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**Agrément Certificate**  
**15/5269**  
**Product Sheet 1**

**RAISED LOFT FLOORING SYSTEM**

**STOREFLOOR**

This Agrément Certificate Product Sheet<sup>(1)</sup> relates to StoreFloor<sup>(2)</sup>, for use as a raised loft flooring system to provide space for insulation materials.

- (1) Hereinafter referred to as 'Certificate'.
- (2) StoreFloor is a registered trademark.

**CERTIFICATION INCLUDES:**

- factors relating to compliance with Building Regulations where applicable
- factors relating to additional non-regulatory information where applicable
- independently verified technical specification
- assessment criteria and technical investigations
- design considerations
- installation guidance
- regular surveillance of production
- formal three-yearly review.



**KEY FACTORS ASSESSED**

**Structural performance** — loft floors incorporating the system can provide adequate strength and stiffness to sustain the dead and imposed floor loads (see section 6).

**Thermal insulation** — loft floors incorporating the system can provide sufficient space to accommodate insulation material to meet the requirements of the national Building Regulations (see section 7).

**Ventilation and condensation risk** — ventilated lofts can minimise the risk of condensation (see section 8).

**Durability** — loft floors fitted with the system will have a life comparable to other structural elements (see section 10).

The BBA has awarded this Certificate to the company named above for the system described herein. This system has been assessed by the BBA as being fit for its intended use provided it is installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

Simon Wroe  
Head of Approvals — Engineering

Claire Curtis-Thomas  
Chief Executive

Date of First issue: 17 February 2016

*The BBA is a UKAS accredited certification body — Number 113. The schedule of the current scope of accreditation for product certification is available in pdf format via the UKAS link on the BBA website at [www.bbacerts.co.uk](http://www.bbacerts.co.uk)*

*Readers are advised to check the validity and latest issue number of this Agrément Certificate by either referring to the BBA website or contacting the BBA direct.*

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# Regulations

In the opinion of the BBA, StoreFloor, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements of the following Building Regulations (the presence of a UK map indicates that the subject is related to the Building Regulations in the region or regions of the UK depicted):



## The Building Regulations 2010 (England and Wales) (as amended)

|              |    |  |
|--------------|----|--|
| Requirement: | A1 | Loading  |
| Comment:     |    | The system will have sufficient strength and stiffness to sustain and transmit dead and imposed loads to the supporting structures when designed in accordance with section 6 of this Certificate. |
| Regulation:  | 7  | Materials and workmanship  |
| Comment:     |    | The system is acceptable. See section 10 and the <i>Installation</i> part of this Certificate.   |



## The Building (Scotland) Regulations 2004 (as amended)

|             |           |  |
|-------------|-----------|--|
| Regulation: | 8(1)      | Durability, workmanship and fitness of materials   |
| Comment:    |           | The system is acceptable. See section 10 and the <i>Installation</i> part of this Certificate.   |
| Regulation: | 9         | Building standards applicable to construction  |
| Standard:   | 1.1(a)    | Structure  |
| Comment:    |           | The system will have sufficient strength and stiffness, with reference to clauses 1.1.1 <sup>(1)</sup> to 1.1.4 <sup>(1)</sup> , when designed in accordance with section 6 of this Certificate.   |
| Standard:   | 7.1(a)(b) | Statement of sustainability  |
| Comment:    |           | The system can contribute to satisfying the relevant requirements of Regulation 9, Standards 1 to 6, and therefore will contribute to a construction meeting a bronze level of sustainability as defined in this Standard.<br>(1) Technical Handbook (Domestic). |



## The Building Regulations (Northern Ireland) 2012 (as amended)

|             |    |  |
|-------------|----|--|
| Regulation: | 23 | Fitness of materials and workmanship   |
| Comment:    |    | The system is acceptable. See section 10 and the <i>Installation</i> part of this Certificate.   |
| Regulation: | 30 | Stability  |
| Comment:    |    | Loft floors incorporating the system can be designed to sustain and transmit dead and imposed loads to the supporting structures. See section 6 of this Certificate. |

## Construction (Design and Management) Regulations 2015

## Construction (Design and Management) Regulations (Northern Ireland) 2007

Information in this Certificate may assist the client, Principal Designer/CDM co-ordinator, designer and contractors to address their obligations under these Regulations.

See section: 3 *Delivery and site handling* (3.3) of this Certificate.

# Technical Specification

## 1 Description

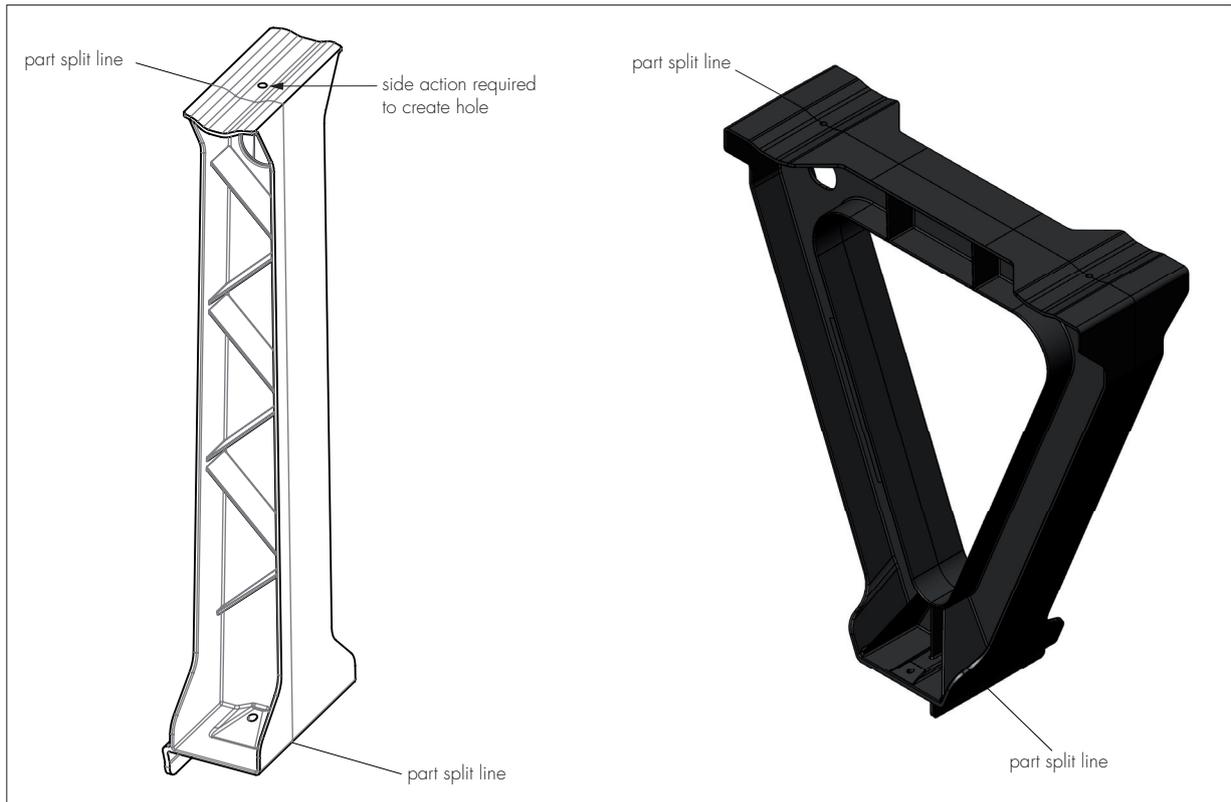
1.1 StoreFloor is a raised loft flooring system designed to provide sufficient space for insulation materials. The system comprises lightweight galvanized steel Cross-Beams and plastic support brackets (see Figure 1).

Figure 1 StoreFloor system



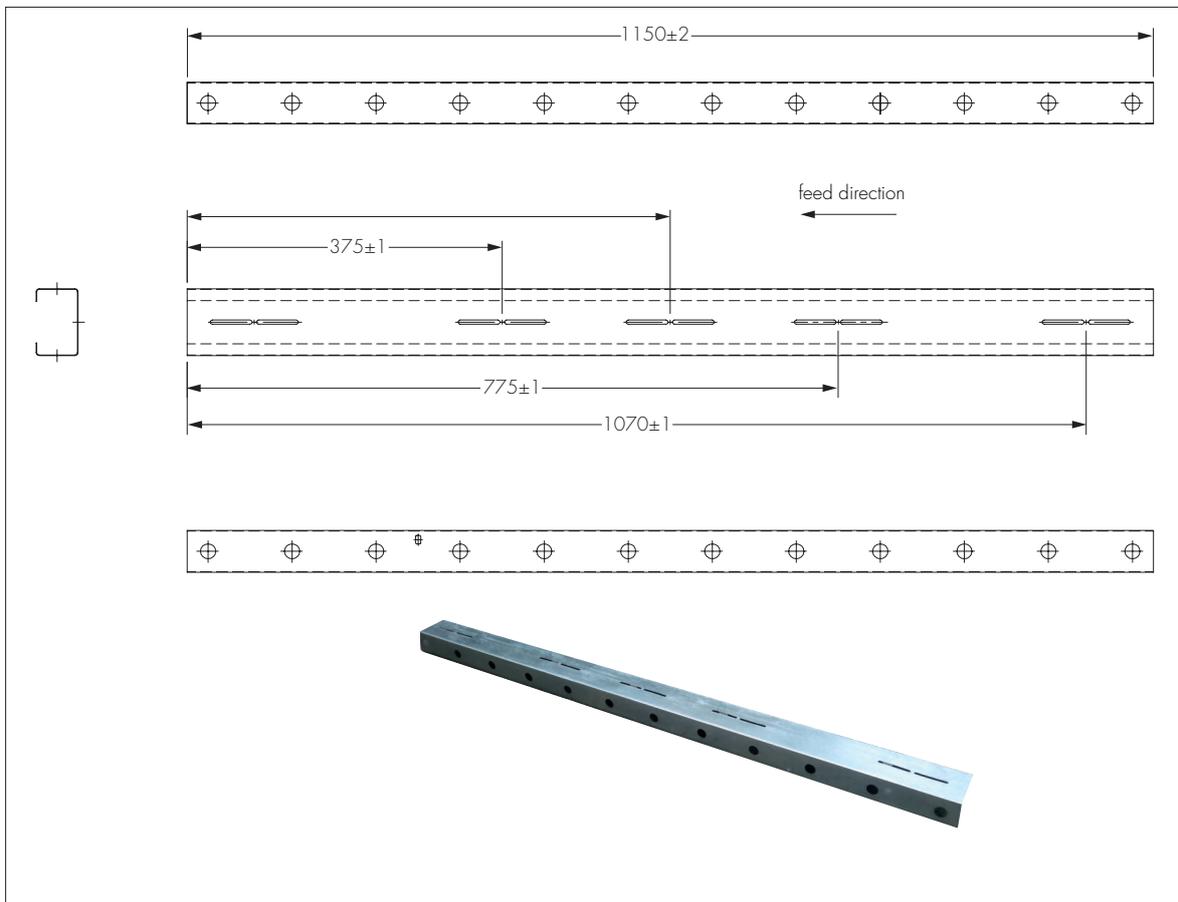
1.2 The Tri-Supports and Uni-Supports are manufactured from nylon or polypropylene, are 279 mm in height and incorporate fixing holes at the base and top (see Figure 2).

Figure 2 Detail of Uni-Supports and Tri-Supports



1.3 The lightweight galvanized steel (grade S280 GD + Z140 NA-C to BS EN 10346 : 2015) C-section Cross-Beams are available in three lengths: 1150 mm, 1750 mm and 2350 mm. The top of the beam incorporates slots, 50 mm by 18 mm, and 18 mm diameter holes are provided at 100 mm centres on each side face (see Figure 3).

Figure 3 Detail of steel Cross-Beams



1.4 Galvanized steel wood screws, 4 mm diameter by 40 mm long, are used to fix the Supports to the supporting loft floor joists and to secure the Cross-Beams to the Supports.

1.5 Ancillary items used with StoreFloor to complete the construction, but outside the scope of this Certificate, include:

- loft floor boards – typically tongue-and-groove chipboard panels, 1220 mm by 235 mm by 18 mm
- insulation material, such as mineral wool quilts, etc
- screws to secure the boards to the Cross-Beam.

## 2 Manufacture

2.1 The Uni-Supports and Tri-Supports are manufactured by injection moulding in polypropylene or nylon. The galvanized mild steel Cross-Beams are cold roll-formed by the steel manufacturer.

2.2 As part of the assessment and ongoing surveillance of system quality, the BBA has:

- agreed with the manufacturers the quality control procedures and product testing to be undertaken
- assessed and agreed the quality control operated over batches of incoming materials
- monitored the production process and verified that it is in accordance with the documented process
- evaluated the process for management of non-conformities
- checked that equipment has been properly tested and calibrated
- undertaken to carry out the above measures on a regular basis through a surveillance process, to verify that the specifications and quality control operated by the manufacturers are being maintained.

2.3 The management systems of the manufacturers supplying the metal and plastic components have been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2008.

2.4 The system is manufactured, marketed and distributed in the UK.

## 3 Delivery and site handling

3.1 The Uni-Supports and Tri-Supports are supplied in boxes and the lightweight galvanized steel Cross-Beams are delivered strapped in bundles.

3.2 Where temporary storage of the components is necessary, items should be stored inside, in a dry environment.

3.3 Due care is required during delivery of the system into lofts through the loft entrance, and during installation.

# Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on StoreFloor.

## Design Considerations

### 4 General

4.1 StoreFloor is satisfactory for use in trussed roofs or traditional cut-timber pitched roofs. The existing loft floor joists must be a minimum of 35 mm thick. The system is suitable for loft floors in excess of 1.2 m by 1.2 m.

4.2 The galvanized steel Cross-Beams can span a maximum length of 1150 mm and the maximum spacing between parallel steel Cross-Beams is 610 mm to suit the typical length of 1220 mm loft floor boards.

4.3 StoreFloor is satisfactory for raising a loft floor to provide extra space to accommodate uncompressed insulation.

4.4 The condition and loading capacity of supporting structures (eg existing loft floor joists) must be taken into account when considering the overall capacity of the installation.

4.5 If required, U value calculations for individual cases should be performed by appropriately-qualified individuals.

4.6 To help minimise the risk of condensation, ventilation should be well maintained in the loft and under the loft floorboards.

### 5 Practicability of installation

The system is designed to be installed by a competent general builder, or a contractor, experienced with this type of system.

### 6 Structural performance



6.1 Correctly installed, StoreFloor can meet the requirements of BS EN 1990 : 2002, BS EN 1991-1-1 : 2002 and BS 6399-1 : 1996.

6.2 The maximum recommended loading on the system is restricted by the usual capacity of the loft floor joists to 0.25 kN·m<sup>-2</sup>, plus infrequent access of the loft by individuals. In order to utilise this capacity, Uni-Supports must be installed at intermediate locations on the loft floor joists.

6.3 Tests carried out on StoreFloor have determined that the system can adequately support design loads of  $1.5 \text{ kN}\cdot\text{m}^{-2}$ . Therefore, it is essential that a suitably qualified engineer is engaged to confirm that the loft joists are adequate for loads in excess of  $0.25 \text{ kN}\cdot\text{m}^{-2}$ .

6.4 It is good practice to avoid excessive concentrated loads which could result in excessive deflections of the loft floor.

6.5 The system has resistance against small lateral loads. However, it is recommended that at least one lateral restraint is provided in each direction for the completed installation.

6.6 The system has adequate resistance to domestic impact loads.

## 7 Thermal insulation

7.1 Thermal insulation does not form part of the assessed system and is therefore outside the scope of this Certificate. Adequate provision for installation of insulation in the loft should be considered by a competent individual.

7.2 The effect of thermal bridging from the StoreFloor components is not significant and so can be ignored when calculating the U value of roof constructions incorporating the system. Therefore, installing StoreFloor in an existing loft will not affect adversely the roof's U values. The overall roof U value will depend on the existing insulation and timber ceiling joist spacing and new insulation material above ceiling joists.

7.3 The requirements of the national Building Regulations for roofs is given in Table 1.

| Roof                                   | England | Wales | Scotland | Northern Ireland |
|--|---------|-------|----------|------------------|
| Existing building with loft insulation | 0.16    | 0.16  | 0.13     | 0.16             |
| New dwelling                           | 0.13    | 0.13  | 0.11     | 0.13             |

7.4 The system provides extra space of up to 230 mm above the existing ceiling joist to allow further insulation to be accommodated in the loft, under the floorboards. The extra thermal resistance is dependent on the insulation material used. For quilt insulation with a thermal conductivity of  $0.037 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$ , the extra 230 mm together with the existing insulation (minimum 100 mm high) between joists at spacings of 600 mm, should meet the minimum U value requirement of  $0.11 \text{ W}\cdot\text{m}^{-2}\cdot\text{K}^{-1}$  specified for lofts in the national Building Regulations for new dwellings (provided the insulation is enclosed around the Uni- and Tri-Supports and that no nominal cavities bridge the additional insulation layer).

## 8 Ventilation and condensation risk

8.1 It is essential to keep an airspace between the underside of the loft floor boards and the top of the insulation. To ensure adequate ventilation of the airspace, it must be kept open at opposite sides and not blocked or sealed in any way. A 50 mm gap is required to prevent the risk of interstitial condensation.

8.2 Adequate ventilation in a cold loft space is required.

## 9 Maintenance

Maintenance is not required for the Cross-Beams and Supports.

## 10 Durability

 The system will have a service life of not less than 60 years provided it is installed using the Certificate holder's instructions and the details given in this Certificate, and that the loft space has adequate ventilation.

## 11 Reuse and recyclability

The system contains polypropylene and nylon supports and galvanized steel beams, all of which can be recycled.

# Installation

## 12 General

12.1 Care must be taken when using a ladder to access a loft space. Walking boards are required to provide access during the installation of the system.

12.2 The sides at loft entrances are to be made good. For more information, reference should be made to the Certificate holder's installation manual.

## 13 Procedure

13.1 The loft area should be clear and free of objects. If insulation is not already in place, insulation quilt is laid between, and up to the top of, the loft floor joists before starting installation.

13.2 The Tri-Supports are positioned at 610 mm intervals along the joists, and attached to the joists with two 4 mm by 40 mm galvanized steel wood screws. In the perpendicular direction, the distance between supports on parallel joists must be no greater than 1200 mm and the supports must be aligned (see Figures 4 and 5).

Figure 4 Arrangement of Tri-Supports

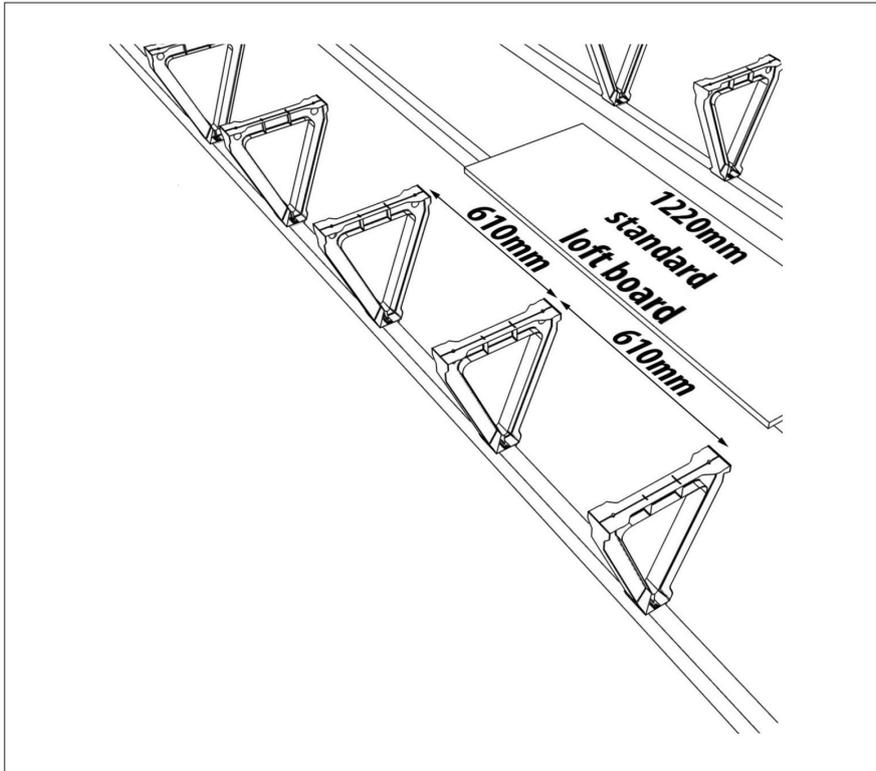


Figure 5 Fitting of Tri-Support

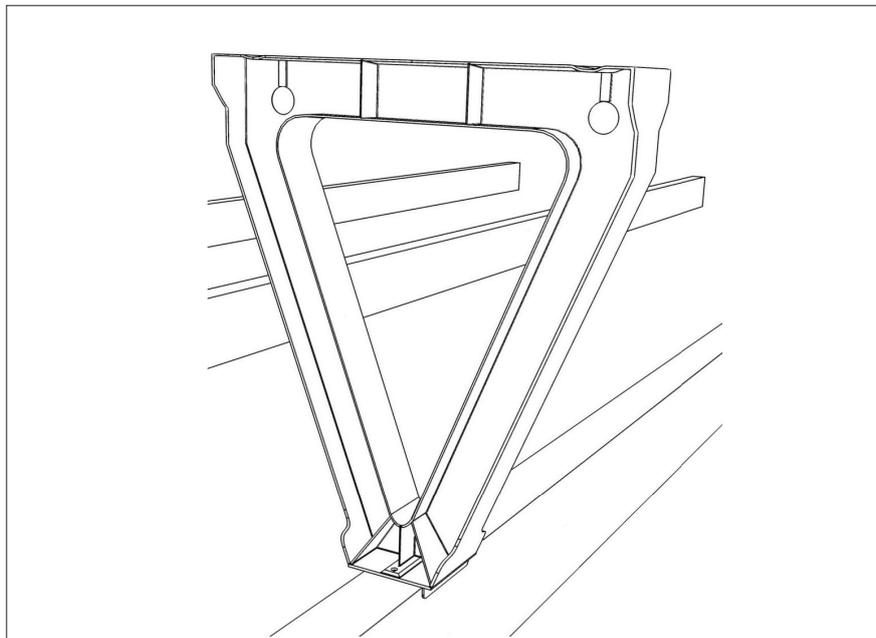


Figure 6 Fitting of Cross-Beam

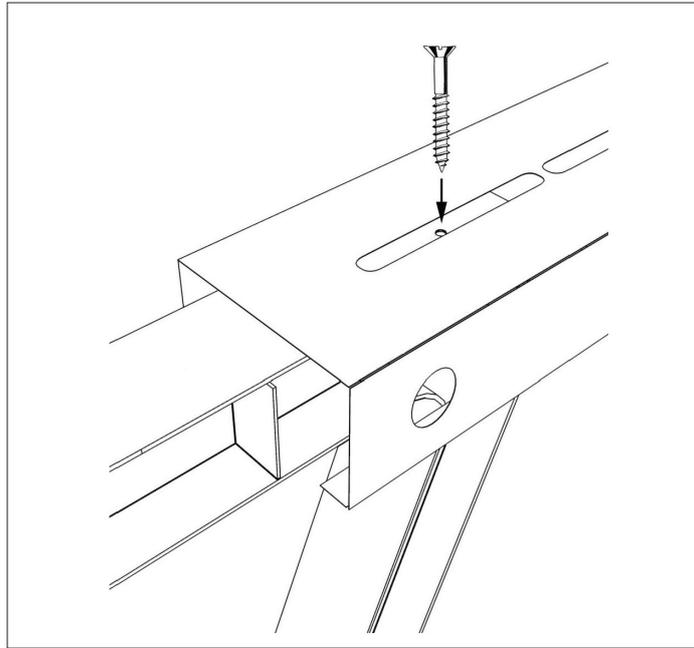


Figure 7 Fitting of Uni-Support

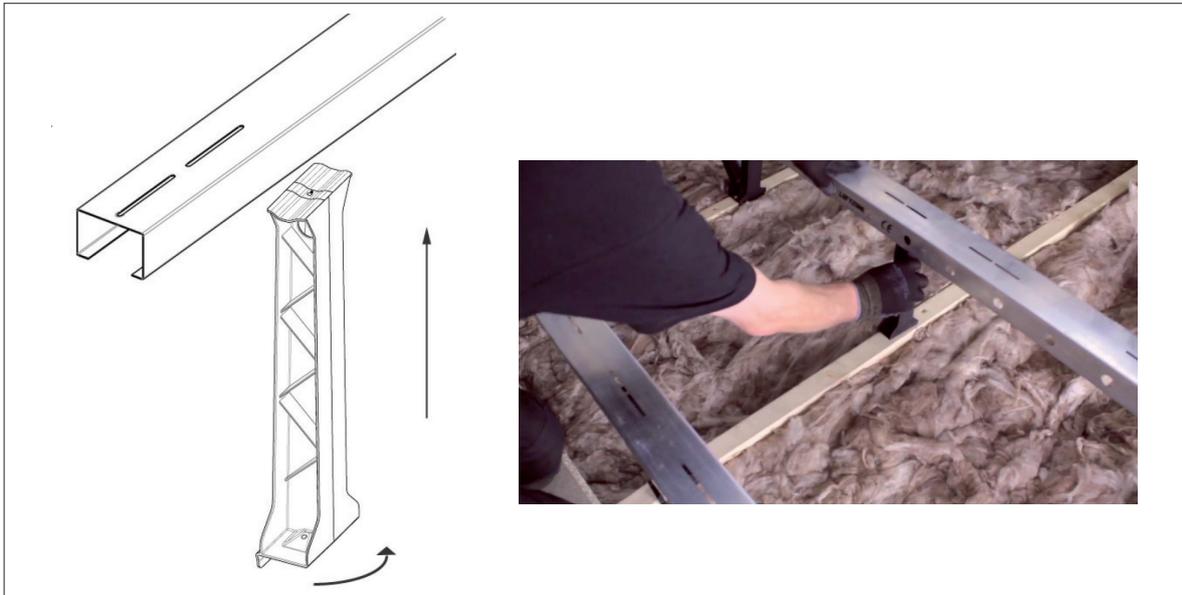
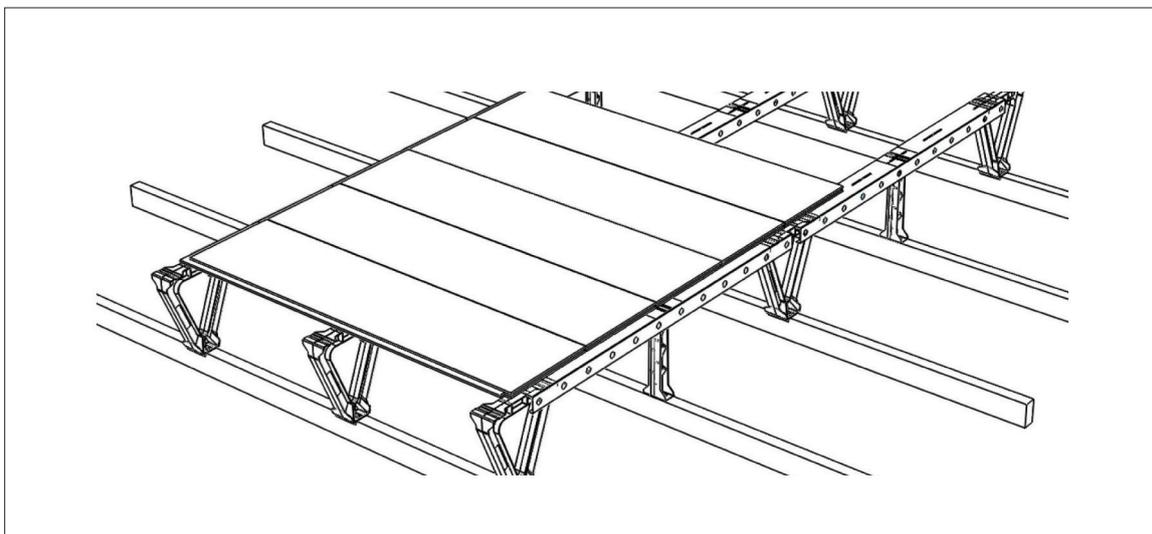


Figure 8 Fitting of ceiling floorboards



13.3 The Cross-Beams are slid into position onto the Tri-Supports and secured using wood screws via the slots in the beams and the pre-drilled holes in the Tri-Supports (see Figures 5 and 6). The inclusion of this hole and slot feature makes it possible to accommodate slight variations in the spacing of loft floor joists. This process is continued to cover the extent of the required finished floor deck.

13.4 Uni-Supports are installed on intermediate loft floor joists. Each support is positioned into the Cross-Beam from beneath, and then rotated through 90 degrees to lock it into position. It should then be screwed to the loft floor joist using one wood screw, and to the Cross-Beam with one self-tapping screw, into the pre-drilled screw hole in the Uni-Support (see Figure 7).

13.5 Once the Cross-Beams and Supports have been fitted, the insulation should be laid, leaving a gap of 50 mm below the underside of the loft floor boards. The insulation should fit tightly around the supports. Care should be taken to ensure that there are no gaps between adjacent strips of insulation.

13.6 The loft floorboards are then laid directly onto the Cross-Beams, staggered if possible, and secured with self-tapping screws (see Figure 8).

## Technical Investigations

### 14 Tests and Investigations

14.1 Load tests were undertaken to verify compliance with BS EN 1991-1-1 : 2002 and BS 6399-1 : 1996.

14.2 The hygrothermal performance of the system was assessed in accordance with BS EN ISO 13788 : 2012 and BS 5250 : 2011.

14.3 The thermal performance of the system using conventional insulation materials was evaluated.

14.4 A test report for the durability of StoreFloor was assessed.

14.5 A user survey was carried out to establish performance in use.

14.6 The manufacturing process was evaluated, including the methods adopted for quality control, and details were obtained of the quality and composition of materials used.

## Bibliography

BS 5250 : 2011 *Code of practice for control of condensation in buildings*

BS 6399-1 : 1996 *Loadings for buildings — Code of practice for dead and imposed loads*

BS EN 1990 : 2002 *Eurocode — Basis of structural design*

BS EN 1991-1-1 : 2002 *Eurocode 1 — Actions on structures — General actions — Densities, self-weight, imposed loads for buildings*

BS EN 10346 : 2015 *Continuously hot-dipped coated steel flat products for cold forming — Technical delivery conditions*

BS EN ISO 9001 : 2008 *Quality management systems — Requirements*

BS EN ISO 13788 : 2012 *Hygrothermal performance of building components and building elements — Internal surface temperature to avoid critical surface humidity and interstitial condensation — Calculation methods*

## 15 Conditions

15.1 This Certificate:

- relates only to the product/system that is named and described on the front page
- is issued only to the company, firm, organisation or person named on the front page — no other company, firm, organisation or person may hold or claim that this Certificate has been issued to them
- is valid only within the UK
- has to be read, considered and used as a whole document — it may be misleading and will be incomplete to be selective
- is copyright of the BBA
- is subject to English Law.

15.2 Publications, documents, specifications, legislation, regulations, standards and the like referenced in this Certificate are those that were current and/or deemed relevant by the BBA at the date of issue or reissue of this Certificate.

15.3 This Certificate will remain valid for an unlimited period provided that the product/system and its manufacture and/or fabrication, including all related and relevant parts and processes thereof:

- are maintained at or above the levels which have been assessed and found to be satisfactory by the BBA
- continue to be checked as and when deemed appropriate by the BBA under arrangements that it will determine
- are reviewed by the BBA as and when it considers appropriate.

15.4 The BBA has used due skill, care and diligence in preparing this Certificate, but no warranty is provided.

15.5 In issuing this Certificate, the BBA is not responsible and is excluded from any liability to any company, firm, organisation or person, for any matters arising directly or indirectly from:

- the presence or absence of any patent, intellectual property or similar rights subsisting in the product/system or any other product/system
- the right of the Certificate holder to manufacture, supply, install, maintain or market the product/system
- actual installations of the product/system, including their nature, design, methods, performance, workmanship and maintenance
- any works and constructions in which the product/system is installed, including their nature, design, methods, performance, workmanship and maintenance
- any loss or damage, including personal injury, howsoever caused by the product/system, including its manufacture, supply, installation, use, maintenance and removal
- any claims by the manufacturer relating to CE marking.

15.6 Any information relating to the manufacture, supply, installation, use, maintenance and removal of this product/system which is contained or referred to in this Certificate is the minimum required to be met when the product/system is manufactured, supplied, installed, used, maintained and removed. It does not purport in any way to restate the requirements of the Health and Safety at Work etc. Act 1974, or of any other statutory, common law or other duty which may exist at the date of issue or reissue of this Certificate; nor is conformity with such information to be taken as satisfying the requirements of the 1974 Act or of any statutory, common law or other duty of care.