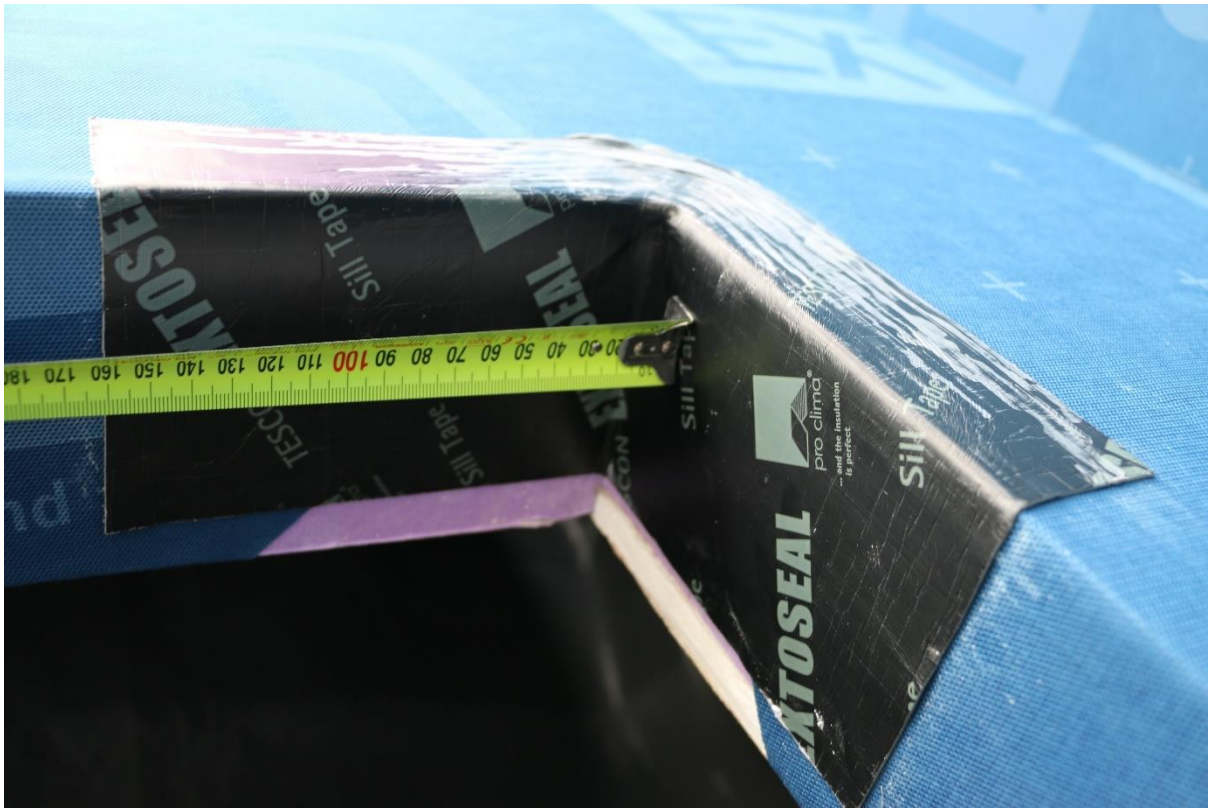

Photo 7: Combustion chamber opening flashing

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Photo 8: Alucolux panels and fire cavity barriers

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Photo 9: Alucolux panels with sealant applied to junctions

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Photo 10: Combustion chamber opening Panel fixing rails, Head flashing and Joinery angles

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Photo 11: Alucolux panel fixing

Photo 12: Panel fixing rails and Vertical fire cavity barrier

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Photo 13: Fire cavity barriers at drainage cavity

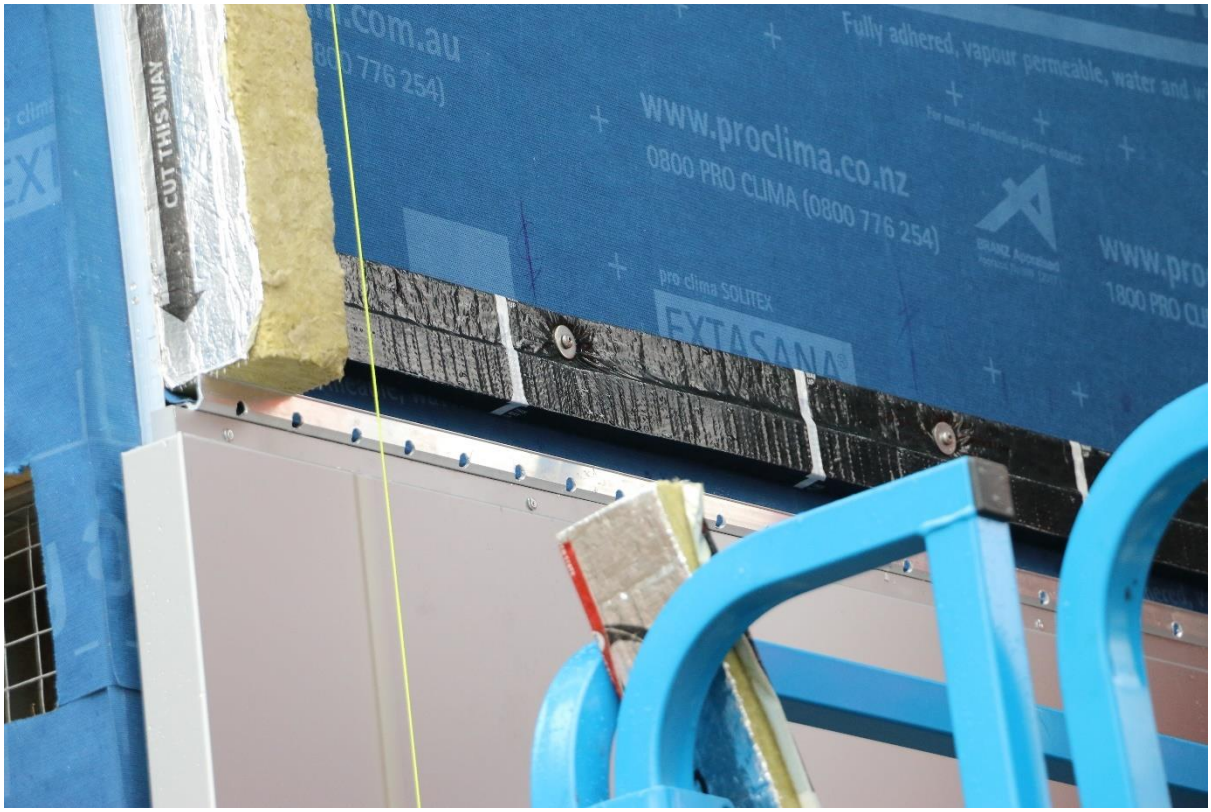

Photo 14: Vertical fire cavity barrier fixing bracket

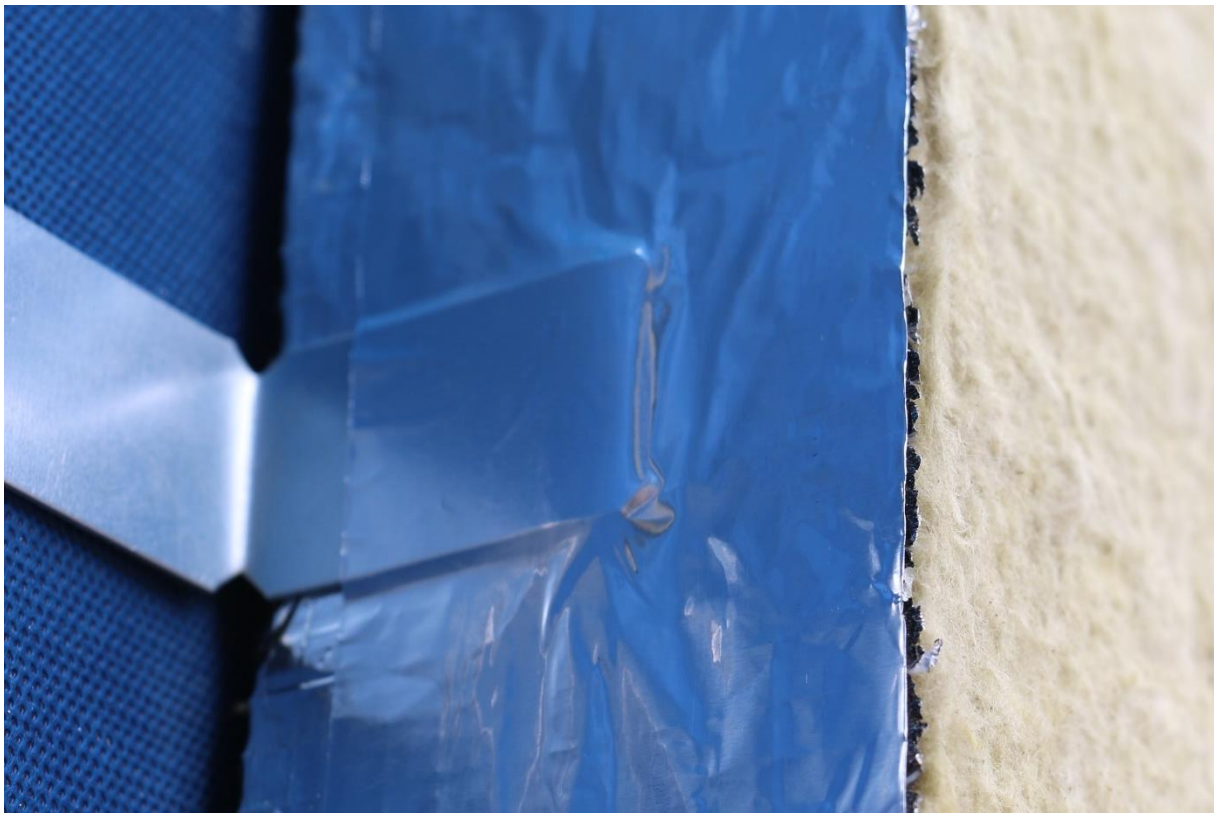

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Photo 15: Insulation and Internal lining

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Photo 16: Completed installation

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Photo 17: Ignition of timber crib

Photo 18: At 0 minutes 30 seconds

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Photo 19: At 1 minute 0 seconds

Photo 20: At 2 minutes 0 seconds

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Photo 21: At 3 minutes 0 seconds

Photo 22: At 4 minutes 0 seconds

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Photo 23: At 5 minutes 0 seconds

Photo 24: At 6 minutes

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Photo 25: At 7 minutes 0 seconds

Photo 26: At 8 minutes 0 seconds

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Photo 27: At 9 minutes 0 second

Photo 28: At 10 minutes 0 seconds

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Photo 29: At 11 minutes 0 seconds

Photo 30: At 12 minutes 0 seconds

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Photo 31: At 13 minutes 0 seconds

Photo 32: At 14 minutes 0 seconds

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Photo 33: At 15 minutes 0 seconds

Photo 34: At 16 minutes 0 seconds

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Photo 35: At 17 minutes 0 seconds

Photo 36: At 18 minutes 0 seconds

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Photo 37: At 19 minutes 0 seconds

Photo 38: At 20 minutes 0 seconds

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Photo 39: At 21 minutes 0 seconds

Photo 40: At 22 minutes 0 seconds

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Photo 41: At 23 minutes 0 seconds

Photo 42: At 24 minutes 0 seconds

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Photo 43: At 25 minutes 0 seconds

Photo 44: At 29 minutes 30 seconds

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Photo 45: Post-test main wall

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Photo 46: Post-test wing wall

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Photo 47: Post-test unexposed main wall

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Photo 48: Post-test unexposed wing wall

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Photo 49: Post-test debris on Satorius scale

END OF REPORT

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FF12829-001-C1
BR 135 PERFORMANCE

This is to certify that the specimen described below has been tested by BRANZ on behalf of the sponsor for determination of performance in accordance with BS 8414-2 and BR 135 Annex B.

Sponsor: The Building Agency
4 Link Drive
Wairau Valley
Auckland, 0627
New Zealand

Referenced Document: BR 135 'Fire performance of external thermal insulation for walls of multi-storey buildings' Third edition Annex B 2013

Specimen Name: Alucolux Solid Aluminium Façade System

Specimen Description: The test specimen described by the client as Alucolux Solid Aluminium Façade System, comprising Alucolux 3 mm thick solid aluminium panel and extruded aluminium rail fixing system on a plasterboard rigid air barrier supported by a lightweight timber frame.

A full description of the test specimen and the test results are given in BRANZ Type Test report: FF12829-001

Orientation: Exposure from external face.

The tested results were as follows:

Classification Criteria	**Pass/Fail**
B2.2: External Fire Spread	Pass
B2.3: Internal Fire Spread (Panel Cavity)	Pass
B2.3: Internal Fire Spread (Frame Cavity)	Pass
B2.3: Internal Fire Spread	Pass
B2.4: Mechanical Performance	N/A
Classification	**Pass**

Regulatory authorities are advised to examine test reports before approving any product.

Issued by Lukas Hersche
Fire Testing Engineer
BRANZ

Reviewed by Ed Soja
Senior Fire Safety Engineer
BRANZ

Issue date 26 March 2021

Expiry date 26 March 2026