

Fire Resistance Testing

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CONFIDENTIAL

Report: BMT/FEI/F15003A

Ad hoc fire resistance test performed on a steel access hatch fitted within a British Gypsum 60 minute specification ceiling membrane section

Test conducted to the temperature and pressure conditions of BS476: Part 20: 1987 (and current FTSG Resolutions where applicable)

Test date: 19th January 2015

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The legal validity of this report can only be claimed on presentation of the complete report.

1 Introduction

Three access hatches were installed into a ceiling membrane section fixed within a refractory lined steel restraint frame above a 1.5m x 1.5m furnace, only one of which is subject to this report.

The access hatch was fitted opening in towards the furnace.

2 Specimen verification

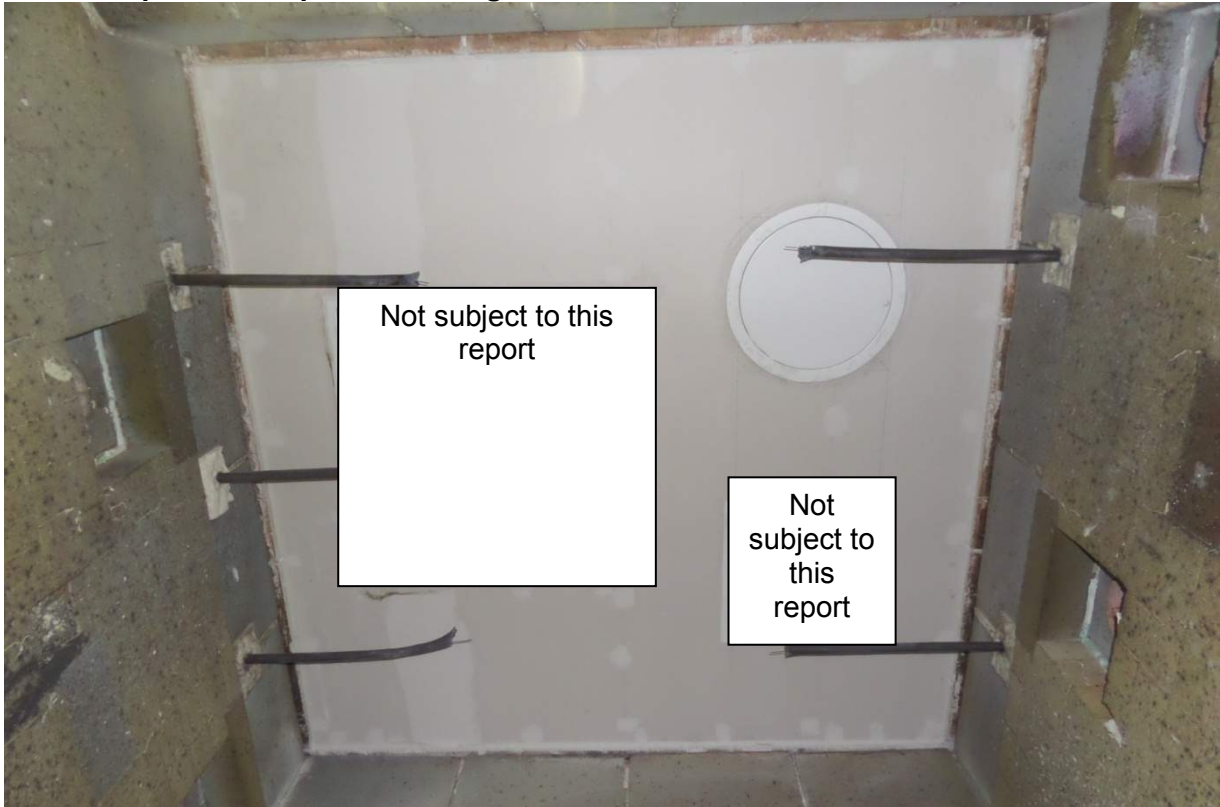
The steel access hatch was manufactured and supplied for test by the client and delivered on 12th January 2015.

3 Description of supporting construction

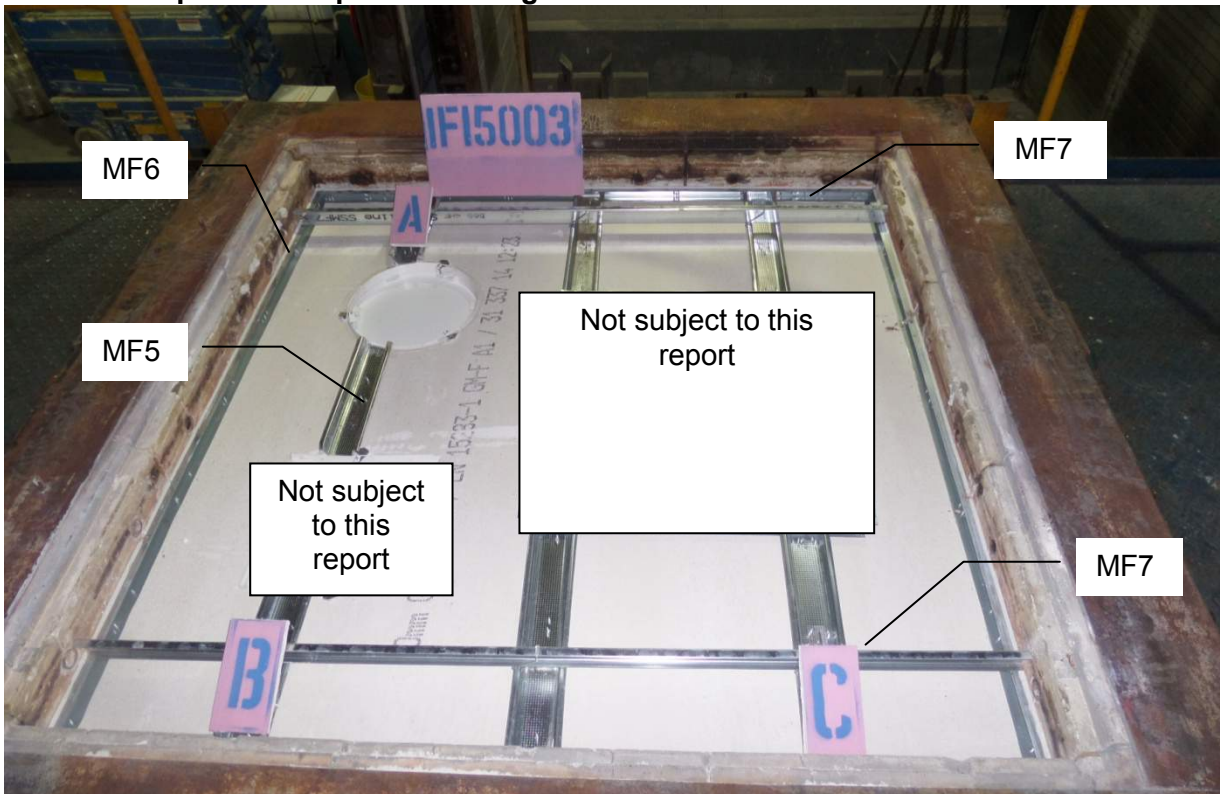
BM TRADA constructed a section of British Gypsum (BG) CasoLine MF 120 minute ceiling membrane within a refractory lined steel restraint frame.

The client installed the access hatch into a Ø304mm aperture in the ceiling section.

Exposed face prior to testing



Unexposed face prior to testing



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4 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 restraint frame ring beam and BG Gypframe MF5 Ceiling Section fitted within the MF6 Primary Support Channel profile at 375mm centres. 2No. sections of BG Gypframe MF7 Primary Support Channel were fitted one to each side of the hatch apertures, at 90° to the MF5 ceiling section, extending to the MF6 Support Channel around the ceiling section. The ceiling system was clad with 3No. layers of 10mm thick BG Glasroc F (GRG) multiboard, the first layer fixed with 25mm long Drywall screws, the second layer with 32mm long Drywall screws and the third layer with 42mm long Drywall screws, all fitted at 230mm centres.

The MF5 channel was fully interrupted at the area of the specimen aperture.

No insulation was fitted.

The access hatch aperture was not lined.

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.

5 Description of test specimen (refers to clients drawings in appendix 1)

Access hatch

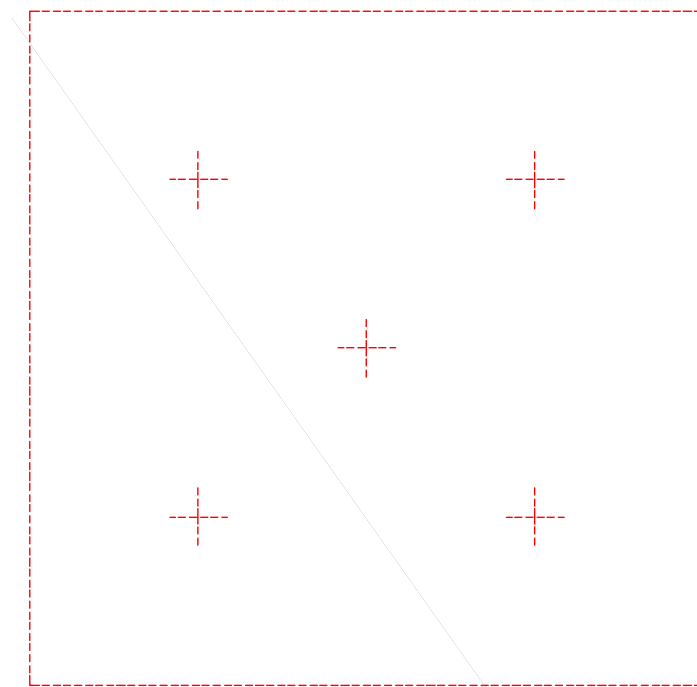
The hatch panel (product referenced FlipFix circular metal faced) measured Ø300mm x 15mm thick overall. The hatch panel comprised a 0.8mm thick profiled powder coated steel circular tray section. The hatch had 6No. steel section tabs welded to the hatch which twisted under corresponding tabs welded to the frame. A hexagon drive locking bolt screwed through the hatch and through a corresponding hole in one of the frame tabs, locking the hatch closed.

The frame comprised 0.8mm thick profiled powder coated steel 'L' section, 38mm high x 25mm wide. The frame was fixed into the aperture with 3No. Flip Fix fitting devices, equally spaced around the frame perimeter.



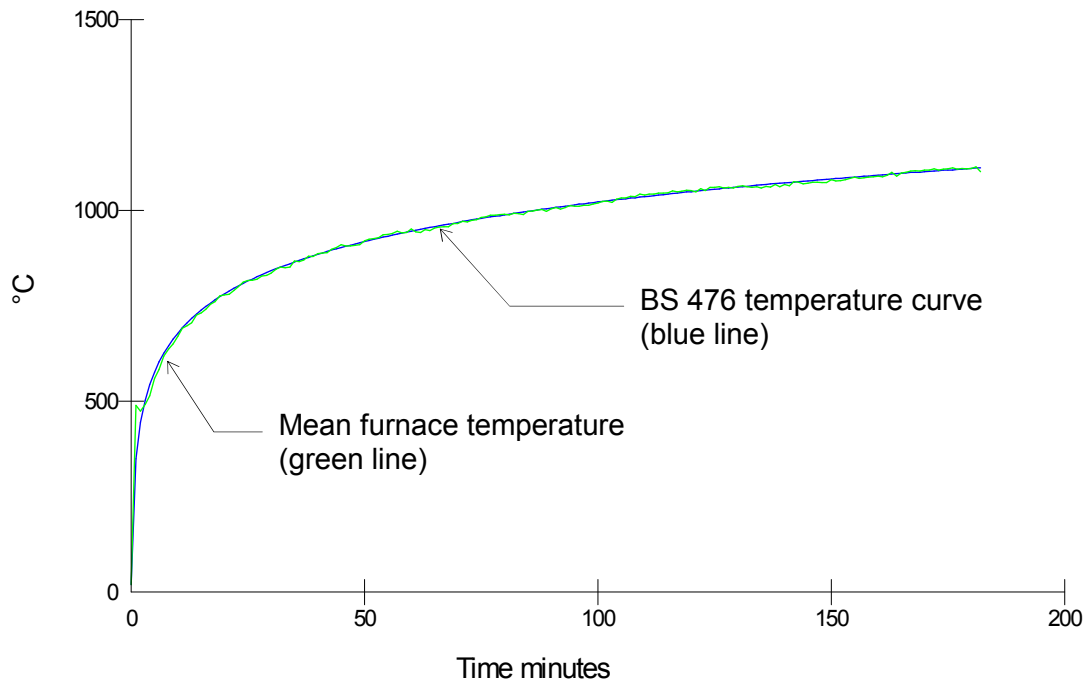
6 Test conditions

- 6.1 Where areas of the test specification are ambiguous or open to interpretation the Fire Test Study Group Resolutions No's 70, 71 and 72 have been followed (further specific details are available on request). These Resolutions provide basis of common agreements between the fire test laboratories which are members of this Group.
- 6.2 The ambient temperature of the test area at commencement of test was 10°C.
- 6.3 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 20Pa at the underside of the ceiling soffit. The pressure readings have been tabulated in Appendix 2.
- 6.4 The furnace was controlled to follow the temperature/time relationship specified in BS 476: Part 20: 1987 as closely as possible, using the average of five thermocouples suitably distributed within the furnace. The temperatures recorded are shown graphically below:



✚ : Furnace Thermocouples

Furnace Temperature



6.5 The specimen was declared uninsulated, so no thermocouples were fitted

7 Observations

All comments relate to the unexposed face unless otherwise specified.

Time

(minutes)

01.00	There is smoke issuing from the hatch.
05.30	There is discolouration to the face of the hatch.
09.20	There is an increase in smoke issuing from the hatch.
12.20	There is further discolouration to the hatch.
19.10	The paint is bubbling and flaking away.
45.00	No visual change to the hatch observed.
75.00	No visual change to the hatch observed.
90.00	No visual change to the hatch observed.
105.00	No visual change to the hatch observed.
112.00	Exposed face, the first layer of board is falling away.
120.00	No visual change to the hatch observed.
135.00	No visual change to the hatch observed.
170.00	The hatch is dropping into the furnace.
182.00	Test terminated.

8 Primary observations

Time



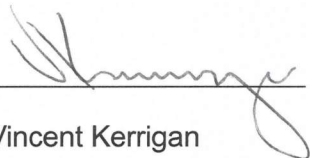
(minutes)

00.00	Test started.
90.00	No visual change to the hatch observed.
135.00	No visual change to the hatch observed.
170.00	The hatch is dropping into the furnace.
182.00	Test terminated.

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9 Limitations

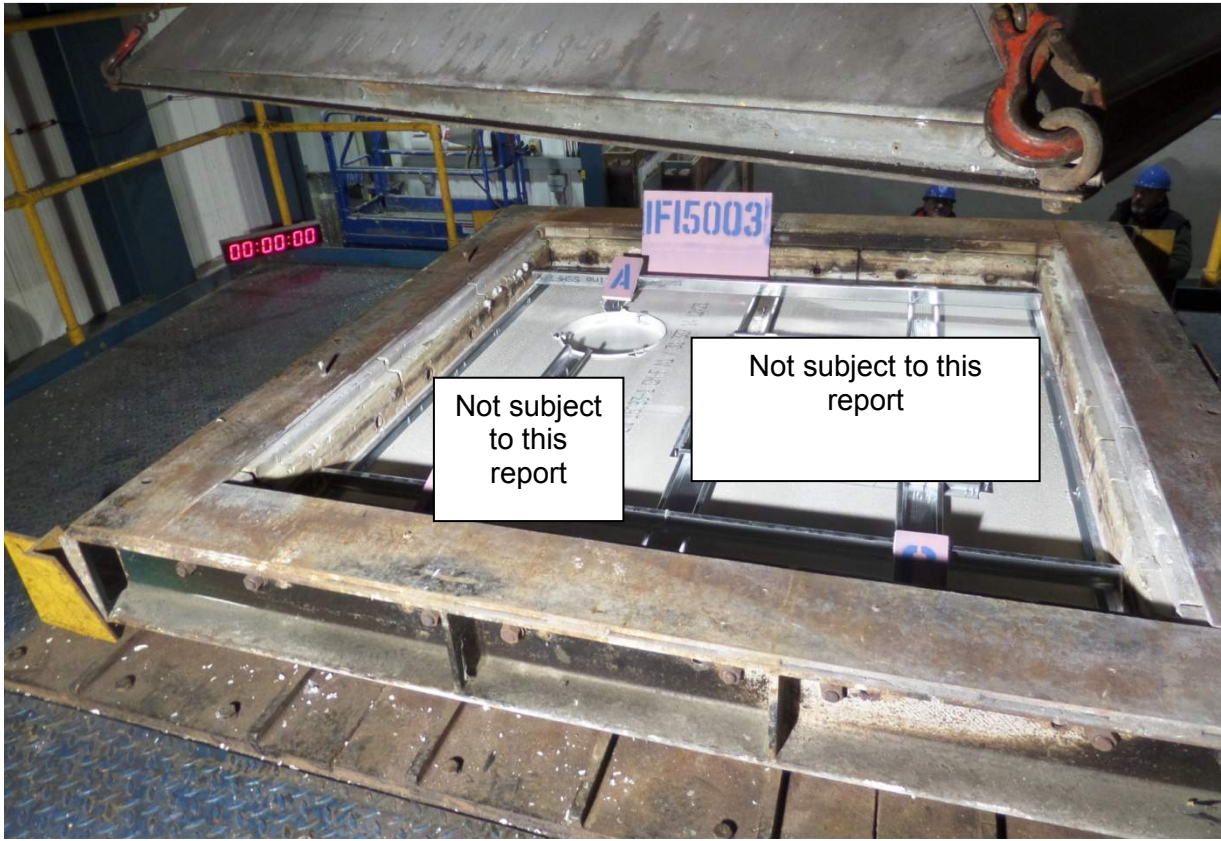
This test report relates to an investigation which utilised the test methodology given in BS 476 Part 20: 1987; the full requirements of the Standard were not, however, complied with. The information is provided for the test sponsor's information only and should not be used to demonstrate performance against the Standard nor compliance with a regulatory requirement. The test was not conducted under the requirements of UKAS accreditation.

	Written by:	Checked by:	Authorised by:
Signature:			
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Title:	Senior Technical Officer	Lead Technical Officer	Technical Manager
Date of issue:	18.03.2015	18.03.2015	18.03.2015

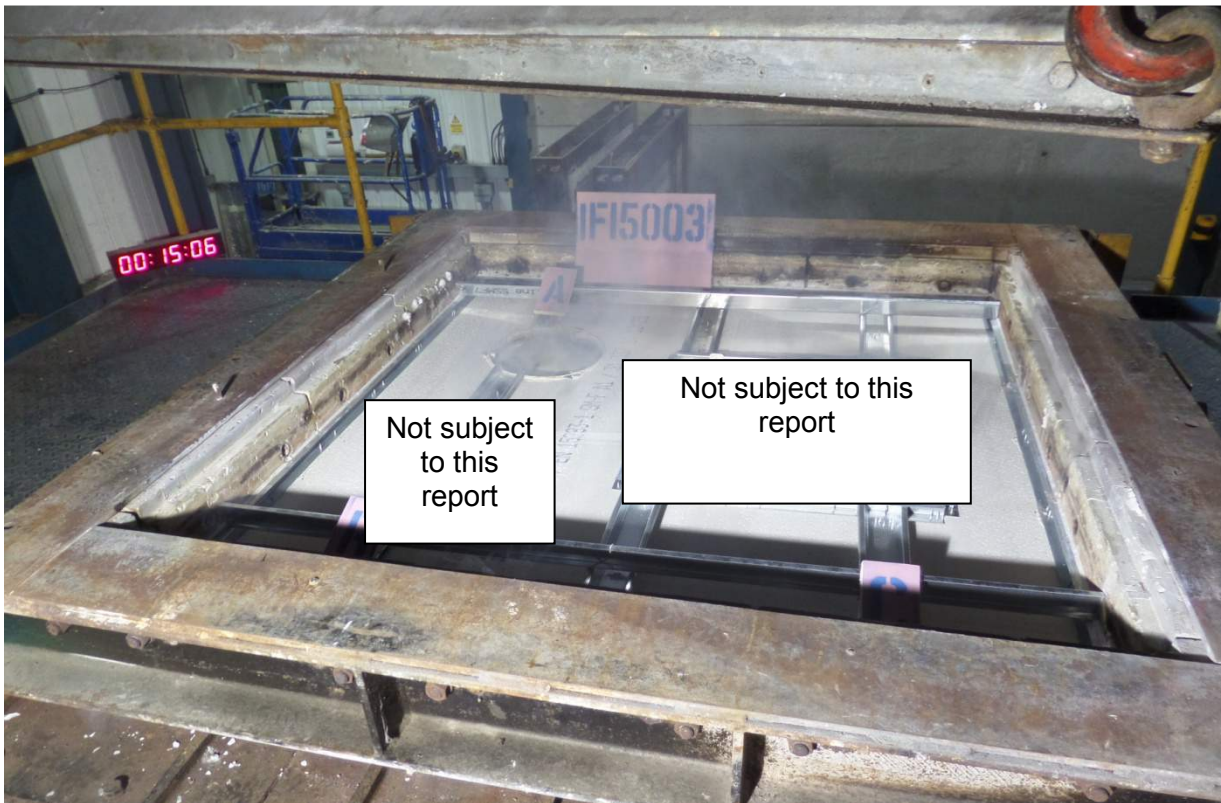
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10 Photographs

At start of test

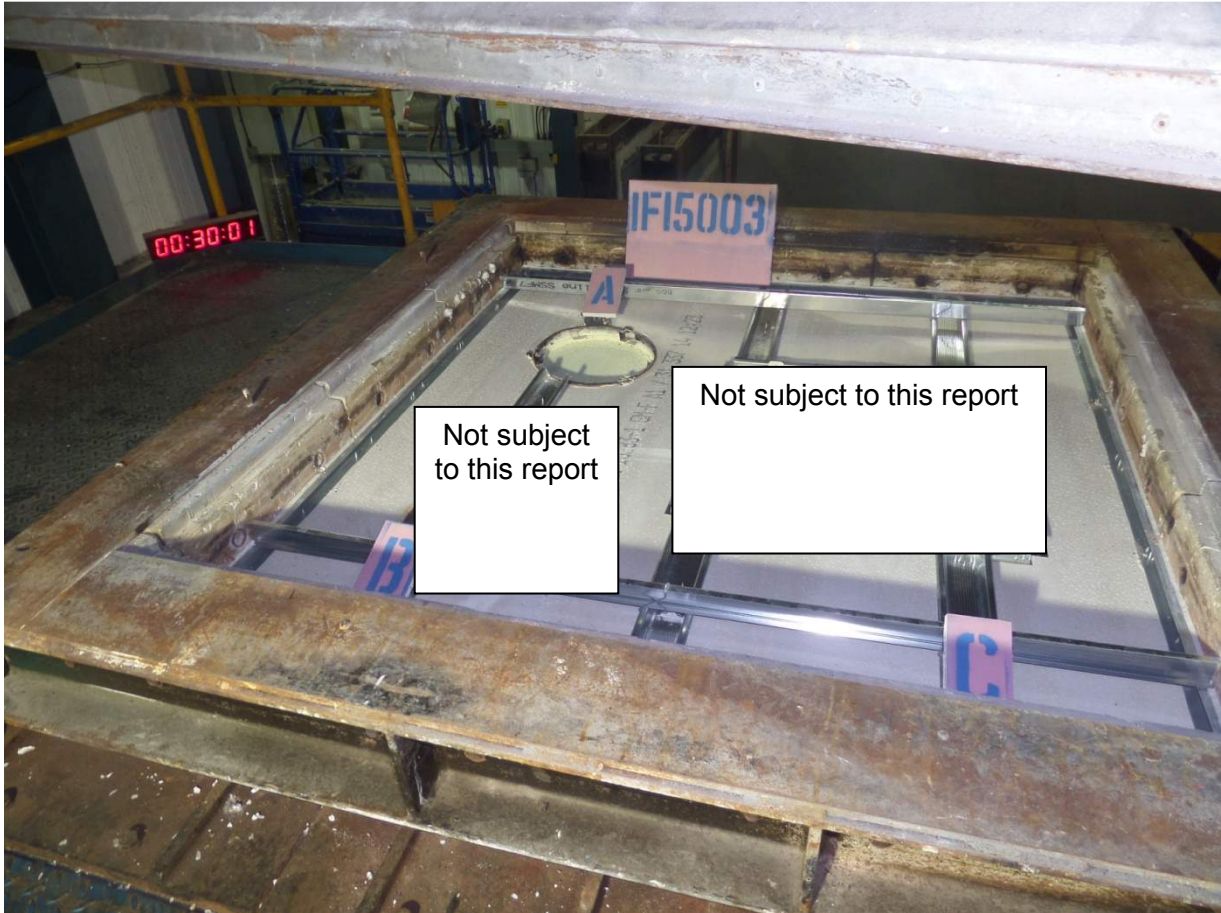


After 15 minutes

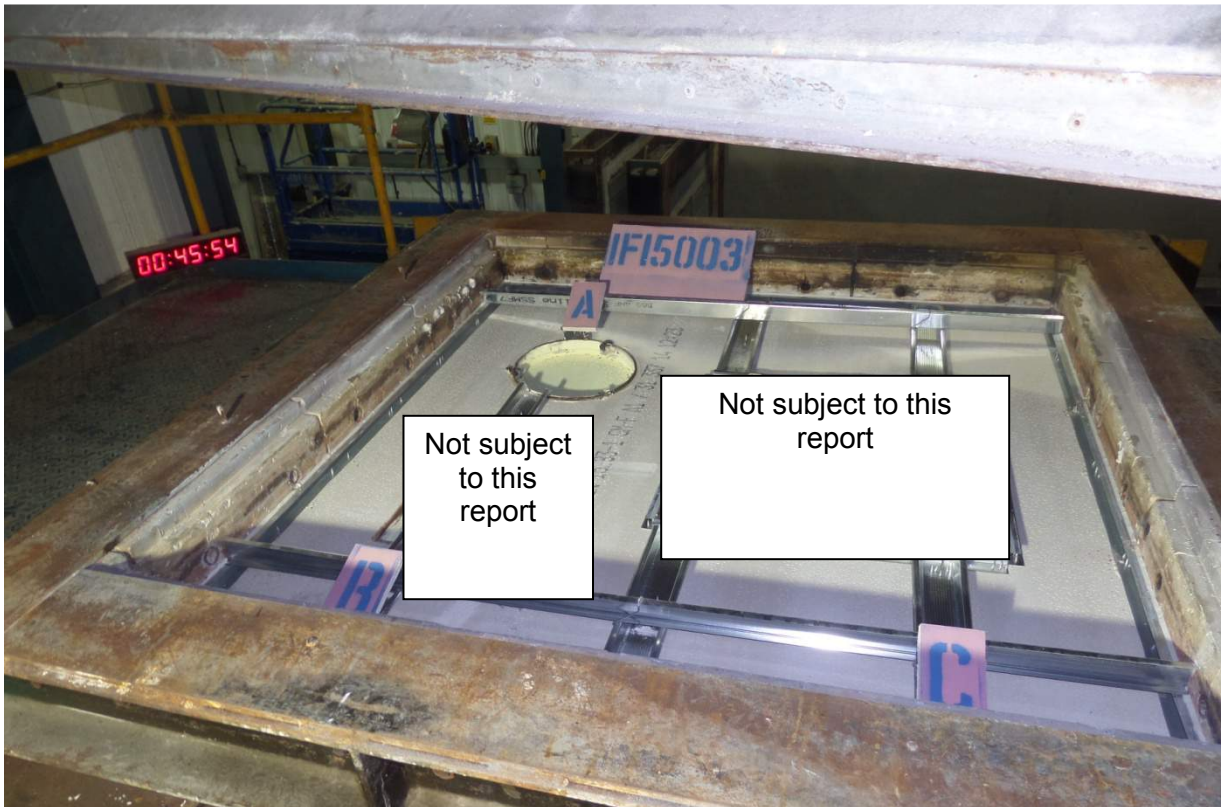


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After 30 minutes



After 45 minutes

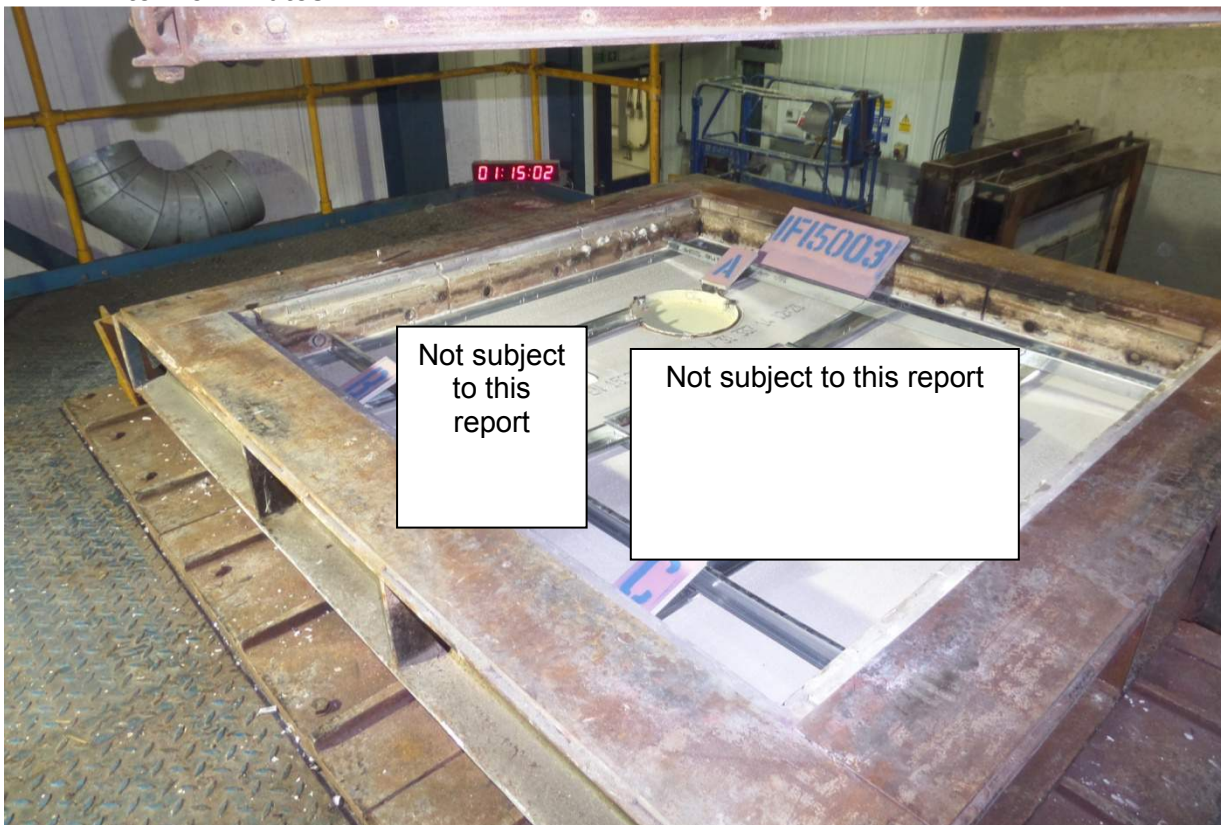


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After 60 minutes

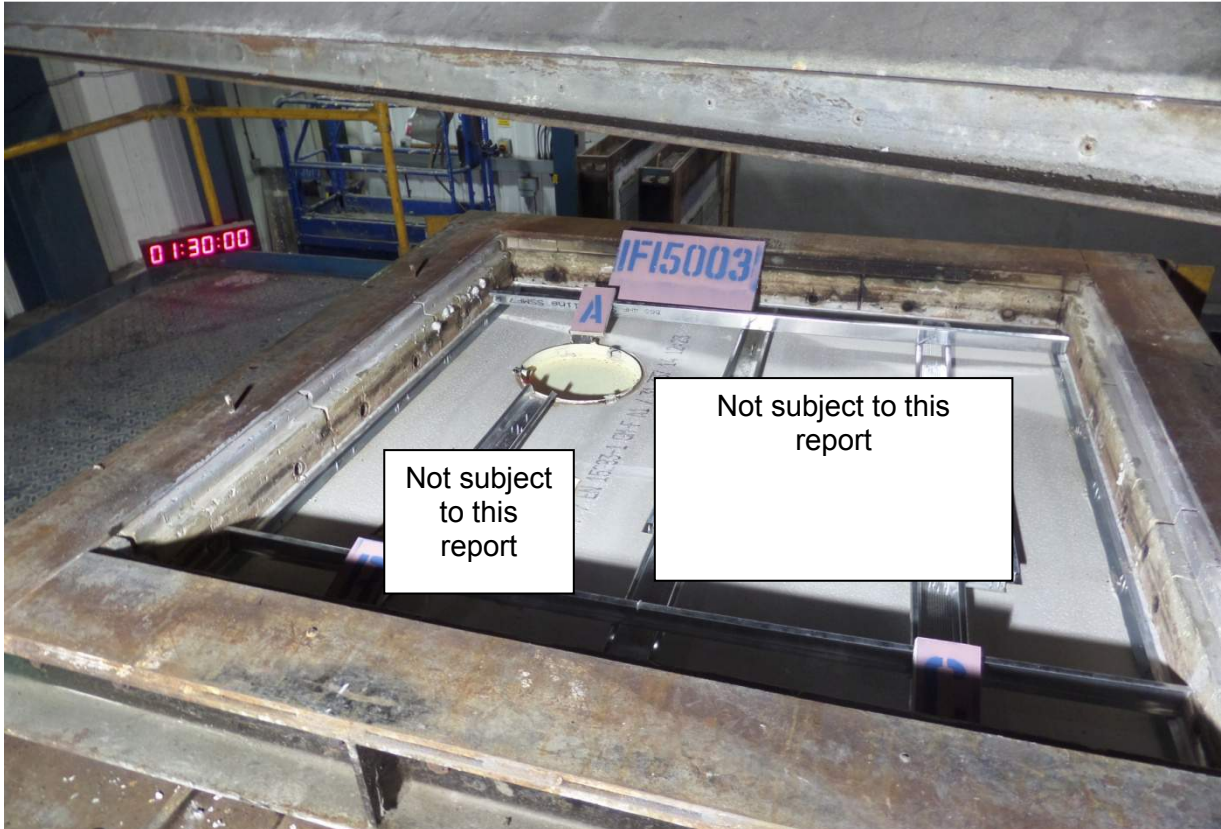


After 75 minutes



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At 96 minutes

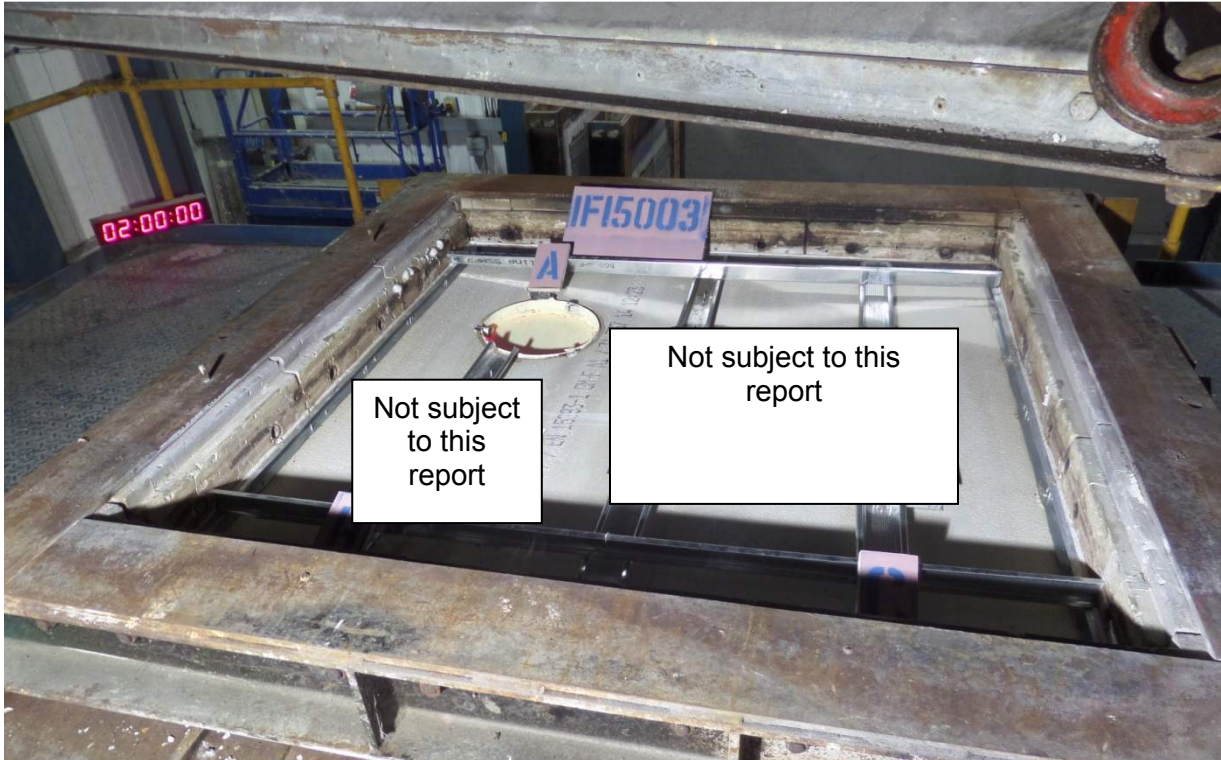


After 105 minutes

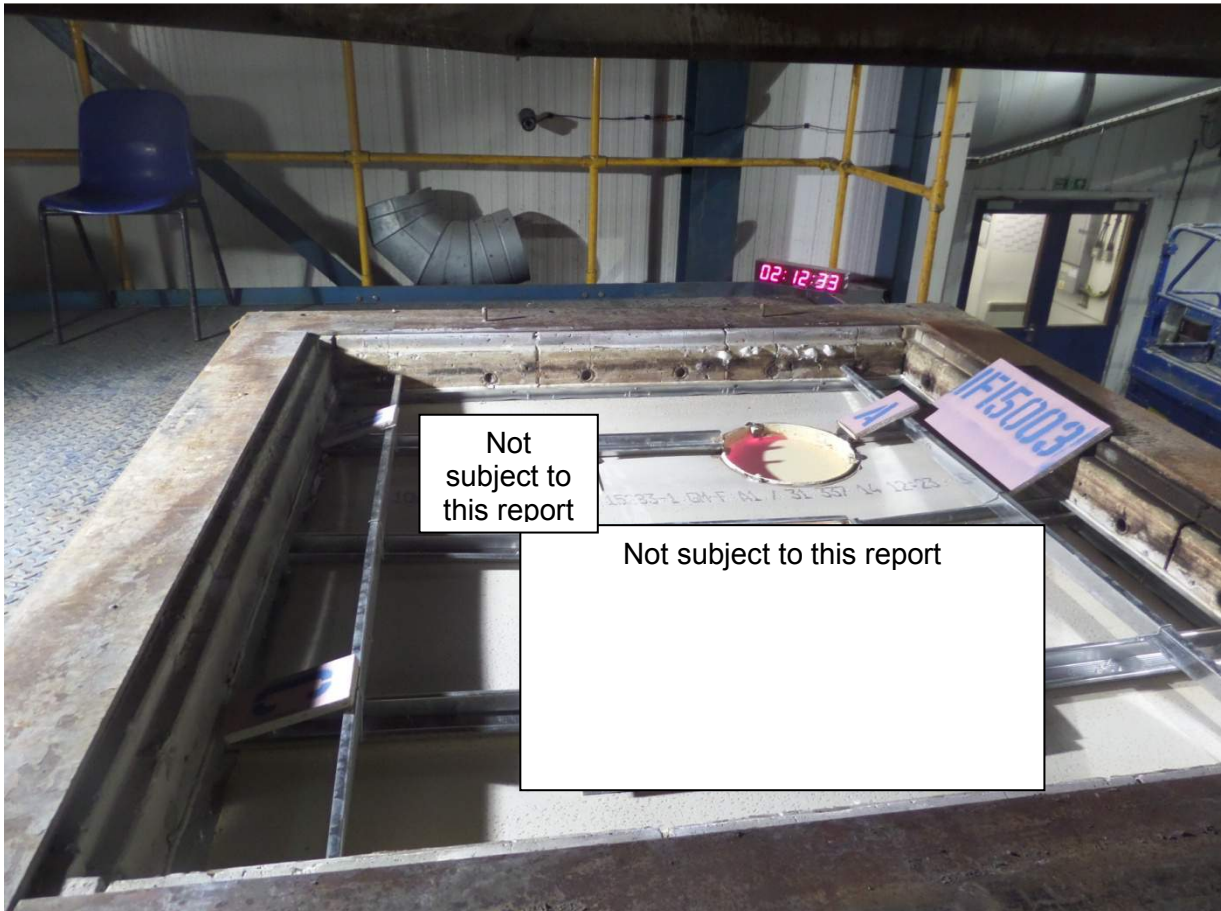


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At 120 minutes

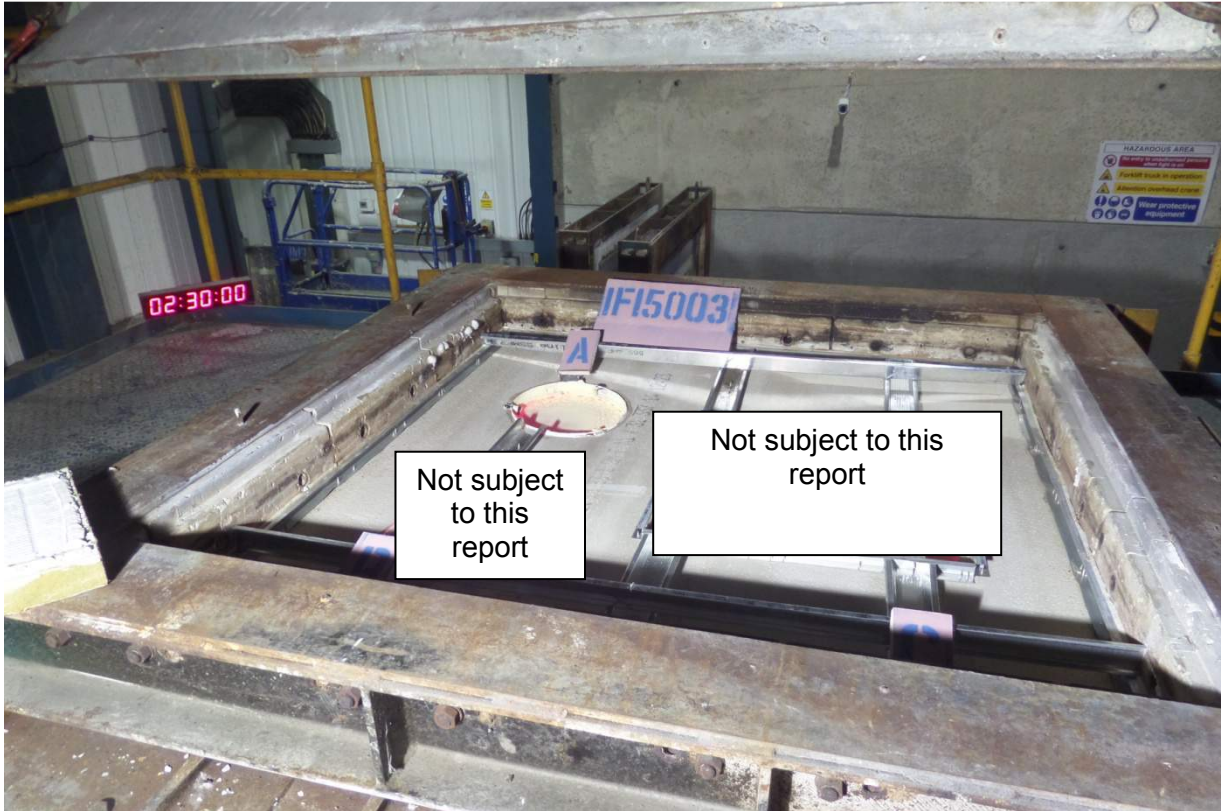


After 132 minutes



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At 150 minutes

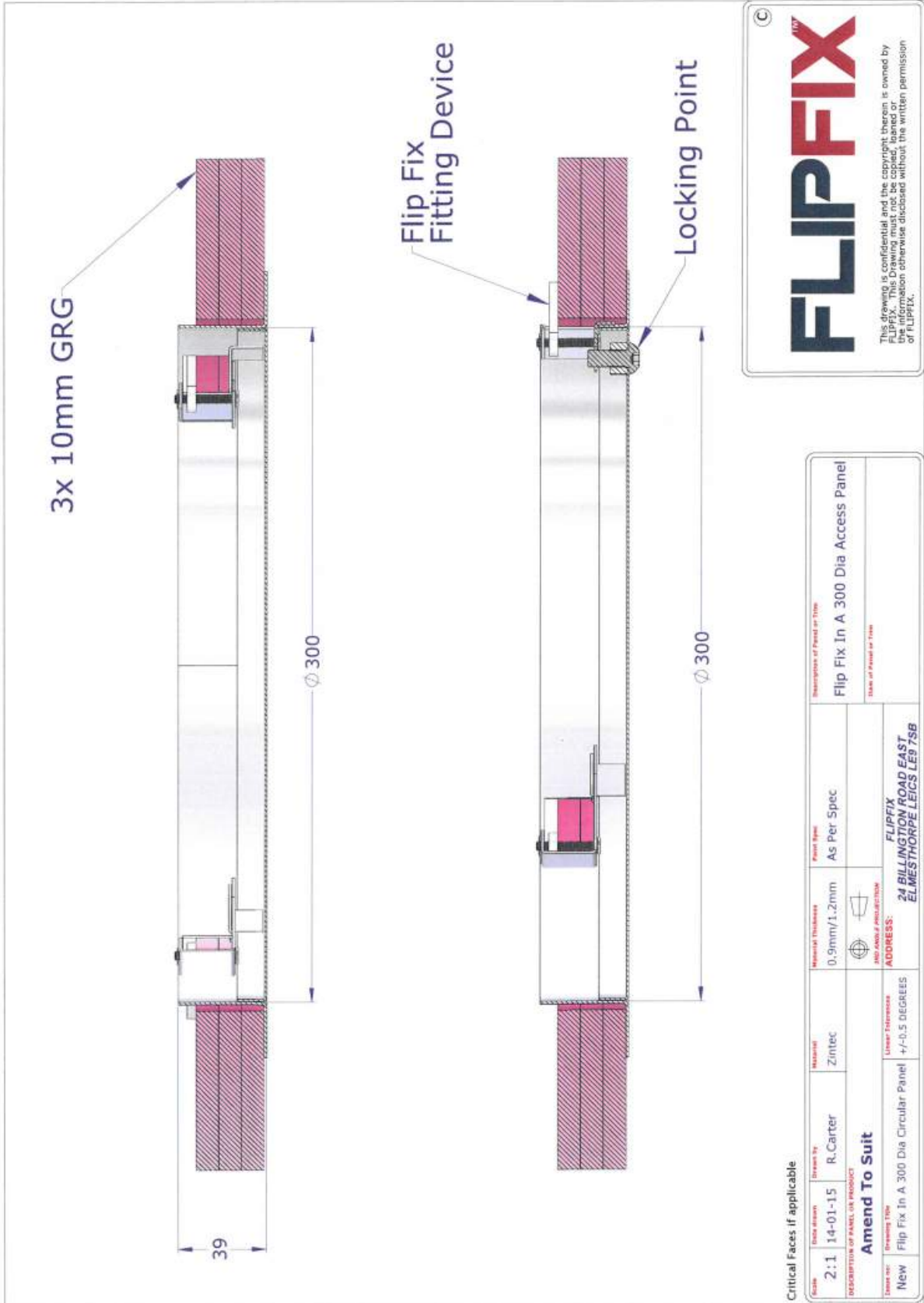


After 180 minutes

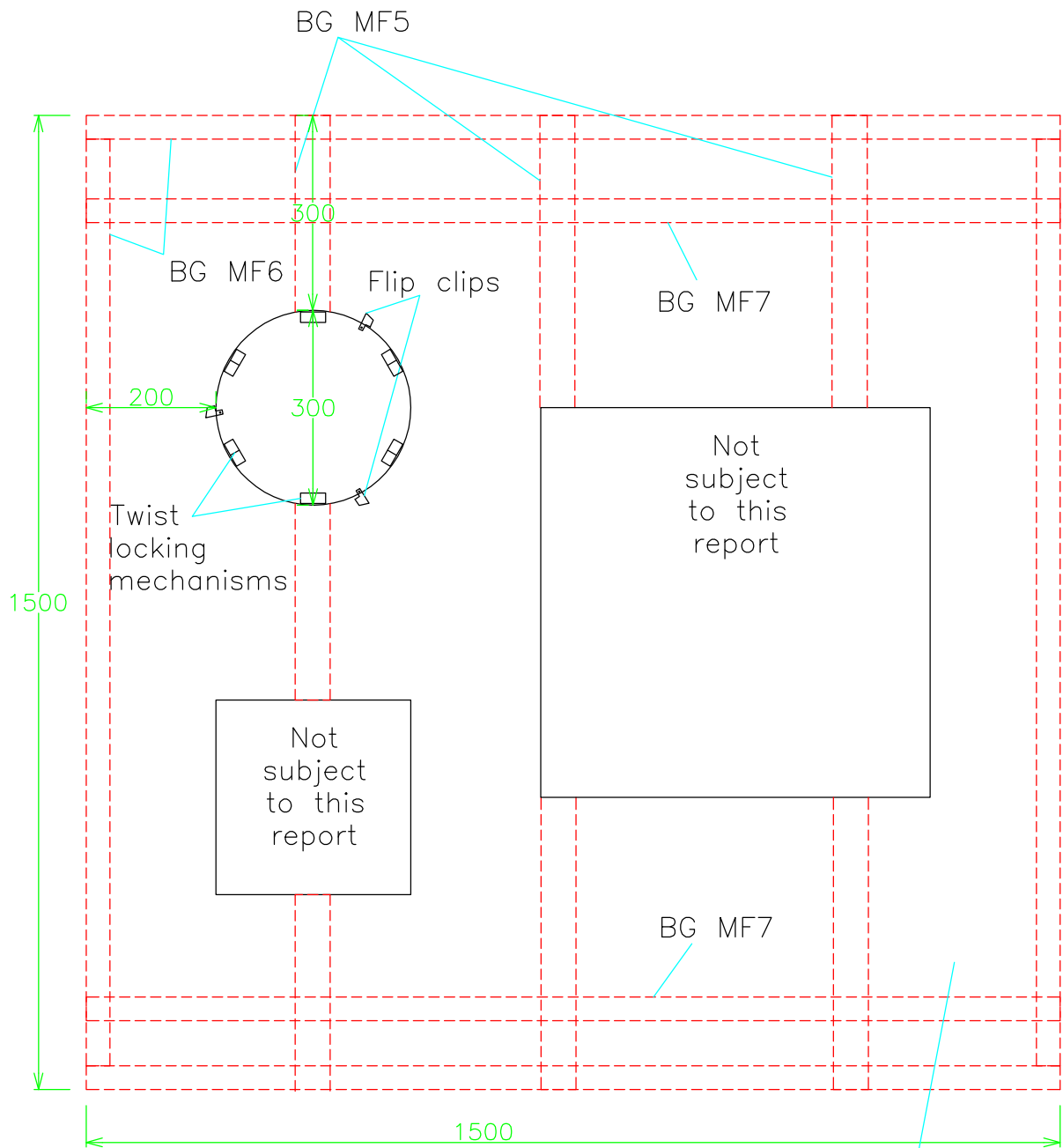


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Appendix – client drawing and figure 1
Access hatch



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Front of furnace

British Gypsum Casoline MF suspended ceiling system

BMTRADA

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

Date Drawn 02/0215	Drawn By ARD	Scale NTS
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Project No. BMT/FEI/F15003A	Appendix
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BM TRADA provides independent certification, testing, inspection, training and technical services around the world. We help customers large and small to prove their business and product credentials and to improve performance and compliance. With an international presence across many industry sectors, we offer a special focus and long history of technical excellence in supply chain certification, product certification and testing, and technical services to the timber, building, fire and furniture industries.



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