

## **Report Number BTC 16505F**

A FIRE RESISTANCE TEST ON A GYPWALL METAL STUD PARTITION WITH 92mm STUD FRAMEWORK CLAD EACH SIDE WITH A DOUBLE LAYER OF 12.5mm GYPROC FIRELINE EX EAST LEAKE LINE 3, CONDUCTED IN ACCORDANCE WITH BS EN 1364-1: 1999.

Test Date: 22<sup>nd</sup> June 2009

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**Customer:** **British Gypsum**  
East Leake  
Loughborough  
Leicestershire  
LE12 6HX

**Customer: British Gypsum**

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A FIRE RESISTANCE TEST ON A GYPWALL METAL STUD PARTITION WITH 92mm STUD FRAMEWORK CLAD EACH SIDE WITH A DOUBLE LAYER OF 12.5mm GYPROC FIRELINE EX EAST LEAKE LINE 3, CONDUCTED IN ACCORDANCE WITH BS EN 1364-1: 1999.

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## 1. FOREWORD

This test report details a fire resistance test conducted on a metal stud partition clad on each face with a double layer of Gyproc FireLine. The test sponsor was British Gypsum.

The test specimen was installed by Alltone Limited. The construction of the specimen took place on the 18<sup>th</sup> June 2009. The Building Test Centre played no role in the design or selection of materials comprising the test specimen.

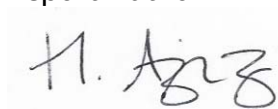
The test was conducted on the 22<sup>nd</sup> June 2009.

This report details the method of construction, the test conditions and the results obtained when the specific element of construction described herein was tested following the procedures outlined in EN 1363-1, and where appropriate EN 1363-2. Any significant deviation with respect to size, constructional details, loads, stresses, edge or end conditions other than those allowed under the field of direct application in EN 1364-1 is not covered by this report.

Because of the nature of fire resistance testing and the consequent difficulty in quantifying the uncertainty of measurement of fire resistance, it is not possible to provide a stated degree of accuracy of the result.

## 2. REPORT AUTHORISATION

Report Author



**Nabila Aziz**  
BEng. (Hons)  
Technologist

Authorised by



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BSc. (Hons)  
Laboratory Supervisor

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### 3. TEST REPORT AMENDMENTS

| Page | Amendments | Date |
|------|------------|------|
|      |            |      |
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|      |            |      |
|      |            |      |

#### 4. TEST CONSTRUCTION

##### 4.1 Description of Construction

The specimen was constructed in a refractory concrete lined steel restraint test frame with an opening of 3000 mm (high) x 3000 mm (wide).

Gypframe 94C50 Standard Floor and Ceiling Channels were fixed to the head and base of the test aperture at 600mm centres using 60mm fire resistant fixings.

Gypframe 92S50 'C' Studs were positioned at 600mm centres between the channels. The right-hand stud viewed from the unexposed face was not fixed to the perimeter of the test frame, and the gap between the stud and the frame lining was filled with a 25mm thick rock mineral fibre gasket.

At the left-hand edge a Gypframe 94C50 'C' Stud was used to fix the partition to the test frame, using 60mm fire resistance fixings at 600mm centres.

Thermocouples were added to the studs. Two at mid height on the web and two on each of the hot and cold flanges of the central two studs.

Both the unexposed face and the exposed face of the specimen were clad with a double layer of British Gypsum 12.5mm Gyproc FireLine boards. The inner layer boards were fixed with 25mm Gyproc Drywall Screws at 300mm centres around the perimeter of the boards only. The outer layer boards were fixed with 36mm Gyproc Drywall Screws at 300mm centres around the perimeter and within the field of the boards.

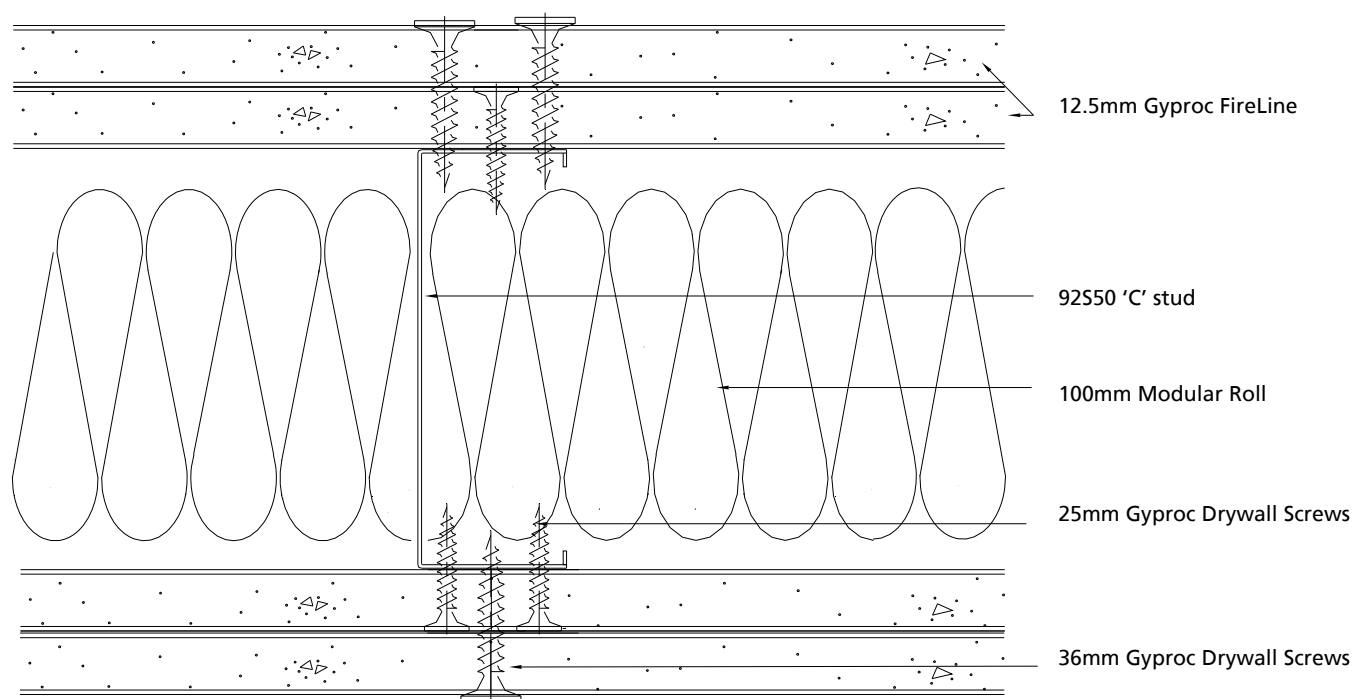
The cavity was filled with a single layer of 100mm thick Modular Roll.

All vertical joints were staggered between layers, with a full board at the free edge of the exposed face. A horizontal joint was positioned at 2400mm from the base on the outer layer boards and at 600mm from the base on the inner layer boards, on both faces of the specimen. A Gypframe GFS1 fixing strap was used behind the horizontal outer layer board joint.

All external board joints were taped and filled using Gyproc Paper Joint Tape and Gyproc Joint Filler as appropriate. All screw heads were spotted using Gyproc Joint Filler.

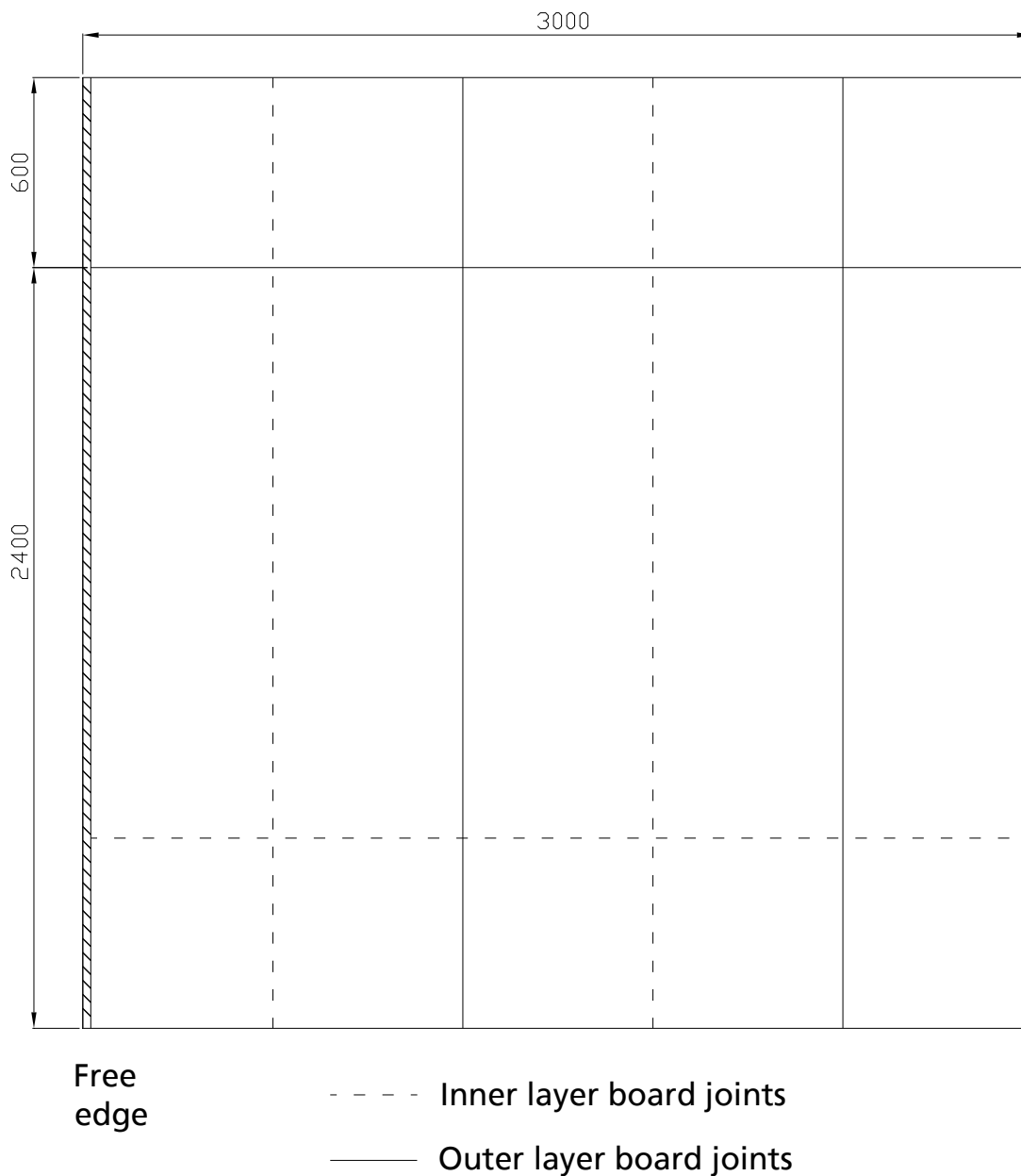
## 4.2 Test Construction Drawings

### 4.2.1 Horizontal Cross Section



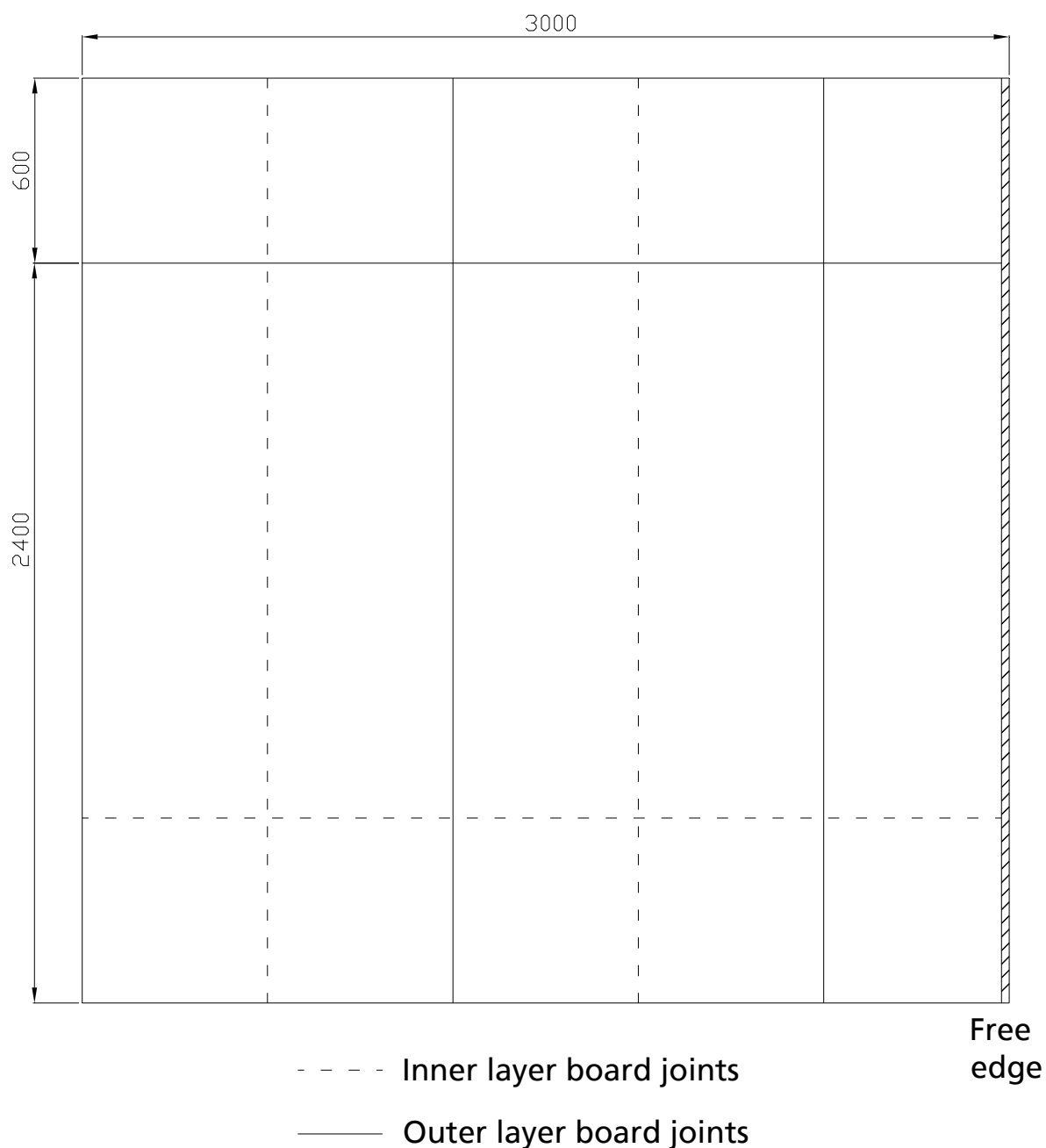
**Figure 1 - Horizontal Cross Section**

## 4.2.2 Exposed Face Elevation



**Figure 2 - Exposed Face Elevation**

#### 4.2.3 Unexposed Face Elevation



**Figure 3 - Unexposed Face Elevation**

*The descriptions of individual components making up the test specimen were provided by the customer and were checked for accuracy wherever possible.*

Customer: **British Gypsum**

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## 5. TEST MATERIALS

### 5.1 Gyproc Fireline

- i) Nominally, 2400mm (long) x 1200mm (wide) x 12.5mm (thick), Gyproc FireLine, manufactured and supplied by British Gypsum ex East Leake Line 3.

|                                |                                                    |
|--------------------------------|----------------------------------------------------|
| Measured weight per unit area: | 10.27 kg/m <sup>2</sup>                            |
| Measured thickness:            | 12.80 mm                                           |
| Board identification numbers:  | 16 138 9 00:20<br>16 138 9 00:20<br>16 138 9 00:20 |
| Measured moisture content:     | 0.30 %                                             |

The surface density and board thickness were calculated using the actual weight and size of a selection of boards used in the test specimen. The moisture content of plasterboard was determined using samples dried to constant weight in an oven at 50°C.

### 5.2 Metal Components

- ii) Gypframe 94C50 Standard Floor & Ceiling Channels.  
iii) Gypframe 92S50 'C' Studs.  
iv) Gypframe GFS1 Fixing Strap.

All metal components were supplied by British Gypsum.

### 5.3 Fasteners

- v) 25mm Gyproc Drywall Screws, supplied by British Gypsum.  
vi) 36mm Gyproc Drywall Screws, supplied by British Gypsum.  
vii) 60mm fire resistant fixings, supplied by the Building Test Centre.

### 5.4 Miscellaneous Components

- viii) Gyproc Paper Joint Tape, supplied by British Gypsum.  
ix) Gyproc Joint Filler, supplied by British Gypsum.  
x) Rock mineral fibre gasket, supplied by the Building Test Centre.

## 5.5 Insulation

- x) Nominally 100mm (thick) Modular Roll manufactured and supplied by Saint-Gobain Isover.

|                           |                        |
|---------------------------|------------------------|
| Measured density:         | 10.83kg/m <sup>3</sup> |
| Measured surface density: | 1.08kg/m <sup>2</sup>  |

The density was calculated using the insulation roll used in the test specimen.

## 6. TEST PROCEDURE

The test was conducted fully in accordance with BS EN 1364-1: 1999. The specimen was subjected to fire from one side, as specified in BS EN 1364-1: 1999.

As the test specimen is considered to be symmetrical one test is adequate to cover the fire resistance performance in both directions.

Where areas of the test specification are ambiguous, or open to interpretation, the Fire Test Study Group Resolutions 43, 72, 83 and 85 have been followed (where appropriate). These Resolutions provide the basis of common agreements between the fire test laboratories, which are members of this group.

The test procedure used was EN 1364-1 Issue 3.

The ambient temperature at the commencement of the test was 19 °C.

The furnace pressure was set to control at  $18 \pm 2$  Pa positive with respect to atmosphere, at the top of the specimen. Furnace pressure data is shown in figure 5.

The test conditions did not meet the full requirements of BS EN 1363-1: 1999 as the test frame stiffness did not fully comply.

The specimen and associated construction were not conditioned in accordance with clause 8 of BS EN 1363-1: 1999.

## 7. TEST RESULTS

The requirements of the standard were satisfied for the following periods:

|            |                   |             |
|------------|-------------------|-------------|
| Integrity  | Sustained flaming | 145 minutes |
|            | 6mm gap gauge     | 151 minutes |
|            | 25mm gap gauge    | 156 minutes |
|            | Cotton Pad        | 145 minutes |
| Insulation |                   | 128 minutes |

The test was terminated at 156 minutes at the request of the sponsor.

## 8. LIMITATIONS

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. The laboratory that issued the report 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.

The scope of the Field of Direct Application of the results and construction detailed in this test report is explained in BS EN 1364-1: 1999, section 13.

## 9. TEST DATA

### 9.1 Observations

Observers: Unexposed face N Aziz  
Exposed face M Shortland

| Time  |      | Observations                                                                                                                                                                                                                                                                                                                                           |
|-------|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| hours | mins |                                                                                                                                                                                                                                                                                                                                                        |
|       |      | <i>All observations refer to the exposed face unless otherwise stated.</i>                                                                                                                                                                                                                                                                             |
| 0     | 0    | Test started.                                                                                                                                                                                                                                                                                                                                          |
| 0     | 10   | Face paper charred.<br>Jointing material flaked away.                                                                                                                                                                                                                                                                                                  |
| 0     | 20   | 100% of face paper had burnt away.<br>Left hand vertical joint had opened to approximately 2-4mm.<br>Right hand vertical joint had opened to approximately 4-5mm.<br>Horizontal joint had opened to approximately 4mm.                                                                                                                                 |
| 0     | 30   | Left hand vertical joint had opened to approximately 8-10mm.<br>Right hand vertical joint had opened to approximately 6-8mm.<br>Horizontal joint had opened to approximately 6-8mm.<br>Boards adjacent to the left hand vertical joint pulled away from the screw heads.                                                                               |
| 0     | 40   | Left hand vertical joint had opened to approximately 10-12mm.<br>Right hand vertical joint had opened to approximately 8-10mm.<br>Horizontal joint had opened to approximately 8mm.<br>Boards adjacent to the right hand vertical joint pulled away from the screw heads.<br>Boards adjacent to the horizontal joint pulled away from the screw heads. |
| 0     | 50   | Left hand vertical joint had opened to approximately 12-14mm.<br>Right hand vertical joint had opened to approximately 10-12mm.<br>Horizontal joint had opened to approximately 8-10mm.                                                                                                                                                                |

| Time  |      | Observations                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-------|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| hours | mins |                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|       |      | <i>All observations refer to the exposed face unless otherwise stated.</i>                                                                                                                                                                                                                                                                                                                                                                    |
| 1     | 00   | Left hand vertical joint had opened to approximately 15-18mm.<br>Right hand vertical joint had opened to approximately 12-15mm.<br>Horizontal joint had opened to approximately 10-12mm.<br><br><i>Unexposed face</i><br>No visible change.                                                                                                                                                                                                   |
| 1     | 10   | No visible change.                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 1     | 20   | Left hand vertical joint had opened to approximately 25-30mm.<br>Right hand vertical joint had opened to approximately 20-25mm.<br>Horizontal joint had opened to approximately 20-25mm.                                                                                                                                                                                                                                                      |
| 1     | 30   | Right hand side of the left hand lower board had fallen.<br>Lower centre board had fallen.<br>Second layer crazed.<br>Second layer right hand vertical joint had opened to approximately 40-50mm.<br>Stud visible through right hand vertical joint.<br><br><i>Unexposed face</i><br>No visible change.                                                                                                                                       |
| 1     | 40   | First layer lower left hand side of the left hand board fell.<br>Second layer right hand vertical joint opened to approximately 70-80mm with gaps to either side of the stud.<br>Second layer left hand vertical joint opened to approximately 50-60mm.<br>Approximately 75% of the first layer boards had fallen.<br><br><i>Unexposed face</i><br>Screw heads visible at the left hand vertical joint from approximately 1500-2400mm height. |
| 1     | 50   | Top left hand corner of the right hand board bowed into the furnace.                                                                                                                                                                                                                                                                                                                                                                          |

| Time  |      | Observations                                                                                                                                                                                                                                                                                                                                                                                                           |
|-------|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| hours | mins |                                                                                                                                                                                                                                                                                                                                                                                                                        |
|       |      | <i>All observations refer to the exposed face unless otherwise stated.</i>                                                                                                                                                                                                                                                                                                                                             |
| 2     | 00   | Second layer left hand vertical joint opened to approximately 100mm.<br>Second layer right hand vertical joint opened to approximately 100mm.<br>Second layer right hand board bowed away from the furnace and rested against the third layer.<br><br><i>Unexposed face</i><br>Screw heads visible at the left hand vertical joint, full length.<br>Screw heads visible at the right hand vertical joint, full length. |
| 2     | 08   | <i>Unexposed face</i><br><b>INSULATION FAILURE.</b> The temperature rise at a point approximately 1800mm height adjacent to the left hand vertical joint exceeded 180 °C (roving thermocouple).                                                                                                                                                                                                                        |
| 2     | 09   | <i>Unexposed face</i><br>The temperature rise of thermocouple no.31, positioned at mid-height adjacent to the left hand vertical joint, exceeded 180 °C.                                                                                                                                                                                                                                                               |
| 2     | 10   | Second layer lower half of the centre board and lower centre board had fallen.<br>First layer right hand board bowed into the furnace and rested against the furnace thermocouples.<br>Second layer right hand vertical joint had opened to approximately 100-130mm.<br>Visible third layer crazed.                                                                                                                    |
| 2     | 16   | <i>Unexposed face</i><br>Discolouration down the centre of the centre board, left hand vertical joint and the right hand vertical joint.                                                                                                                                                                                                                                                                               |
| 2     | 20   | First layer right hand board fell.<br>First layer upper boards from the left hand side to mid-width had fallen.<br>Approximately 90% of the first layer boards had fallen.                                                                                                                                                                                                                                             |
| 2     | 21   | <i>Unexposed face</i><br>The mean temperature rise of the standard five thermocouples exceeded 140 °C.                                                                                                                                                                                                                                                                                                                 |

| Time  |      | Observations                                                                                                                                                                                                                                                                                                                   |
|-------|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| hours | mins |                                                                                                                                                                                                                                                                                                                                |
|       |      | <i>All observations refer to the exposed face unless otherwise stated.</i>                                                                                                                                                                                                                                                     |
| 2     | 22   | Piece of second layer centre board fell. Piece was approximately 1200mm wide x 900mm high.<br>Piece of second layer right hand side board fell. Piece approximately 600mm wide x 2400mm high.                                                                                                                                  |
| 2     | 25   | <i>Unexposed face</i><br><b>INTEGRITY FAILURE.</b> Sustained flaming, at approximately 1200mm height on the left hand side of the lower right hand board.<br><b>FURTHER INTEGRITY FAILURE.</b> The cotton pad ignited (flamed) when placed on the left hand side of the lower right hand board at approximately 1200mm height. |
| 2     | 30   | Second layer left hand board and upper part of the centre board fell.<br>First layer upper right hand side and centre boards had fallen.<br>Approximately 100% of first layer board had fallen.<br>Approximately 90% of second layer boards had fallen.                                                                        |
| 2     | 31   | <i>Unexposed face</i><br><b>FURTHER INTEGRITY FAILURE.</b> The gap at the head on the right hand side exceeded 6mm x 150mm (visual).                                                                                                                                                                                           |
| 2     | 36   | <i>Unexposed face</i><br><b>FURTHER INTEGRITY FAILURE.</b> The gap at the head on the right hand side exceeded 25mm diameter (visual).<br><br><b>TEST TERMINATED</b> at the request of the sponsor.                                                                                                                            |

## 9.2 Furnace Temperature Graph

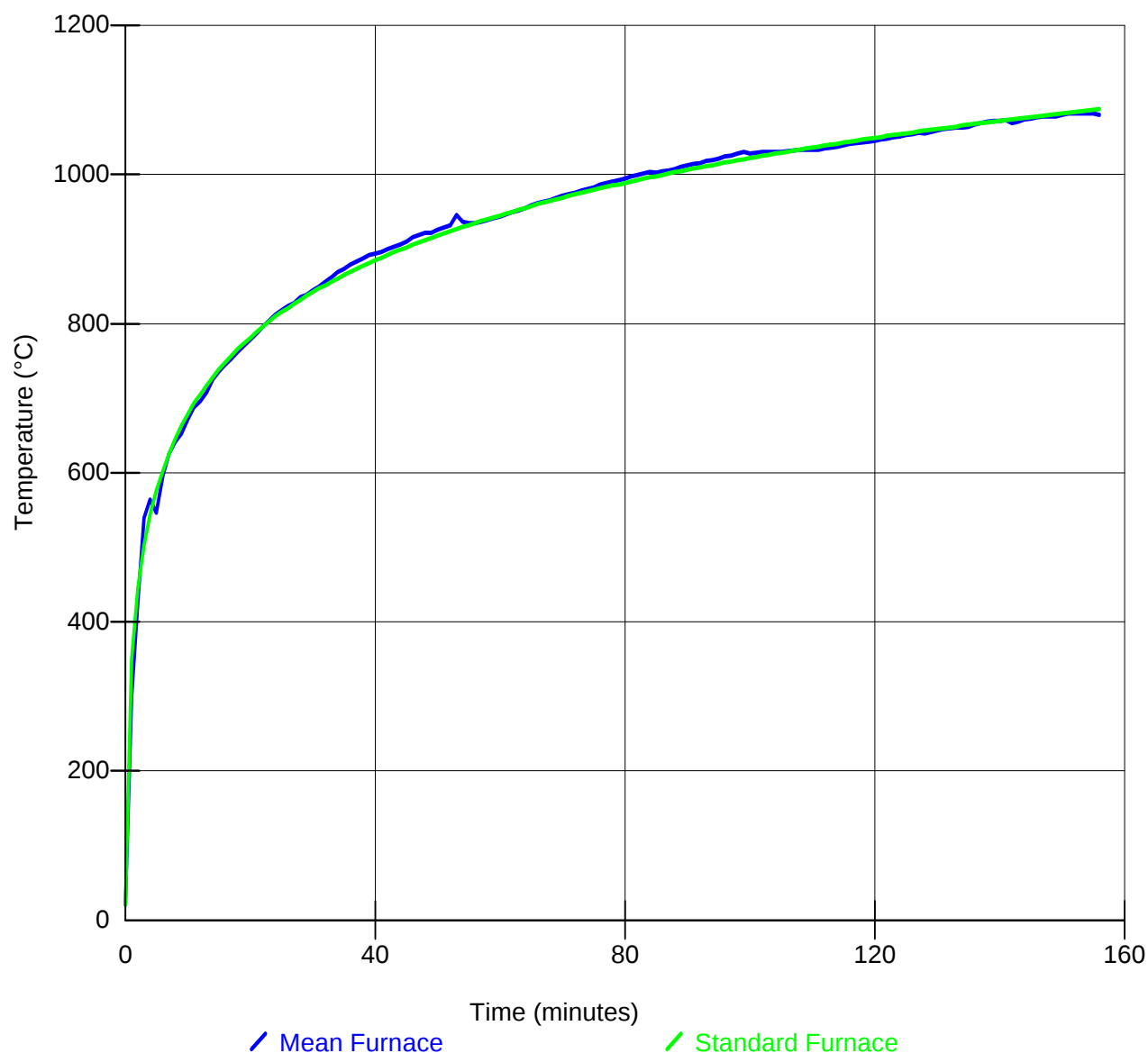
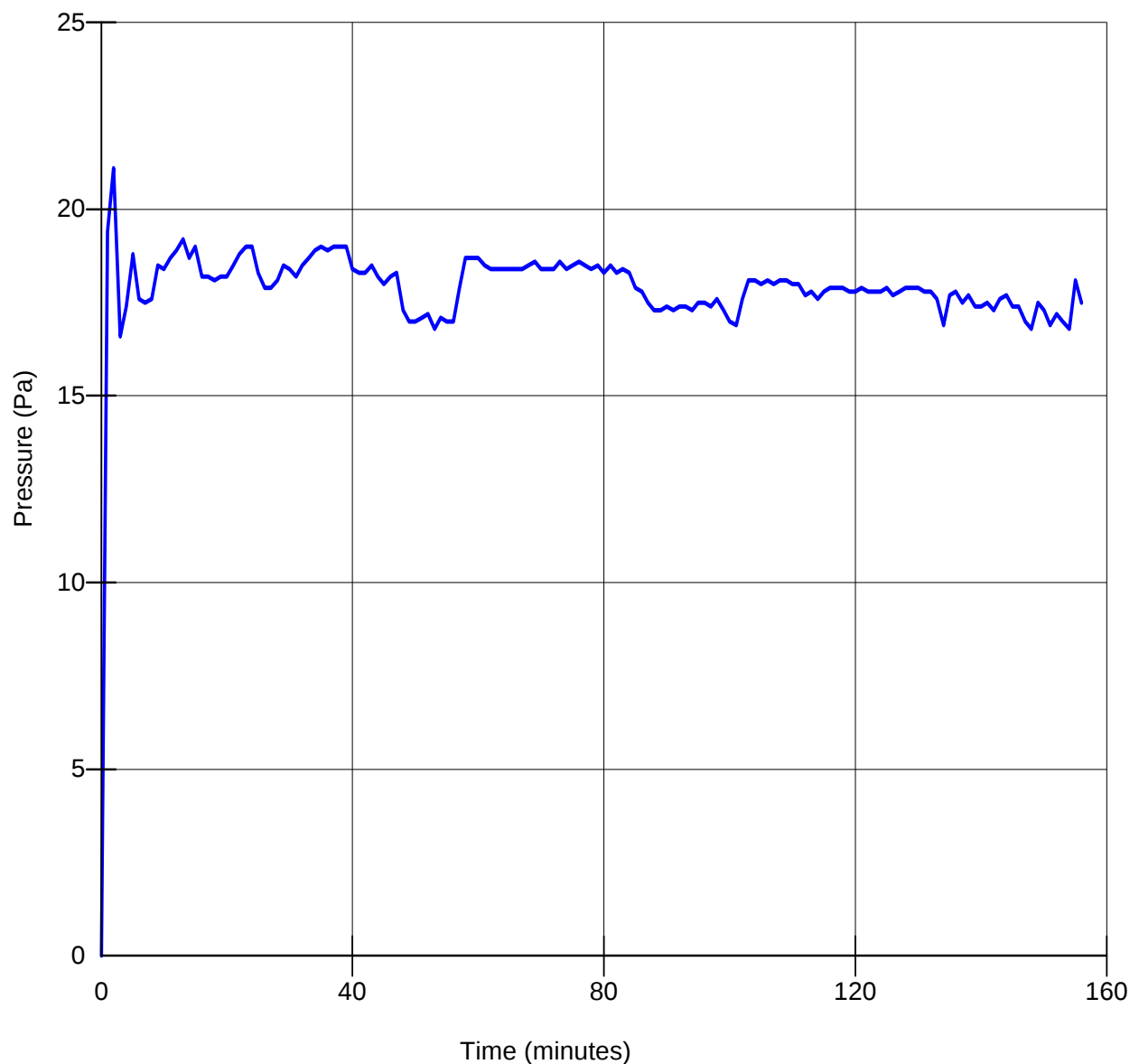


Figure 4 - Furnace temperature graph

## 9.3 Furnace Pressure Graph



**Figure 5 - Furnace pressure graph**

The furnace pressure was set to control at  $18 \pm 2$  Pa positive with respect to atmosphere, at the top of the specimen.

## 9.4 Unexposed Face Temperature Graph

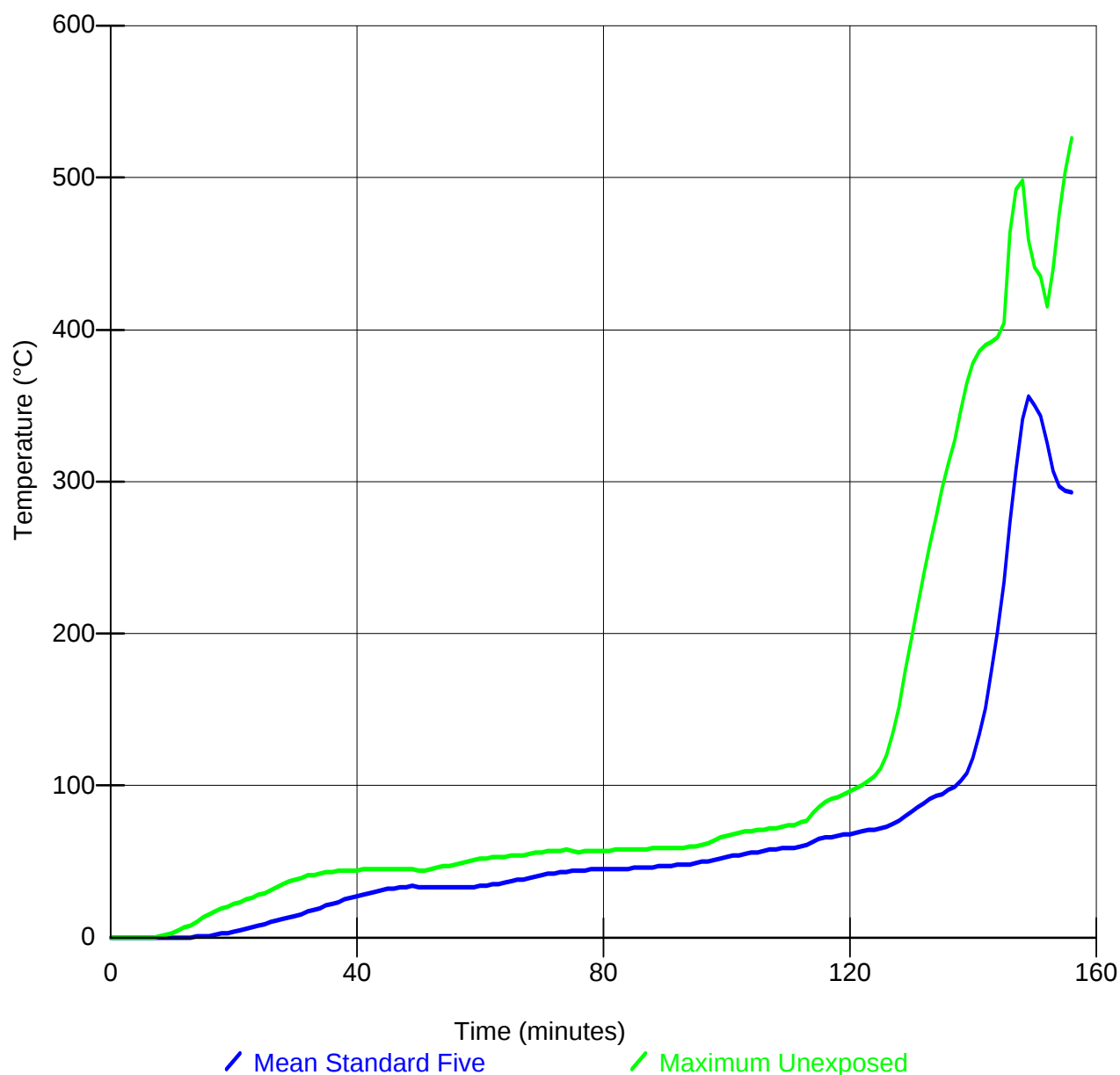


Figure 6 - Unexposed face temperature graph

### 9.5 Unexposed Face Thermocouple Layout

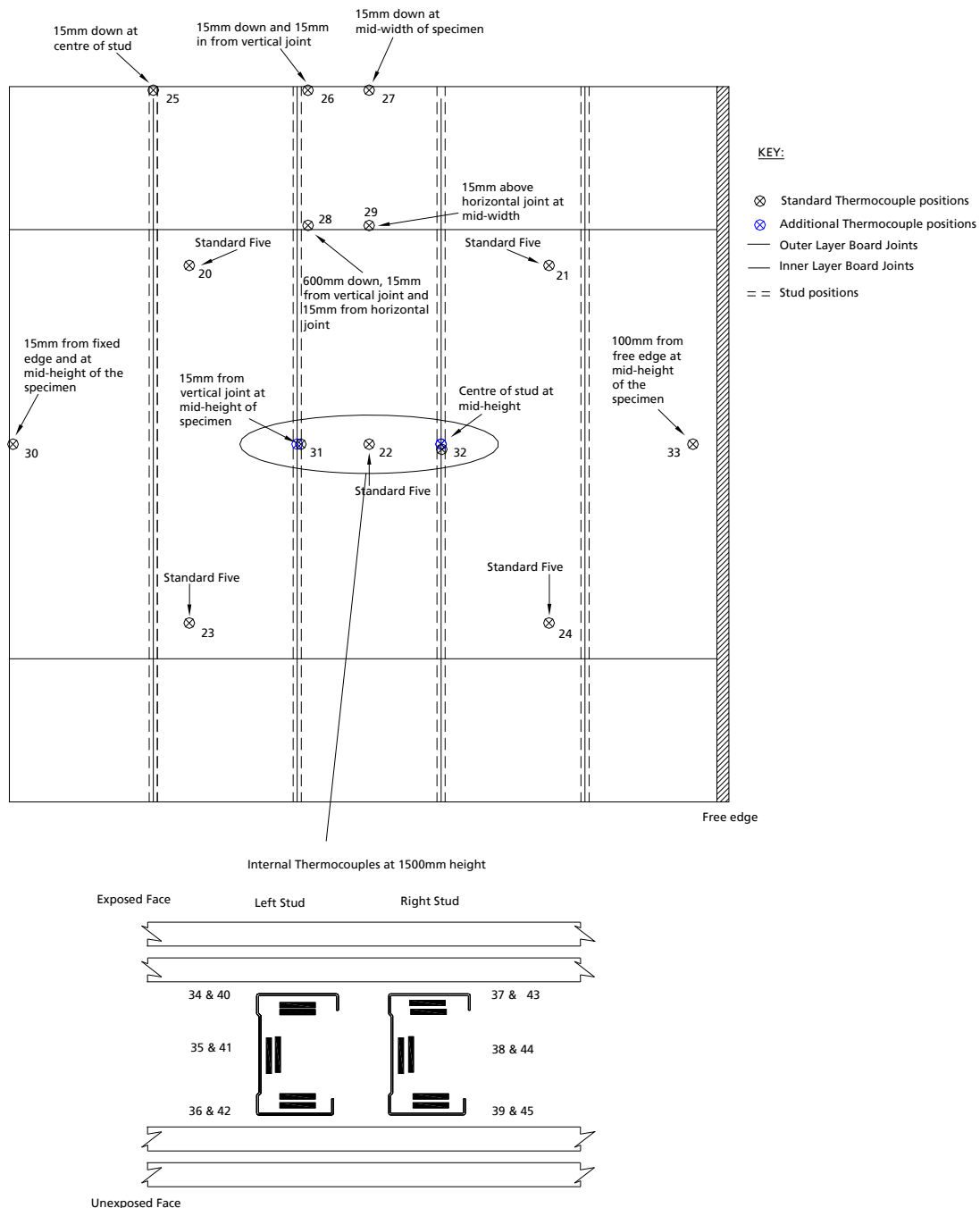


Figure 7 - Unexposed face thermocouple layout

## 9.6 Unexposed Face Standard Five Temperature Data

| Time<br>(mins) | Temperature Rise (°C)  |                        |                        |                        |                        |                    |
|----------------|------------------------|------------------------|------------------------|------------------------|------------------------|--------------------|
|                | Thermocouple<br>No. 20 | Thermocouple<br>No. 21 | Thermocouple<br>No. 22 | Thermocouple<br>No. 23 | Thermocouple<br>No. 24 | Mean<br>Standard 5 |
| 0              | 0                      | 0                      | 0                      | 0                      | 0                      | 0                  |
| 1              | 0                      | 0                      | 0                      | 0                      | 0                      | 0                  |
| 2              | 0                      | 0                      | 0                      | 0                      | 0                      | 0                  |
| 3              | 0                      | 0                      | 0                      | 0                      | 0                      | 0                  |
| 4              | 0                      | 0                      | 0                      | 0                      | 0                      | 0                  |
| 5              | 0                      | 0                      | 0                      | 0                      | 0                      | 0                  |
| 6              | 0                      | 0                      | 0                      | 0                      | 0                      | 0                  |
| 7              | 0                      | 0                      | 0                      | 0                      | 0                      | 0                  |
| 8              | 0                      | 0                      | 0                      | 0                      | 0                      | 0                  |
| 9              | 0                      | 0                      | 0                      | 0                      | 0                      | 0                  |
| 10             | 0                      | 0                      | 0                      | 0                      | 0                      | 0                  |
| 11             | 0                      | 0                      | 0                      | 0                      | 0                      | 0                  |
| 12             | 0                      | 0                      | 0                      | 0                      | 0                      | 0                  |
| 13             | 0                      | 0                      | 1                      | 1                      | 1                      | 0                  |
| 14             | 1                      | 1                      | 1                      | 1                      | 1                      | 1                  |
| 15             | 1                      | 1                      | 2                      | 1                      | 2                      | 1                  |
| 16             | 1                      | 1                      | 2                      | 2                      | 3                      | 1                  |
| 17             | 1                      | 2                      | 3                      | 3                      | 4                      | 2                  |
| 18             | 2                      | 2                      | 3                      | 4                      | 4                      | 3                  |
| 19             | 2                      | 3                      | 4                      | 4                      | 5                      | 3                  |
| 20             | 3                      | 4                      | 5                      | 5                      | 6                      | 4                  |
| 21             | 4                      | 4                      | 6                      | 6                      | 7                      | 5                  |
| 22             | 4                      | 5                      | 7                      | 7                      | 8                      | 6                  |
| 23             | 5                      | 6                      | 8                      | 8                      | 9                      | 7                  |
| 24             | 6                      | 7                      | 9                      | 9                      | 10                     | 8                  |
| 25             | 6                      | 8                      | 10                     | 10                     | 11                     | 9                  |
| 26             | 7                      | 8                      | 11                     | 11                     | 13                     | 10                 |
| 27             | 8                      | 10                     | 12                     | 12                     | 14                     | 11                 |
| 28             | 9                      | 11                     | 13                     | 14                     | 15                     | 12                 |
| 29             | 10                     | 12                     | 15                     | 15                     | 16                     | 13                 |
| 30             | 11                     | 13                     | 16                     | 16                     | 18                     | 14                 |
| 31             | 12                     | 14                     | 17                     | 17                     | 19                     | 15                 |
| 32             | 13                     | 15                     | 19                     | 19                     | 20                     | 17                 |
| 33             | 14                     | 16                     | 20                     | 20                     | 21                     | 18                 |
| 34             | 15                     | 18                     | 22                     | 21                     | 23                     | 19                 |
| 35             | 16                     | 19                     | 23                     | 23                     | 24                     | 21                 |
| 36             | 17                     | 21                     | 25                     | 24                     | 26                     | 22                 |

# The Building Test Centre

## Fire Acoustics Structures

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| Time<br>(mins) | Temperature Rise (°C)  |                        |                        |                        |                        |                    |
|----------------|------------------------|------------------------|------------------------|------------------------|------------------------|--------------------|
|                | Thermocouple<br>No. 20 | Thermocouple<br>No. 21 | Thermocouple<br>No. 22 | Thermocouple<br>No. 23 | Thermocouple<br>No. 24 | Mean<br>Standard 5 |
| 37             | 19                     | 22                     | 26                     | 25                     | 27                     | 23                 |
| 38             | 20                     | 23                     | 28                     | 27                     | 28                     | 25                 |
| 39             | 21                     | 25                     | 29                     | 28                     | 29                     | 26                 |
| 40             | 22                     | 26                     | 30                     | 29                     | 30                     | 27                 |
| 41             | 23                     | 28                     | 32                     | 30                     | 31                     | 28                 |
| 42             | 24                     | 28                     | 33                     | 30                     | 32                     | 29                 |
| 43             | 25                     | 29                     | 34                     | 31                     | 32                     | 30                 |
| 44             | 26                     | 30                     | 35                     | 32                     | 33                     | 31                 |
| 45             | 27                     | 32                     | 36                     | 33                     | 34                     | 32                 |
| 46             | 28                     | 32                     | 36                     | 34                     | 34                     | 32                 |
| 47             | 29                     | 33                     | 36                     | 34                     | 35                     | 33                 |
| 48             | 29                     | 33                     | 37                     | 34                     | 35                     | 33                 |
| 49             | 30                     | 34                     | 37                     | 34                     | 35                     | 34                 |
| 50             | 30                     | 34                     | 36                     | 34                     | 35                     | 33                 |
| 51             | 30                     | 34                     | 36                     | 34                     | 34                     | 33                 |
| 52             | 30                     | 34                     | 36                     | 34                     | 34                     | 33                 |
| 53             | 30                     | 34                     | 36                     | 34                     | 34                     | 33                 |
| 54             | 30                     | 33                     | 35                     | 33                     | 34                     | 33                 |
| 55             | 30                     | 33                     | 35                     | 33                     | 34                     | 33                 |
| 56             | 30                     | 33                     | 35                     | 33                     | 34                     | 33                 |
| 57             | 30                     | 33                     | 35                     | 33                     | 34                     | 33                 |
| 58             | 31                     | 33                     | 36                     | 33                     | 34                     | 33                 |
| 59             | 31                     | 33                     | 36                     | 34                     | 34                     | 33                 |
| 60             | 31                     | 33                     | 37                     | 34                     | 35                     | 34                 |
| 61             | 32                     | 33                     | 37                     | 35                     | 36                     | 34                 |
| 62             | 33                     | 33                     | 38                     | 35                     | 36                     | 35                 |
| 63             | 33                     | 34                     | 38                     | 36                     | 37                     | 35                 |
| 64             | 34                     | 35                     | 39                     | 37                     | 38                     | 36                 |
| 65             | 35                     | 35                     | 40                     | 38                     | 38                     | 37                 |
| 66             | 36                     | 36                     | 41                     | 38                     | 39                     | 38                 |
| 67             | 36                     | 36                     | 42                     | 39                     | 40                     | 38                 |
| 68             | 37                     | 37                     | 42                     | 40                     | 41                     | 39                 |
| 69             | 38                     | 38                     | 43                     | 41                     | 42                     | 40                 |
| 70             | 39                     | 39                     | 44                     | 42                     | 43                     | 41                 |
| 71             | 40                     | 40                     | 44                     | 42                     | 44                     | 42                 |
| 72             | 40                     | 41                     | 45                     | 43                     | 44                     | 42                 |
| 73             | 41                     | 42                     | 45                     | 43                     | 45                     | 43                 |
| 74             | 42                     | 42                     | 45                     | 44                     | 45                     | 43                 |
| 75             | 42                     | 43                     | 45                     | 44                     | 46                     | 44                 |

Customer: **British Gypsum**

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# The Building Test Centre

## Fire Acoustics Structures

The Building Test Centre  
 British Gypsum  
 East Leake  
 Loughborough  
 Leics. LE12 6NP  
 Tel (0115) 945 1564  
 Fax (0115) 945 1562  
 Email btc.testing@bpb.com

| Time<br>(mins) | Temperature Rise (°C)  |                        |                        |                        |                        |                    |
|----------------|------------------------|------------------------|------------------------|------------------------|------------------------|--------------------|
|                | Thermocouple<br>No. 20 | Thermocouple<br>No. 21 | Thermocouple<br>No. 22 | Thermocouple<br>No. 23 | Thermocouple<br>No. 24 | Mean<br>Standard 5 |
| 76             | 43                     | 44                     | 45                     | 44                     | 46                     | 44                 |
| 77             | 44                     | 44                     | 45                     | 44                     | 46                     | 44                 |
| 78             | 44                     | 45                     | 46                     | 44                     | 46                     | 45                 |
| 79             | 44                     | 45                     | 46                     | 44                     | 46                     | 45                 |
| 80             | 44                     | 45                     | 46                     | 44                     | 46                     | 45                 |
| 81             | 45                     | 46                     | 46                     | 44                     | 46                     | 45                 |
| 82             | 45                     | 46                     | 46                     | 45                     | 46                     | 45                 |
| 83             | 45                     | 46                     | 47                     | 45                     | 46                     | 45                 |
| 84             | 45                     | 46                     | 47                     | 45                     | 46                     | 45                 |
| 85             | 46                     | 46                     | 47                     | 45                     | 46                     | 46                 |
| 86             | 46                     | 46                     | 47                     | 46                     | 47                     | 46                 |
| 87             | 46                     | 46                     | 48                     | 46                     | 47                     | 46                 |
| 88             | 46                     | 47                     | 48                     | 46                     | 47                     | 46                 |
| 89             | 47                     | 47                     | 49                     | 46                     | 47                     | 47                 |
| 90             | 47                     | 47                     | 49                     | 47                     | 48                     | 47                 |
| 91             | 47                     | 47                     | 49                     | 46                     | 48                     | 47                 |
| 92             | 47                     | 47                     | 50                     | 47                     | 49                     | 48                 |
| 93             | 48                     | 47                     | 51                     | 47                     | 49                     | 48                 |
| 94             | 48                     | 48                     | 51                     | 47                     | 50                     | 48                 |
| 95             | 48                     | 48                     | 52                     | 47                     | 51                     | 49                 |
| 96             | 49                     | 48                     | 53                     | 48                     | 52                     | 50                 |
| 97             | 49                     | 48                     | 54                     | 48                     | 52                     | 50                 |
| 98             | 49                     | 49                     | 56                     | 49                     | 53                     | 51                 |
| 99             | 50                     | 51                     | 57                     | 50                     | 54                     | 52                 |
| 100            | 51                     | 52                     | 58                     | 51                     | 53                     | 53                 |
| 101            | 53                     | 54                     | 58                     | 53                     | 53                     | 54                 |
| 102            | 54                     | 55                     | 58                     | 54                     | 53                     | 54                 |
| 103            | 56                     | 56                     | 58                     | 56                     | 53                     | 55                 |
| 104            | 56                     | 57                     | 58                     | 57                     | 54                     | 56                 |
| 105            | 56                     | 57                     | 58                     | 58                     | 55                     | 56                 |
| 106            | 56                     | 57                     | 57                     | 59                     | 56                     | 57                 |
| 107            | 56                     | 57                     | 59                     | 60                     | 58                     | 58                 |
| 108            | 55                     | 58                     | 61                     | 60                     | 58                     | 58                 |
| 109            | 55                     | 57                     | 64                     | 60                     | 59                     | 59                 |
| 110            | 55                     | 58                     | 65                     | 60                     | 59                     | 59                 |
| 111            | 57                     | 58                     | 66                     | 59                     | 59                     | 59                 |
| 112            | 60                     | 58                     | 66                     | 58                     | 58                     | 60                 |
| 113            | 64                     | 61                     | 67                     | 59                     | 58                     | 61                 |
| 114            | 65                     | 63                     | 67                     | 63                     | 61                     | 63                 |

Customer: **British Gypsum**

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# The Building Test Centre

## Fire Acoustics Structures

The Building Test Centre  
 British Gypsum  
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 Fax (0115) 945 1562  
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| Time<br>(mins) | Temperature Rise (°C)  |                        |                        |                        |                        |                    |
|----------------|------------------------|------------------------|------------------------|------------------------|------------------------|--------------------|
|                | Thermocouple<br>No. 20 | Thermocouple<br>No. 21 | Thermocouple<br>No. 22 | Thermocouple<br>No. 23 | Thermocouple<br>No. 24 | Mean<br>Standard 5 |
| 115            | 66                     | 64                     | 67                     | 66                     | 65                     | 65                 |
| 116            | 67                     | 64                     | 68                     | 67                     | 66                     | 66                 |
| 117            | 67                     | 65                     | 68                     | 67                     | 67                     | 66                 |
| 118            | 68                     | 66                     | 68                     | 68                     | 67                     | 67                 |
| 119            | 69                     | 66                     | 69                     | 68                     | 68                     | 68                 |
| 120            | 70                     | 67                     | 69                     | 69                     | 68                     | 68                 |
| 121            | 70                     | 68                     | 70                     | 69                     | 69                     | 69                 |
| 122            | 71                     | 69                     | 71                     | 70                     | 69                     | 70                 |
| 123            | 73                     | 70                     | 72                     | 71                     | 70                     | 71                 |
| 124            | 73                     | 70                     | 73                     | 71                     | 71                     | 71                 |
| 125            | 74                     | 72                     | 74                     | 72                     | 71                     | 72                 |
| 126            | 75                     | 73                     | 75                     | 73                     | 72                     | 73                 |
| 127            | 77                     | 74                     | 79                     | 74                     | 73                     | 75                 |
| 128            | 81                     | 76                     | 82                     | 76                     | 74                     | 77                 |
| 129            | 84                     | 81                     | 84                     | 77                     | 75                     | 80                 |
| 130            | 86                     | 84                     | 87                     | 81                     | 78                     | 83                 |
| 131            | 88                     | 87                     | 88                     | 85                     | 84                     | 86                 |
| 132            | 89                     | 88                     | 90                     | 88                     | 89                     | 88                 |
| 133            | 91                     | 89                     | 92                     | 91                     | 92                     | 91                 |
| 134            | 92                     | 91                     | 94                     | 93                     | 95                     | 93                 |
| 135            | 94                     | 92                     | 95                     | 95                     | 98                     | 94                 |
| 136            | 96                     | 94                     | 97                     | 97                     | 102                    | 97                 |
| 137            | 98                     | 96                     | 99                     | 100                    | 106                    | 99                 |
| 138            | 100                    | 100                    | 102                    | 103                    | 112                    | 103                |
| 139            | 103                    | 103                    | 106                    | 107                    | 125                    | 108                |
| 140            | 106                    | 106                    | 112                    | 112                    | 158                    | 118                |
| 141            | 109                    | 111                    | 122                    | 123                    | 207                    | 134                |
| 142            | 115                    | 118                    | 138                    | 141                    | 247                    | 151                |
| 143            | 124                    | 134                    | 162                    | 174                    | 285                    | 175                |
| 144            | 137                    | 147                    | 186                    | 200                    | 336                    | 201                |
| 145            | 154                    | 176                    | 208                    | 231                    | 404                    | 234                |
| 146            | 176                    | 199                    | 239                    | 291                    | 464                    | 273                |
| 147            | 193                    | 219                    | 292                    | 348                    | 492                    | 308                |
| 148            | 207                    | 238                    | 355                    | 407                    | 498                    | 341                |
| 149            | 219                    | 254                    | 413                    | 439                    | 459                    | 356                |
| 150            | 230                    | 270                    | 433                    | 441                    | 378                    | 350                |
| 151            | 240                    | 285                    | 435                    | 425                    | 330                    | 343                |
| 152            | 250                    | 300                    | 411                    | 361                    | 305                    | 325                |
| 153            | 261                    | 313                    | 355                    | 322                    | 288                    | 307                |

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| Time<br>(mins) | Temperature Rise (°C)  |                        |                        |                        |                        |                    |
|----------------|------------------------|------------------------|------------------------|------------------------|------------------------|--------------------|
|                | Thermocouple<br>No. 20 | Thermocouple<br>No. 21 | Thermocouple<br>No. 22 | Thermocouple<br>No. 23 | Thermocouple<br>No. 24 | Mean<br>Standard 5 |
| 154            | 270                    | 328                    | 311                    | 303                    | 277                    | 297                |
| 155            | 278                    | 344                    | 288                    | 292                    | 269                    | 294                |
| 156            | 288                    | 356                    | 278                    | 281                    | 263                    | 293                |

Figures highlighted in red indicate the minute in which the mean temperature rise exceeded 140°C.

See figure 7 for thermocouple layout.

## 9.7 Additional Unexposed Face Temperature Data

| Time<br>(mins) | Temperature Rise (°C)  |                        |                        |                        |                        |
|----------------|------------------------|------------------------|------------------------|------------------------|------------------------|
|                | Thermocouple<br>No. 25 | Thermocouple<br>No. 26 | Thermocouple<br>No. 27 | Thermocouple<br>No. 28 | Thermocouple<br>No. 29 |
| 0              | 0                      | 0                      | 0                      | 0                      | 0                      |
| 1              | 0                      | 0                      | 0                      | 0                      | 0                      |
| 2              | 0                      | 0                      | 0                      | 0                      | 0                      |
| 3              | 0                      | 0                      | 0                      | 0                      | 0                      |
| 4              | 0                      | 0                      | 0                      | 0                      | 0                      |
| 5              | 0                      | 0                      | 0                      | 0                      | 0                      |
| 6              | 0                      | 0                      | 0                      | 0                      | 0                      |
| 7              | 0                      | 0                      | 0                      | 0                      | 0                      |
| 8              | 0                      | 1                      | 0                      | 0                      | 0                      |
| 9              | 1                      | 2                      | 0                      | 0                      | 0                      |
| 10             | 2                      | 3                      | 1                      | 0                      | 0                      |
| 11             | 3                      | 5                      | 2                      | 0                      | 0                      |
| 12             | 5                      | 7                      | 3                      | 1                      | 0                      |
| 13             | 8                      | 8                      | 4                      | 1                      | 0                      |
| 14             | 10                     | 10                     | 6                      | 1                      | 0                      |
| 15             | 13                     | 12                     | 8                      | 1                      | 1                      |
| 16             | 15                     | 14                     | 10                     | 2                      | 1                      |
| 17             | 17                     | 15                     | 12                     | 2                      | 1                      |
| 18             | 19                     | 17                     | 14                     | 3                      | 2                      |
| 19             | 20                     | 18                     | 16                     | 3                      | 2                      |
| 20             | 22                     | 20                     | 18                     | 4                      | 2                      |
| 21             | 23                     | 21                     | 19                     | 4                      | 3                      |
| 22             | 25                     | 22                     | 21                     | 5                      | 4                      |
| 23             | 26                     | 23                     | 23                     | 6                      | 4                      |
| 24             | 28                     | 24                     | 24                     | 7                      | 5                      |
| 25             | 29                     | 25                     | 25                     | 7                      | 6                      |
| 26             | 30                     | 26                     | 27                     | 8                      | 6                      |
| 27             | 32                     | 27                     | 28                     | 9                      | 7                      |
| 28             | 33                     | 28                     | 29                     | 10                     | 8                      |
| 29             | 34                     | 29                     | 31                     | 11                     | 9                      |
| 30             | 36                     | 30                     | 32                     | 12                     | 10                     |
| 31             | 37                     | 32                     | 33                     | 13                     | 11                     |
| 32             | 39                     | 33                     | 34                     | 14                     | 12                     |
| 33             | 40                     | 34                     | 35                     | 15                     | 13                     |
| 34             | 41                     | 35                     | 37                     | 16                     | 14                     |
| 35             | 42                     | 36                     | 37                     | 18                     | 15                     |
| 36             | 43                     | 37                     | 38                     | 19                     | 16                     |

# The Building Test Centre

## Fire Acoustics Structures

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Email [btc.testing@bpb.com](mailto:btc.testing@bpb.com)

| Time<br>(mins) | Temperature Rise (°C)  |                        |                        |                        |                        |
|----------------|------------------------|------------------------|------------------------|------------------------|------------------------|
|                | Thermocouple<br>No. 25 | Thermocouple<br>No. 26 | Thermocouple<br>No. 27 | Thermocouple<br>No. 28 | Thermocouple<br>No. 29 |
| 37             | 44                     | 38                     | 39                     | 20                     | 17                     |
| 38             | 44                     | 39                     | 39                     | 21                     | 18                     |
| 39             | 44                     | 39                     | 40                     | 22                     | 20                     |
| 40             | 44                     | 40                     | 40                     | 24                     | 21                     |
| 41             | 45                     | 40                     | 41                     | 25                     | 22                     |
| 42             | 45                     | 40                     | 41                     | 25                     | 23                     |
| 43             | 45                     | 41                     | 41                     | 27                     | 24                     |
| 44             | 45                     | 41                     | 41                     | 27                     | 25                     |
| 45             | 45                     | 41                     | 42                     | 28                     | 26                     |
| 46             | 45                     | 41                     | 41                     | 29                     | 27                     |
| 47             | 45                     | 42                     | 41                     | 30                     | 27                     |
| 48             | 45                     | 42                     | 41                     | 30                     | 28                     |
| 49             | 45                     | 42                     | 41                     | 31                     | 29                     |
| 50             | 44                     | 42                     | 41                     | 31                     | 29                     |
| 51             | 44                     | 43                     | 40                     | 31                     | 29                     |
| 52             | 45                     | 43                     | 40                     | 32                     | 30                     |
| 53             | 45                     | 43                     | 40                     | 32                     | 30                     |
| 54             | 45                     | 44                     | 40                     | 32                     | 30                     |
| 55             | 46                     | 45                     | 40                     | 31                     | 30                     |
| 56             | 47                     | 45                     | 39                     | 32                     | 30                     |
| 57             | 47                     | 46                     | 39                     | 32                     | 30                     |
| 58             | 48                     | 47                     | 39                     | 32                     | 31                     |
| 59             | 49                     | 48                     | 39                     | 32                     | 31                     |
| 60             | 50                     | 49                     | 39                     | 33                     | 31                     |
| 61             | 51                     | 50                     | 40                     | 33                     | 32                     |
| 62             | 52                     | 51                     | 40                     | 33                     | 32                     |
| 63             | 53                     | 52                     | 40                     | 33                     | 32                     |
| 64             | 53                     | 52                     | 41                     | 34                     | 33                     |
| 65             | 54                     | 53                     | 42                     | 35                     | 33                     |
| 66             | 54                     | 54                     | 42                     | 36                     | 34                     |
| 67             | 54                     | 54                     | 43                     | 36                     | 35                     |
| 68             | 55                     | 55                     | 43                     | 37                     | 35                     |
| 69             | 55                     | 56                     | 44                     | 38                     | 36                     |
| 70             | 55                     | 56                     | 45                     | 39                     | 37                     |
| 71             | 56                     | 57                     | 45                     | 39                     | 37                     |
| 72             | 56                     | 57                     | 46                     | 40                     | 38                     |
| 73             | 56                     | 57                     | 46                     | 41                     | 38                     |
| 74             | 56                     | 58                     | 47                     | 41                     | 39                     |
| 75             | 56                     | 57                     | 47                     | 42                     | 39                     |

Customer: **British Gypsum**

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| Time<br>(mins) | Temperature Rise (°C)  |                        |                        |                        |                        |
|----------------|------------------------|------------------------|------------------------|------------------------|------------------------|
|                | Thermocouple<br>No. 25 | Thermocouple<br>No. 26 | Thermocouple<br>No. 27 | Thermocouple<br>No. 28 | Thermocouple<br>No. 29 |
| 76             | 56                     | 56                     | 48                     | 43                     | 39                     |
| 77             | 57                     | 56                     | 48                     | 43                     | 40                     |
| 78             | 57                     | 56                     | 49                     | 44                     | 40                     |
| 79             | 57                     | 55                     | 49                     | 44                     | 40                     |
| 80             | 57                     | 55                     | 49                     | 45                     | 40                     |
| 81             | 57                     | 55                     | 50                     | 45                     | 41                     |
| 82             | 58                     | 55                     | 50                     | 46                     | 41                     |
| 83             | 58                     | 55                     | 51                     | 46                     | 42                     |
| 84             | 58                     | 56                     | 51                     | 47                     | 42                     |
| 85             | 58                     | 56                     | 51                     | 48                     | 42                     |
| 86             | 58                     | 56                     | 52                     | 48                     | 42                     |
| 87             | 58                     | 56                     | 52                     | 49                     | 42                     |
| 88             | 59                     | 56                     | 52                     | 49                     | 43                     |
| 89             | 59                     | 57                     | 52                     | 50                     | 43                     |
| 90             | 59                     | 58                     | 53                     | 52                     | 43                     |
| 91             | 59                     | 58                     | 53                     | 53                     | 43                     |
| 92             | 59                     | 58                     | 53                     | 55                     | 44                     |
| 93             | 59                     | 59                     | 53                     | 55                     | 45                     |
| 94             | 60                     | 59                     | 53                     | 56                     | 45                     |
| 95             | 60                     | 60                     | 53                     | 56                     | 46                     |
| 96             | 60                     | 60                     | 54                     | 56                     | 47                     |
| 97             | 60                     | 61                     | 54                     | 56                     | 47                     |
| 98             | 61                     | 61                     | 54                     | 56                     | 47                     |
| 99             | 61                     | 62                     | 54                     | 56                     | 48                     |
| 100            | 61                     | 62                     | 54                     | 57                     | 48                     |
| 101            | 62                     | 62                     | 55                     | 58                     | 48                     |
| 102            | 63                     | 62                     | 55                     | 59                     | 47                     |
| 103            | 63                     | 63                     | 55                     | 61                     | 47                     |
| 104            | 64                     | 63                     | 55                     | 62                     | 47                     |
| 105            | 65                     | 64                     | 55                     | 64                     | 47                     |
| 106            | 65                     | 64                     | 55                     | 65                     | 47                     |
| 107            | 66                     | 65                     | 56                     | 65                     | 48                     |
| 108            | 67                     | 65                     | 56                     | 66                     | 48                     |
| 109            | 67                     | 66                     | 56                     | 67                     | 49                     |
| 110            | 68                     | 66                     | 56                     | 68                     | 49                     |
| 111            | 68                     | 67                     | 56                     | 69                     | 50                     |
| 112            | 69                     | 67                     | 57                     | 71                     | 51                     |
| 113            | 69                     | 68                     | 57                     | 72                     | 51                     |
| 114            | 70                     | 68                     | 57                     | 74                     | 52                     |

| Time<br>(mins) | Temperature Rise (°C)  |                        |                        |                        |                        |
|----------------|------------------------|------------------------|------------------------|------------------------|------------------------|
|                | Thermocouple<br>No. 25 | Thermocouple<br>No. 26 | Thermocouple<br>No. 27 | Thermocouple<br>No. 28 | Thermocouple<br>No. 29 |
| 115            | 71                     | 69                     | 57                     | 76                     | 52                     |
| 116            | 71                     | 70                     | 57                     | 78                     | 52                     |
| 117            | 72                     | 70                     | 58                     | 79                     | 53                     |
| 118            | 72                     | 71                     | 58                     | 80                     | 53                     |
| 119            | 73                     | 72                     | 58                     | 82                     | 53                     |
| 120            | 74                     | 73                     | 59                     | 83                     | 54                     |
| 121            | 74                     | 74                     | 59                     | 84                     | 55                     |
| 122            | 75                     | 75                     | 59                     | 85                     | 56                     |
| 123            | 75                     | 75                     | 59                     | 86                     | 57                     |
| 124            | 76                     | 76                     | 60                     | 87                     | 59                     |
| 125            | 77                     | 78                     | 61                     | 89                     | 61                     |
| 126            | 77                     | 78                     | 62                     | 90                     | 63                     |
| 127            | 78                     | 79                     | 63                     | 92                     | 64                     |
| 128            | 78                     | 80                     | 64                     | 94                     | 65                     |
| 129            | 79                     | 81                     | 65                     | 96                     | 66                     |
| 130            | 80                     | 82                     | 66                     | 99                     | 68                     |
| 131            | 80                     | 83                     | 68                     | 103                    | 68                     |
| 132            | 81                     | 84                     | 69                     | 108                    | 69                     |
| 133            | 81                     | 86                     | 70                     | 113                    | 70                     |
| 134            | 82                     | 87                     | 72                     | 122                    | 70                     |
| 135            | 83                     | 88                     | 74                     | 136                    | 72                     |
| 136            | 84                     | 90                     | 77                     | 153                    | 74                     |
| 137            | 85                     | 91                     | 78                     | 171                    | 75                     |
| 138            | 87                     | 92                     | 80                     | 191                    | 75                     |
| 139            | 87                     | 95                     | 81                     | 207                    | 78                     |
| 140            | 87                     | 98                     | 82                     | 221                    | 79                     |
| 141            | 88                     | 99                     | 83                     | 233                    | 80                     |
| 142            | 89                     | 101                    | 84                     | 245                    | 81                     |
| 143            | 90                     | 105                    | 85                     | 259                    | 83                     |
| 144            | 91                     | 108                    | 86                     | 271                    | 84                     |
| 145            | 92                     | 112                    | 87                     | 287                    | 86                     |
| 146            | 94                     | 114                    | 88                     | 311                    | 87                     |
| 147            | 95                     | 118                    | 88                     | 325                    | 88                     |
| 148            | 96                     | 123                    | 90                     | 343                    | 90                     |
| 149            | 98                     | 128                    | 91                     | 353                    | 95                     |
| 150            | 100                    | 134                    | 93                     | 367                    | 100                    |
| 151            | 102                    | 141                    | 95                     | 396                    | 106                    |
| 152            | 104                    | 149                    | 98                     | 415                    | 112                    |
| 153            | 106                    | 163                    | 100                    | 440                    | 107                    |

| Time<br>(mins) | Temperature Rise (°C)  |                        |                        |                        |                        |
|----------------|------------------------|------------------------|------------------------|------------------------|------------------------|
|                | Thermocouple<br>No. 25 | Thermocouple<br>No. 26 | Thermocouple<br>No. 27 | Thermocouple<br>No. 28 | Thermocouple<br>No. 29 |
| 154            | 109                    | 182                    | 107                    | 476                    | 142                    |
| 155            | 113                    | 204                    | 109                    | 504                    | 124                    |
| 156            | 117                    | 238                    | 112                    | 526                    | 125                    |

See figure 7 for thermocouple layout.

## 9.8 Additional Unexposed Face Temperature Data

| Time<br>(mins) | Temperature Rise (°C)  |                        |                        |                        |
|----------------|------------------------|------------------------|------------------------|------------------------|
|                | Thermocouple<br>No. 30 | Thermocouple<br>No. 31 | Thermocouple<br>No. 32 | Thermocouple<br>No. 33 |
| 0              | 0                      | 0                      | 0                      | 0                      |
| 1              | 0                      | 0                      | 0                      | 0                      |
| 2              | 0                      | 0                      | 0                      | 0                      |
| 3              | 0                      | 0                      | 0                      | 0                      |
| 4              | 0                      | 0                      | 0                      | 0                      |
| 5              | 0                      | 0                      | 0                      | 0                      |
| 6              | 0                      | 0                      | 0                      | 0                      |
| 7              | 0                      | 0                      | 0                      | 0                      |
| 8              | 0                      | 0                      | 0                      | 0                      |
| 9              | 0                      | 0                      | 0                      | 0                      |
| 10             | 0                      | 0                      | 0                      | 0                      |
| 11             | 0                      | 1                      | 1                      | 0                      |
| 12             | 0                      | 1                      | 2                      | 0                      |
| 13             | 0                      | 2                      | 3                      | 0                      |
| 14             | 0                      | 2                      | 4                      | 1                      |
| 15             | 1                      | 3                      | 6                      | 1                      |
| 16             | 1                      | 4                      | 9                      | 2                      |
| 17             | 1                      | 5                      | 11                     | 3                      |
| 18             | 2                      | 7                      | 13                     | 4                      |
| 19             | 2                      | 8                      | 15                     | 5                      |
| 20             | 3                      | 9                      | 17                     | 6                      |
| 21             | 3                      | 11                     | 20                     | 7                      |
| 22             | 4                      | 12                     | 22                     | 8                      |
| 23             | 4                      | 13                     | 25                     | 9                      |
| 24             | 5                      | 14                     | 27                     | 10                     |
| 25             | 6                      | 16                     | 29                     | 12                     |
| 26             | 6                      | 17                     | 31                     | 13                     |
| 27             | 7                      | 19                     | 33                     | 14                     |
| 28             | 8                      | 20                     | 35                     | 16                     |
| 29             | 9                      | 22                     | 37                     | 17                     |
| 30             | 10                     | 23                     | 38                     | 18                     |
| 31             | 11                     | 25                     | 39                     | 20                     |
| 32             | 12                     | 27                     | 41                     | 21                     |
| 33             | 13                     | 28                     | 41                     | 22                     |
| 34             | 14                     | 30                     | 42                     | 24                     |
| 35             | 15                     | 31                     | 43                     | 25                     |
| 36             | 16                     | 32                     | 43                     | 26                     |

| Time<br>(mins) | Temperature Rise (°C)  |                        |                        |                        |
|----------------|------------------------|------------------------|------------------------|------------------------|
|                | Thermocouple<br>No. 30 | Thermocouple<br>No. 31 | Thermocouple<br>No. 32 | Thermocouple<br>No. 33 |
| 37             | 18                     | 34                     | 44                     | 27                     |
| 38             | 19                     | 35                     | 44                     | 29                     |
| 39             | 20                     | 36                     | 44                     | 29                     |
| 40             | 21                     | 37                     | 44                     | 30                     |
| 41             | 23                     | 37                     | 44                     | 31                     |
| 42             | 24                     | 38                     | 43                     | 32                     |
| 43             | 25                     | 38                     | 43                     | 33                     |
| 44             | 26                     | 38                     | 43                     | 34                     |
| 45             | 27                     | 39                     | 43                     | 34                     |
| 46             | 28                     | 39                     | 42                     | 35                     |
| 47             | 28                     | 39                     | 42                     | 35                     |
| 48             | 29                     | 40                     | 42                     | 36                     |
| 49             | 30                     | 40                     | 43                     | 36                     |
| 50             | 30                     | 41                     | 44                     | 36                     |
| 51             | 31                     | 41                     | 44                     | 36                     |
| 52             | 31                     | 42                     | 45                     | 36                     |
| 53             | 31                     | 42                     | 46                     | 36                     |
| 54             | 31                     | 43                     | 47                     | 36                     |
| 55             | 31                     | 43                     | 47                     | 35                     |
| 56             | 31                     | 44                     | 48                     | 35                     |
| 57             | 31                     | 45                     | 49                     | 35                     |
| 58             | 31                     | 45                     | 50                     | 35                     |
| 59             | 31                     | 46                     | 51                     | 35                     |
| 60             | 31                     | 47                     | 52                     | 35                     |
| 61             | 31                     | 48                     | 52                     | 35                     |
| 62             | 31                     | 49                     | 53                     | 35                     |
| 63             | 31                     | 50                     | 53                     | 36                     |
| 64             | 31                     | 50                     | 53                     | 36                     |
| 65             | 31                     | 51                     | 54                     | 37                     |
| 66             | 31                     | 51                     | 54                     | 38                     |
| 67             | 31                     | 52                     | 54                     | 38                     |
| 68             | 32                     | 52                     | 54                     | 39                     |
| 69             | 32                     | 53                     | 54                     | 40                     |
| 70             | 32                     | 53                     | 54                     | 41                     |
| 71             | 32                     | 54                     | 54                     | 42                     |
| 72             | 33                     | 54                     | 54                     | 43                     |
| 73             | 33                     | 54                     | 54                     | 43                     |
| 74             | 33                     | 54                     | 54                     | 44                     |
| 75             | 34                     | 55                     | 54                     | 45                     |

| Time<br>(mins) | Temperature Rise (°C)  |                        |                        |                        |
|----------------|------------------------|------------------------|------------------------|------------------------|
|                | Thermocouple<br>No. 30 | Thermocouple<br>No. 31 | Thermocouple<br>No. 32 | Thermocouple<br>No. 33 |
| 76             | 34                     | 55                     | 54                     | 45                     |
| 77             | 35                     | 55                     | 54                     | 46                     |
| 78             | 35                     | 55                     | 55                     | 47                     |
| 79             | 36                     | 55                     | 54                     | 47                     |
| 80             | 36                     | 55                     | 54                     | 48                     |
| 81             | 37                     | 55                     | 54                     | 48                     |
| 82             | 37                     | 56                     | 55                     | 48                     |
| 83             | 38                     | 56                     | 55                     | 48                     |
| 84             | 39                     | 56                     | 55                     | 49                     |
| 85             | 39                     | 56                     | 55                     | 49                     |
| 86             | 40                     | 56                     | 55                     | 49                     |
| 87             | 40                     | 56                     | 55                     | 49                     |
| 88             | 41                     | 57                     | 56                     | 49                     |
| 89             | 41                     | 57                     | 56                     | 50                     |
| 90             | 42                     | 57                     | 56                     | 50                     |
| 91             | 42                     | 57                     | 57                     | 50                     |
| 92             | 42                     | 58                     | 58                     | 50                     |
| 93             | 43                     | 59                     | 58                     | 51                     |
| 94             | 43                     | 59                     | 59                     | 51                     |
| 95             | 44                     | 60                     | 60                     | 51                     |
| 96             | 44                     | 61                     | 61                     | 51                     |
| 97             | 44                     | 62                     | 61                     | 51                     |
| 98             | 45                     | 64                     | 62                     | 52                     |
| 99             | 45                     | 66                     | 63                     | 51                     |
| 100            | 46                     | 67                     | 63                     | 52                     |
| 101            | 46                     | 68                     | 64                     | 52                     |
| 102            | 46                     | 69                     | 65                     | 52                     |
| 103            | 47                     | 70                     | 65                     | 53                     |
| 104            | 47                     | 70                     | 66                     | 54                     |
| 105            | 48                     | 71                     | 66                     | 55                     |
| 106            | 48                     | 71                     | 67                     | 56                     |
| 107            | 48                     | 72                     | 67                     | 57                     |
| 108            | 49                     | 72                     | 68                     | 58                     |
| 109            | 49                     | 73                     | 69                     | 58                     |
| 110            | 50                     | 74                     | 70                     | 58                     |
| 111            | 50                     | 74                     | 71                     | 58                     |
| 112            | 50                     | 76                     | 72                     | 59                     |
| 113            | 50                     | 77                     | 73                     | 59                     |
| 114            | 50                     | 82                     | 75                     | 60                     |

| Time<br>(mins) | Temperature Rise (°C)  |                        |                        |                        |
|----------------|------------------------|------------------------|------------------------|------------------------|
|                | Thermocouple<br>No. 30 | Thermocouple<br>No. 31 | Thermocouple<br>No. 32 | Thermocouple<br>No. 33 |
| 115            | 51                     | 86                     | 77                     | 61                     |
| 116            | 51                     | 89                     | 80                     | 64                     |
| 117            | 51                     | 91                     | 82                     | 66                     |
| 118            | 51                     | 92                     | 84                     | 67                     |
| 119            | 51                     | 94                     | 86                     | 68                     |
| 120            | 52                     | 96                     | 88                     | 69                     |
| 121            | 52                     | 98                     | 90                     | 69                     |
| 122            | 52                     | 100                    | 92                     | 70                     |
| 123            | 52                     | 103                    | 94                     | 71                     |
| 124            | 52                     | 106                    | 96                     | 72                     |
| 125            | 52                     | 111                    | 99                     | 73                     |
| 126            | 52                     | 120                    | 102                    | 74                     |
| 127            | 53                     | 135                    | 106                    | 75                     |
| 128            | 53                     | 152                    | 111                    | 76                     |
| 129            | 53                     | 175                    | 122                    | 78                     |
| 130            | 53                     | 197                    | 141                    | 83                     |
| 131            | 53                     | 218                    | 168                    | 88                     |
| 132            | 53                     | 239                    | 198                    | 92                     |
| 133            | 53                     | 258                    | 223                    | 94                     |
| 134            | 53                     | 277                    | 248                    | 95                     |
| 135            | 53                     | 296                    | 275                    | 96                     |
| 136            | 54                     | 312                    | 301                    | 98                     |
| 137            | 54                     | 327                    | 327                    | 100                    |
| 138            | 55                     | 340                    | 347                    | 102                    |
| 139            | 54                     | 352                    | 365                    | 104                    |
| 140            | 55                     | 359                    | 378                    | 106                    |
| 141            | 55                     | 362                    | 386                    | 109                    |
| 142            | 55                     | 363                    | 390                    | 114                    |
| 143            | 56                     | 364                    | 392                    | 120                    |
| 144            | 56                     | 364                    | 395                    | 136                    |
| 145            | 57                     | 367                    | 394                    | 154                    |
| 146            | 57                     | 375                    | 399                    | 186                    |
| 147            | 58                     | 405                    | 404                    | 281                    |
| 148            | 59                     | 415                    | 411                    | 284                    |
| 149            | 59                     | 388                    | 416                    | 297                    |
| 150            | 60                     | 331                    | 415                    | 319                    |
| 151            | 60                     | 276                    | 413                    | 353                    |
| 152            | 61                     | 247                    | 410                    | 380                    |
| 153            | 61                     | 231                    | 409                    | 390                    |

| Time<br>(mins) | Temperature Rise (°C)  |                        |                        |                        |
|----------------|------------------------|------------------------|------------------------|------------------------|
|                | Thermocouple<br>No. 30 | Thermocouple<br>No. 31 | Thermocouple<br>No. 32 | Thermocouple<br>No. 33 |
| 154            | 62                     | 225                    | 410                    | 391                    |
| 155            | 62                     | 251                    | 412                    | 392                    |
| 156            | 63                     | 311                    | 414                    | 397                    |

Figures highlighted in red indicate the minute in which the temperature rise exceeded 180°C.

See figure 7 for thermocouple layout.

## 9.9 Internal Temperature Data at 1500mm Height (Upper)

| Time<br>(mins) | Actual Temperature (°C)              |                               |                                       |                                      |                               |                                       |
|----------------|--------------------------------------|-------------------------------|---------------------------------------|--------------------------------------|-------------------------------|---------------------------------------|
|                | Left stud                            |                               |                                       | Right stud                           |                               |                                       |
|                | Hot Flange<br>Thermocouple<br>No. 34 | Web<br>Thermocouple<br>No. 35 | Cold Flange<br>Thermocouple<br>No. 36 | Hot Flange<br>Thermocouple<br>No. 37 | Web<br>Thermocouple<br>No. 38 | Cold Flange<br>Thermocouple<br>No. 39 |
| 0              | 19                                   | 19                            | 19                                    | 19                                   | 19                            | 19                                    |
| 1              | 19                                   | 19                            | 19                                    | 19                                   | 19                            | 19                                    |
| 2              | 19                                   | 19                            | 19                                    | 20                                   | 19                            | 19                                    |
| 3              | 22                                   | 19                            | 19                                    | 21                                   | 19                            | 19                                    |
| 4              | 40                                   | 20                            | 19                                    | 25                                   | 20                            | 19                                    |
| 5              | 61                                   | 27                            | 20                                    | 33                                   | 22                            | 19                                    |
| 6              | 65                                   | 35                            | 25                                    | 45                                   | 29                            | 22                                    |
| 7              | 76                                   | 46                            | 38                                    | 58                                   | 42                            | 29                                    |
| 8              | 85                                   | 53                            | 46                                    | 70                                   | 58                            | 40                                    |
| 9              | 92                                   | 58                            | 50                                    | 78                                   | 68                            | 52                                    |
| 10             | 93                                   | 63                            | 55                                    | 86                                   | 80                            | 70                                    |
| 11             | 92                                   | 67                            | 59                                    | 90                                   | 85                            | 77                                    |
| 12             | 92                                   | 70                            | 62                                    | 91                                   | 86                            | 79                                    |
| 13             | 92                                   | 73                            | 66                                    | 92                                   | 86                            | 80                                    |
| 14             | 91                                   | 77                            | 72                                    | 93                                   | 87                            | 81                                    |
| 15             | 91                                   | 79                            | 75                                    | 95                                   | 88                            | 81                                    |
| 16             | 91                                   | 80                            | 76                                    | 96                                   | 89                            | 83                                    |
| 17             | 92                                   | 80                            | 75                                    | 98                                   | 91                            | 85                                    |
| 18             | 93                                   | 80                            | 74                                    | 99                                   | 91                            | 88                                    |
| 19             | 95                                   | 81                            | 75                                    | 100                                  | 92                            | 90                                    |
| 20             | 96                                   | 83                            | 77                                    | 101                                  | 93                            | 91                                    |
| 21             | 98                                   | 85                            | 79                                    | 102                                  | 95                            | 92                                    |
| 22             | 99                                   | 87                            | 81                                    | 102                                  | 96                            | 93                                    |
| 23             | 99                                   | 88                            | 82                                    | 103                                  | 97                            | 94                                    |
| 24             | 100                                  | 90                            | 84                                    | 104                                  | 98                            | 94                                    |
| 25             | 100                                  | 92                            | 86                                    | 106                                  | 99                            | 96                                    |
| 26             | 101                                  | 93                            | 87                                    | 108                                  | 99                            | 97                                    |
| 27             | 101                                  | 95                            | 89                                    | 111                                  | 100                           | 98                                    |
| 28             | 102                                  | 96                            | 90                                    | 113                                  | 100                           | 98                                    |
| 29             | 102                                  | 98                            | 91                                    | 117                                  | 100                           | 99                                    |
| 30             | 102                                  | 99                            | 92                                    | 120                                  | 101                           | 99                                    |
| 31             | 102                                  | 101                           | 92                                    | 125                                  | 101                           | 98                                    |
| 32             | 103                                  | 102                           | 92                                    | 129                                  | 102                           | 97                                    |
| 33             | 103                                  | 103                           | 92                                    | 131                                  | 102                           | 96                                    |
| 34             | 104                                  | 103                           | 92                                    | 135                                  | 103                           | 96                                    |

# The Building Test Centre

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| Time<br>(mins) | Actual Temperature (°C)              |                               |                                       |                                      |                               |                                       |
|----------------|--------------------------------------|-------------------------------|---------------------------------------|--------------------------------------|-------------------------------|---------------------------------------|
|                | Left stud                            |                               |                                       | Right stud                           |                               |                                       |
|                | Hot Flange<br>Thermocouple<br>No. 34 | Web<br>Thermocouple<br>No. 35 | Cold Flange<br>Thermocouple<br>No. 36 | Hot Flange<br>Thermocouple<br>No. 37 | Web<br>Thermocouple<br>No. 38 | Cold Flange<br>Thermocouple<br>No. 39 |
| 35             | 105                                  | 103                           | 92                                    | 142                                  | 103                           | 95                                    |
| 36             | 106                                  | 104                           | 93                                    | 154                                  | 105                           | 95                                    |
| 37             | 109                                  | 104                           | 92                                    | 170                                  | 107                           | 95                                    |
| 38             | 113                                  | 105                           | 91                                    | 189                                  | 111                           | 95                                    |
| 39             | 120                                  | 106                           | 90                                    | 210                                  | 116                           | 94                                    |
| 40             | 135                                  | 109                           | 90                                    | 233                                  | 123                           | 93                                    |
| 41             | 151                                  | 112                           | 90                                    | 257                                  | 133                           | 93                                    |
| 42             | 169                                  | 117                           | 90                                    | 282                                  | 144                           | 93                                    |
| 43             | 190                                  | 124                           | 90                                    | 308                                  | 160                           | 93                                    |
| 44             | 212                                  | 132                           | 92                                    | 335                                  | 178                           | 95                                    |
| 45             | 236                                  | 142                           | 96                                    | 359                                  | 197                           | 97                                    |
| 46             | 260                                  | 155                           | 100                                   | 382                                  | 218                           | 101                                   |
| 47             | 286                                  | 170                           | 104                                   | 405                                  | 240                           | 104                                   |
| 48             | 315                                  | 186                           | 106                                   | 427                                  | 262                           | 106                                   |
| 49             | 342                                  | 205                           | 109                                   | 450                                  | 283                           | 111                                   |
| 50             | 369                                  | 229                           | 116                                   | 469                                  | 304                           | 119                                   |
| 51             | 392                                  | 251                           | 123                                   | 482                                  | 320                           | 129                                   |
| 52             | 417                                  | 267                           | 133                                   | 495                                  | 335                           | 144                                   |
| 53             | 438                                  | 283                           | 146                                   | 505                                  | 347                           | 160                                   |
| 54             | 457                                  | 298                           | 160                                   | 515                                  | 358                           | 176                                   |
| 55             | 470                                  | 309                           | 175                                   | 525                                  | 369                           | 190                                   |
| 56             | 475                                  | 319                           | 185                                   | 534                                  | 380                           | 201                                   |
| 57             | 480                                  | 325                           | 194                                   | 542                                  | 387                           | 210                                   |
| 58             | 484                                  | 331                           | 201                                   | 550                                  | 394                           | 218                                   |
| 59             | 488                                  | 336                           | 208                                   | 557                                  | 400                           | 224                                   |
| 60             | 492                                  | 342                           | 215                                   | 564                                  | 408                           | 230                                   |
| 61             | 496                                  | 349                           | 223                                   | 572                                  | 415                           | 236                                   |
| 62             | 500                                  | 356                           | 230                                   | 579                                  | 422                           | 241                                   |
| 63             | 505                                  | 363                           | 237                                   | 586                                  | 430                           | 245                                   |
| 64             | 510                                  | 371                           | 244                                   | 593                                  | 438                           | 251                                   |
| 65             | 515                                  | 380                           | 251                                   | 599                                  | 446                           | 256                                   |
| 66             | 521                                  | 389                           | 259                                   | 605                                  | 453                           | 262                                   |
| 67             | 526                                  | 397                           | 267                                   | 610                                  | 461                           | 267                                   |
| 68             | 532                                  | 406                           | 276                                   | 616                                  | 469                           | 273                                   |
| 69             | 538                                  | 415                           | 284                                   | 620                                  | 476                           | 279                                   |
| 70             | 544                                  | 424                           | 293                                   | 625                                  | 483                           | 286                                   |
| 71             | 550                                  | 433                           | 302                                   | 629                                  | 491                           | 292                                   |

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# The Building Test Centre

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| Time<br>(mins) | Actual Temperature (°C)              |                               |                                       |                                      |                               |                                       |
|----------------|--------------------------------------|-------------------------------|---------------------------------------|--------------------------------------|-------------------------------|---------------------------------------|
|                | Left stud                            |                               |                                       | Right stud                           |                               |                                       |
|                | Hot Flange<br>Thermocouple<br>No. 34 | Web<br>Thermocouple<br>No. 35 | Cold Flange<br>Thermocouple<br>No. 36 | Hot Flange<br>Thermocouple<br>No. 37 | Web<br>Thermocouple<br>No. 38 | Cold Flange<br>Thermocouple<br>No. 39 |
| 72             | 555                                  | 440                           | 311                                   | 633                                  | 498                           | 299                                   |
| 73             | 560                                  | 448                           | 320                                   | 637                                  | 505                           | 306                                   |
| 74             | 566                                  | 455                           | 330                                   | 641                                  | 512                           | 312                                   |
| 75             | 572                                  | 462                           | 340                                   | 644                                  | 519                           | 318                                   |
| 76             | 577                                  | 468                           | 349                                   | 647                                  | 526                           | 325                                   |
| 77             | 582                                  | 473                           | 358                                   | 649                                  | 532                           | 331                                   |
| 78             | 586                                  | 477                           | 365                                   | 652                                  | 538                           | 337                                   |
| 79             | 590                                  | 481                           | 372                                   | 655                                  | 544                           | 343                                   |
| 80             | 594                                  | 484                           | 379                                   | 658                                  | 551                           | 349                                   |
| 81             | 598                                  | 488                           | 386                                   | 663                                  | 559                           | 357                                   |
| 82             | 601                                  | 492                           | 394                                   | 668                                  | 568                           | 364                                   |
| 83             | 605                                  | 496                           | 401                                   | 673                                  | 579                           | 373                                   |
| 84             | 607                                  | 500                           | 408                                   | 678                                  | 590                           | 383                                   |
| 85             | 611                                  | 504                           | 417                                   | 683                                  | 602                           | 394                                   |
| 86             | 614                                  | 509                           | 426                                   | 687                                  | 613                           | 405                                   |
| 87             | 617                                  | 514                           | 435                                   | 689                                  | 620                           | 415                                   |
| 88             | 627                                  | 520                           | 445                                   | 690                                  | 625                           | 421                                   |
| 89             | 660                                  | 539                           | 468                                   | 690                                  | 626                           | 426                                   |
| 90             | 730                                  | 565                           | 496                                   | 688                                  | 627                           | 431                                   |
| 91             | 809                                  | 600                           | 537                                   | 686                                  | -                             | 438                                   |
| 92             | 819                                  | 636                           | 574                                   | 678                                  | -                             | 449                                   |
| 93             | 821                                  | 652                           | 603                                   | 659                                  | -                             | 457                                   |
| 94             | 823                                  | 658                           | 625                                   | 652                                  | -                             | 456                                   |
| 95             | 826                                  | 661                           | 638                                   | 698                                  | -                             | 473                                   |
| 96             | 833                                  | -                             | 652                                   | 636                                  | -                             | 493                                   |
| 97             | 838                                  | -                             | 669                                   | 748                                  | -                             | 514                                   |
| 98             | 849                                  | -                             | 695                                   | 803                                  | -                             | 526                                   |
| 99             | 854                                  | -                             | 731                                   | 996                                  | -                             | 533                                   |
| 100            | 814                                  | -                             | 757                                   | 965                                  | -                             | 546                                   |
| 101            | 794                                  | -                             | 757                                   | 928                                  | -                             | 560                                   |
| 102            | 789                                  | -                             | 775                                   | 872                                  | -                             | 571                                   |
| 103            | 798                                  | -                             | 783                                   | 817                                  | -                             | 580                                   |
| 104            | 795                                  | -                             | 785                                   | 806                                  | -                             | 585                                   |
| 105            | 793                                  | -                             | 785                                   | 807                                  | -                             | 585                                   |
| 106            | 788                                  | -                             | 781                                   | 796                                  | -                             | 587                                   |
| 107            | 781                                  | -                             | 771                                   | 787                                  | -                             | 594                                   |
| 108            | 774                                  | -                             | 762                                   | 788                                  | -                             | 606                                   |

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| Time<br>(mins) | Actual Temperature (°C)              |                               |                                       |                                      |                               |                                       |
|----------------|--------------------------------------|-------------------------------|---------------------------------------|--------------------------------------|-------------------------------|---------------------------------------|
|                | Left stud                            |                               |                                       | Right stud                           |                               |                                       |
|                | Hot Flange<br>Thermocouple<br>No. 34 | Web<br>Thermocouple<br>No. 35 | Cold Flange<br>Thermocouple<br>No. 36 | Hot Flange<br>Thermocouple<br>No. 37 | Web<br>Thermocouple<br>No. 38 | Cold Flange<br>Thermocouple<br>No. 39 |
| 109            | 773                                  | -                             | 757                                   | 787                                  | -                             | 625                                   |
| 110            | 765                                  | -                             | 753                                   | 786                                  | -                             | 654                                   |
| 111            | 762                                  | -                             | 759                                   | 789                                  | -                             | 716                                   |
| 112            | 784                                  | -                             | 787                                   | 789                                  | -                             | 782                                   |
| 113            | 807                                  | -                             | 808                                   | 789                                  | -                             | 805                                   |
| 114            | 838                                  | -                             | 856                                   | 818                                  | -                             | 846                                   |
| 115            | 868                                  | -                             | 860                                   | 855                                  | -                             | 862                                   |
| 116            | 899                                  | -                             | 886                                   | 891                                  | -                             | 885                                   |
| 117            | 906                                  | -                             | 893                                   | 897                                  | -                             | 896                                   |
| 118            | 914                                  | -                             | 906                                   | 909                                  | -                             | 906                                   |
| 119            | 923                                  | -                             | 918                                   | 919                                  | -                             | 916                                   |
| 120            | 932                                  | -                             | 929                                   | 931                                  | -                             | 928                                   |
| 121            | 948                                  | -                             | 948                                   | 953                                  | -                             | 948                                   |
| 122            | 963                                  | -                             | 976                                   | 985                                  | -                             | 971                                   |
| 123            | 974                                  | -                             | 983                                   | 999                                  | -                             | 977                                   |
| 124            | 980                                  | -                             | 982                                   | 1002                                 | -                             | 979                                   |
| 125            | 985                                  | -                             | 987                                   | 1034                                 | -                             | 984                                   |
| 126            | 992                                  | -                             | 990                                   | 1020                                 | -                             | 988                                   |
| 127            | 996                                  | -                             | 995                                   | -                                    | -                             | 992                                   |
| 128            | 1011                                 | -                             | 1020                                  | -                                    | -                             | 1010                                  |
| 129            | 1015                                 | -                             | 1021                                  | -                                    | -                             | 1012                                  |
| 130            | 1019                                 | -                             | 1026                                  | -                                    | -                             | 1019                                  |
| 131            | 1011                                 | -                             | 1018                                  | -                                    | -                             | 1019                                  |
| 132            | 1011                                 | -                             | 1022                                  | -                                    | -                             | 1022                                  |
| 133            | 1013                                 | -                             | 1006                                  | -                                    | -                             | 1026                                  |
| 134            | 1023                                 | -                             | 1010                                  | -                                    | -                             | 1030                                  |
| 135            | 1032                                 | -                             | 1015                                  | -                                    | -                             | 1039                                  |
| 136            | 1032                                 | -                             | 1021                                  | -                                    | -                             | 1043                                  |
| 137            | 1033                                 | -                             | 1025                                  | -                                    | -                             | 1048                                  |
| 138            | 1033                                 | -                             | 1031                                  | -                                    | -                             | 1051                                  |
| 139            | 1036                                 | -                             | 1035                                  | -                                    | -                             | 1051                                  |
| 140            | 1031                                 | -                             | 1033                                  | -                                    | -                             | -                                     |
| 141            | 1028                                 | -                             | 1032                                  | -                                    | -                             | -                                     |
| 142            | 1026                                 | -                             | 1035                                  | -                                    | -                             | -                                     |
| 143            | 1026                                 | -                             | 1033                                  | -                                    | -                             | -                                     |
| 144            | 1027                                 | -                             | 1034                                  | -                                    | -                             | -                                     |
| 145            | 1029                                 | -                             | 1034                                  | -                                    | -                             | -                                     |

Customer: **British Gypsum**

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| Time<br>(mins) | Actual Temperature (°C)              |                               |                                       |                                      |                               |                                       |
|----------------|--------------------------------------|-------------------------------|---------------------------------------|--------------------------------------|-------------------------------|---------------------------------------|
|                | Left stud                            |                               |                                       | Right stud                           |                               |                                       |
|                | Hot Flange<br>Thermocouple<br>No. 34 | Web<br>Thermocouple<br>No. 35 | Cold Flange<br>Thermocouple<br>No. 36 | Hot Flange<br>Thermocouple<br>No. 37 | Web<br>Thermocouple<br>No. 38 | Cold Flange<br>Thermocouple<br>No. 39 |
| 146            | 1026                                 | -                             | 1034                                  | -                                    | -                             | -                                     |
| 147            | 1025                                 | -                             | 1034                                  | -                                    | -                             | -                                     |
| 148            | 1025                                 | -                             | 1035                                  | -                                    | -                             | -                                     |
| 149            | 1024                                 | -                             | 1036                                  | -                                    | -                             | -                                     |
| 150            | 1035                                 | -                             | 1042                                  | -                                    | -                             | -                                     |
| 151            | 1028                                 | -                             | 1045                                  | -                                    | -                             | -                                     |
| 152            | 1034                                 | -                             | 1043                                  | -                                    | -                             | -                                     |
| 153            | 1038                                 | -                             | 1046                                  | -                                    | -                             | -                                     |
| 154            | 1048                                 | -                             | 1047                                  | -                                    | -                             | -                                     |
| 155            | 1053                                 | -                             | 1052                                  | -                                    | -                             | -                                     |
| 156            | 1058                                 | -                             | 1050                                  | -                                    | -                             | -                                     |

- Indicates a broken thermocouple.

See figure 7 for the location of the thermocouples.

## 9.10 Internal Temperature Data at 1500mm Height (Lower)

| Time<br>(mins) | Actual Temperature (°C)              |                               |                                       |                                      |                               |                                       |
|----------------|--------------------------------------|-------------------------------|---------------------------------------|--------------------------------------|-------------------------------|---------------------------------------|
|                | Left stud                            |                               |                                       | Right stud                           |                               |                                       |
|                | Hot Flange<br>Thermocouple<br>No. 40 | Web<br>Thermocouple<br>No. 41 | Cold Flange<br>Thermocouple<br>No. 42 | Hot Flange<br>Thermocouple<br>No. 43 | Web<br>Thermocouple<br>No. 44 | Cold Flange<br>Thermocouple<br>No. 45 |
| 0              | 18                                   | 19                            | 19                                    | 19                                   | 19                            | 19                                    |
| 1              | 18                                   | 18                            | 19                                    | 19                                   | 19                            | 19                                    |
| 2              | 18                                   | 18                            | 19                                    | 19                                   | 19                            | 19                                    |
| 3              | 20                                   | 18                            | 18                                    | 20                                   | 19                            | 19                                    |
| 4              | 39                                   | 19                            | 18                                    | 23                                   | 19                            | 19                                    |
| 5              | 61                                   | 25                            | 19                                    | 30                                   | 21                            | 19                                    |
| 6              | 64                                   | 31                            | 22                                    | 42                                   | 28                            | 22                                    |
| 7              | 77                                   | 39                            | 29                                    | 55                                   | 38                            | 27                                    |
| 8              | 86                                   | 45                            | 33                                    | 67                                   | 51                            | 35                                    |
| 9              | 92                                   | 54                            | 46                                    | 76                                   | 65                            | 51                                    |
| 10             | 93                                   | 61                            | 53                                    | 86                                   | 80                            | 69                                    |
| 11             | 92                                   | 64                            | 54                                    | 89                                   | 84                            | 74                                    |
| 12             | 91                                   | 66                            | 57                                    | 90                                   | 84                            | 76                                    |
| 13             | 91                                   | 70                            | 63                                    | 90                                   | 84                            | 77                                    |
| 14             | 89                                   | 74                            | 69                                    | 91                                   | 84                            | 78                                    |
| 15             | 89                                   | 77                            | 73                                    | 92                                   | 85                            | 79                                    |
| 16             | 89                                   | 78                            | 74                                    | 94                                   | 87                            | 80                                    |
| 17             | 89                                   | 78                            | 74                                    | 95                                   | 89                            | 83                                    |
| 18             | 91                                   | 78                            | 74                                    | 97                                   | 91                            | 86                                    |
| 19             | 93                                   | 79                            | 75                                    | 98                                   | 93                            | 89                                    |
| 20             | 94                                   | 81                            | 77                                    | 98                                   | 93                            | 90                                    |
| 21             | 96                                   | 83                            | 80                                    | 99                                   | 94                            | 91                                    |
| 22             | 97                                   | 85                            | 82                                    | 100                                  | 95                            | 92                                    |
| 23             | 98                                   | 87                            | 83                                    | 101                                  | 95                            | 93                                    |
| 24             | 99                                   | 88                            | 85                                    | 102                                  | 96                            | 94                                    |
| 25             | 100                                  | 89                            | 86                                    | 103                                  | 96                            | 95                                    |
| 26             | 100                                  | 91                            | 87                                    | 104                                  | 97                            | 96                                    |
| 27             | 101                                  | 92                            | 88                                    | 106                                  | 98                            | 97                                    |
| 28             | 101                                  | 93                            | 89                                    | 108                                  | 100                           | 98                                    |
| 29             | 102                                  | 94                            | 90                                    | 110                                  | 101                           | 99                                    |
| 30             | 103                                  | 95                            | 90                                    | 113                                  | 102                           | 99                                    |
| 31             | 103                                  | 96                            | 90                                    | 116                                  | 103                           | 98                                    |
| 32             | 103                                  | 96                            | 91                                    | 120                                  | 104                           | 97                                    |
| 33             | 104                                  | 96                            | 91                                    | 123                                  | 104                           | 96                                    |
| 34             | 105                                  | 97                            | 92                                    | 127                                  | 105                           | 95                                    |

# The Building Test Centre

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| Time<br>(mins) | Actual Temperature (°C)              |                               |                                       |                                      |                               |                                       |
|----------------|--------------------------------------|-------------------------------|---------------------------------------|--------------------------------------|-------------------------------|---------------------------------------|
|                | Left stud                            |                               |                                       | Right stud                           |                               |                                       |
|                | Hot Flange<br>Thermocouple<br>No. 40 | Web<br>Thermocouple<br>No. 41 | Cold Flange<br>Thermocouple<br>No. 42 | Hot Flange<br>Thermocouple<br>No. 43 | Web<br>Thermocouple<br>No. 44 | Cold Flange<br>Thermocouple<br>No. 45 |
| 35             | 107                                  | 97                            | 93                                    | 133                                  | 105                           | 95                                    |
| 36             | 109                                  | 98                            | 93                                    | 144                                  | 106                           | 94                                    |
| 37             | 114                                  | 98                            | 93                                    | 160                                  | 109                           | 94                                    |
| 38             | 119                                  | 98                            | 92                                    | 180                                  | 113                           | 94                                    |
| 39             | 126                                  | 99                            | 91                                    | 202                                  | 119                           | 94                                    |
| 40             | 136                                  | 101                           | 91                                    | 225                                  | 130                           | 93                                    |
| 41             | 148                                  | 103                           | 90                                    | 250                                  | 143                           | 94                                    |
| 42             | 163                                  | 106                           | 90                                    | 276                                  | 158                           | 95                                    |
| 43             | 181                                  | 111                           | 90                                    | 304                                  | 175                           | 99                                    |
| 44             | 200                                  | 118                           | 92                                    | 330                                  | 194                           | 101                                   |
| 45             | 222                                  | 127                           | 96                                    | 355                                  | 213                           | 104                                   |
| 46             | 247                                  | 139                           | 100                                   | 379                                  | 232                           | 107                                   |
| 47             | 274                                  | 151                           | 103                                   | 402                                  | 252                           | 110                                   |
| 48             | 303                                  | 165                           | 105                                   | 424                                  | 271                           | 114                                   |
| 49             | 332                                  | 182                           | 108                                   | 445                                  | 290                           | 121                                   |
| 50             | 357                                  | 205                           | 113                                   | 465                                  | 308                           | 141                                   |
| 51             | 382                                  | 227                           | 121                                   | 478                                  | 321                           | 155                                   |
| 52             | 409                                  | 242                           | 132                                   | 489                                  | 330                           | 170                                   |
| 53             | 432                                  | 256                           | 145                                   | 499                                  | 340                           | 184                                   |
| 54             | 451                                  | 267                           | 157                                   | 510                                  | 351                           | 197                                   |
| 55             | 468                                  | 274                           | 167                                   | 520                                  | 361                           | 209                                   |
| 56             | 473                                  | 281                           | 176                                   | 528                                  | 370                           | 219                                   |
| 57             | 477                                  | 285                           | 184                                   | 536                                  | 377                           | 228                                   |
| 58             | 480                                  | 290                           | 189                                   | 543                                  | 383                           | 236                                   |
| 59             | 484                                  | 294                           | 192                                   | 550                                  | 389                           | 244                                   |
| 60             | 487                                  | 299                           | 196                                   | 557                                  | 395                           | 251                                   |
| 61             | 490                                  | 306                           | 201                                   | 564                                  | 402                           | 257                                   |
| 62             | 493                                  | 313                           | 208                                   | 571                                  | 409                           | 264                                   |
| 63             | 497                                  | 321                           | 214                                   | 578                                  | 416                           | 270                                   |
| 64             | 502                                  | 330                           | 222                                   | 584                                  | 423                           | 275                                   |
| 65             | 508                                  | 339                           | 231                                   | 590                                  | 430                           | 280                                   |
| 66             | 514                                  | 348                           | 241                                   | 596                                  | 437                           | 285                                   |
| 67             | 520                                  | 357                           | 250                                   | 601                                  | 443                           | 289                                   |
| 68             | 526                                  | 366                           | 261                                   | 607                                  | 450                           | 294                                   |
| 69             | 532                                  | 376                           | 267                                   | 611                                  | 456                           | 300                                   |
| 70             | 538                                  | 385                           | 281                                   | 616                                  | 462                           | 306                                   |
| 71             | 544                                  | 394                           | 290                                   | 620                                  | 469                           | 312                                   |

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| Time<br>(mins) | Actual Temperature (°C)              |                               |                                       |                                      |                               |                                       |
|----------------|--------------------------------------|-------------------------------|---------------------------------------|--------------------------------------|-------------------------------|---------------------------------------|
|                | Left stud                            |                               |                                       | Right stud                           |                               |                                       |
|                | Hot Flange<br>Thermocouple<br>No. 40 | Web<br>Thermocouple<br>No. 41 | Cold Flange<br>Thermocouple<br>No. 42 | Hot Flange<br>Thermocouple<br>No. 43 | Web<br>Thermocouple<br>No. 44 | Cold Flange<br>Thermocouple<br>No. 45 |
| 72             | 550                                  | 402                           | 299                                   | 625                                  | 475                           | 319                                   |
| 73             | 556                                  | 410                           | 308                                   | 629                                  | 482                           | 325                                   |
| 74             | 561                                  | 417                           | 317                                   | 632                                  | 488                           | 332                                   |
| 75             | 567                                  | 425                           | 327                                   | 635                                  | 495                           | 339                                   |
| 76             | 572                                  | 430                           | 336                                   | 638                                  | 500                           | 345                                   |
| 77             | 577                                  | 436                           | 345                                   | 642                                  | 506                           | 352                                   |
| 78             | 582                                  | 441                           | 351                                   | 645                                  | 511                           | 358                                   |
| 79             | 586                                  | 444                           | 358                                   | 648                                  | 517                           | 364                                   |
| 80             | 590                                  | 448                           | 364                                   | 652                                  | 523                           | 371                                   |
| 81             | 593                                  | 452                           | 371                                   | 657                                  | 530                           | 379                                   |
| 82             | 597                                  | 456                           | 378                                   | 662                                  | 538                           | 388                                   |
| 83             | 600                                  | 460                           | 385                                   | 668                                  | 547                           | 397                                   |
| 84             | 603                                  | 463                           | 392                                   | 673                                  | 557                           | 409                                   |
| 85             | 607                                  | 469                           | 399                                   | 679                                  | 569                           | 423                                   |
| 86             | 610                                  | 473                           | 407                                   | 684                                  | 580                           | 440                                   |
| 87             | 613                                  | 479                           | 417                                   | 685                                  | 592                           | 455                                   |
| 88             | 617                                  | 484                           | 427                                   | 686                                  | 601                           | 465                                   |
| 89             | 632                                  | 500                           | 443                                   | 686                                  | 610                           | 473                                   |
| 90             | 707                                  | 525                           | 467                                   | 686                                  | 618                           | 481                                   |
| 91             | 788                                  | 566                           | 504                                   | 685                                  | 619                           | 489                                   |
| 92             | 810                                  | 602                           | 547                                   | 676                                  | 621                           | 498                                   |
| 93             | 816                                  | 631                           | 580                                   | 661                                  | 607                           | 503                                   |
| 94             | 819                                  | 646                           | 607                                   | 656                                  | 593                           | 500                                   |
| 95             | 822                                  | 653                           | 628                                   | 674                                  | 614                           | 512                                   |
| 96             | 832                                  | -                             | 643                                   | 549                                  | 621                           | 528                                   |
| 97             | 838                                  | -                             | 660                                   | 577                                  | 637                           | 545                                   |
| 98             | 848                                  | -                             | 684                                   | 527                                  | 630                           | 554                                   |
| 99             | 775                                  | -                             | 724                                   | 519                                  | 626                           | 557                                   |
| 100            | 765                                  | -                             | 742                                   | 560                                  | 622                           | 560                                   |
| 101            | 743                                  | -                             | 731                                   | 576                                  | 619                           | 564                                   |
| 102            | 729                                  | -                             | 728                                   | 600                                  | 626                           | 571                                   |
| 103            | 723                                  | -                             | 732                                   | 616                                  | 635                           | 580                                   |
| 104            | 722                                  | -                             | 735                                   | 627                                  | 632                           | 583                                   |
| 105            | 722                                  | -                             | 743                                   | 638                                  | 648                           | 580                                   |
| 106            | 724                                  | -                             | 750                                   | 642                                  | 659                           | 580                                   |
| 107            | 721                                  | -                             | 750                                   | 653                                  | 669                           | 587                                   |
| 108            | 721                                  | -                             | 749                                   | 665                                  | 678                           | 599                                   |

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| Time<br>(mins) | Actual Temperature (°C)              |                               |                                       |                                      |                               |                                       |
|----------------|--------------------------------------|-------------------------------|---------------------------------------|--------------------------------------|-------------------------------|---------------------------------------|
|                | Left stud                            |                               |                                       | Right stud                           |                               |                                       |
|                | Hot Flange<br>Thermocouple<br>No. 40 | Web<br>Thermocouple<br>No. 41 | Cold Flange<br>Thermocouple<br>No. 42 | Hot Flange<br>Thermocouple<br>No. 43 | Web<br>Thermocouple<br>No. 44 | Cold Flange<br>Thermocouple<br>No. 45 |
| 109            | 725                                  | -                             | 753                                   | 686                                  | 693                           | 618                                   |
| 110            | 732                                  | -                             | 752                                   | 708                                  | 715                           | 651                                   |
| 111            | 749                                  | -                             | 759                                   | 733                                  | 756                           | 723                                   |
| 112            | 781                                  | -                             | 789                                   | 757                                  | 791                           | 784                                   |
| 113            | 803                                  | -                             | 812                                   | 774                                  | 808                           | 816                                   |
| 114            | 838                                  | -                             | 853                                   | 797                                  | 844                           | 850                                   |
| 115            | 847                                  | -                             | 868                                   | 800                                  | 867                           | 874                                   |
| 116            | 870                                  | -                             | 895                                   | 834                                  | 891                           | 902                                   |
| 117            | 877                                  | -                             | 901                                   | 827                                  | 901                           | 909                                   |
| 118            | 892                                  | -                             | 910                                   | 803                                  | 910                           | 919                                   |
| 119            | 903                                  | -                             | 918                                   | 799                                  | 918                           | 926                                   |
| 120            | 916                                  | -                             | 929                                   | 830                                  | 929                           | 935                                   |
| 121            | 937                                  | -                             | 946                                   | 881                                  | 950                           | 952                                   |
| 122            | 971                                  | -                             | 966                                   | 961                                  | 977                           | 972                                   |
| 123            | 983                                  | -                             | 976                                   | 987                                  | 988                           | 982                                   |
| 124            | 995                                  | -                             | 980                                   | 981                                  | 989                           | 986                                   |
| 125            | 976                                  | -                             | 984                                   | 983                                  | 985                           | 991                                   |
| 126            | 975                                  | -                             | 991                                   | 991                                  | 984                           | 998                                   |
| 127            | 969                                  | -                             | 995                                   | 966                                  | 987                           | 1004                                  |
| 128            | 1006                                 | -                             | 1008                                  | 922                                  | 991                           | 1016                                  |
| 129            | 1006                                 | -                             | 1009                                  | 929                                  | 985                           | 1018                                  |
| 130            | 998                                  | -                             | 1010                                  | 932                                  | 990                           | 1024                                  |
| 131            | 982                                  | -                             | 1020                                  | 942                                  | 998                           | 1028                                  |
| 132            | 994                                  | -                             | 1024                                  | 950                                  | 1001                          | 1032                                  |
| 133            | 998                                  | -                             | 1026                                  | 958                                  | 1004                          | 1034                                  |
| 134            | 1025                                 | -                             | 1028                                  | 965                                  | 1010                          | 1031                                  |
| 135            | 1036                                 | -                             | 1034                                  | 971                                  | 1017                          | 1038                                  |
| 136            | 1041                                 | -                             | 1036                                  | 967                                  | 1023                          | 1043                                  |
| 137            | 1029                                 | -                             | 1041                                  | 968                                  | 1026                          | 1055                                  |
| 138            | 1034                                 | -                             | 1044                                  | 976                                  | 1029                          | 1059                                  |
| 139            | 1040                                 | -                             | 1047                                  | 980                                  | 1034                          | 1057                                  |
| 140            | 1052                                 | -                             | 1045                                  | 993                                  | -                             | 1056                                  |
| 141            | 1026                                 | -                             | 1045                                  | 999                                  | -                             | 1057                                  |
| 142            | 1050                                 | -                             | 1045                                  | 1004                                 | -                             | 1048                                  |
| 143            | 1015                                 | -                             | 1044                                  | 1002                                 | -                             | 1047                                  |
| 144            | 1006                                 | -                             | 1044                                  | 1003                                 | -                             | 1065                                  |
| 145            | 1014                                 | -                             | 1042                                  | 1011                                 | -                             | 1053                                  |

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| Time<br>(mins) | Actual Temperature (°C)              |                               |                                       |                                      |                               |                                       |
|----------------|--------------------------------------|-------------------------------|---------------------------------------|--------------------------------------|-------------------------------|---------------------------------------|
|                | Left stud                            |                               |                                       | Right stud                           |                               |                                       |
|                | Hot Flange<br>Thermocouple<br>No. 40 | Web<br>Thermocouple<br>No. 41 | Cold Flange<br>Thermocouple<br>No. 42 | Hot Flange<br>Thermocouple<br>No. 43 | Web<br>Thermocouple<br>No. 44 | Cold Flange<br>Thermocouple<br>No. 45 |
| 146            | 1021                                 | -                             | 1042                                  | 1013                                 | -                             | -                                     |
| 147            | -                                    | -                             | 1041                                  | 1015                                 | -                             | -                                     |
| 148            | -                                    | -                             | 1044                                  | 1015                                 | -                             | -                                     |
| 149            | -                                    | -                             | 1044                                  | -                                    | -                             | -                                     |
| 150            | -                                    | -                             | 1052                                  | -                                    | -                             | -                                     |
| 151            | -                                    | -                             | 1054                                  | -                                    | -                             | -                                     |
| 152            | -                                    | -                             | 1049                                  | -                                    | -                             | -                                     |
| 153            | -                                    | -                             | 1052                                  | -                                    | -                             | -                                     |
| 154            | -                                    | -                             | 1054                                  | -                                    | -                             | -                                     |
| 155            | -                                    | -                             | 1064                                  | -                                    | -                             | -                                     |
| 156            | -                                    | -                             | -                                     | -                                    | -                             | -                                     |

- Indicates a broken thermocouple

See figure 7 for thermocouple layout

## 9.11 Specimen Lateral Deflection

| Time<br>(mins) | Deflection<br>(mm) |           |
|----------------|--------------------|-----------|
|                | Centre             | Free Edge |
| 0              | 0                  | 0         |
| 1              | 1                  | 0         |
| 2              | 2                  | 1         |
| 3              | 3                  | 1         |
| 4              | 3                  | 1         |
| 5              | 4                  | 1         |
| 6              | 5                  | 1         |
| 7              | 6                  | 2         |
| 8              | 6                  | 2         |
| 9              | 6                  | 2         |
| 10             | 6                  | 2         |
| 11             | 6                  | 2         |
| 12             | 6                  | 2         |
| 13             | 6                  | 2         |
| 14             | 6                  | 2         |
| 15             | 7                  | 2         |
| 16             | 7                  | 2         |
| 17             | 6                  | 2         |
| 18             | 6                  | 2         |
| 19             | 6                  | 2         |
| 20             | 6                  | 2         |
| 21             | 6                  | 3         |
| 22             | 7                  | 3         |
| 23             | 6                  | 3         |
| 24             | 7                  | 3         |
| 25             | 6                  | 3         |
| 26             | 7                  | 3         |
| 27             | 7                  | 3         |
| 28             | 7                  | 3         |
| 29             | 7                  | 3         |
| 30             | 7                  | 3         |
| 31             | 7                  | 3         |
| 32             | 7                  | 3         |
| 33             | 7                  | 3         |
| 34             | 7                  | 3         |
| 35             | 8                  | 3         |
| 36             | 8                  | 3         |

| Time<br>(mins) | Deflection<br>(mm) |           |
|----------------|--------------------|-----------|
|                | Centre             | Free Edge |
| 37             | 9                  | 3         |
| 38             | 11                 | 4         |
| 39             | 13                 | 4         |
| 40             | 15                 | 4         |
| 41             | 17                 | 5         |
| 42             | 20                 | 6         |
| 43             | 23                 | 7         |
| 44             | 26                 | 8         |
| 45             | 29                 | 10        |
| 46             | 31                 | 13        |
| 47             | 35                 | 15        |
| 48             | 37                 | 18        |
| 49             | 40                 | 21        |
| 50             | 43                 | 25        |
| 51             | 45                 | 28        |
| 52             | 48                 | 30        |
| 53             | 50                 | 33        |
| 54             | 52                 | 35        |
| 55             | 53                 | 38        |
| 56             | 54                 | 40        |
| 57             | 56                 | 42        |
| 58             | 57                 | 44        |
| 59             | 58                 | 46        |
| 60             | 59                 | 48        |
| 61             | 60                 | 49        |
| 62             | 61                 | 50        |
| 63             | 62                 | 51        |
| 64             | 63                 | 53        |
| 65             | 64                 | 53        |
| 66             | 65                 | 54        |
| 67             | 65                 | 55        |
| 68             | 66                 | 56        |
| 69             | 67                 | 56        |
| 70             | 68                 | 57        |
| 71             | 68                 | 58        |
| 72             | 69                 | 58        |
| 73             | 69                 | 59        |
| 74             | 70                 | 60        |
| 75             | 71                 | 61        |

| Time<br>(mins) | Deflection<br>(mm) |           |
|----------------|--------------------|-----------|
|                | Centre             | Free Edge |
| 76             | 71                 | 62        |
| 77             | 72                 | 63        |
| 78             | 73                 | 63        |
| 79             | 74                 | 65        |
| 80             | 74                 | 66        |
| 81             | 75                 | 67        |
| 82             | 76                 | 69        |
| 83             | 77                 | 70        |
| 84             | 78                 | 72        |
| 85             | 79                 | 74        |
| 86             | 80                 | 76        |
| 87             | 81                 | 78        |
| 88             | 82                 | 80        |
| 89             | 83                 | 83        |
| 90             | 84                 | 85        |
| 91             | 85                 | 87        |
| 92             | 86                 | 89        |
| 93             | 86                 | 90        |
| 94             | 87                 | 92        |
| 95             | 88                 | 93        |
| 96             | 89                 | 95        |
| 97             | 90                 | 97        |
| 98             | 91                 | 98        |
| 99             | 92                 | 99        |
| 100            | 93                 | 101       |
| 101            | 94                 | 102       |
| 102            | 95                 | 104       |
| 103            | 95                 | 105       |
| 104            | 96                 | 106       |
| 105            | 97                 | 107       |
| 106            | 98                 | 109       |
| 107            | 98                 | 111       |
| 108            | 99                 | 113       |
| 109            | 100                | 115       |
| 110            | 101                | 117       |
| 111            | 102                | 118       |
| 112            | 102                | 119       |
| 113            | 103                | 120       |
| 114            | 103                | 122       |

| Time<br>(mins) | Deflection<br>(mm) |           |
|----------------|--------------------|-----------|
|                | Centre             | Free Edge |
| 115            | 104                | 123       |
| 116            | 104                | 124       |
| 117            | 105                | 125       |
| 118            | 105                | 126       |
| 119            | 106                | 127       |
| 120            | 106                | 128       |
| 121            | 106                | 130       |
| 122            | 106                | 131       |
| 123            | 106                | 131       |
| 124            | 106                | 132       |
| 125            | 106                | 133       |
| 126            | 105                | 133       |
| 127            | 105                | 134       |
| 128            | 105                | 135       |
| 129            | 104                | 136       |
| 130            | 104                | 138       |
| 131            | 103                | 139       |
| 132            | 102                | 139       |
| 133            | 101                | 140       |
| 134            | 100                | 141       |
| 135            | -                  | -         |

The deflection was recorded at the approximate centre of the specimen and at mid-height at the free edge. Positive readings indicate deflection into the furnace.

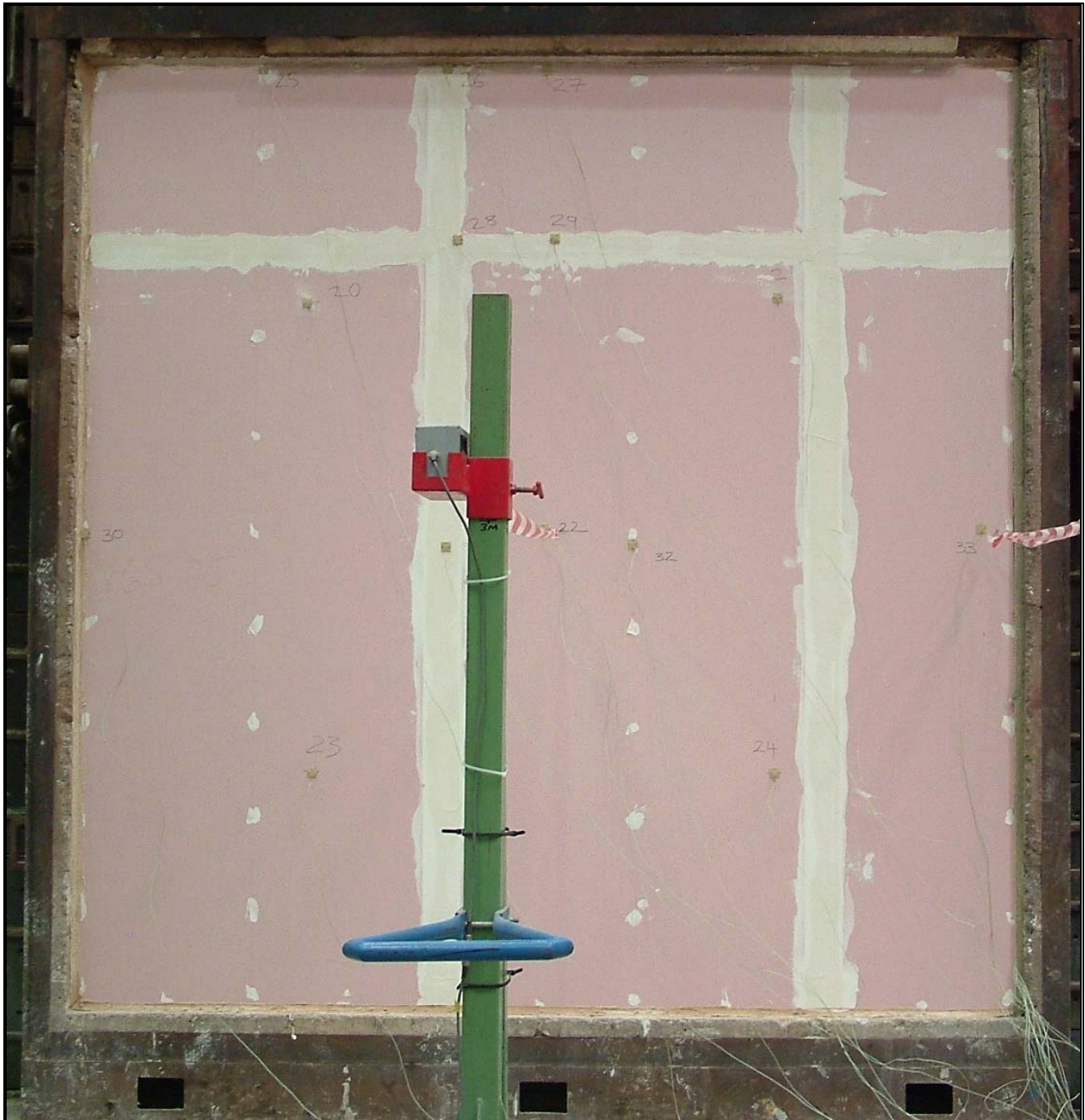
The transducers were removed after 134 minutes to protect the equipment.

## 10. PHOTOGRAPHS

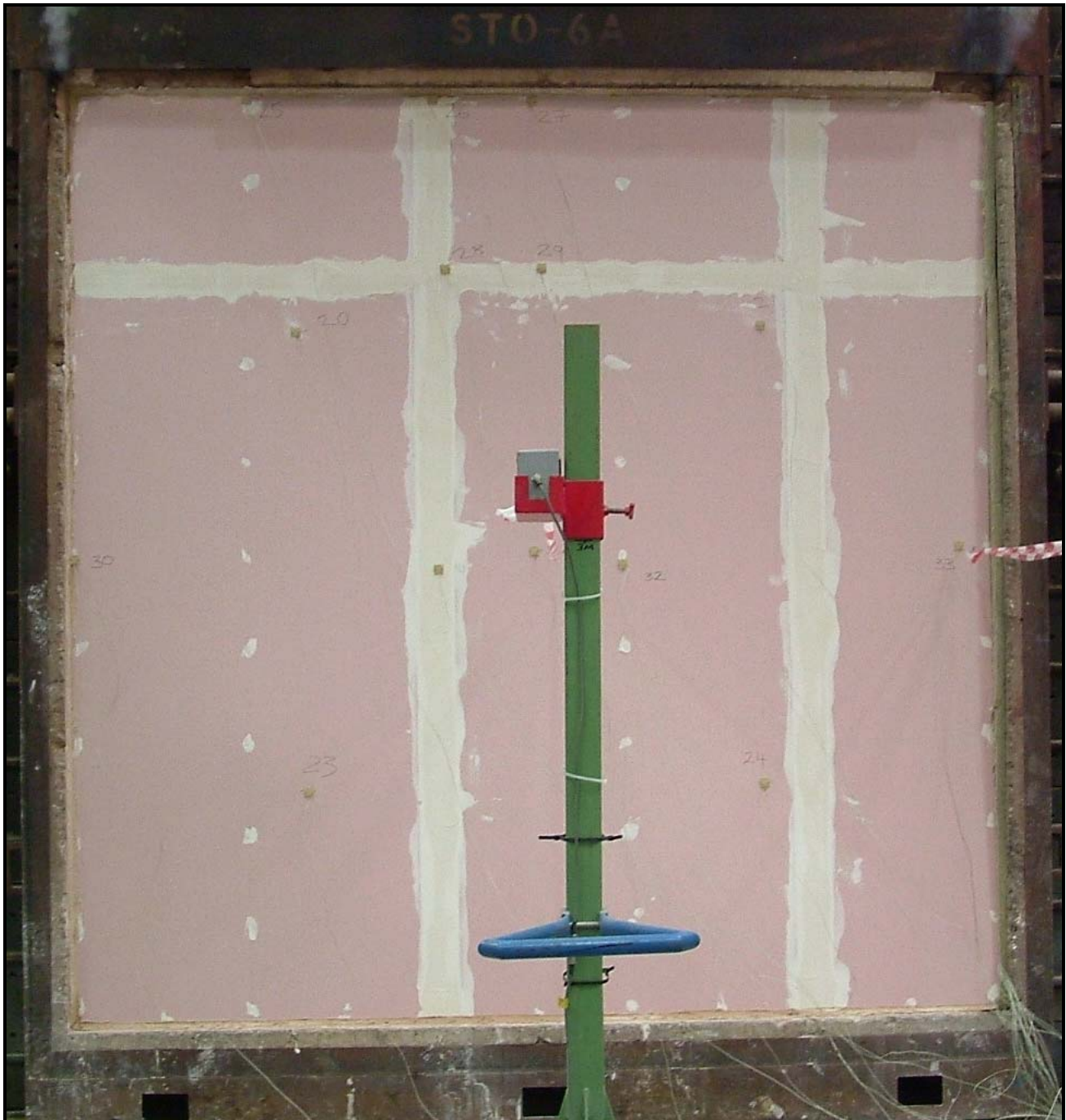
### 10.1 Exposed face prior to test



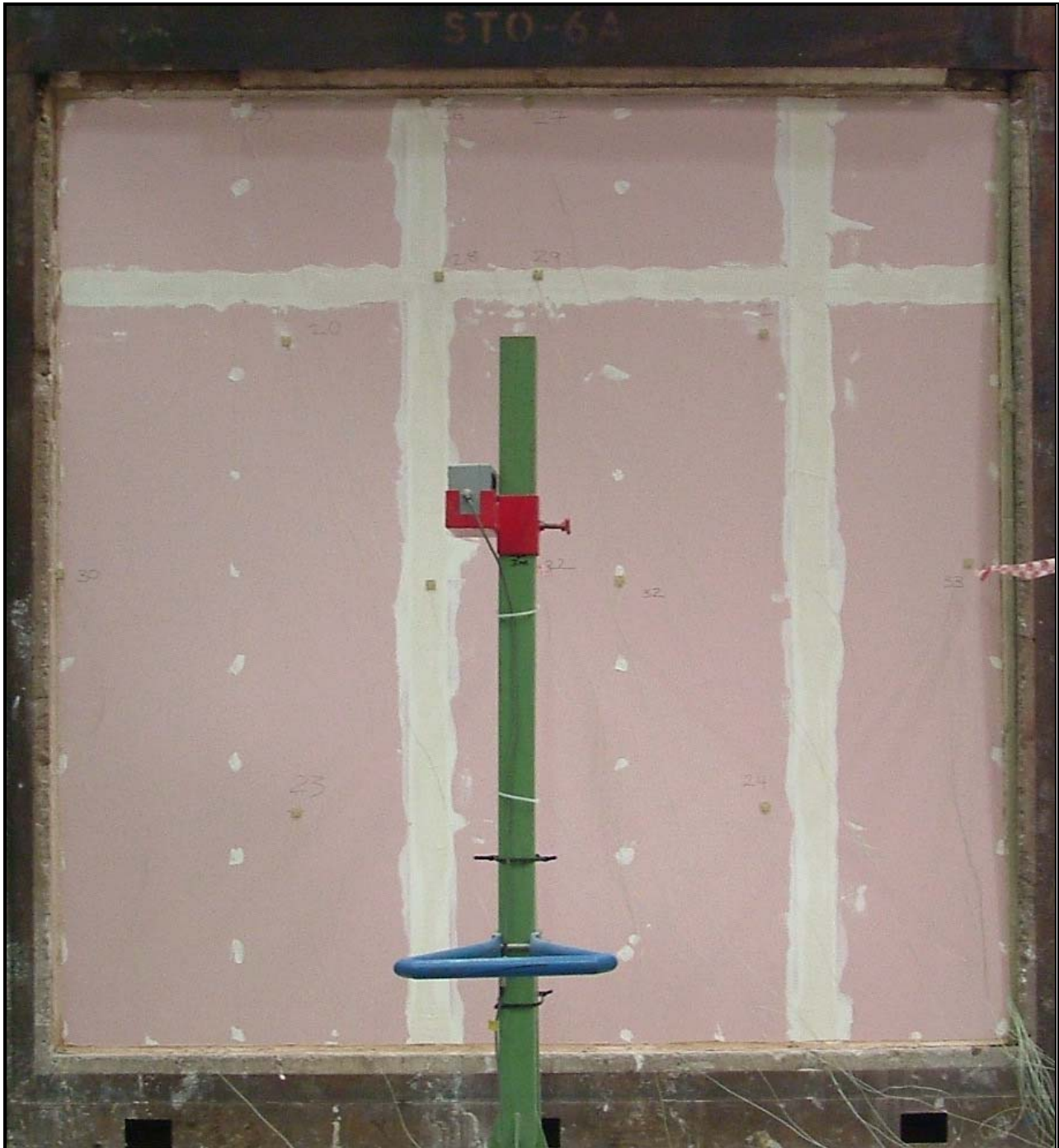
## 10.2 Unexposed face prior to test



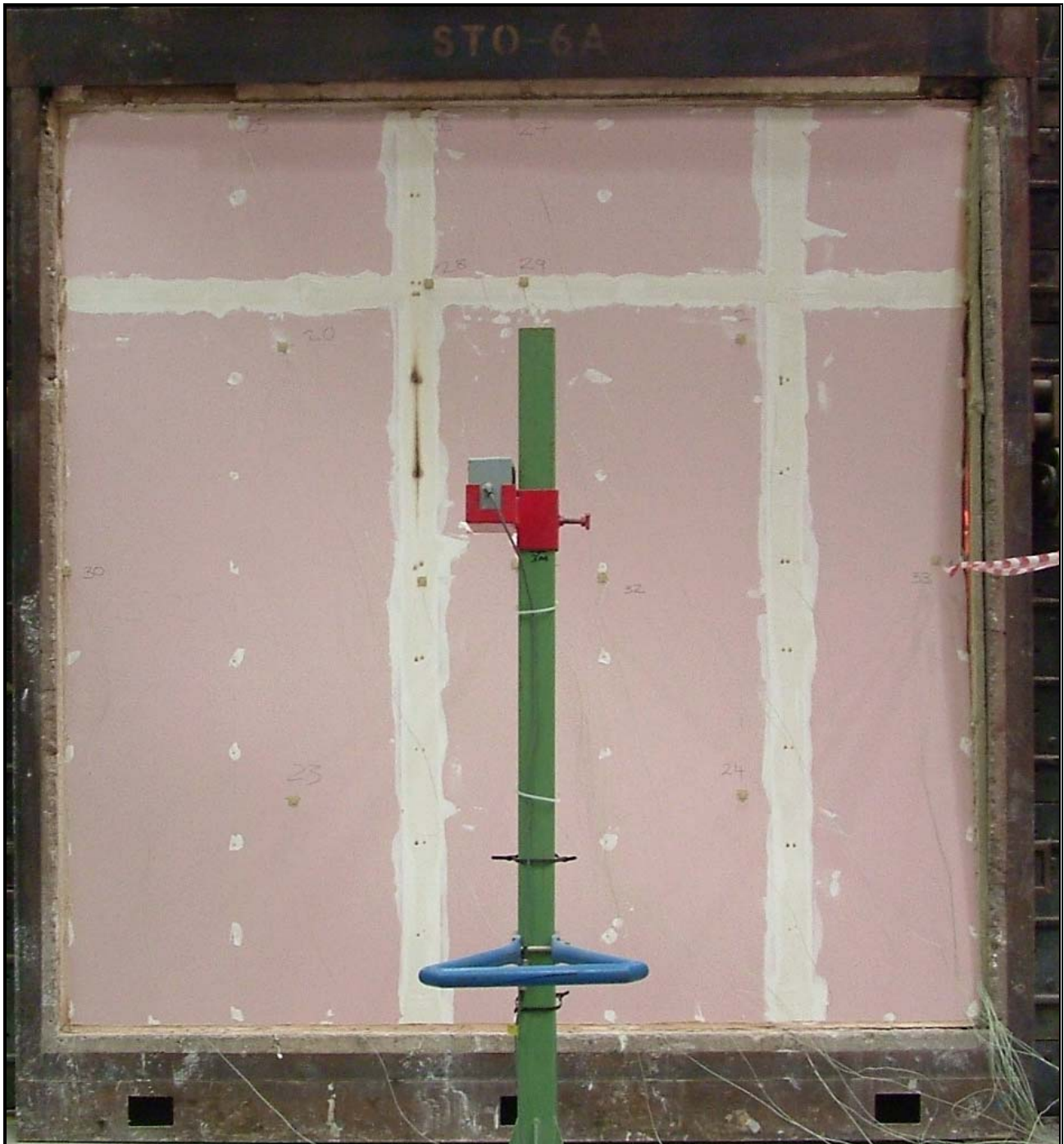
## 10.3 Unexposed face at 1 hour



## 10.4 Unexposed face at 1 hour, 30 minutes



## 10.5 Unexposed face at 2 hours



## 10.6 Unexposed face at 2 hours, 30 minutes



## 11. FIELD OF DIRECT APPLICATION

### 11.1 General

The results of the fire test are directly applicable to similar constructions where one or more of the changes listed below are made and the construction continues to comply with the appropriate design code for its stiffness and stability.

- (i) Decrease in height from 3000mm
- (ii) Increase in the thickness of the wall (minimum thickness 144mm)
- (iii) Increase thickness of component materials (minimum Gypframe stud depth 92mm, minimum Gypframe 'C' stud gauge 0.50mm)
- (iv) Decrease in the linear dimensions of the boards but not thickness ( $\leq 2400\text{mm}$  (long)  $\times \leq 1200\text{mm}$  (wide) Gyproc FireLine)
- (v) Decrease stud spacing from 600mm
- (vi) Decrease in fixing centres from 300mm
- (vii) Horizontal and vertical joints, of the type tested

### 11.2 Extension of width

The width of an identical construction may be increased as the specimen was tested at nominally 3000mm wide with one vertical edge without restraint.

### 11.3 Extension of height

The height of constructions tested at a minimum of 3000mm, maybe increased to 4000mm at the following fire resistance periods as the lateral deflection was below 100mm.

| 30 minutes                                       | 60 minutes                                       | 90 minutes                                       |
|--------------------------------------------------|--------------------------------------------------|--------------------------------------------------|
| $\leq 100\text{mm}$ , $\therefore 4000\text{mm}$ | $\leq 100\text{mm}$ , $\therefore 4000\text{mm}$ | $\leq 100\text{mm}$ , $\therefore 4000\text{mm}$ |