



# Classification report

Classification of a non-loadbearing external wall system in accordance with AS 5113:2016 Amendment 1


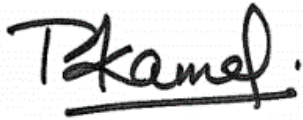


Test sponsor: CSR Cemintel

Job number: ASCRRTF180305

Revision: R2.0

External wall (EW) test date: 18 February 2019

## Amendment schedule

Version	Date	Information relating to report	
R1.0	17 April 2019	Description	Initial issue
			Prepared by
		Name	Anthony Rosamilia
		Signature	
		Reviewed by	
R2.0	8 July 2019	Description	Change to company name
			Prepared by
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		Signature	
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Exova Warringtonfire rebranded to Warringtonfire on 1 December 2018. Apart from the change to our brand name, no other changes have occurred. The introduction of our new brand name does not affect the validity of any existing documents we have previously issued.

## Executive summary

This report presents the classification of the external wall system detailed in the schedule of components in Section 2. The test procedure and classification were carried out in accordance with the procedures given in AS 5113:2016 Amendment 1 – Classification of external walls of buildings based on reaction-to-fire performance. That classification should be read together with this report.

The test referenced in this classification report is:

- RTF180305, done on 18/02/2019 in accordance with BS 8414-2:2015 and the additional requirements of AS 5113:2016 Amendment 1 to provide a classification that complies with the requirements of AS 5113:2016.
- A BB test in accordance with AS 5113:2016 Amendment 1 Appendix C had not been conducted at the time this report was issued.

Warringtonfire Australia performed the test to classify the external wall system at the request of CSR Cemintel.

The test specimen consisted of a steel framing that was clad on the unexposed side with plasterboard. On the exposed side was layered with Cemintel cement sheeting, which was clad over a layer of rigid air barrier. The Cemintel cement sheets were fixed in place using brackets and steel clips. A horizontal cavity barrier was also installed along the false levels.

The test specimen achieved the following classification as specified in AS 5113:2016 Amendment 1:

**Fire performance (FP): EW/-**

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# 1. Introduction

This report presents the classification of the external wall system detailed in the schedule of components in Section 2. The test procedure and classification were carried out in accordance with the procedures given in AS 5113:2016 Amendment 1 – Classification of external walls of buildings based on reaction-to-fire performance. That classification should be read together with this report.

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Warringtonfire Australia performed the test to classify the external wall system at the request of CSR Cemintel.

**Table 1 Test sponsor details**

Test sponsor	Address
CSR Cemintel	376 Victoria Street Wetherill Park 2164 NSW Australia


## 2. Schedule of components

### EW test specimen schedule

Table 2 lists the schedule of components for the test specimen which were provided by the test sponsor and surveyed by Warringtonfire Australia.


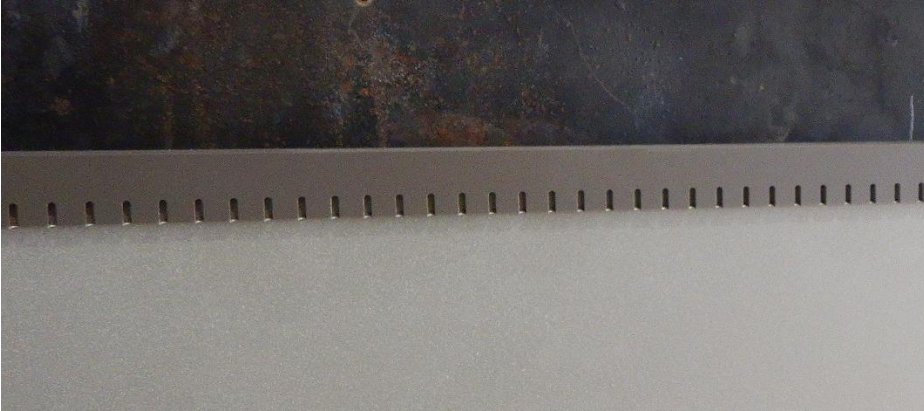

**Table 2 EW schedule of components**

Item	Description	
<b>Cladding</b>		
1.	Item name	Cemintel Territory
	Product name	133938 Savanna Shade
	Material	Cement bonded, fibrous-wood particle panel
	Size	3031mm long x 470mm (455mm visible face) wide x 18mm thick Density (measured): 1108kg/m <sup>3</sup>
	Installation	<p>The specimen consisted of 60 panels of various sizes installed on the exposed side. The panels had a tongue and groove profile along the top and bottom. The panels were secured to the Rigid air barrier (item 4) using panel clips (item 2), which were fixed at nominal 455mm vertical centres.</p> <p>The panel to panel vertical joints were applied with sealant (item 17).</p> <p>The panels were installed horizontally. On the main wall, a vertical spacer (item 8) was installed at panel to panel joints.</p> <p>Horizontal panel starter strips (item 3) were used at the start of each level to start the panels, which was screw fixed at stud centres using screws (item 28). Clips (item 2) were used to connect the panels together. Where clips could not be used, the panels – with a spacer (item between it and the rigid air barrier (item 4) - were screw fixed (item 28) from the exposed face to the frame at nominal 450mm centres. The screws were painted over (item 19) for decoration. At the vertical edge of both the main and wing wall, a L-profile (item 15) was installed behind the panels, acting as flashing.</p> <p>At the topmost panels of the main and wing wall, eave trims (item 10) was fixed horizontally to cap the tongue profile.</p> <p>The top grooved edge of the panel had a white strip seal. ~3mm wide.</p> <p>For more details, refer to Appendix A.</p>
2.	Item name	Panel clip
	Product name	JE825
	Material	0.80mm thick Galvanised Steel
	Size	Overall Size: 72mm wide x 45mm high x 23mm deep
	Installation	<p>The clips were fitted to the top (tongue) profile of each panel (item 1) at nominal 600mm centres. The clips secured the panels to the steel framing (item 12), sandwiching the Rigid air barrier (item 4) in-between.</p> <p>The clips were screw fixed using hex head screws (item 29).</p>  <p>For more details, refer to Appendix A.</p>
3.	Item name	Starter strip
	Material	Galvalume AZ150 corrosion resistant coating
	Size	Overall Size: 40mm high x 3030mm wide x 22mm deep x 1mm thick

Item	Description	
	Installation	<p>The starter strip was installed at the start of each level, between the panel (item 1) and the Rigid air barrier (item 4). The starter strip was screw fixed using hex head screws (item 29) at stud centres to the steel framing studs (item 12).</p>  <p>For more details, refer to Appendix A.</p>
4.	Item name	Rigid air barrier
	Product name	Ceminseal Rigid Air Barrier SE
	Material	6mm thick fibre cement sheet
	Size	Overall size: 1200mm wide × 2995mm high × 6mm thick (cut to size) Density: 1479 kg/m <sup>3</sup> (measured)
	Installation	<p>Installed on the exposed face of the steel framing (item 12). Screw fixed using 35mm CSK screws (item 22) to the studs at nominal 200mm vertical centres at stud intervals. The sheet to sheet joints were sealed with HighTack tape (item 5). The sheets were butt joined together.</p> <p>For more details, refer to Appendix A.</p>
5.	Item name	HighTack tape
	Product name	Enviroseal™ ProctorWrap™ HighTack tape
	Size	60mm wide
	Installation	<p>Installed at the joints between the rigid air barrier (item 4) sheets.</p> <p>For more details, refer to Appendix A.</p>
6.	Item name	13mm plasterboard
	Product name	CSR Gyprock Plasterboard RE
	Size	Overall size: 1200mm wide × 3000mm long × 13mm thick (cut to size) Density: 648 kg/m <sup>3</sup> (measured)
	Installation	<p>One layer of plasterboard was installed horizontally on the unexposed side of the specimen. The plasterboard sheets were screw fixed at nominal 400mm centres using plasterboard screws (item 26). The plasterboard at the unexposed corner of the specimen was extended to allow for a square finish. The board to board joints were base coated.</p> <p>For more details, refer to Appendix A.</p>
7.	Item name	Fire barrier
	Product name	FF102/50 – Ventilated Fire Barrier
	Material	Intumescent material



Item		Description
	Size	Overall size: 3.6mm thick x 75mm wide x 1000mm long (cut to nominal 35mm wide) Mass per unit area: 4kg/m <sup>2</sup>
	Installation	Screw fixed using 16mm screws (item 25) horizontally along each false slab level at nominal 250mm centres over the Z flashing (item 9).  For more details, refer to Appendix A.
8.	Item name	Joint Backing Strip Double Flange
	Material	0.3mm BMT steel with Galvalume AZ150 corrosion resistant coating.
	Size	Overall Size: 50mm wide x 20mm deep x 3030mm high
	Installation	Fixed vertically along the panel to panel (item 1) joint to act as joint spacer. Screw fixed using screws (item 29) at 600mm centres. Also used at the corner of the main and wing wall. Screw fixed (item 29) at nominal 300mm centres. Used as the spacer for the corner join.  For more details, refer to Appendix A.
9.	Item name	Z flashing
	Material	0.5mm thick Galvanised Steel
	Size	Overall Size: 25mm high front face x 40mm deep web x 202mm high back face
	Installation	Installed horizontally along each false slab level and along the top of the chamber opening. Screw fixed at nominal stud centres using hex head screws (item 29).

Item	Description	
		 <p>For more details, refer to Appendix A.</p>
10.	Item name	Eaves Trim
	Product name	TER Eave Trim Charcoal 3030mm SGL
	Material	Powder coated finish on 0.35mm thick steel with Galvalume AZ150 corrosion resistance coating.
	Size	Overall Size: 26mm deep x 60mm high x 3030mm long
	Installation	<p>Located at the top of the specimen fitted on to the top (tongue) profile of the panel (item 1). The eaves trim was slotted and friction fitted onto the top of the top panels of the wall system.</p>  <p>For more details, refer to Appendix A.</p>
11.	Item name	Top-hat spacer
	Product name	Rondo 15mm top-hat
	Material	Galvanised steel
	Size	15mm flange x 15mm deep x 45mm web x 0.75BMT (75mm wide)
	Installation	<p>Located at the top of the reveal and on the Z-flashing (item 9) below false slab levels. The sections of top-hat were screw fixed onto the Z-flashing using hex-head screws (item 30)</p>  <p>For more details, refer to Appendix A.</p>
<b>Framing</b>		
12.	Item name	Steel framing
	Product	1.15BMT Galvanized steel Rondo 92mm Studs and Tracks

Item		Description
	Installation	<p>There were six separate section of steel framing, three each for both the main and wing wall.</p> <p>The main wall section above the combustion chamber had six rows of studs at approximate 500mm centres, with alternating rows having double studs back to back. The top and bottom of each section was installed with tracks, which were screw fixed to the slab floor and SHS at 600mm centres. The tracks were screw fixed using 50mm hex head screws (item 24) to the floor and 32mm hex head screws (item 23) to the SHS (item 30). The top of the chamber opening was also fixed with an additional track section.</p> <p>The wing wall sections had four studs at nominal 500mm centres, and the tracks were installed at the top and bottom of the studs, screw fixed at 600mm centres.</p> <p>The steel framing was installed flush with the front face of the false slabs of the steel substrate (item 30).</p> <p>For more details, refer to Appendix A.</p>
<b>Flashing</b>		
13.	Item name	140mm wide flashing
	Installation	Installed around the perimeter of the chamber opening. Screw fixed using hex head screws (item 29) at nominal 300mm centres for the sides and nominal 250mm centres for the top.
14.	Item name	Rondo reveal Bead 0.9BMT
	Dimension	25mm x 25mm equal angle. One side is perforated.
	Installation	Installed at the outer edge of the specimen to cover the studs.
15.	Item name	50mm L-profile
	Dimension	50mm x 50mm x 0.3mm thick with a 6mm folded lip on both sides
	Installation	Installed at the outer edge of the specimen between the rigid air barrier (item 4) and the panel (item 1).
<b>Insulation</b>		
16.	Item name	Bradford™ Gold Performance R2.7 90mm Wall Batts
	Size	1155mm x 560mm x 90mm thick (cut to size) Density: 34.4 kg/m <sup>3</sup> (measured)
	Installation	Installed in the cavity of the steel framing (item 12), except in the area above the chamber opening to the first floor. This client said that this was inadvertently omitted.
<b>Sealant/Adhesive</b>		
17.	Item name	Sealant
	Product name	Cemintel Territory 178928 Coloured sealant
	Installation	Applied between the panel to panel (item 1) vertical joints to 10mm depth from specimen face.
18.	Item name	Primer
	Product name	Cemintel Territory 111616 Primer 1
	Installation	Applied before the touch up paint (item 19) to cover up screws.
19.	Item name	Touch up paint
	Product name	Cemintel Territory 165368 Savanna Cloud Touch Up Paint
	Installation	Used to paint over the screw fixed from the exposed side.
20.	Item name	Join tape
	Product name	CertainTeed Marco® Spark-Perf® Drywall Joint Tape

Item	Description	
	Installation	Used to tape over the plasterboard (item 6) joins.
21.	Item name	Join cement
	Product name	Gyprock Pre-mixed Total Joint Cement
	Installation	Applied over the joint tape (item 20).
<b>Fixings</b>		
22.	Item name	8 – 18 x 35mm CSK Ribbed Head screws
	Installation	Used to screw fix the Rigid air barriers (item 4) to the steel framing (item 12).
23.	Item name	32mm long Hex head Tek screws
	Installation	Used to screw fix the steel framing tracks (item 12) to the SHS (item 29).
24.	Item name	Ø7.6mm x 50mm long Masonry anchor hex head screws
	Installation	Used to screw fix the steel framing tracks (item 12) to the floor.
25.	Item name	10g x 16mm SDS flat top screw
	Installation	Used to screw fix the fire barriers (item 7) along the false slab levels.
26.	Item name	6g x 32mm Self Drilling, Fine thread bugle head screw
	Installation	Used to screw fix the plasterboards (item 6) to the unexposed side of the specimen.
27.	Item name	10g x 16mm Self-drilling screw flat top screw
	Installation	Used to screw fix the studs to the track for the steel framing (item 12).
28.	Item name	8g x 65mm Bugle head drill point fine thread screws
	Installation	Used to screw fix the panels to the steel framing (item 12).
29.	Item name	10g x 25mm Hex head screws
	Installation	Used to screw fix the flashings, clips and strips to the rigid air barrier (item 4) and the steel framing (item 12).
<b>Steel substrate</b>		
30.	Item name	Steel substrate
	Size	The steel substrate was overall 9300mm high x 3245mm wide for the main wall and 9300mm high x 2000mm wide for the wing wall
	Installation	The substrate consisted of structural steel sections and SHS.

### BB test specimen schedule

The test had not been conducted at the time this report was issued.

### 3. Test procedure

Table 3 details the test procedure for the tests conducted to ascertain compliance with this classification.

**Table 3 Test procedure**

Item	Detail							
Statement of compliance	EW	The EW test was performed in accordance with the requirements of BS 8414-2:2015 and AS 5113:2016 Amendment 1 as appropriate for a non-loadbearing external cladding system fixed to and supported by a structural steel frame.						
	BB	The BB test had not been conducted						
Variations	EW	<ul style="list-style-type: none"> <li>Pinus Radiata was used instead of Pinus Silvestris as permitted by AS 5113:2016 Amendment 1</li> </ul>						
	BB	N/A						
Pre-test conditioning	EW	<p>The construction of the external wall system was completed on 15 February 2019.</p> <p>Once the construction of the system was complete, the test specimen was protected from adverse environmental conditions.</p>						
	BB	N/A						
Sampling / specimen selection	EW	The laboratory was not involved in sampling or selecting the test specimen for the reaction-to-fire test. All test materials were supplied and installed by the test sponsor.						
	BB	N/A						
Environmental conditions at the start of the test	EW	<table border="1"> <tr> <td>Ambient temperature</td> <td>26°C</td> </tr> <tr> <td>Wind speed</td> <td>0.0 - 0.8 m/s</td> </tr> </table>	Ambient temperature	26°C	Wind speed	0.0 - 0.8 m/s		
	Ambient temperature	26°C						
Wind speed	0.0 - 0.8 m/s							
BB	<table border="1"> <tr> <td>Ambient laboratory temperature</td> <td>N/A</td> </tr> <tr> <td>Minimum temperature</td> <td></td> </tr> <tr> <td>Maximum temperature</td> <td></td> </tr> </table>	Ambient laboratory temperature	N/A	Minimum temperature		Maximum temperature		
Ambient laboratory temperature	N/A							
Minimum temperature								
Maximum temperature								
Ignition source	EW	<table border="1"> <tr> <td>Crib material</td> <td>softwood (pinus radiata)</td> </tr> <tr> <td>Moisture content</td> <td>11.2%</td> </tr> <tr> <td>Density</td> <td>0.5kg/dm<sup>3</sup></td> </tr> </table>	Crib material	softwood (pinus radiata)	Moisture content	11.2%	Density	0.5kg/dm <sup>3</sup>
	Crib material	softwood (pinus radiata)						
Moisture content	11.2%							
Density	0.5kg/dm <sup>3</sup>							
BB	None							
Test duration	EW	60 minutes						
	BB	N/A						

## 4. Test results

Table 4 shows the peak temperatures the EW test specimen achieved. BB test was not conducted.

Table 5 shows the EW classification indices as listed in AS 5113:2016 Amendment 1 and as provided by BS 8414-2:2015.

**Table 4 EW peak temperatures**

Parameter	Results
t <sub>s</sub> , start time	04 minutes 04 seconds after ignition of crib
Peak temperature/time at Level 2, 50mm external	498°C at 08 minutes 46 seconds after t <sub>s</sub>
Peak temperature/time at Level 2, Panel cavity	99°C at 18 minutes 35 seconds after t <sub>s</sub>
Peak temperature/time at Level 2, Insulation layer	48°C at 28 minutes 30 seconds after t <sub>s</sub>
Peak temperature/time at Level 1, 50mm external	886°C at 08 minutes 46 seconds after t <sub>s</sub>
Peak temperature/time at 900mm above lintel	83°C at 36 minutes 55 seconds after t <sub>s</sub>

**Table 5 EW classification test results**

Classification criteria	Related classification measure	Result in test	Pass/Fail
5.4.5(a) T <sub>w5m</sub>	≤ 600°C	498°C at 12 minutes 50 seconds after crib ignition	Pass
5.4.5(b) T <sub>cavity5m</sub>	≤ 250°C	99°C at 23 minutes 40 seconds after crib ignition	Pass
5.4.5(b) T <sub>layer5m</sub>	≤ 250°C	48°C at 33 minutes 35 seconds after crib ignition	Pass
5.4.5(c) T <sub>unexposedside0.9m</sub>	≤ 180K	83°C at 41 minutes 00 seconds after crib ignition	Pass
5.4.5(d) flaming	No flaming	No flaming	Pass
5.4.5(d) openings	No openings	No openings	Pass
5.4.5(e) spread	No spread beyond specimen	No flame spread beyond specimen	Pass
5.4.5(f) debris flaming	≤ 20 s	No flaming debris	Pass
5.4.5(g) debris mass	≤ 2 kg	Mass of measured debris was negligible	Pass
<b>Classification</b>			<b>EW</b>

The test specimen achieved the following classification as specified in AS 5113:2016 Amendment 1:

**Fire performance (FP): EW/-**

## **5. Application of test results**

### **5.1 Test limitations**

The results of these fire tests may be used to directly assess fire hazard, but it should be recognised that a single test method will not provide a full assessment of fire hazard under all fire conditions.

These results only relate to the behaviour of the specimen of the element of the construction under the particular conditions of the test. They are not intended to be the sole criteria for assessing the potential fire performance of the element in use, and they do not necessarily reflect the actual behaviour in fires.

### **5.2 Variations from the tested specimen**

This report details methods of construction, the test conditions and the results obtained when the specific element of construction described here was tested following the procedure outlined in AS 5113:2016 Amendment 1.

Any significant variation with respect to size, construction details, loads, stresses, edge or end conditions, other than that allowed under the field of direct application in the relevant test method, is not covered by this report.

### **5.3 Uncertainty of measurements**

It is not possible to provide a stated degree of accuracy of the result, because of difficulty in quantifying the uncertainty of measurements.

## Appendix A Drawings of test assembly

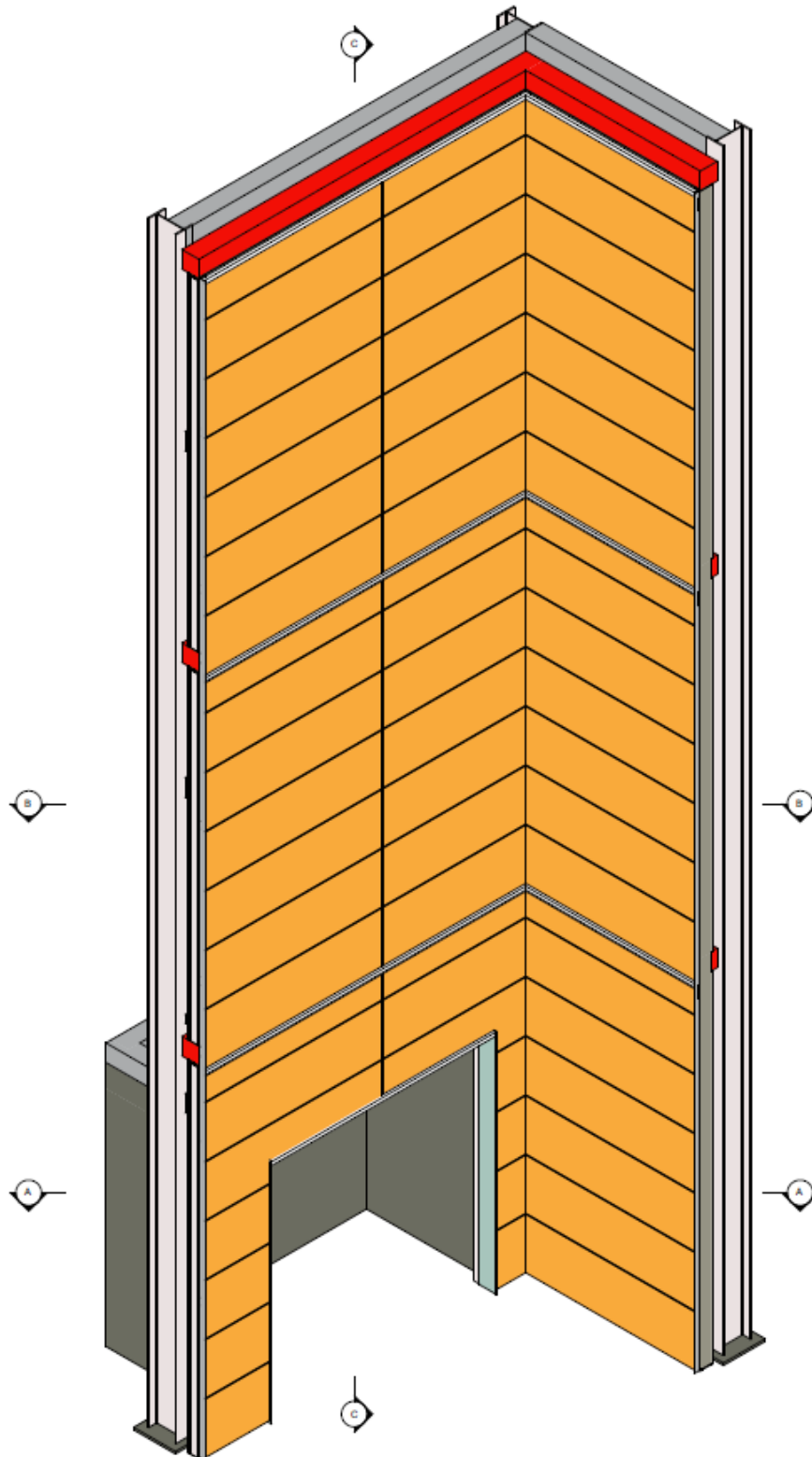
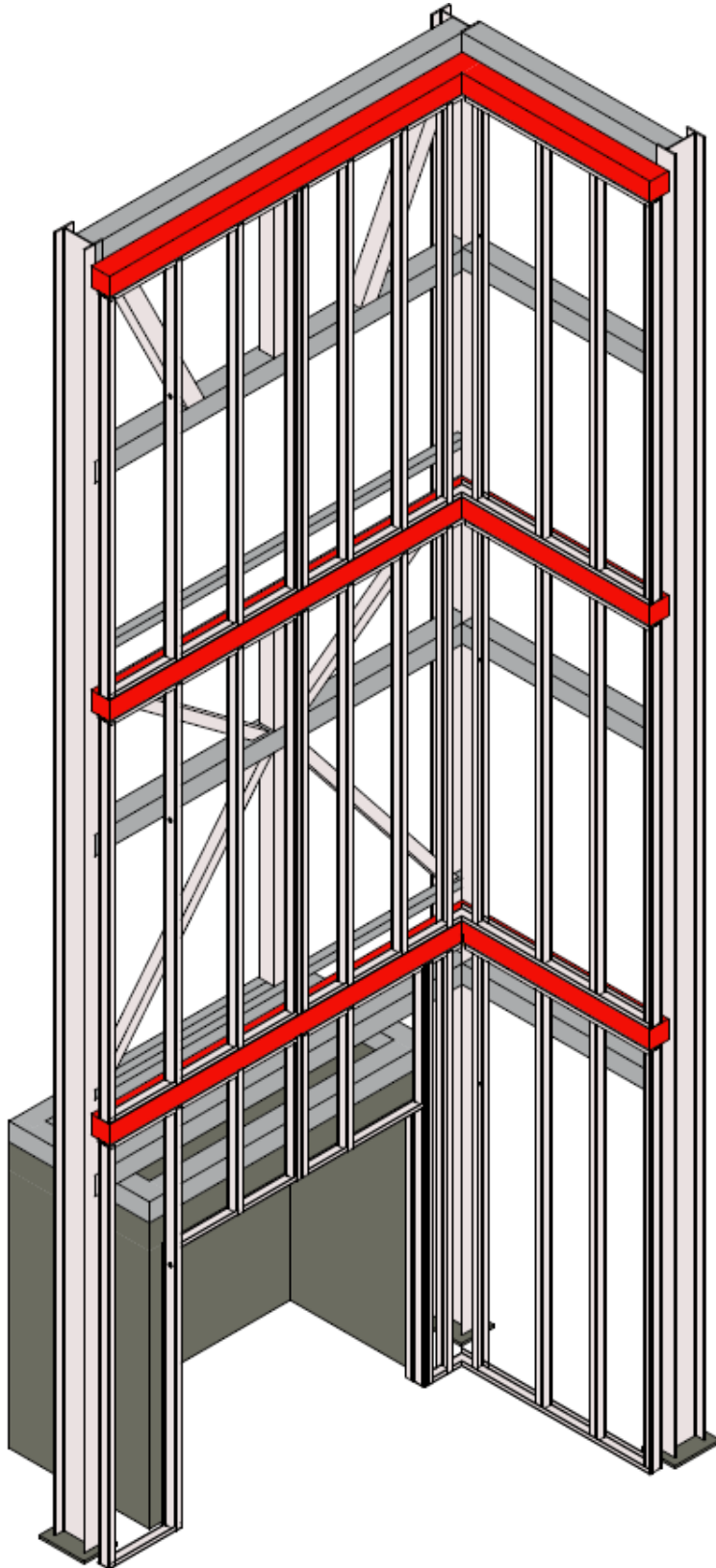


Figure 1 Panel layout (main and wing walls) – provided by client





**Figure 2** Framing (main and wing walls) – provided by client

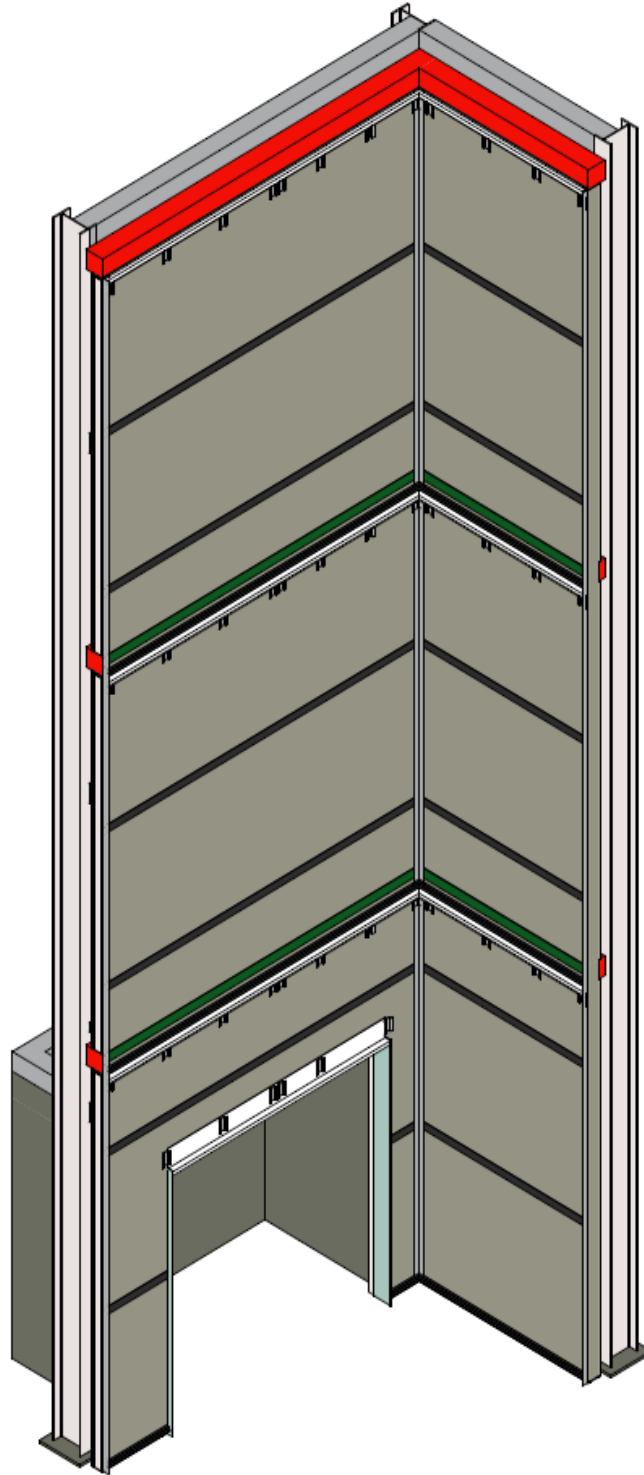


Figure 3 Rigid air barrier layer (main and wing walls) – provided by client

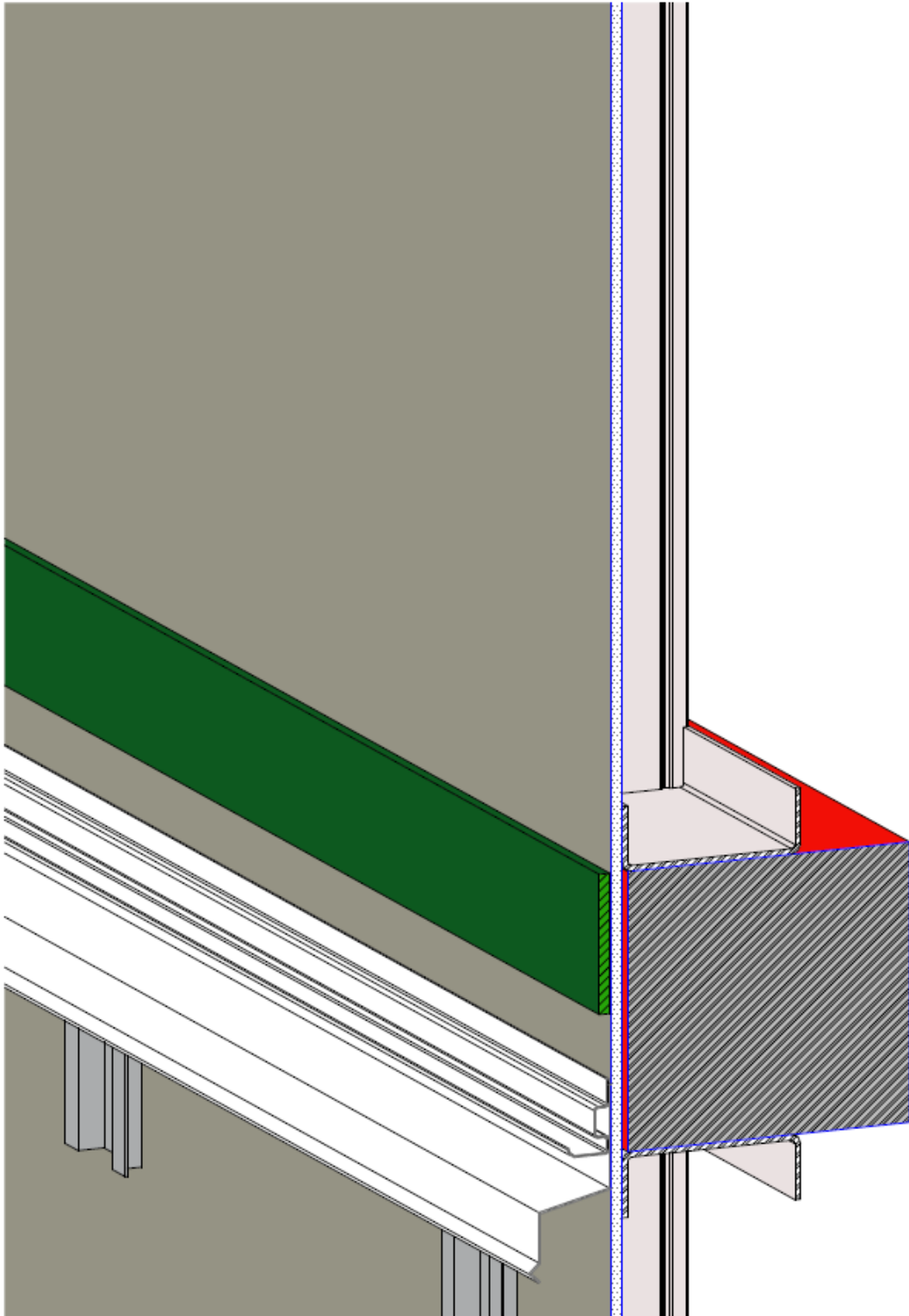
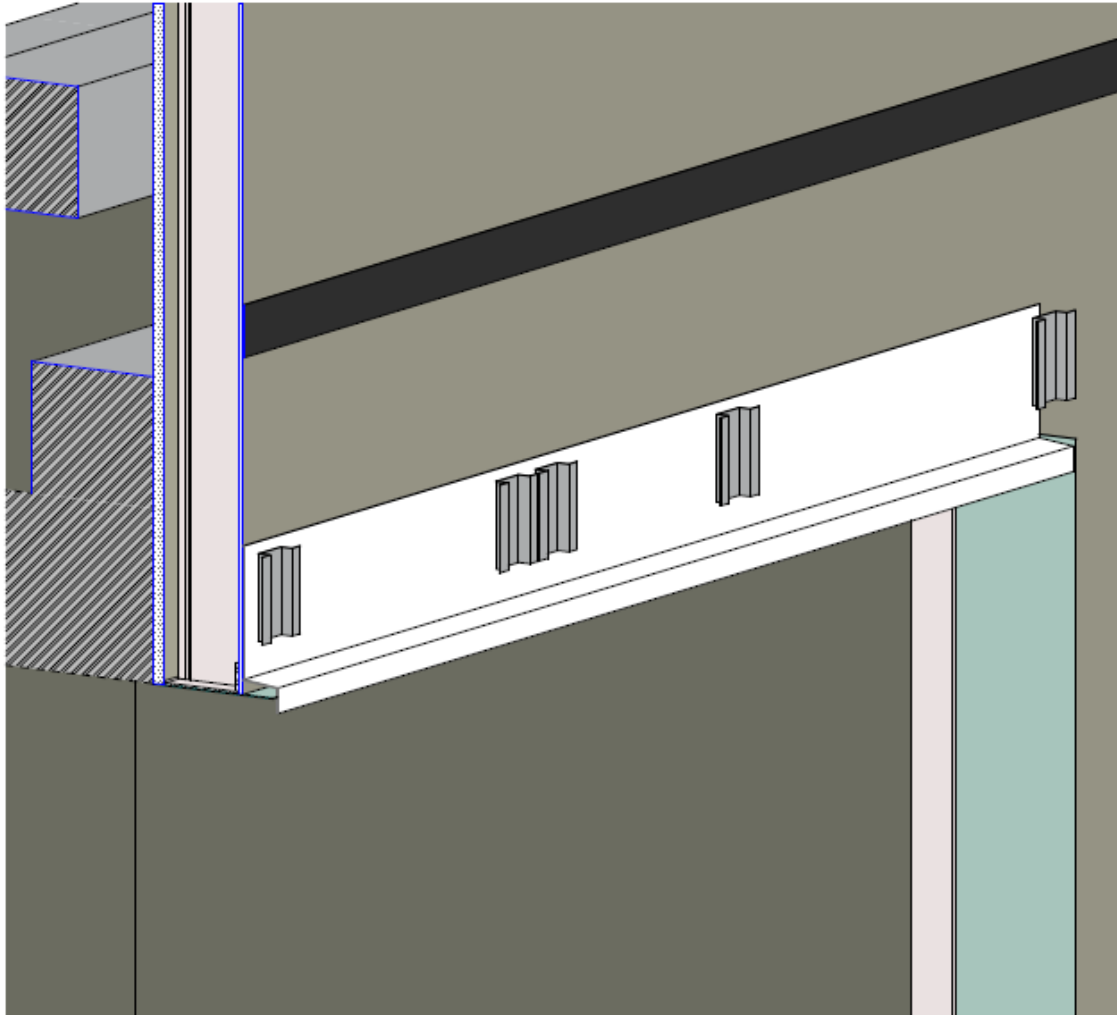


Figure 4 Slab level detail – provided by client



**Figure 5** Rigid air barrier layer – opening detail – provided by client

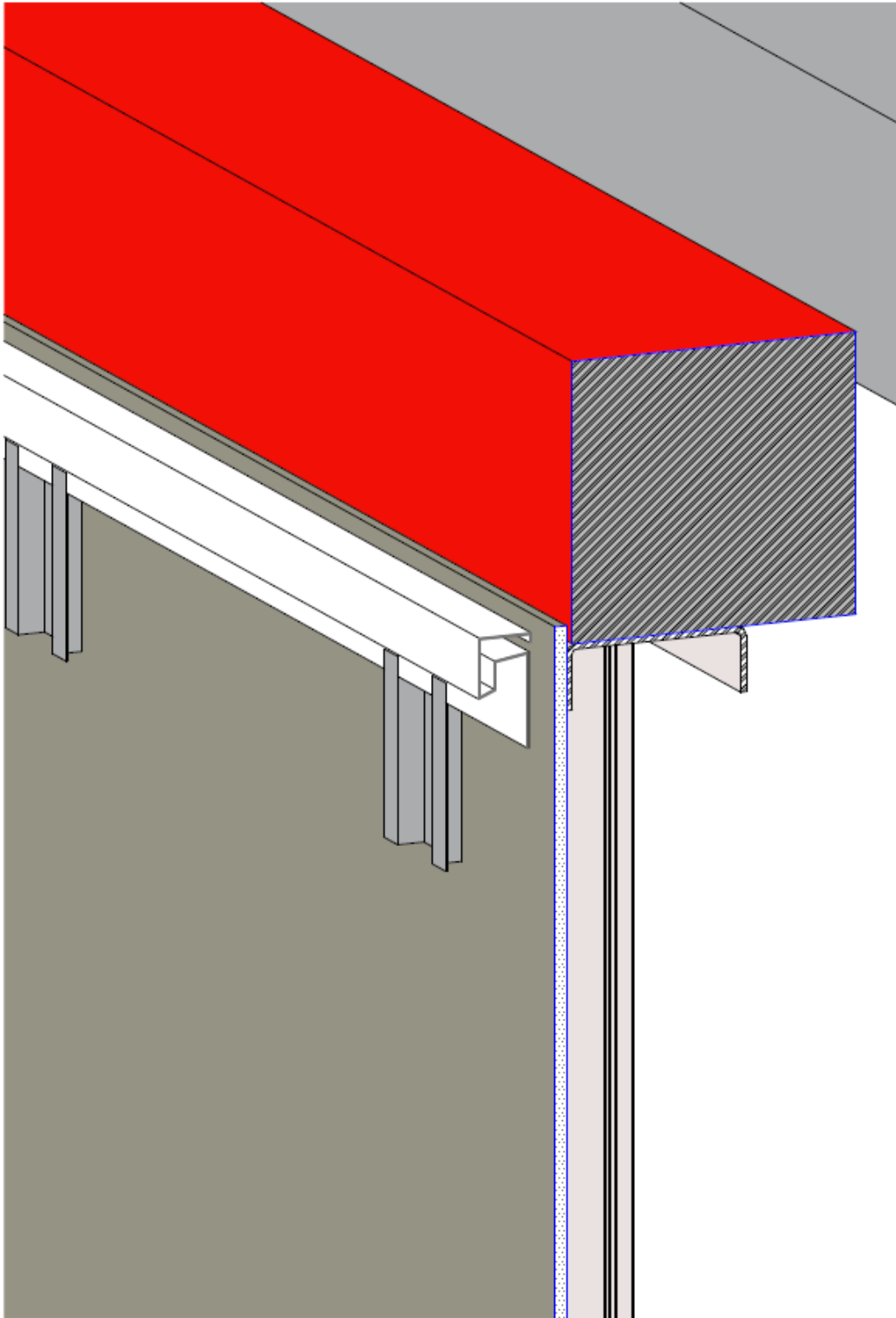
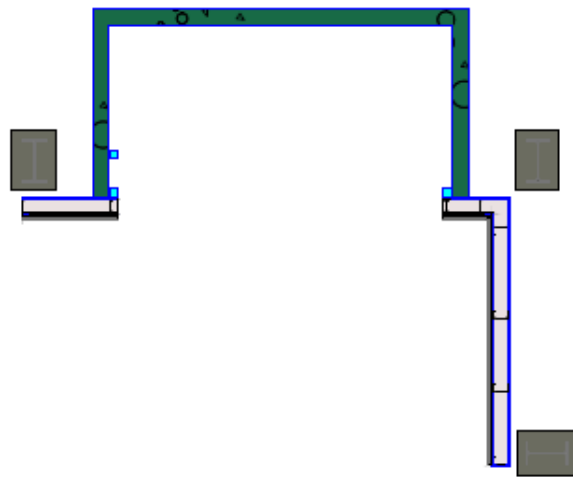
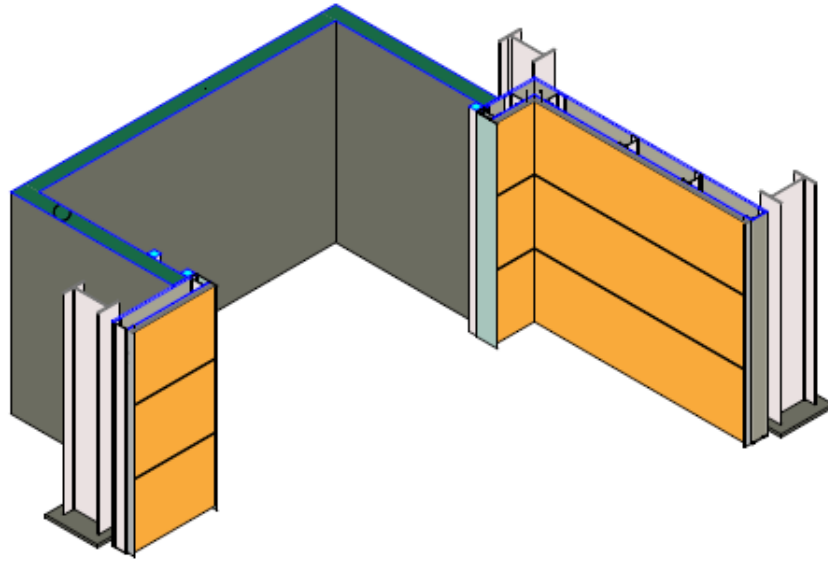


Figure 6 Top of specimen detail – provided by client

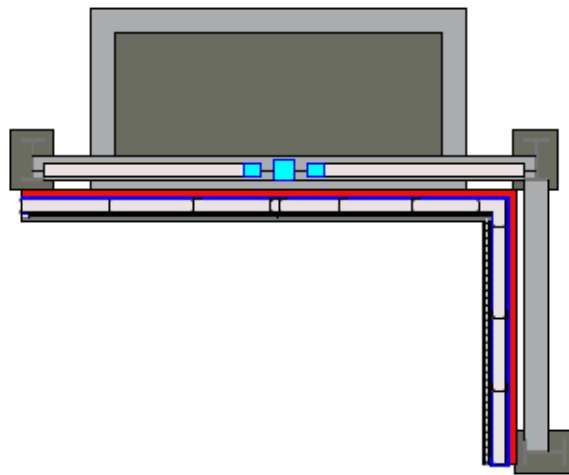
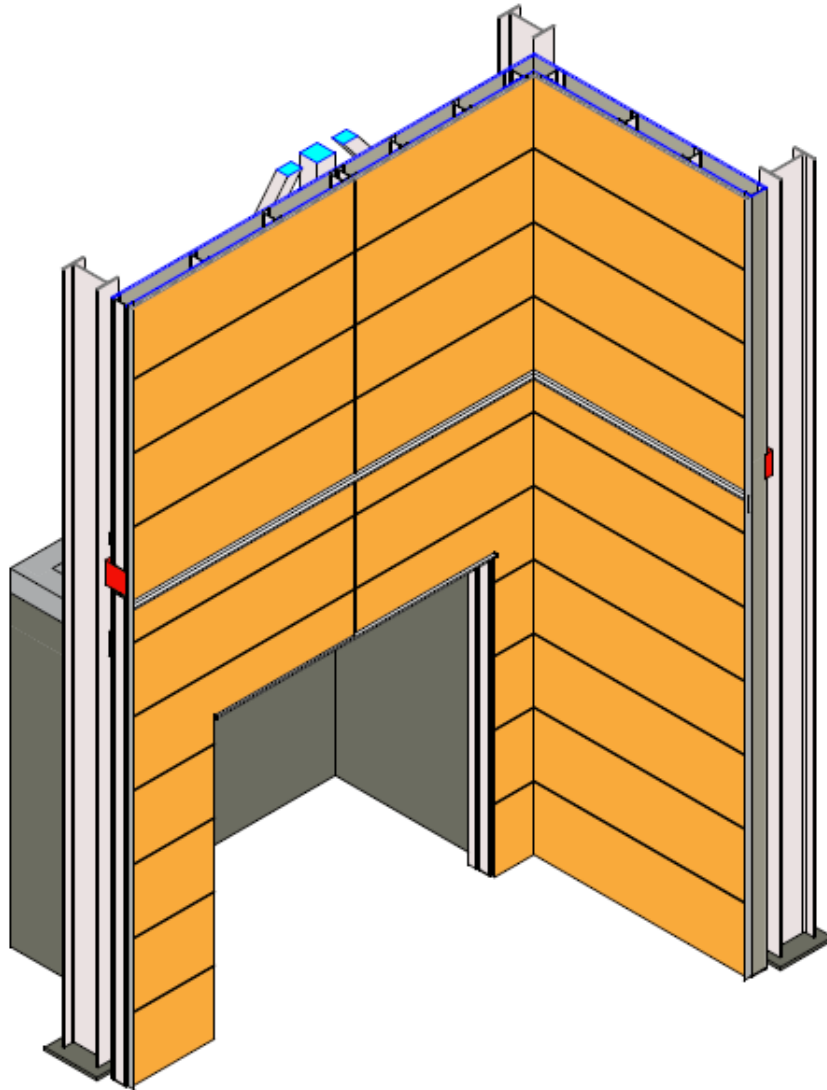


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SECTION A-A

1:25

Figure 7 Cross-section (floor level main and wing walls) – provided by client



2

SECTION B-B

1:25

Figure 8 Cross-section (1<sup>st</sup> level main and wing walls) – provided by client

## Appendix B Instrumentation positions

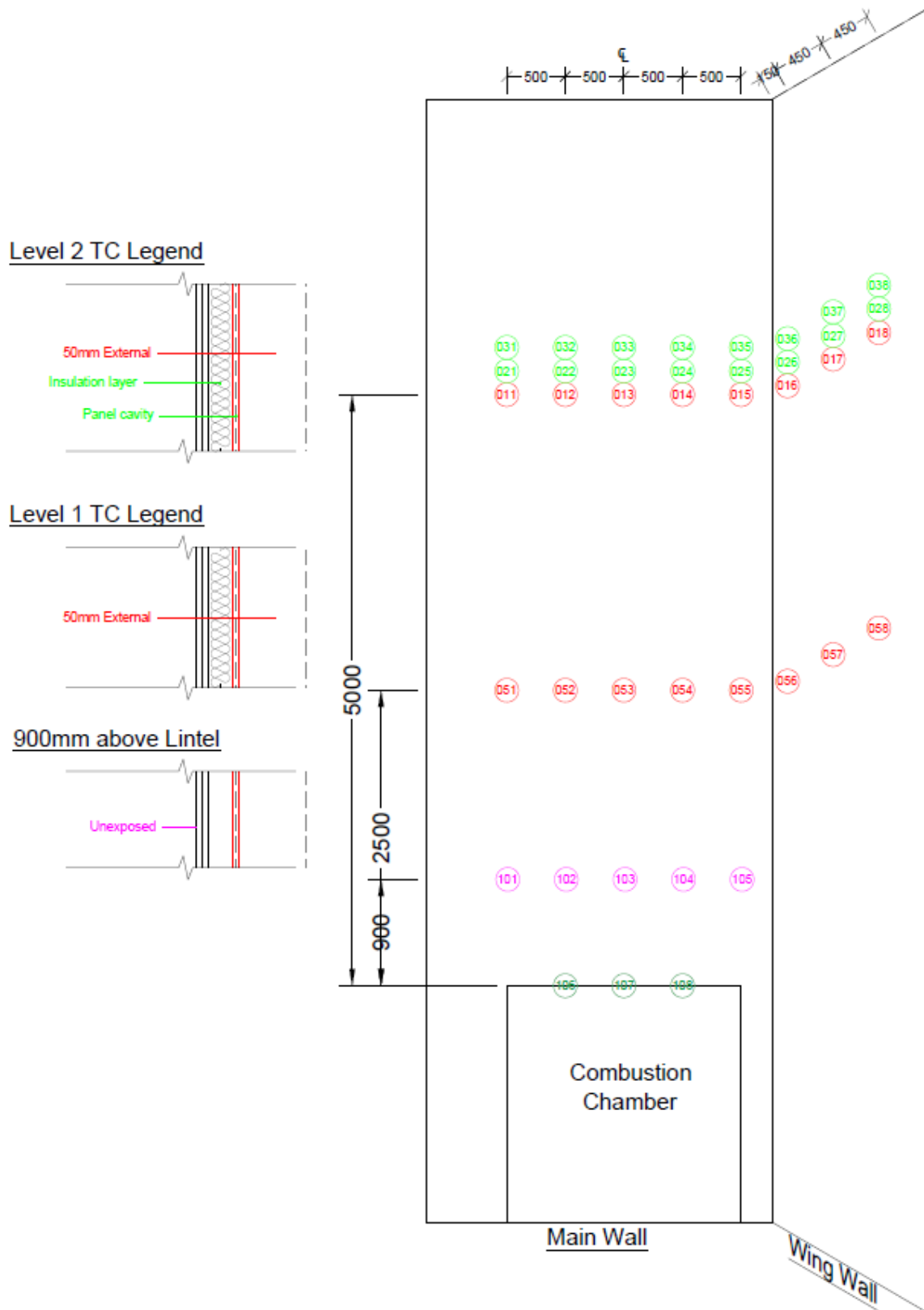


Figure 9 Thermocouple locations