

Fire Resistance Testing

CONFIDENTIAL

Report: Chilt/IF11058 AR1

A fire resistance test performed on 2 No. steel access panels, one within a blockwork wall construction and one within a section of a suspended ceiling construction

Test conducted in accordance with BSEN 1634 – 1: 2008 and BSEN 1364 – 2: 1997

Test date: 6th October 2011

Prepared for:
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The details of the sponsor of test report Chilt/IF11058 are held on file by Chiltern International Fire Ltd. This report is additional to that issued as Chilt/IF11058 on 9 December 2011 and the original report shall remain valid and is not replaced by the additional report.



Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. This document is confidential and remains the property of Chiltern International Fire Ltd. The legal validity of this report can only be claimed on the presentation of the complete report.

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BM TRADA – the new name for Chiltern International Fire Ltd

From July 1st 2013, Chiltern International Fire Ltd commenced trading under the name of its parent company BM TRADA and at the same time adopted a brand new visual identity.

Historically, the group has delivered its services through a number of individual companies: BM TRADA Certification Ltd, TRADA Technology Ltd, Chiltern International Fire Ltd (including Chiltern Dynamics) and a network of international offices. Both BM TRADA Group and these individual companies will now trade under the same name - BM TRADA - and adopt the new visual identity.

To coincide with this change, our Technical Reports, Test Reports, Products Assessments, company stationery and marketing collateral have been re-designed to carry the new branding and visual identity.

The validity of all documents previously issued by the individual companies including certificates, test reports and product assessments is unaffected by this change and a letter to this effect will be available to download from our website www.bmtradagroup.com.

About BM TRADA.

With origins dating back to 1934, we have a deep history and services which are highly valued by our customers. We offer independent certification, testing, inspection, training and technical services around the world. In all these areas we continue to use industry-leading experts in their chosen fields to develop and deliver services – an ethos that has been at the heart of our approach since we began.

A recent review of our businesses and customers revealed that the individual identities sometimes make communications confusing, and that in an already complex business area, clarity and simplicity in communications is rare, but valued. It also revealed that a single identity and combined offer would help us strengthen our appeal.

With this in mind, we brought the companies together under the name BM TRADA and took the opportunity to create a fresh new visual identity.

We have modernised our image and combined our strengths. However, our values, our people and the integrity of our services remain the same. I hope you will welcome these changes and the improvements they will bring.



Jon Osborn
Chief Operating Officer

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1 Introduction

Two steel access panels tested for their fire resistance performance. One panel was installed into a vertical block work wall and the other in a horizontal ceiling system. The vertically orientated access panel was tested against BSEN 1634-1 2008 and the horizontally orientated access panel was tested against BSEN 1364-2 1997.

2 Specimen verification

The specimens were delivered to Chiltern International Fire Ltd (CIFL) during October 2011. CIFL constructed a 150mm thick blockwork wall within a 1m x 1m refractory lined steel restraint frame, and a section of a suspended ceiling system built on a 1.6m x 1.6m blockwork ring beam on top of a 1m x 1m furnace aperture. The access panels were then installed into the supporting constructions.

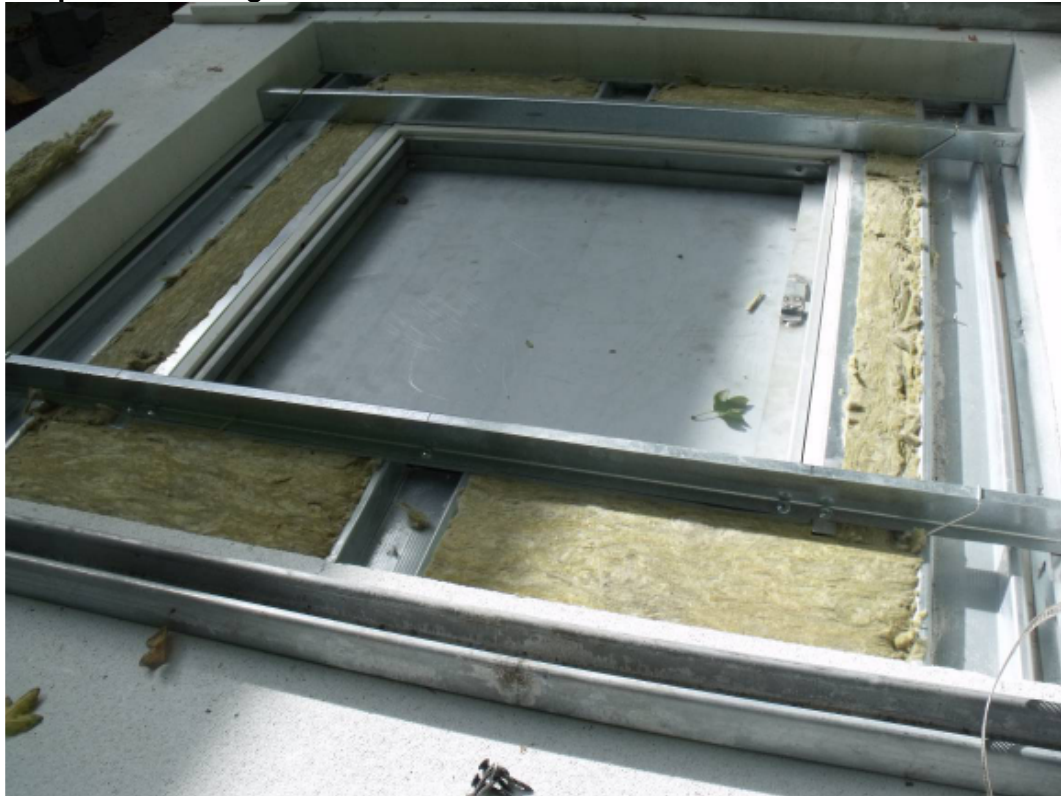
3 Description of supporting construction

The vertical supporting construction was comprised of a 150mm thick aerated autoclaved concrete blockwork wall. The horizontal supporting construction consisted of a section of British Gypsum Casoline 'MF' suspended ceiling clad with 2 No. layers of 15mm thick Glasroc Firecase S plasterboard, built in accordance with BSEN 1363-1 1999 and the relevant system in the British Gypsum 'White Book'. The aperture for the access panel in the ceiling section was lined with 1 No. layer of 15mm thick Firecase S plasterboard.

Unexposed face of vertically orientated access panel



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Unexposed face of horizontally orientated access panel fitted in suspended ceiling section

4 Description of specimens

Details of the specimens are shown in Appendix 1. All measurements are in mm and the descriptions are written viewing the specimens from the unexposed face unless stated otherwise.

4.1 The specimens

Both specimens comprised identical steel access leaf trays hung within steel frames; the horizontal specimen was hung to open in towards the furnace and the vertical specimen was hung to open away from the furnace.

The overall panel size (excluding frame) measured 595mm x 595mm x 25mm thick.

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4.2 Technical detail (both specimens)

(To be read in conjunction with Figures 1 and 2)

The access panel consisted of a leaf and frame. The leaf 'tray' was manufactured from folded 0.9mm thick Zintec steel welded at the corners. The leaf was 25mm deep and had a 10mm wide return on the hanging and side edges and a 40mm wide return on the closing edge, in order to house the locking mechanism.

The frame comprised profiled 1.2mm thick Zintec steel, 50mm deep with a 25mm frame surround and 12mm deep x 25mm wide integral stop on the closing frame jamb.

The leaf was hinged to one side on an M5 x 8mm long rivet pin, and to the other side with an M5 x 12mm long pan head screw locating into an M5 @Hank Bush in the frame.

A zinc plated steel Budget lock within a 40mm wide x 40mm deep x 25mm high steel capping channel was welded to the leaf tray. The lock nib measured 20mm wide x 5mm thick and was engaged by being rotated over the frame profile. The lock was engaged for the test.

The vertical panel frame fixed into the aperture with 2No. 80mm long masonry fixings on the horizontal edges, fitted 50mm from the corners, and was sealed to the aperture with intumescent mastic on both faces. The horizontal panel frame was fixed to the plasterboard clad steel stud framing the aperture, the panel framing having 2No. 35mm wide x 60mm high steel 'tabs' welded to each frame section and fixed to the steel studs with 2No. 25mm long drywall screws per 'tab'.

The specimens were finished with a Polyester powder coat finish RAL 9010.

A self adhesive Envirograf (G8/10) graphite type intumescent seal, 12mm wide x 1mm thick, was centrally fitted around the edge of the panel leaf on the hanging edge and side edges, and to the upstand of the stop on the closing jamb of the frame.

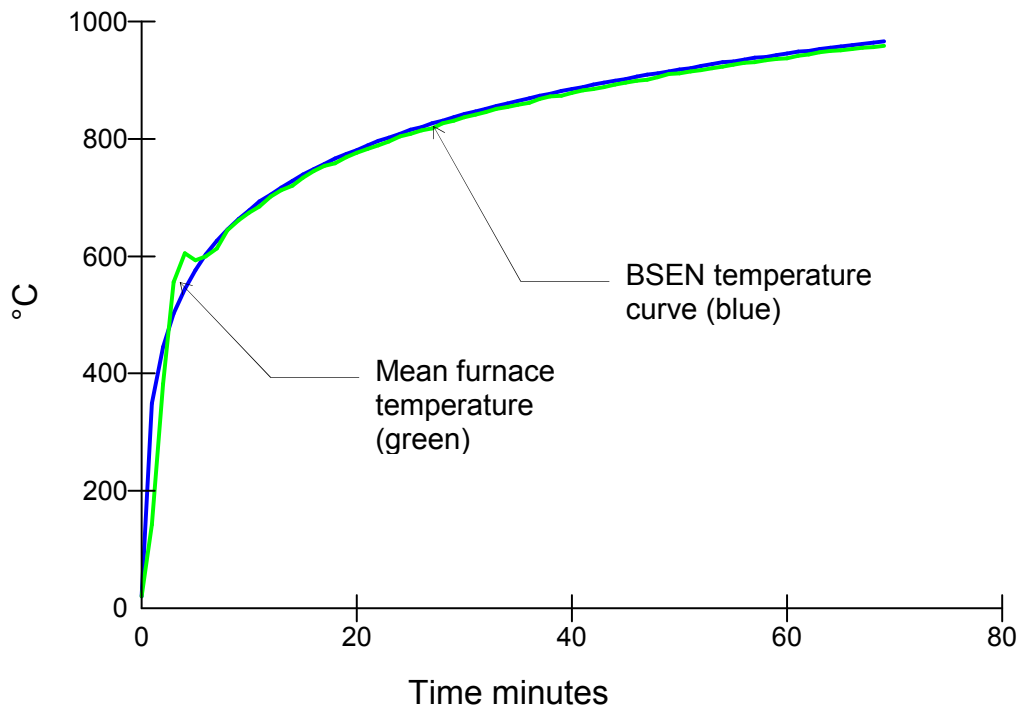


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5 Test conditions

5.1 Furnace temperature

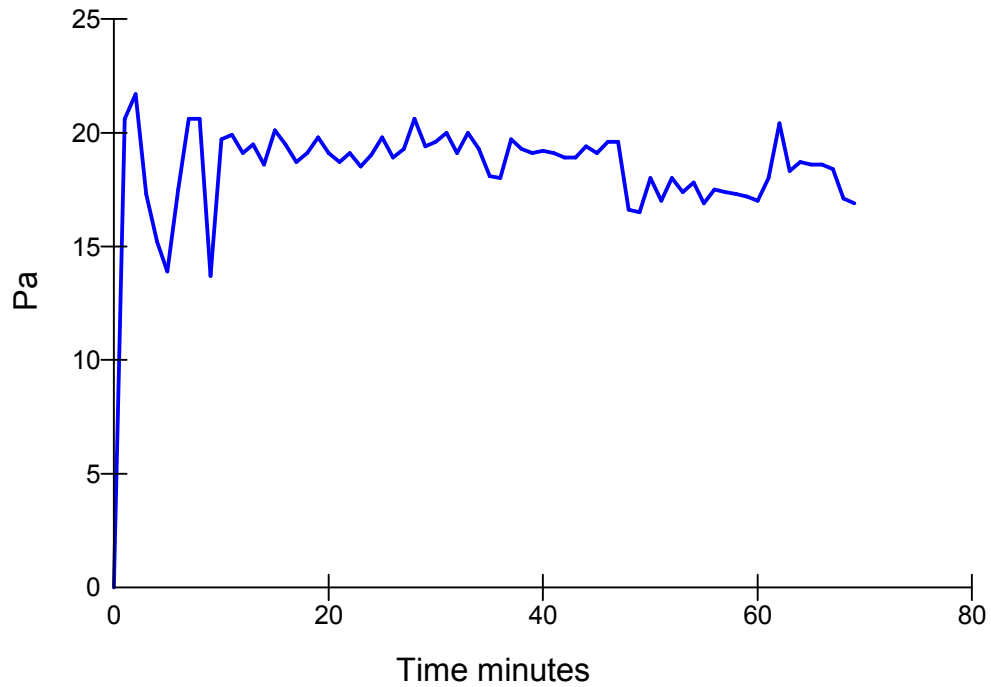
The furnace was controlled to follow the temperature/time relationship specified in BSEN 1363: Part 1: 1999 Section 5.1.1 as closely as possible, using the average of four plate thermometers suitably distributed within the furnace. The temperatures recorded have been tabulated in Appendix 2 and are shown graphically below:



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5.2 Pressure readings

After the first 5 minutes of the test, the furnace pressure was maintained at 18 ± 5 Pa and after 10 minutes was maintained at 18 ± 3 Pa with respect to atmosphere, at a point 1.2m from the notional floor level, equating to 20 Pa at the underside of the ceiling access panel. The pressure readings have been tabulated in Appendix 2 and are shown graphically below:



5.3 Ambient temperature

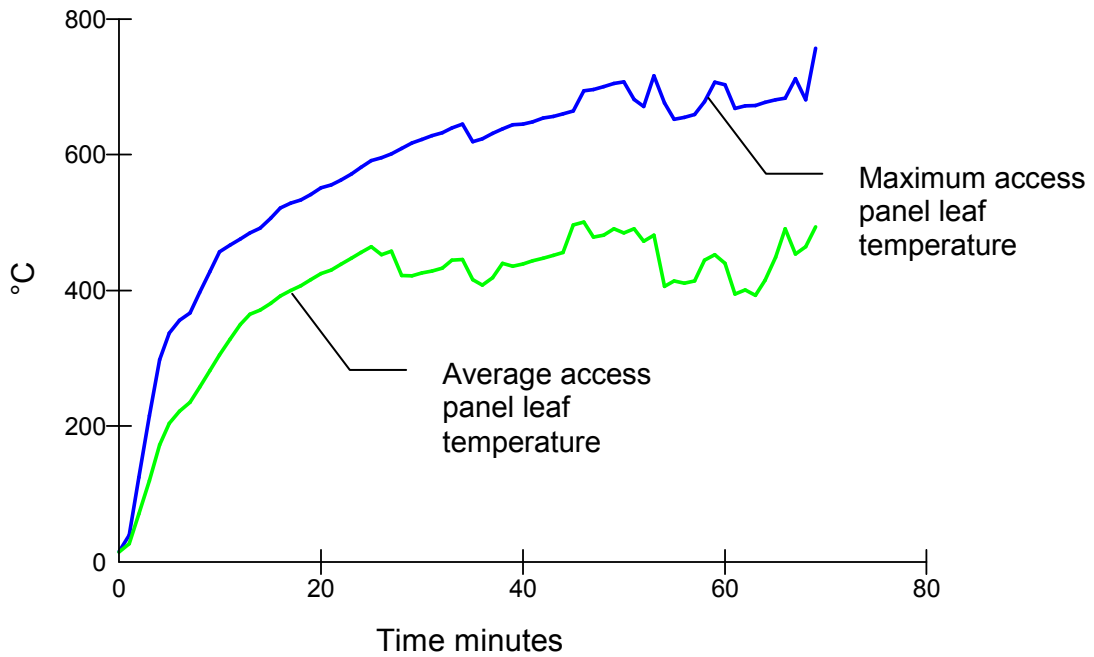
The ambient temperature of the test area at commencement of test was 15° C. The ambient temperature for the duration of the test has been tabulated in Appendix 2.

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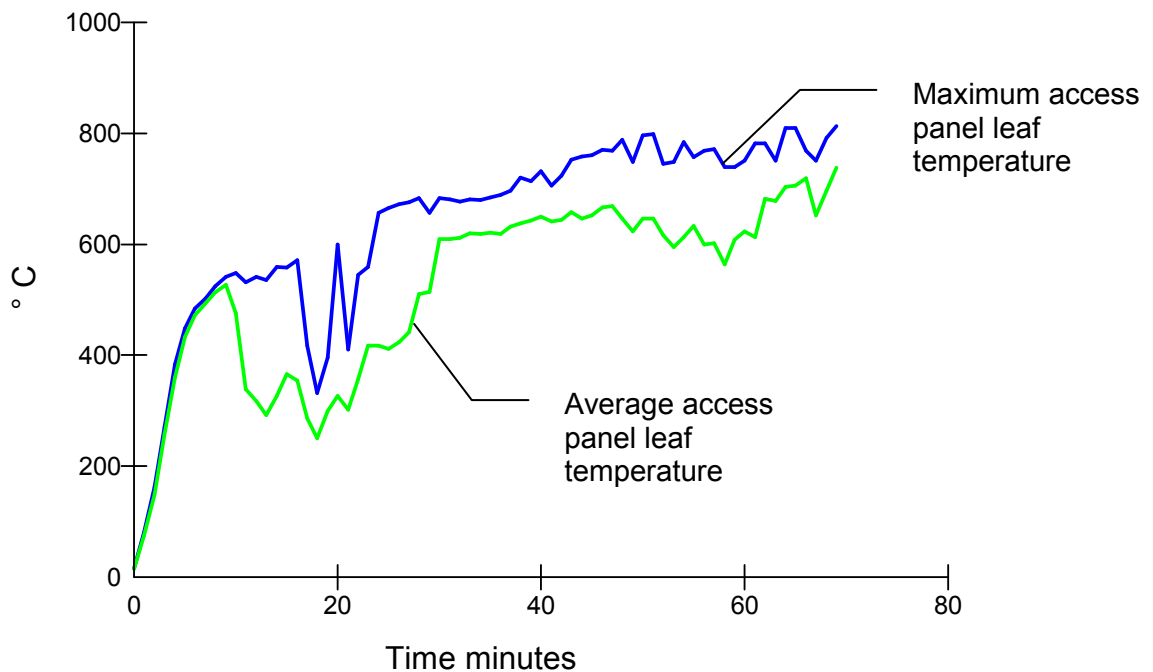
5.4 Unexposed face thermocouple positions

Five thermocouples were fixed to the unexposed face of the horizontal access panel leaf, and eight thermocouples were fixed to the unexposed face of the vertical access panel, three to the frame and five to the panel leaf. The temperature readings have been tabulated in Appendix 2 and are shown graphically below:

Vertical access panel



Horizontal access panel



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6 Observations

All comments relate to the unexposed face unless otherwise specified, (reference to Appendix 1 - figure 1).

| Time (minutes) | Comments |
|----------------|---|
| 0.00 | Test started. |
| 04.40 | Vertical sample, the stopper at the keyhole has melted and fallen away. |
| 18.00 | The radiometer has been introduced at 1m from the centre of the vertical sample. |
| 30.00 | No changes. |
| 60.00 | No changes. |
| 67.50 | There is continuous flaming from the back of the right hand side corner of the ceiling construction, where a section of plasterboard has fallen away into the furnace, thereby constituting integrity failure. |
| 69.00 | Test terminated. No integrity failure to the front vertical access panel. |

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7 Expression of results

Overall performance

Vertical access panel

| | |
|--------------------|---|
| Integrity | |
| Cotton pad | 69 (sixty nine) minutes* |
| Continuous flaming | 69 (sixty nine) minutes* |
| Gap gauges | 69 (sixty nine) minutes* |
| Insulation | |
| Leaf: Maximum | 2 (two) minutes |
| Average | 2 (two) minutes |
| Frame: 180°c rise | 9 (nine) minutes |
| 360°c rise | 35 (thirty five) minutes |
| Radiation | 69 (sixty nine) minutes* to 15kW/m ² |

* Failure criteria was not achieved upon termination of the test at 69 minutes

Horizontal access panel

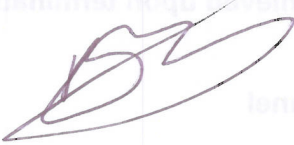
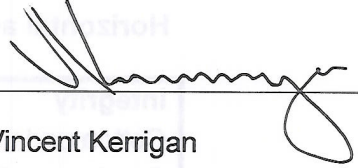
| | |
|--------------------|--------------------------|
| Integrity | |
| Cotton pad | 69 (sixty nine) minutes* |
| Continuous flaming | 67 (sixty seven) minutes |
| Gap gauges | 69 (sixty nine) minutes* |
| Insulation | |
| Leaf: Maximum | 2 (two) minutes |
| Average | 2 (two) minutes |

* Failure criteria was not achieved upon termination of the test at 69 minutes

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.

| | | |
|-----------------------|---|--|
| Signature: |  |  |
| Name: | Robert Axe | Vincent Kerrigan |
| Title: | Lead Technical Officer | Technical Manager |
| Date of issue: | 7/2/2014. | 07-02-2014 |

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Photographs

Unexposed face at start of test



After 21 minutes



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After 32 minutes



After 45 minutes



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After 60 minutes

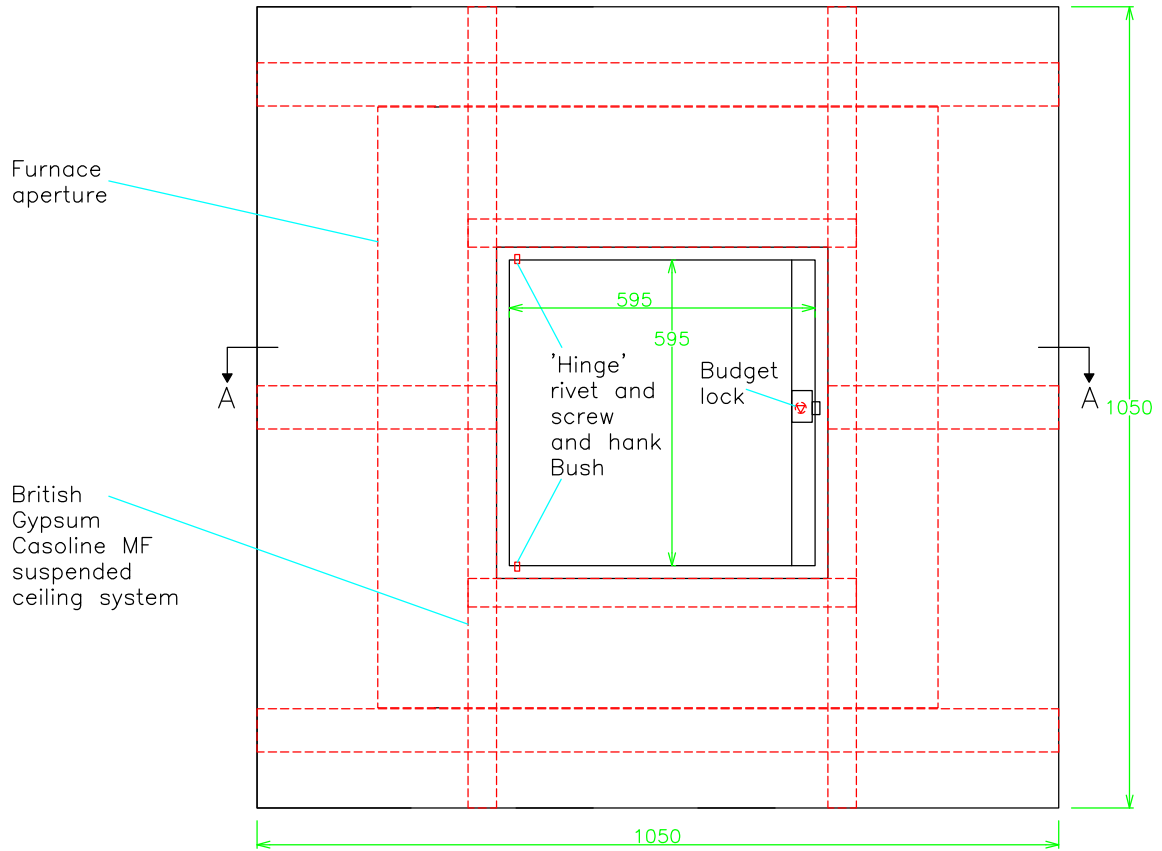


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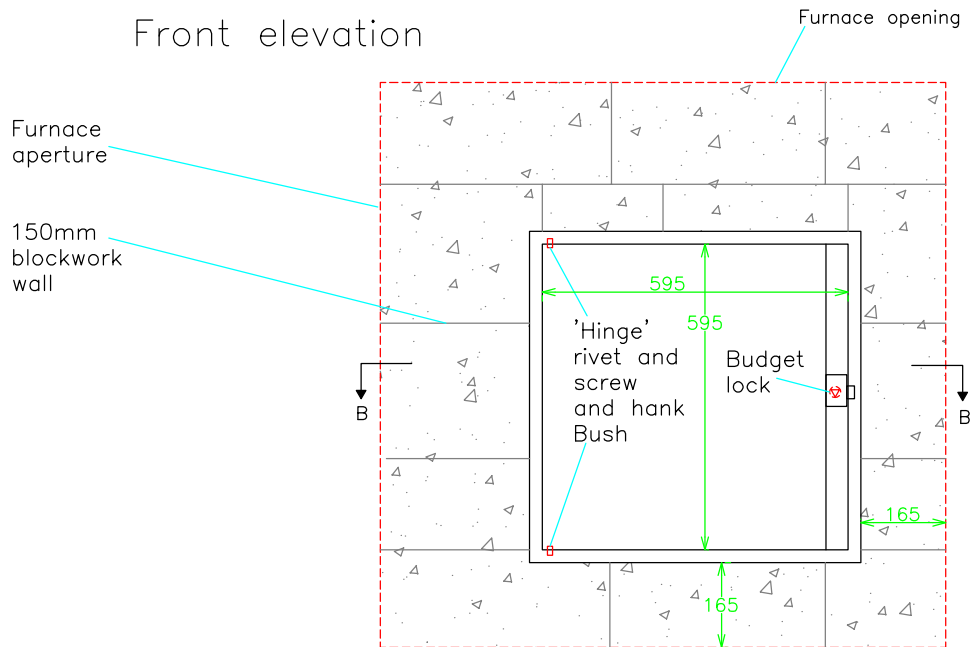
Appendix 1 – figures 1 – 3

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Plan View



Front elevation



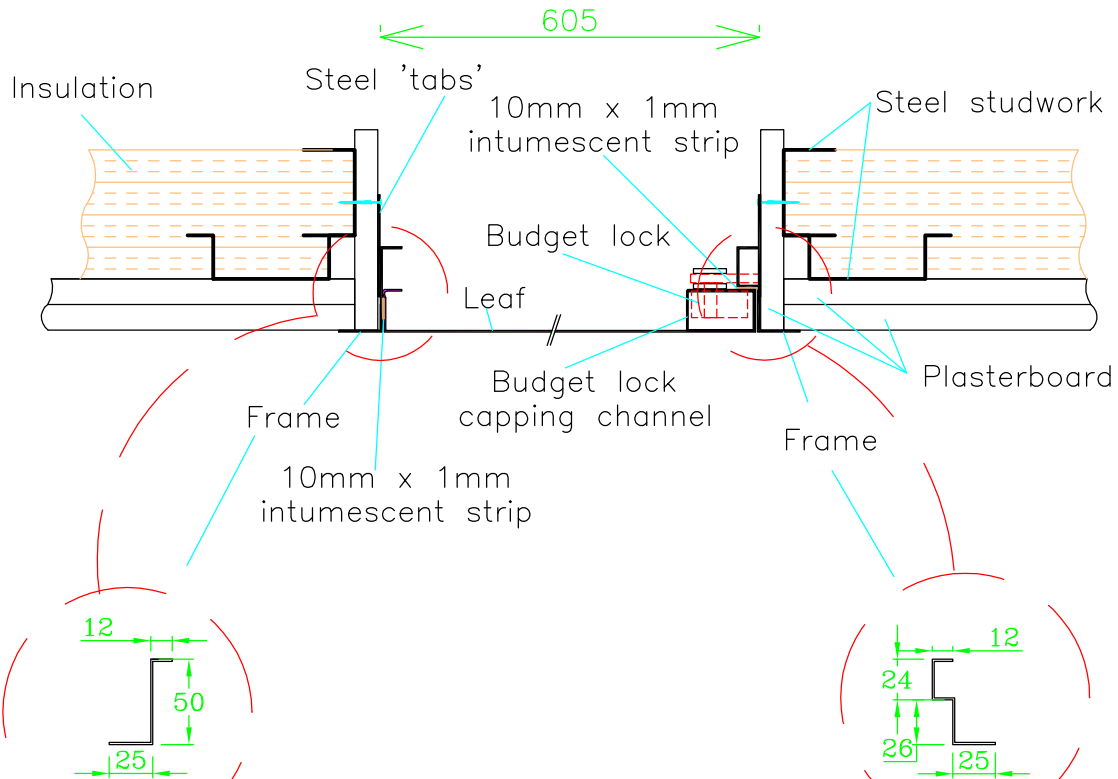
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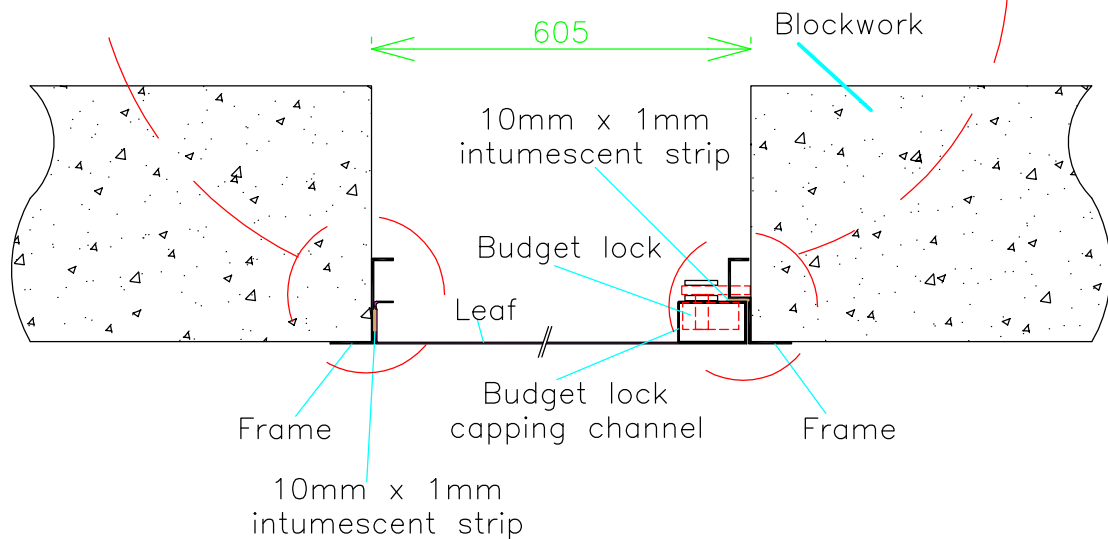
Title Unexposed face front elevation and plan view
 (All dimensions in mm)

| | | |
|----------------------------------|-----------------|--------------|
| Date Drawn 09/11/11 | Drawn By ARD | Scale NTS |
| Project No. Chilt/IF11058 AR1 | | Appendix 1 |

Section A - A



Section B - B



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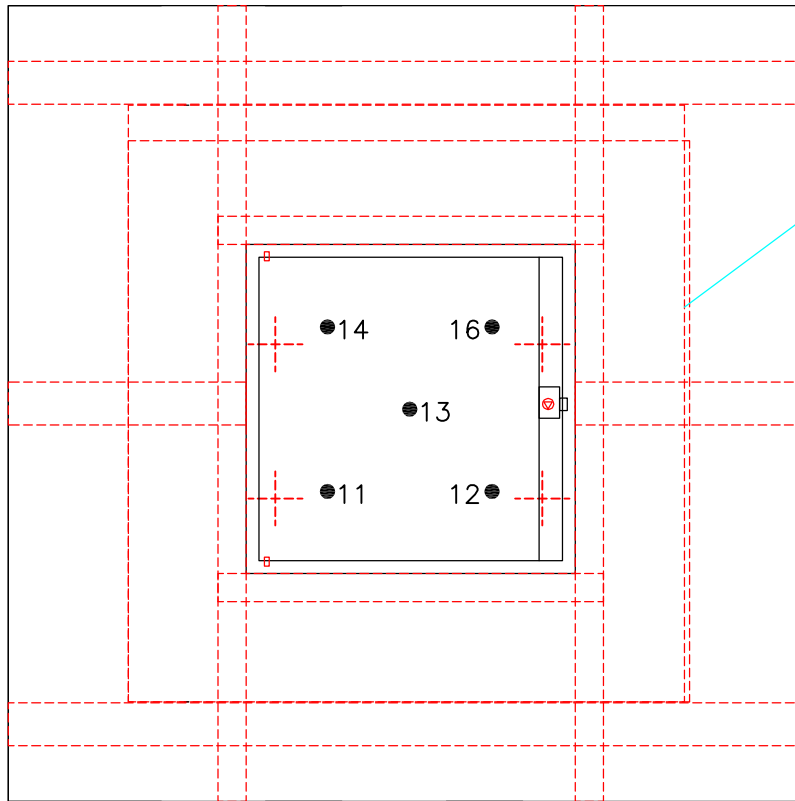
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Title
 Cross sections of access panels
 (All measurements in mm)

| | | |
|------------------------|-----------------|--------------|
| Date Drawn 09/11/11 | Drawn By ARD | Scale NTS |
|------------------------|-----------------|--------------|

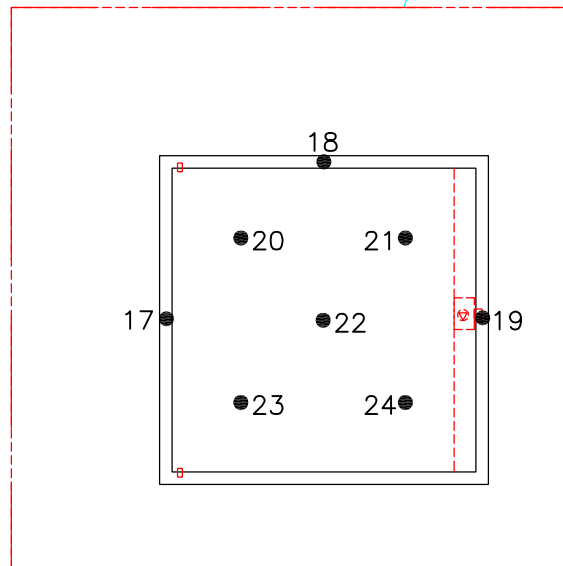
| | |
|----------------------------------|------------|
| Project No. Chilt/IF11058 AR1 | Appendix 1 |
|----------------------------------|------------|

Top of furnace



Furnace opening

Front of furnace



Furnace opening

⊕ : Furnace Thermocouples

● : Unexposed Face Thermocouples

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Title
Thermocouple positions

Date Drawn
09/11/11

Drawn By
ARD

Scale
NTS

Project No.
Chilt/IF11058 AR1

Appendix 1