

Fire Resistance Testing

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CONFIDENTIAL

Report: BMT/FEI/F14064 Revision A

A fire resistance test performed on two loft access hatches fitted within a British Gypsum 60 minute specification ceiling membrane section

Test conducted under the temperature and pressure conditions outlined in BSEN 1363-1: 2012 and generally in accordance with BSEN 1364-2: 1999

Test date: 20th June 2014



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Revision A – April 2022

This report is a revision to that issued as BMT/FEI/F14064 and dated 10/11/14. The details of the test report of BMT/FEI/F14064 are held on file by Warringtonfire. The original report and any previous revisions are replaced by this revised report BMT/FEI/F14064 Revision A.

Amendments made:

- Section 4 – Thickness of the panel amended from “55mm” to “60mm” as per the drawing on page 17.
- Section 4 – Board details amended from “15mm thick plasterboard core” to “12.5mm Siniat/GTEC Megadeco core”.
- Section 4 – Image title amended from “Hinge mechanism as fitted to both hatches” to “Hinge mechanism fitted to Hatch B”.
- Document rebranded to Warringtonfire

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1 Introduction

Two loft access hatches were installed into ceiling membrane fixed within a refractory lined steel restraint frame above a 1.5m x 1.5m furnace.

2 Specimen verification

The steel loft hatches were manufactured and supplied for test by the client and delivered during June 2014.

2.1 Conditioning

Warringtonfire stored the specimens in climatic conditions approximate to those expected in normal service, and used the guidelines of annex F.1 of BSEN 1363 – 1: 2012 to establish a suitable conditioned level where possible.

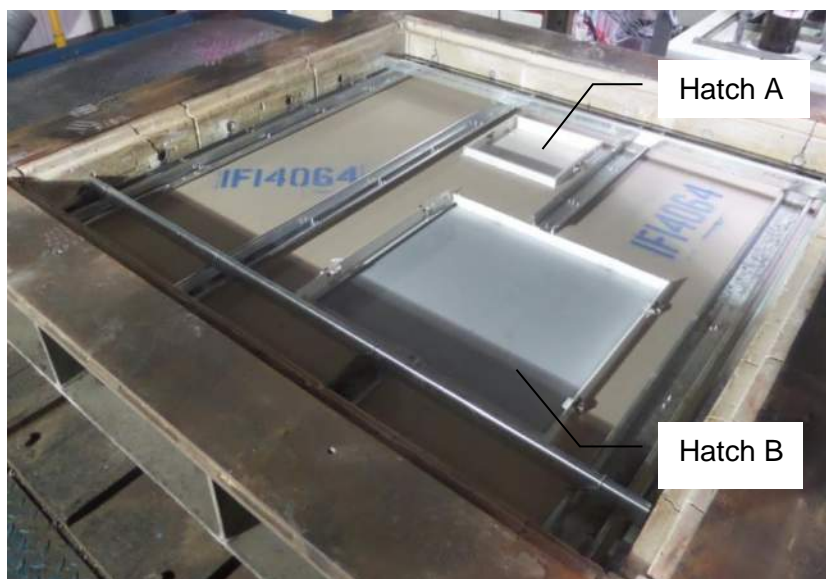
2.2 Sampling

Warringtonfire were not involved in factory sampling of the components used for the specimen subject to this report.

3 Description of supporting construction

Warringtonfire constructed a section of British Gypsum (BG) CasoLine MF 60 minute ceiling membrane within a refractory lined steel restraint frame. The ceiling included a 605mm x 605mm aperture and a 305mm x 305mm aperture, into which Warringtonfire installed the loft access hatches.

Unexposed face prior to testing



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Exposed face prior to testing



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Description of the ceiling membrane construction - Reference British Gypsum CasoLine MF 60 minute system ref. C106003

The 1500mm x 1500mm ceiling construction comprised BG Gypframe M6F Primary Support Channel around the ring beam and BG Gyframe MF5 Ceiling Section fitted within the MF6 Primary Support Channel profile at 450mm centres. 2No.sections of BG Gypframe MF7 Primary Support Channel were fitted 1200mm apart to one side of the each hatch aperture, at 90° to the MF5 ceiling section, extending to the MF6 Support channel around the ceiling section. The ceiling system was clad with 2No. layers of 12.5mm thick BG Gyproc FireLine board, the first layer fixed with 32mm long Drywall screws and the second layer with 42mm long Drywall screws, all fitted at 230mm centres.

No insulation was fitted.

The loft access hatch apertures were unlined. The loft access hatch frames were sealed to the soffit of the ceiling with Mann McGowan Acrylic mastic, applied prior to fixing in the ceiling aperture.

No suspension fixings were used due to the 1500mm x 1500mm size of the test specimen ceiling section, which was supported on all four sides.

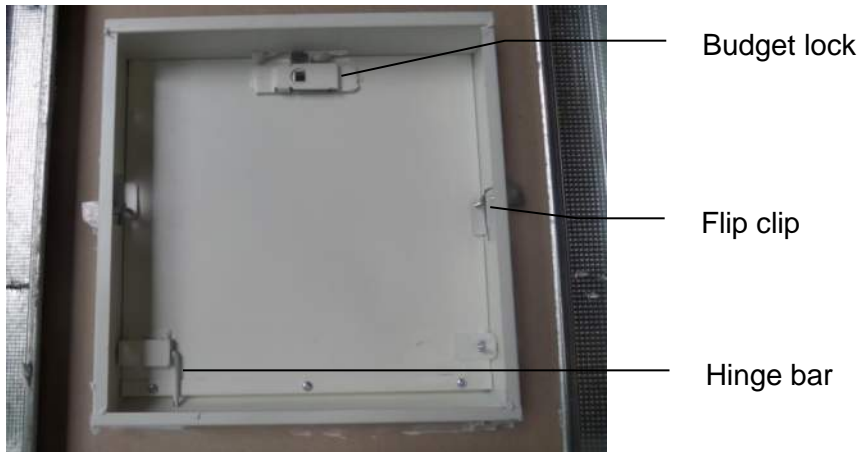
4 Description of test specimens (refers to client drawings of appendix 1)

Access hatch A

The hatch panel (Plasterboard Faced Flipfix) measured 290mm long x 290mm wide x 60mm thick. The hatch panel frame comprised powder coated 1mm thick perforated profiled steel enclosing a 12.5mm Siniat/GTEC Megadeco core. The frame comprised 1mm thick powder coated perforated steel 300mm high x 300mm wide including a 25mm wide architrave. The frame was fixed into the aperture with 2 No. 'flip clip' adjustable fixings centrally fitted on opposite edges.

The loft access hatch was hinged on a Ø4mm steel bar at one edge, with an engaged budget type latch (79mm x 22mm) centrally fitted on the opposite edge.

The hatch panel comprised a tray profile 15.5mm thick, welded at the corners.

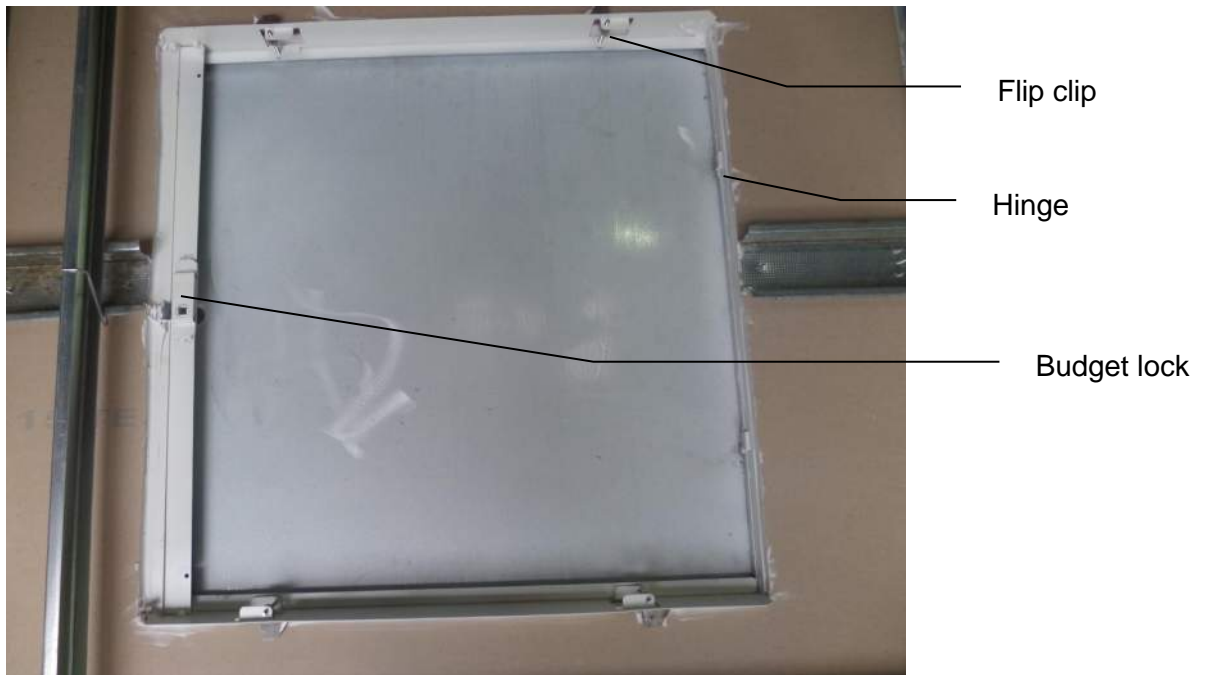


Access hatch B

The hatch panel (Metal Faced Flipfix) measured 598mm long x 598mm wide x 55mm thick. The hatch panel comprised powder coated 0.9mm thick profiled steel. The frame comprised 0.9mm thick powder coated steel 600mm high x 600mm wide including a 25mm wide architrave. The frame was fixed into the aperture with 4 No. 'flip clip' adjustable fixings. 2 No fixings were present on 2 edges, 120mm from corners on adjacent sides.

The loft access hatch was hinged on two Ø5mm steel bolts on one edge, with an engaged budget type latch (79mm x 22mm) centrally fitted on the opposite edge.

The hatch panel comprised a tray profile 13mm thick, welded at the corners.



Hinge mechanism as fitted to Hatch B



Flip clip as fitted to both hatches



Budget lock as fitted to both hatches



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5 Test conditions

5.1 Ambient temperature

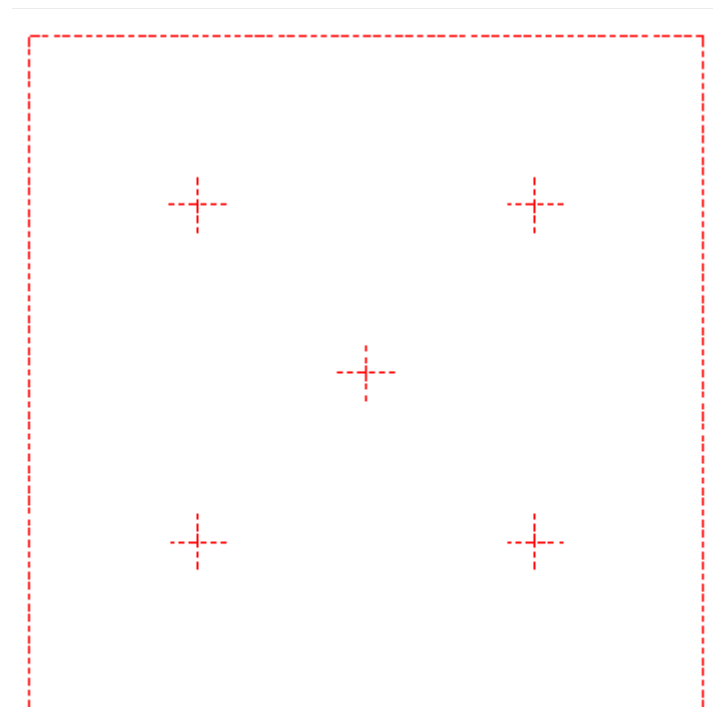
The ambient temperature of the test area at commencement of test was 18°C. The ambient temperature for the duration of the test has been recorded in Appendix 2.

5.2 Pressure readings

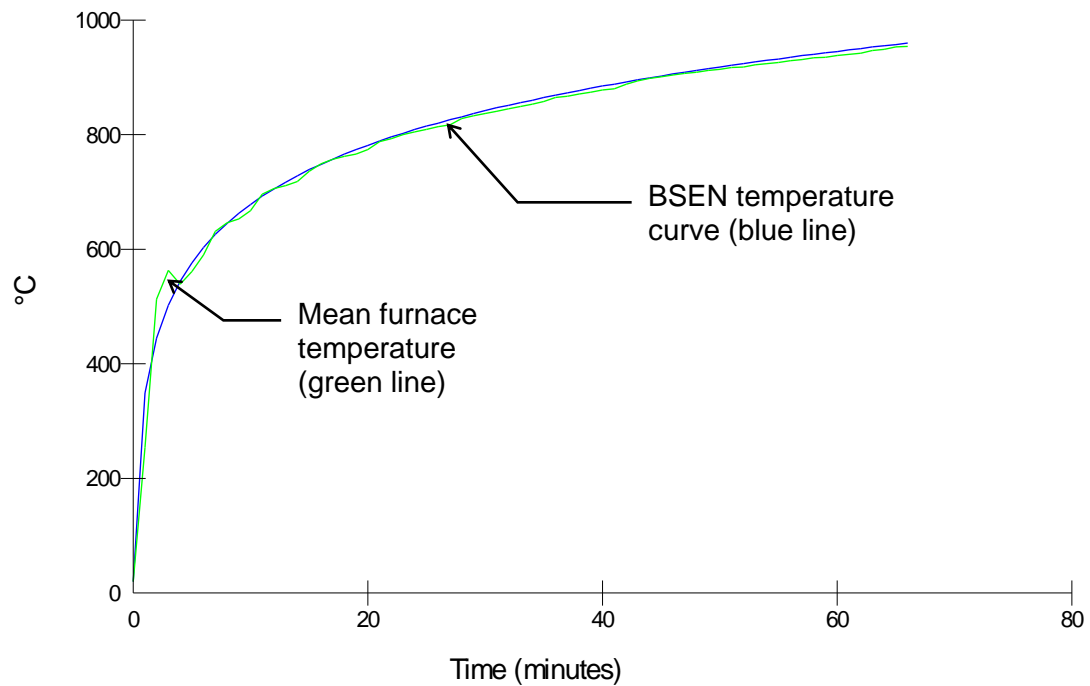
After the first 5 minutes of the test, the furnace pressure was maintained at 13.2 ± 5 Pa and after 10 minutes was maintained at 13.2 ± 3 Pa, equating to 20 Pa at the underside of the ceiling soffit. The pressure readings have been tabulated in Appendix 2.

5.3 Furnace temperature

The furnace was controlled to follow the temperature/time relationship specified in BSEN 1363: Part 1: 2012 Section 5.1.1 as closely as possible, using the average of five plate thermometers suitably distributed within the furnace. The temperatures recorded have been tabulated in Appendix 2 and are shown graphically below:



✦ : Furnace Thermocouples



5.4 Unexposed face thermocouple positions

The specimens were declared to have no insulation properties, so no thermocouples were fitted at the sponsor's request.

6 Observations

All comments relate to the unexposed face unless otherwise specified.

Time (minutes)

00.00	Test started.
01.00	Panel A, there is smoke issuing from the perimeter of the panel.
01.30	Panel B, there is smoke issuing from the perimeter of the panel.
02.00	Panel B, there is discolouration to the unexposed face of the panel.
03.00	Panel A, there is discolouration on the frame of the panel.
04.20	Panel A, there is discolouration to the face of the panel.
05.45	Panel B, there is discolouration on the frame of the panel.
07.20	Panel A, there is further discolouration to the face of the panel around the latch position.
10.40	Panel B, there is an increase in smoke issuing from the latch position.
12.20	Panel A, the face of the panel is glowing at the latch position.
13.30	Panel A, the paint on the face of the panel is starting to bubble at the perimeter of the leaf.
14.20	Panel A, there is further discolouration to the frame of the panel.
17.40	Panel A, the closing edge of the panel is glowing.
25.00	Panel B, the closing edge of the panel is starting to glow
27.00	Panel B, there is further discolouration on the frame of the panel.
30.30	Panel B, there is an increase in smoke issuing from the perimeter of the panel.
32.10	Panel A, there is an increase in smoke issuing from the perimeter of the panel.
34.00	Both panels, all of the edges of the panels are glowing except the hinged edges.
37.00	Panel A, the hinged edge of the panel is starting to glow.
42.45	Panel B, the face of the panel is glowing.
45.45	Panel A, the paint on the panel has burned away.
47.00	Panel A, the closing edge of the panel deflected into the furnace by

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approximately 5-6mm.

- 49.00 Panel A, there is discolouration of the plasterboard at the closing edge of the panel.
- 52.00 Panel A, there is discolouration of the plasterboard around the perimeter of the panel.
- 56.30 Panel A, the closing edge has deflected further by approximately 8-10mm.
- 66.00 Test terminated.

7 Expression of results

	Integrity			Insulation
	Continuous flaming	Gap gauge	Cotton pad	
Panel A	66 (sixty six) minutes*	66 (sixty six) minutes*	66 (sixty six) minutes*	0 (zero) minutes**
Panel B	66 (sixty six) minutes*	66 (sixty six) minutes*	66 (sixty six) minutes*	0 (zero) minutes**

* No failure had occurred at termination of the test at 66 minutes


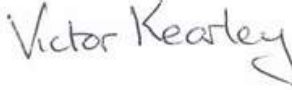
** The specimen has not been evaluated for insulation

8 Limitations

The results only relate to the behaviour of the element of construction under the particular conditions of test; they are not intended to be the sole criteria for assessing the potential fire performance of the element in use nor do they reflect the actual behaviour in fires.

The specification and interpretation of fire test methods are the subject of ongoing development and refinement. Changes in associated legislation may also occur. For these reasons it is recommended that the relevance of test reports over 5 years old should be considered by the user. CIFL will be able to offer, on behalf of the legal owner, a review of the procedures adopted for a particular test to ensure that they are consistent with current practices, and if required may endorse the test report.

In accordance with clause 6.1.1 of BSEN 1364-2 1999, this specimen was deemed to be tested as full size and therefore meets the requirements of the standard. Further testing would be necessary for ceiling sections larger than that tested.

Signature:		
Name:	Adriano Montanino	Victor Kearley
Title:	Technical Officer	Technical Author
Date of issue:	28/04/2022	28/04/2022

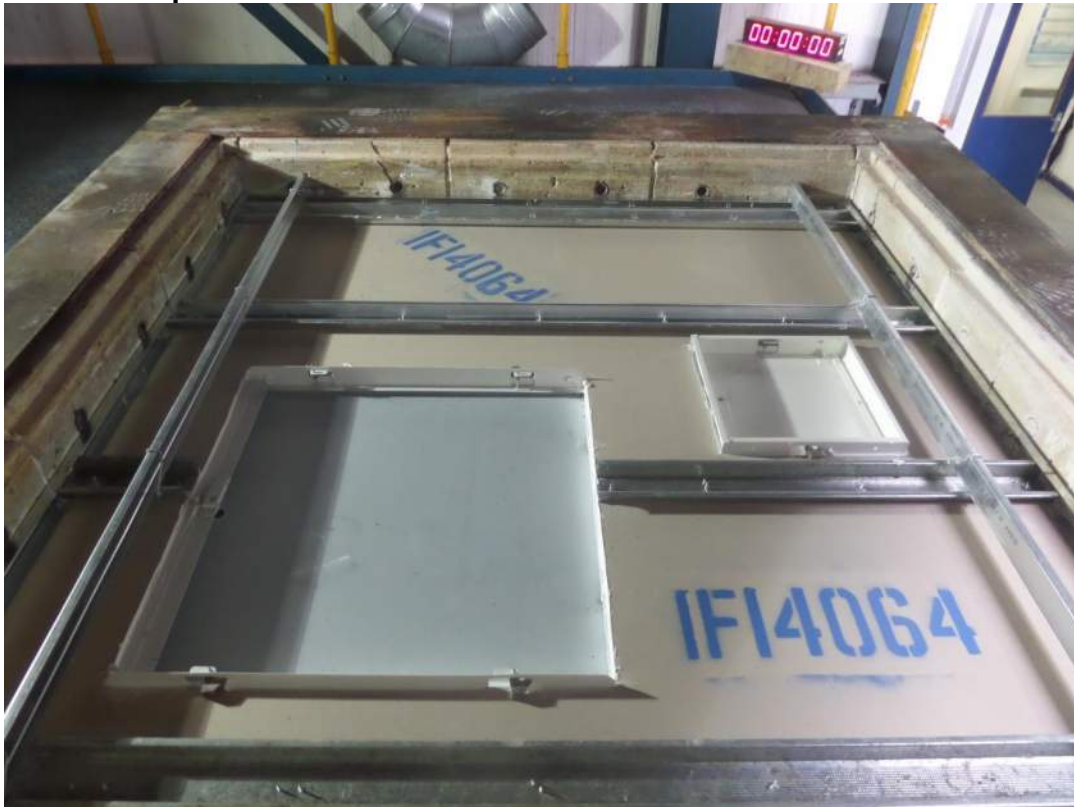
9 Field of direct application of test results

The results of the test are directly applicable to similar constructions where one or more of the changes listed in BSEN 1364-2 1999, Clause 13, are made and the construction continues to comply with that appropriate design code for its stiffness and stability. Other changes are not permitted by the document.

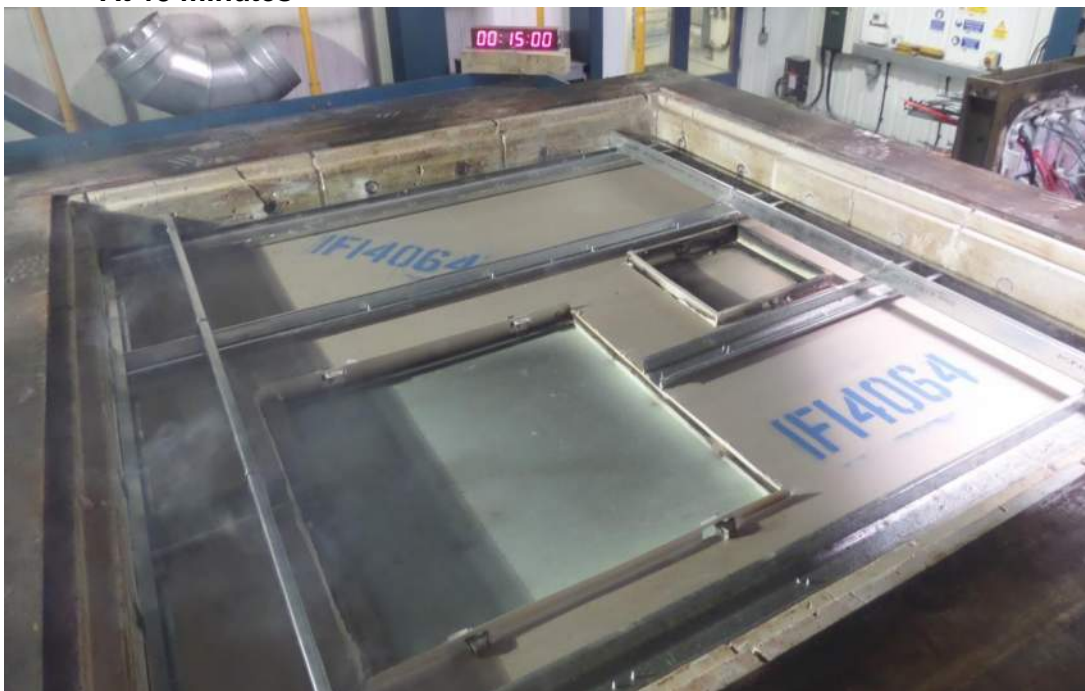
A copy of the field of direct application is available from Warringtonfire upon request.

10 Photographs

Unexposed face at start of test

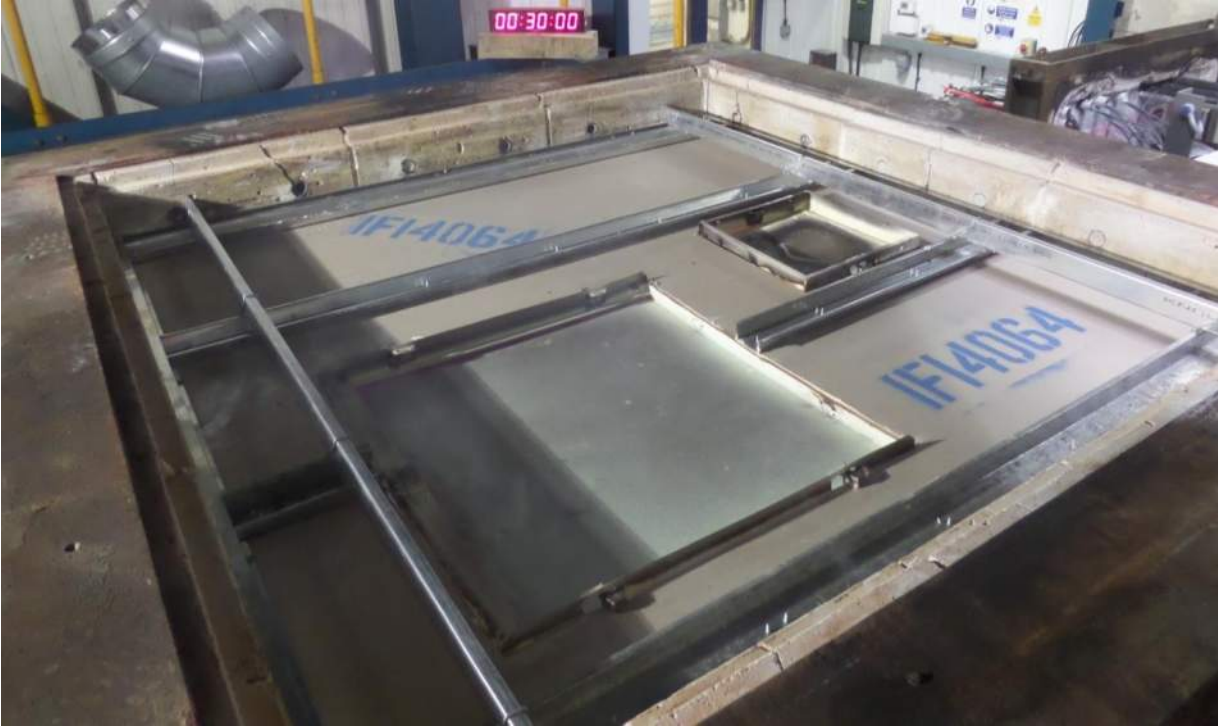


At 15 minutes

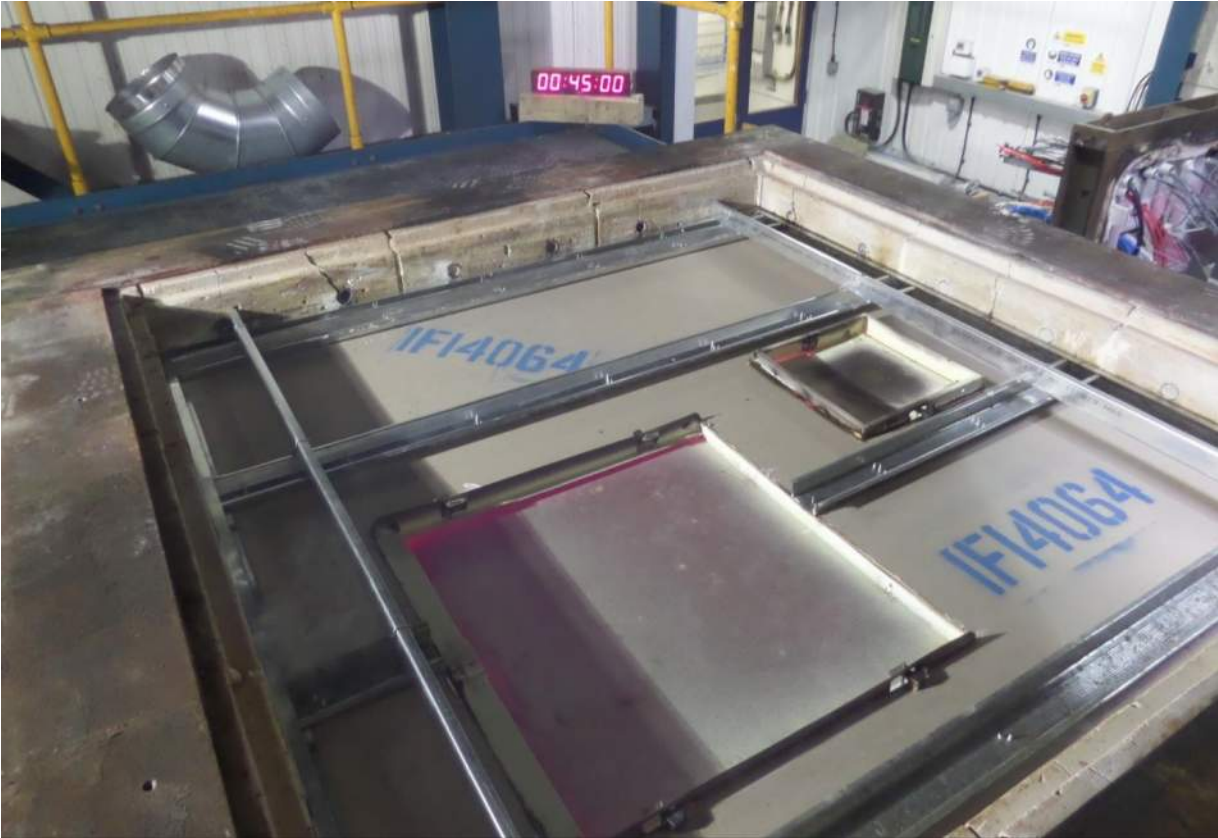


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At 30 minutes

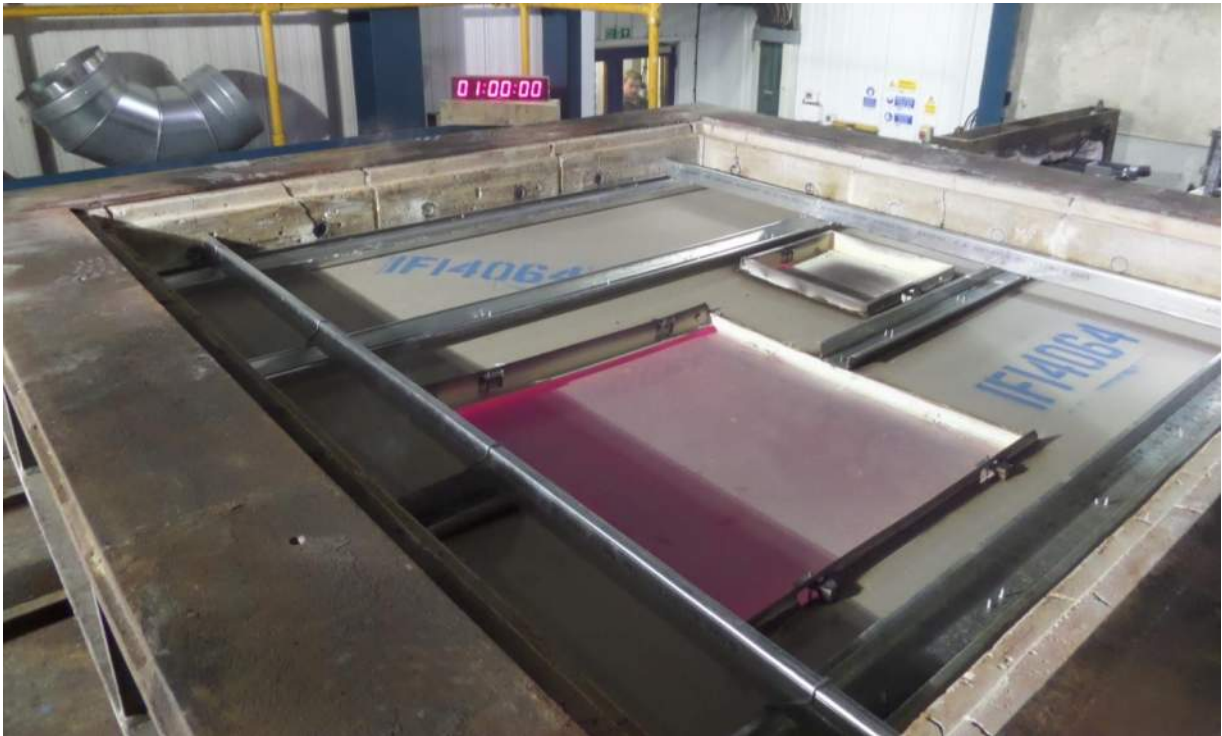


At 45 minutes

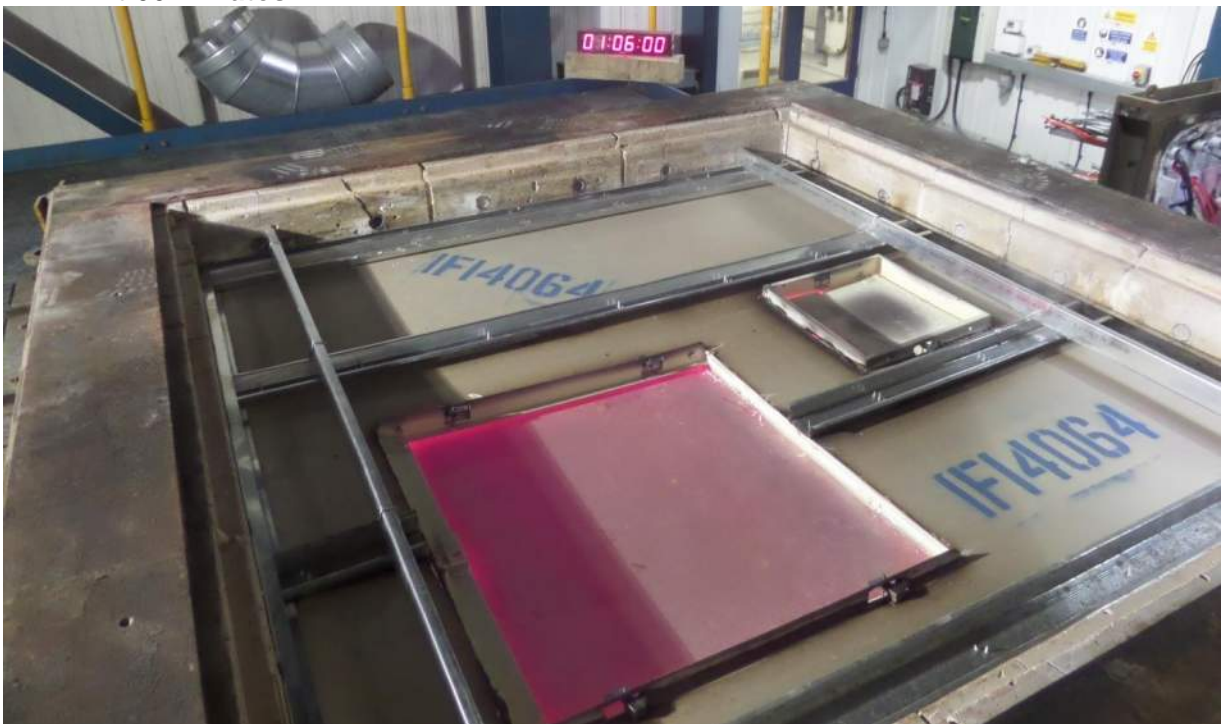


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At 60 minutes



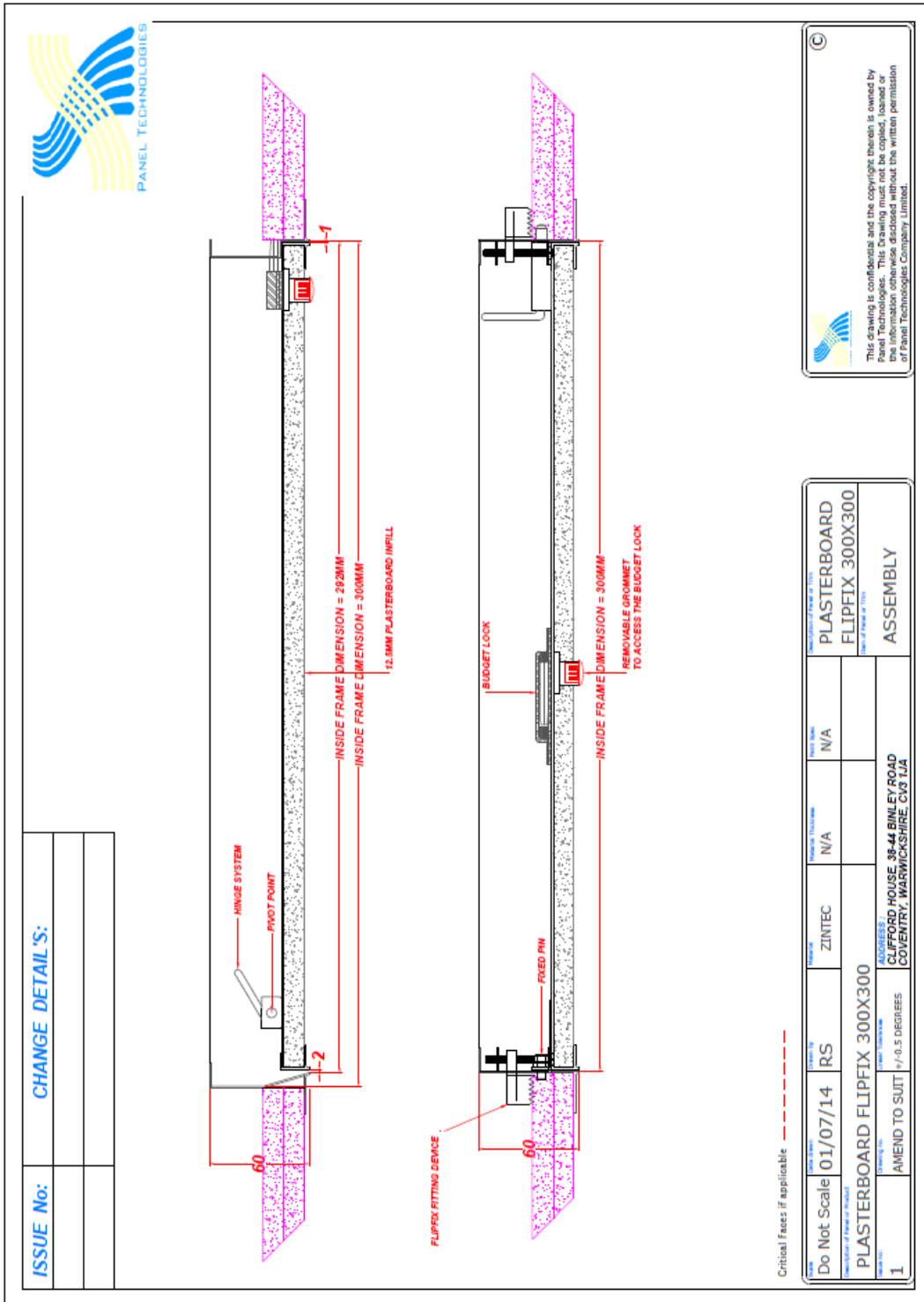
At 66 minutes



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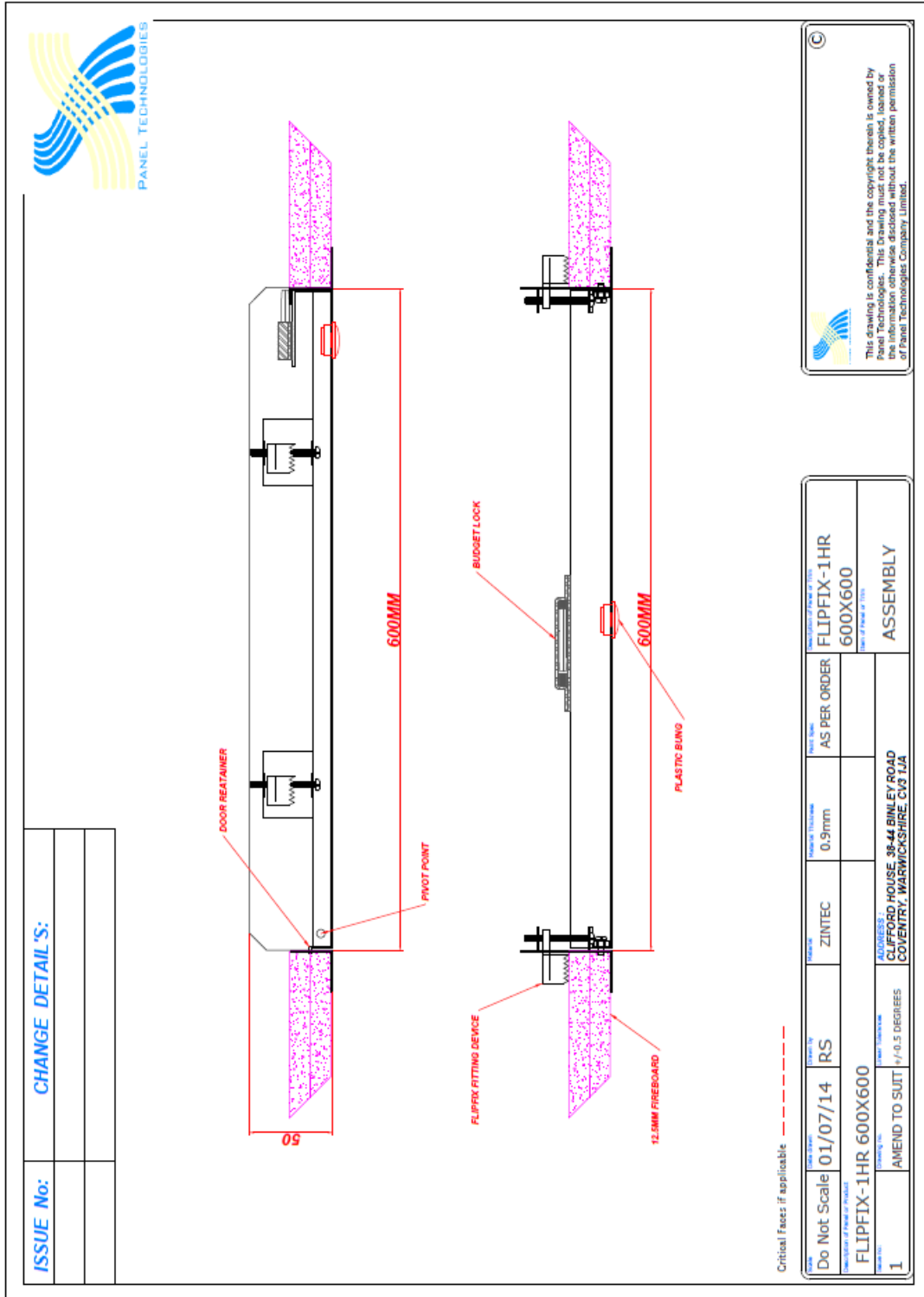
Appendix 1 - Client drawings and figure 1

Hatch A



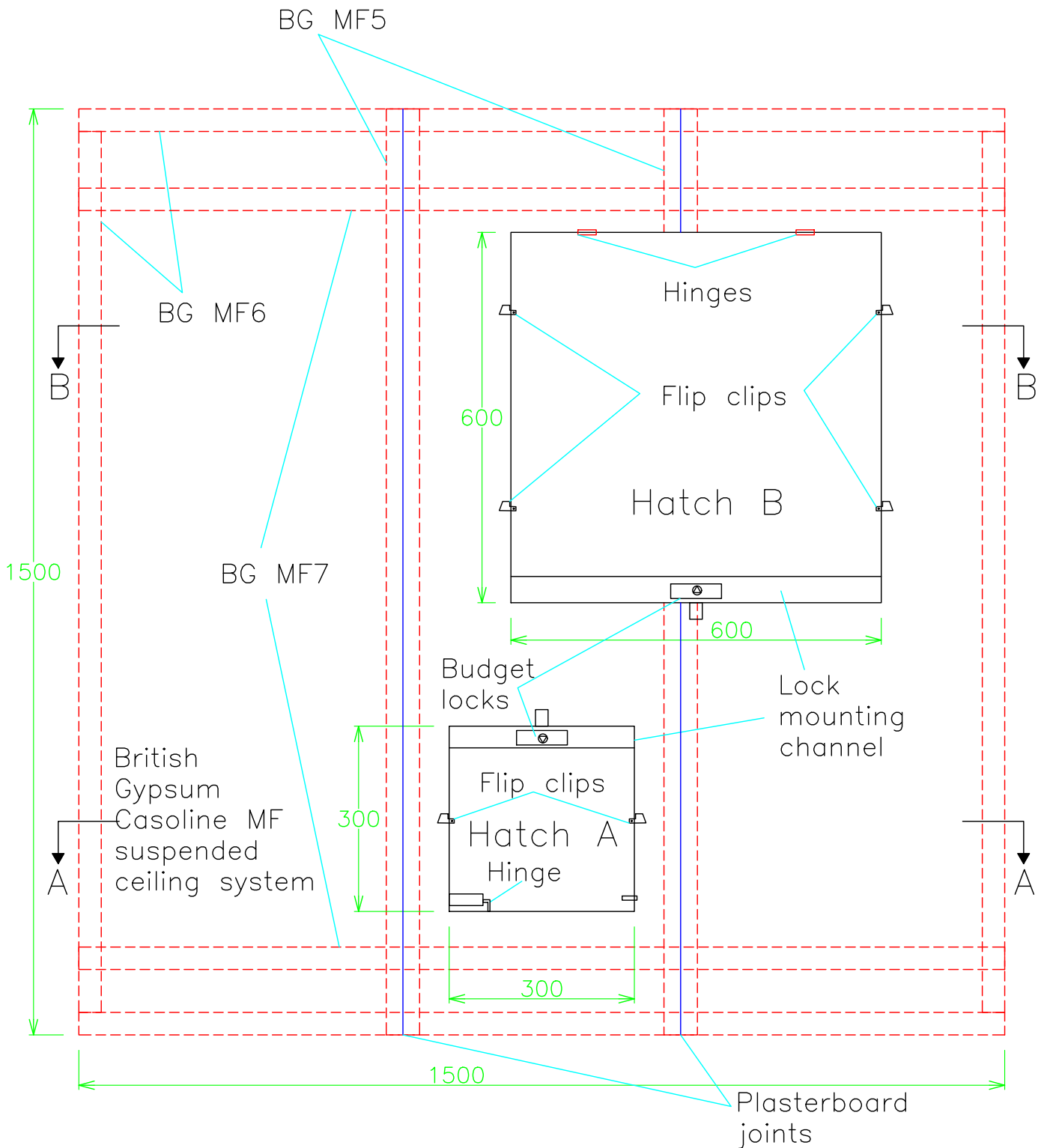
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Hatch B



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Front of furnace



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Title Unexposed face plan view
 and hardware positions
 (All dimensions in mm)

Date Drawn 30/06/14

Drawn By ARD

Scale NTS

Project No. BMT/FEI/F14064 Rev A

Appendix 1

Appendix 2 - raw test data (2 pages)

Furnace thermocouples

Time	Pressure	Chan 1	Chan 2	Chan 3	Chan 4	Chan 5	Ambient
min	Pa	°C	°C	°C	°C	°C	°C
0	0	20	19	20	21	20	18
1	-0.2	314	266	310	202	180	18
2	2	552	501	551	483	478	18
3	-24.1	565	546	606	548	550	19
4	10.8	543	518	575	528	535	19
5	11.3	568	540	590	557	554	18
6	11.6	594	571	615	596	576	18
7	15.1	627	616	652	645	616	19
8	13.8	654	631	666	646	634	19
9	12.4	656	643	672	656	641	19
10	15	671	659	682	675	651	19
11	13.9	703	691	706	702	681	19
12	11.6	714	704	714	709	690	19
13	13	713	709	719	719	697	19
14	11.8	717	714	725	728	710	19
15	5.9	730	735	742	749	724	19
16	14.2	747	749	755	759	739	19
17	13.8	752	755	763	772	747	19
18	16	757	761	770	775	751	19
19	11.5	759	766	773	779	755	19
20	14.3	772	776	779	784	761	19

Time	Pressure	Chan 1	Chan 2	Chan 3	Chan 4	Chan 5	Ambient
min	Pa	°C	°C	°C	°C	°C	°C
21	16.9	781	789	796	803	773	19
22	15.7	785	795	801	808	779	19
23	14	791	804	808	812	786	19
24	11.2	796	807	813	820	792	19
25	13.3	799	811	817	823	797	19
26	13.2	801	817	823	830	801	19
27	14.6	808	819	824	832	803	19
28	12.6	819	830	836	842	816	19
29	13.1	824	835	841	845	821	19
30	12.7	825	840	846	851	825	19
31	14.7	829	845	851	856	826	19
32	11.8	832	849	855	861	832	19
33	11.8	839	853	859	860	837	19
34	9.4	845	857	861	864	839	19
35	9.6	848	862	865	869	846	19
36	12.1	852	869	875	878	853	19
37	12.5	854	871	876	881	855	19
38	13.4	859	876	881	883	860	19
39	14.6	863	878	884	885	860	19
40	13.9	867	882	886	891	866	19
41	12.8	868	885	888	892	867	19

Time	Pressure	Chan 1	Chan 2	Chan 3	Chan 4	Chan 5	Ambient
min	Pa	°C	°C	°C	°C	°C	°C
42	10.2	878	894	896	900	875	19
43	11.7	883	900	903	906	882	19
44	14.1	884	901	909	911	886	19
45	13.3	891	905	909	912	889	19
46	12.8	895	910	911	915	893	19
47	13.6	895	912	916	917	895	19
48	15.3	899	914	917	921	897	19
49	14.4	903	918	920	922	899	19
50	13.9	904	919	923	925	902	19
51	12.7	908	922	924	928	906	19
52	14.3	907	923	926	930	908	19
53	14.5	912	927	929	934	910	19
54	11.3	916	929	929	936	913	19
55	14.6	917	933	933	935	915	19
56	14.1	920	933	935	939	918	19
57	14.8	921	937	938	940	921	20
58	14	925	940	939	943	923	19
59	11.1	927	942	941	944	925	20
60	12	933	943	940	947	927	20
61	14.6	927	946	948	952	929	20
62	13.7	934	948	947	951	931	20
63	14	938	954	952	958	935	20
64	12.8	940	956	954	959	938	20
65	15	949	962	957	956	942	20
66	14.3	952	963	958	957	944	20