

BRE Global Classification Report

**Kingspan K15 insulated system with a ventilated Terracotta tile rainscreen.
Classification of fire performance in accordance with BR 135: 2013 Annex B**

Prepared for: Kingspan Insulation Ltd

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Report Number: 297211 Issue 2

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CLASSIFICATION OF FIRE PERFORMANCE IN ACCORDANCE WITH BR 135:2013 Annex B

Sponsor: Kingspan Insulation Ltd, Pembridge, Leominster, Herefordshire HR6 9LA

Prepared by: BRE Global Ltd, BRE, Bucknalls Lane, Garston, Watford, WD25 9XX, England

Product name: Kingspan K15 insulated system with a ventilated terracotta rain screen

Classification report No.: 297211

Issue number: 2

Date of issue: 3rd July 2018

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1 Introduction

This report presents the classification of the system detailed in section 2. The classification is carried out in accordance with the procedures given in BR 135 – ‘Fire performance of external thermal insulation for walls of multi-storey buildings’, Third edition, Annex B 2013. This classification should be read in conjunction with this document and the associated test reports referenced in section 4.

2 Details of the Classified Product

2.1 Description of substrate

The test specimen was installed onto face 1 of the BRE Global External Cladding Test Facility. This is a multi-faced test facility constructed from steel, the outside to which the cladding system was affixed.

2.2 Description of product

Full details of the system specification and installation details have been provided by the client and are summarised in the following section. The system, as built, comprised of:

- Double layer of 12.5mm Gyproc plasterboard
- 150mm steel frame
- 12mm cement particle board (Versapanel manufactured by Euroform products)
- Aluminium top hat supports
- Aluminium helping hand brackets
- AIM VRB plus firebreaks. 2 x FF102 6.0 x 75 x 1000mm horizontal intumescent expanding fire break fixed to a stone wool batt forming a 1000mm x 150mm x 195mm firebreak
- 2400mm x 1200mm x 140mm Kingspan K15 Insulation Board
- 580mm x 250mm x 30mm ArGeTon Tampa terracotta tiles.

Further detail of the composition of the wall is given below:

A sectional steel frame system (SFS) was installed between the floor slab hangers on the main cladding wall 1, with horizontal base and head tracks fixed to the steel substrate. Vertical rails were installed at nominal 600mm centres to the steel frame. A double layer of 12.5mm plasterboard was installed on the rear of the SFS and a single layer of cement particle board was fixed to the front of the SFS. The build-up of the cladding system is shown in Figures 1 to 5, drawings supplied by the sponsor.

An array of aluminium helping hand brackets were manually fixed to the aluminium top hats using self-drilling fixfast DF3-SS5.5x35 Grade A2 (see Figure 3). A single layer of 140mm Kingspan K15 insulation board was mechanically attached to the sheathing board with metal (197mm long) and plastic (160mm long) EJOT insulation screws. The insulation board was pushed over the helping hand brackets through pre-cut slots in the insulation boards.



Three horizontal ventilated fire breaks, AIM VRB plus firebreaks (2 x FF102 6.0 x 75 x 1000mm horizontal intumescent expanding fire break fixed to a stone wool batt forming a 1000mm x 150mm x 195mm firebreak) were sealed against sheathing board in a continuous strip and any gaps sealed between them and the insulation board with “UF” jointing tape.

Stone wool fire barriers (75mm thick) were installed between the sheathing board and terracotta tiles on both sides and across the top of the hearth.

An array of back to back stainless-steel angles (T) bolted together (vertical carrier rails) were fixed to the helping hand brackets with both L and T aluminium brackets used. A single layer of 30mm ArGeTon Tampa terracotta tiling was attached to the carrier rails using ArGeTon Tampa clips and the helping hand brackets.

2.3 Installation of Specimen

All test materials were supplied and installed by the sponsor. BRE Global were not involved in the sample selection process and therefore cannot comment upon the relationship between samples supplied for test and the product supplied to market.



3 Product Specification

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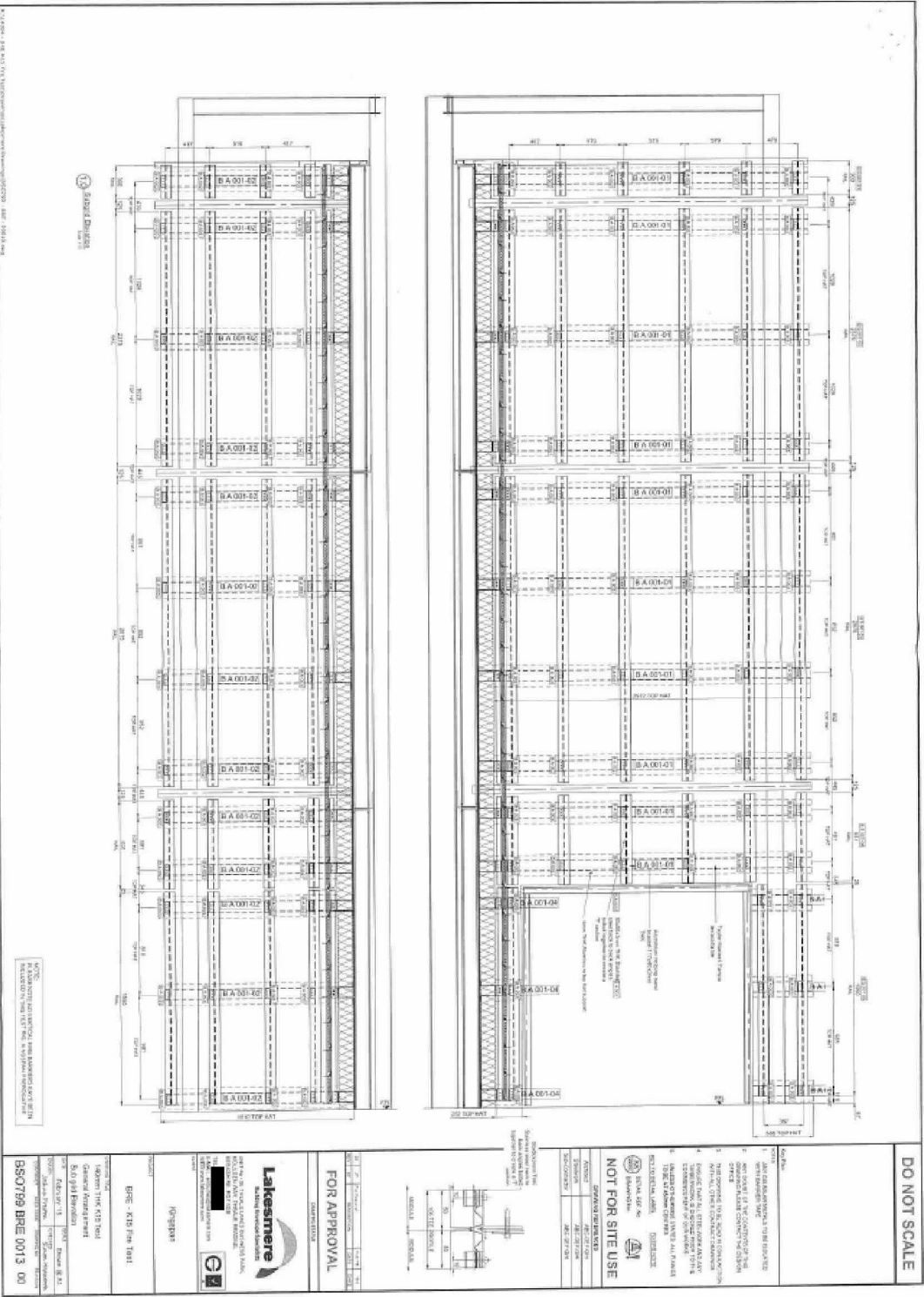


Figure 1. Construction of the system showing the layout of the structural steel frame

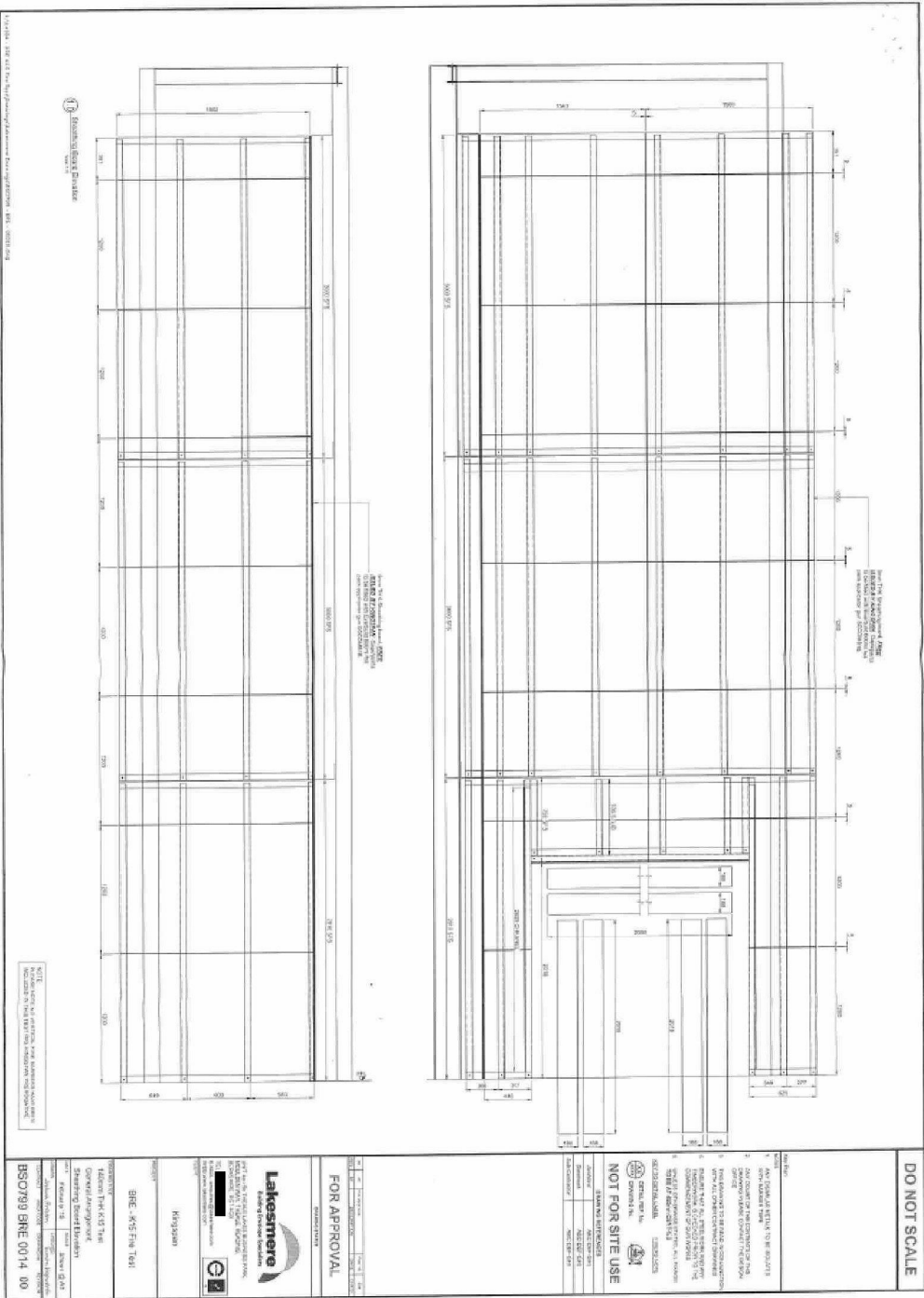


Figure 2. Construction of the system showing the layout of the cement particle sheathing board

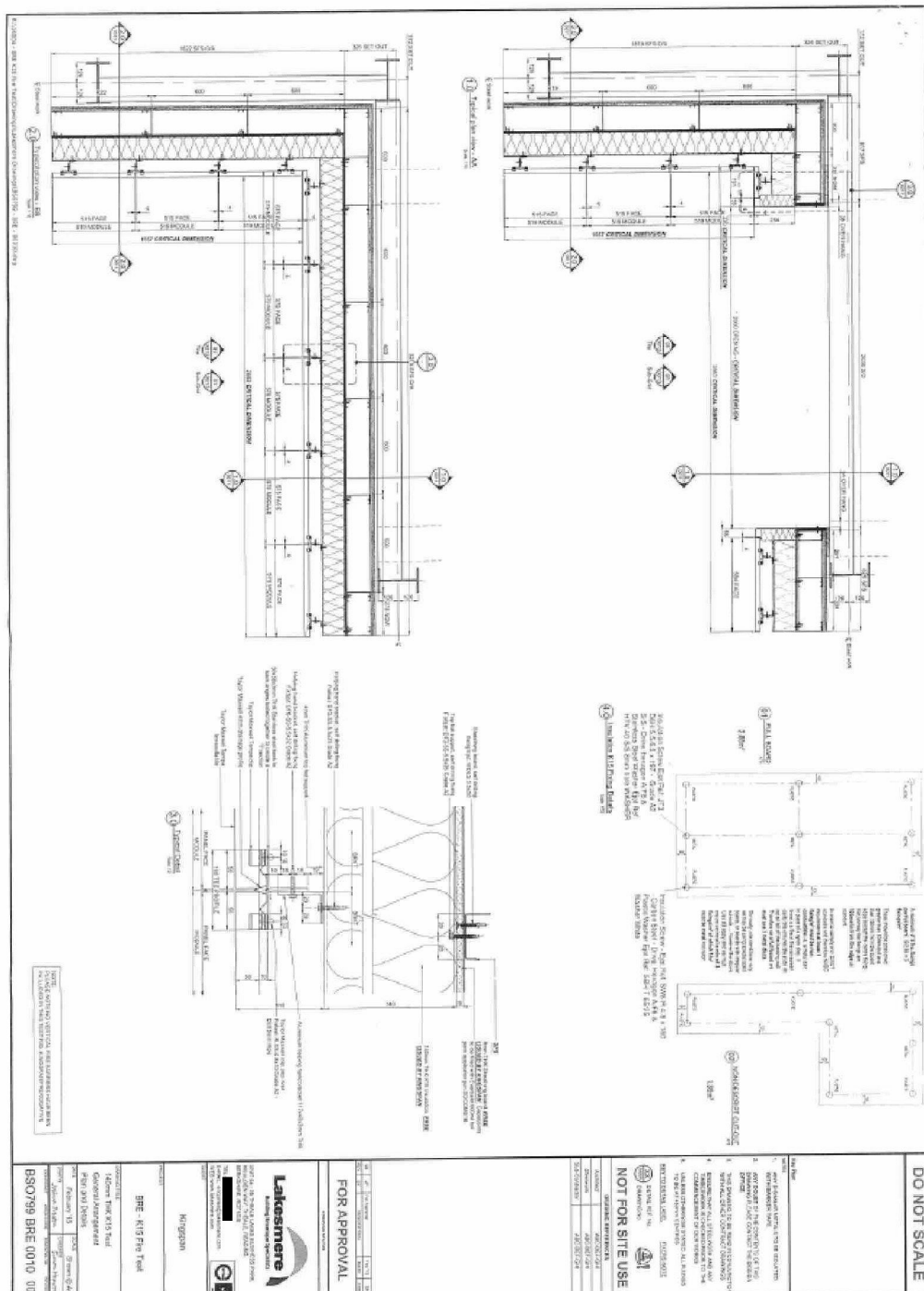


Figure 3. Plan section of the system showing the key layers of the cladding system

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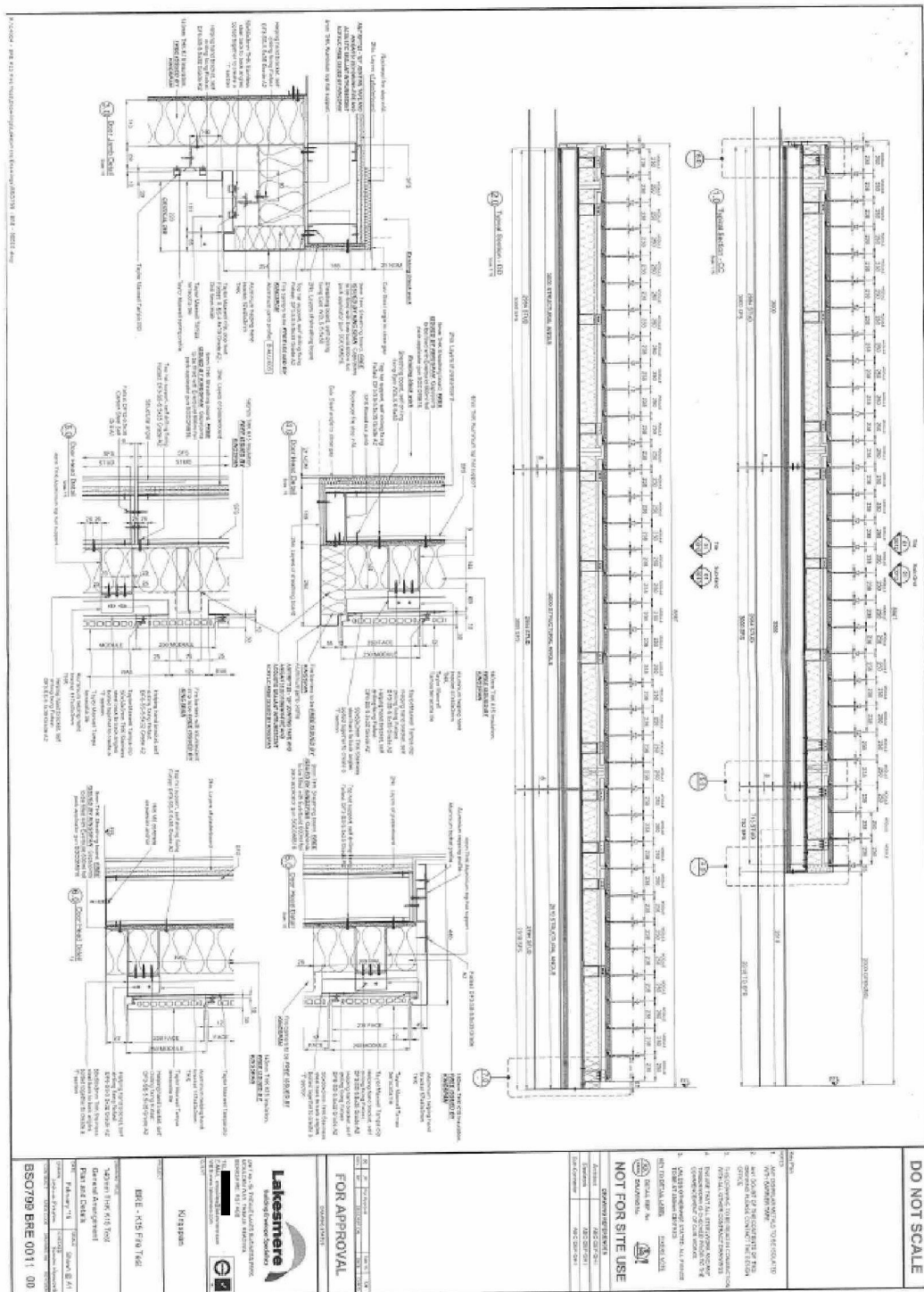


Figure 4. Vertical section of the system showing the key layers of the cladding system

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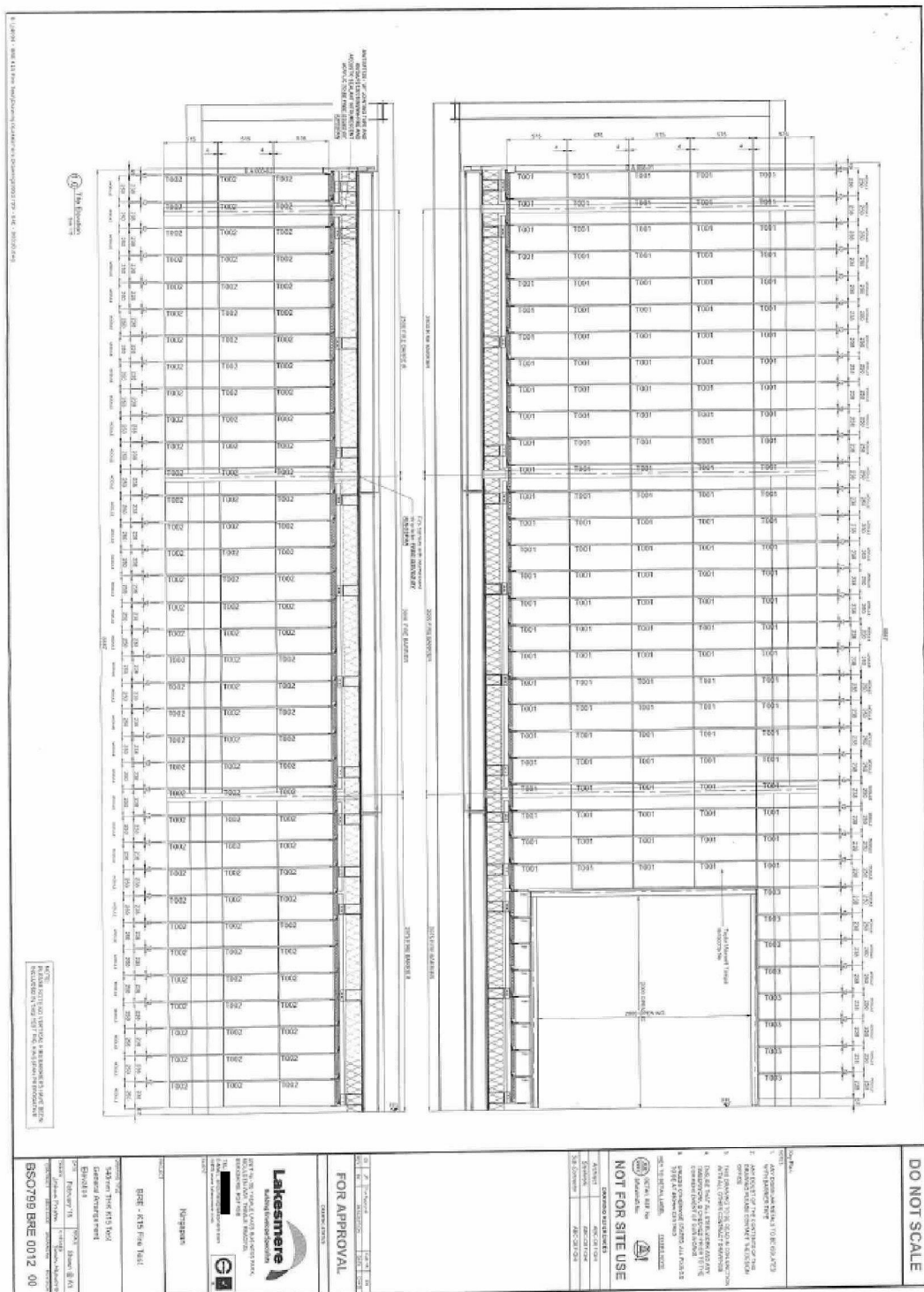


Figure 5. Construction of the system showing the layout of the terracotta tiles



4 Supporting Evidence

4.1 Test reports

Name of Laboratory	Name of sponsor	Test reports/extended application report Nos.	Test method / extended application rules & date
BRE Global, BRE	Kingspan Insulation Limited	Test report 303930 issue 3	BS 8414-2: 2005

4.2 Test results

Test method	Parameter	No. tests	Results	
			Fire spread test result time, t _s (min)	Compliance with parameters in Annex B BR135:2013
BS 8414-2: 2005	External fire spread	1	>15 minutes	Compliant
	Cavity behind rainscreen (cavity 1)		>15 minutes	Compliant
	Internal fire spread Insulation layer		>15 minutes	Compliant
	Cavity formed by Steel frame (cavity 2)		>15 minutes	Compliant
	Internal fire spread Burn through		>15 minutes	Compliant



4.3 Mechanical Performance

The system was tested for the full 60-minute test duration.

Flaming was observed within the insulation to approximately 3.5m above the top of the hearth after the crib was extinguished reaching the fire barrier at the second level of the system.

There was heat damage to the majority of the tiles between the first and second level fire breaks on the main face of the wall, and there was slight damage to the tiles above the second level fire break.

ArGeTon Tampa terracotta rain screen panels began to detach from the sample (main face) at 15:27 (minutes:seconds) and this continued to 28:22 (minutes:seconds) from ignition of crib.

The hearth surround detached from the sample at 7:55 (minutes:seconds) after igniting the crib.



5 Classification and field of application

5.1 Reference of classification

This classification has been carried out in accordance with Annex B of BR 135 – 'Fire performance of external thermal insulation for walls of multi-storey buildings.' Third Edition 2013.

5.2 Classification

The system described in this classification report has been tested and met the performance criteria set in Annex B of BR 135:2013.

5.3 Field of application

This classification is valid only for the system as installed and detailed in Section 2 of this classification report and the associated details found in the related test reports, referenced in Section 4.



6 Limitations

This classification document does not represent type approval or certification of the product.

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 and classification reports over five 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 or classification to ensure that they are consistent with current practices, and if required may endorse the report.

This classification report is issue 2 of report 297211. This report contains up issued drawings included at the client's request. Classification report 297211 issue 1 dated 21st September 2015 has been withdrawn from the date of this report.