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BBA APPROVAL INSPECTION TESTING CERTIFICATION
TECHNICAL APPROVALS FOR CONSTRUCTION

Agrément Certificate
88/2059
Product Sheet 2

JETFLOOR SYSTEMS

JETFLOOR 2A, 2B AND LO FLOOR SYSTEMS

PRODUCT SCOPE AND SUMMARY OF CERTIFICATE

This Certificate relates to the Jetfloor 2A, 2B and Lo Floor Systems, comprising a range of prestressed concrete beams, polystyrene infill blocks, polystyrene sheets and a range of concrete and aircrete perimeter blocks for use in ground floors or garage floors.

AGRÉMENT 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 — the system has adequate strength and stiffness when designed and installed in accordance with this Certificate (see section 5).

Thermal performance — the system can provide levels of thermal insulation and airtightness which will contribute to a building meeting or satisfying the requirements of the national Building Regulations (see section 6).

Condensation risk — the system can adequately limit the risk of condensation (see section 7).

Durability — the polystyrene components will have adequate durability and will be as durable as the prestressed concrete joists (see section 11).

The BBA has awarded this Agrément 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

B C Chamberlain

G N Cooper

Date of First issue: 16 April 2010
Originally certificated on 25 November 2003

Brian Chamberlain
Head of Approvals — Engineering

Greg Cooper
Chief Executive

Certificate amended on 30 September 2015 to update front page information.

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

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, the Jetfloor 2A, 2B and Lo Floor Systems, if used in accordance with the provisions of this Certificate, will meet or contribute to meeting the relevant requirements of the following Building Regulations:

The Building Regulations 2000 (as amended) (England and Wales)

Requirement:	A1	**Loading**
Comment:		Floors incorporating the system can be designed to sustain and transmit dead and imposed floor loads to the ground. See sections 5.1 to 5.6 of this Certificate.
Requirement:	L1(a)(i)	**Conservation of fuel and power**
Comment:		The system can contribute to meeting this Requirement. See sections 6.2 to 6.5 of this Certificate.
Requirement:	Regulation 7	**Materials and workmanship**
Comment:		The system is acceptable. See sections 11.1 and 11.2 and the *Installation* part of this Certificate.

The Building (Scotland) Regulations 2004 (as amended)

Regulation:	8(1)(2)	**Fitness and durability of materials and workmanship**
Comment:		The system can contribute to a construction meeting this Regulation. See sections 10, 11.1 and 11.2 and the *Installation* part of this Certificate.
Regulation:	9	**Building standards — construction**
Standard:	1.1	Structure
Comment:		Floors incorporating the system can be designed to be capable of safely accommodating dead and imposed loads, with reference to clause 1.1.1[(1)(2)]. See sections 5.1 to 5.6 of this Certificate.
Standard:	3.15	Condensation
Comment:		The system will have a minimal risk of interstitial and surface condensation, with reference to clauses 3.15.1[(1)(2)], 3.15.3[(1)(2)] and 3.15.4[(1)(2)]. See sections 7.1 and 7.2 of this Certificate.
Standard:	6.2	Building insulation envelope
Comment:		The system can contribute to satisfying the requirements of this Standard, with reference to clauses 6.2.1[(1)(2)] to 6.2.3[(1)(2)]. See sections 6.2 to 6.5 of this Certificate.
		(1) Technical Handbook (Domestic).
		(2) Technical Handbook (Non-Domestic).

The Building Regulations (Northern Ireland) 2000 (as amended)

Regulation:	B2	**Fitness of materials and workmanship**
Comment:		The system is acceptable. See sections 11.1 and 11.2 and the *Installation* part of this Certificate.
Regulation:	B3(2)	**Suitability of certain materials**
Comment:		The system is acceptable. See section 10 of this Certificate.
Regulation:	C5	**Condensation**
Comment:		The system will have a minimal risk of interstitial condensation. See sections 7.1 and 7.2 of this Certificate.
Regulation:	D1	**Stability**
Comment:		Floors incorporating the system can be designed to sustain and transmit dead and imposed floor loads to the ground. See sections 5.1 to 5.6 of this Certificate.
Regulation:	F2(a)(i)	**Conservation measures**
Comment:		The system can satisfy the requirements of this Regulation. See sections 6.2 to 6.5 of this Certificate.

Construction (Design and Management) Regulations 2007

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

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

See sections: 1 *Description* (1.3) and 2 *Delivery and site handling* (2.2) of this Certificate.

Non-regulatory Information

NHBC Standards 2008

NHBC accepts the use of the Jetfloor 2A, 2B and Lo Floor Systems, when installed and used in accordance with this Certificate, in relation to *NHBC Standards*, Chapters 2.1 *Concrete and its reinforcement* and 5.2 *Suspended ground floors*.

General

This Certificate relates to the Jetfloor 2A, 2B and Lo Floor Systems used for constructing insulated, suspended ground floors.

Technical Specification

1 Description

1.1 The Jetfloor 2A, 2B and Lo Floor Systems comprise prestressed concrete beams, polystyrene infill blocks, polystyrene sheets, aircrete perimeter blocks, associated pins and support pins and a structural concrete layer finish.

1.2 The typical floor construction for the three systems (see Figure 1) consists of:

- Jetfloor 2A — any of the 150 mm deep beams in conjunction with the polystyrene infill block types WS25 or WR25
- Jetfloor 2B — any of the 150 mm deep beams in conjunction with the polystyrene infill block types WR20 or WS20
- Jetfloor 225 2B — the T008 beam in conjunction with the polystyrene block type WR225
- Jetfloor Lo — any of the 150 mm deep beams in conjunction with the polystyrene infill block types WS15 or WR15
- Jetfloor 225 Lo — the T008 beam in conjunction with the polystyrene block type WRD15.

1.3 The range of prestressed concrete beams is shown in Figure 2 with dimensions and weights shown in Table 1.

1.4 The beams are made with cement complying with BS EN 197-1 : 2000 and aggregates in accordance with BS EN 12620 : 2002. The beams are prestressed with indented steel wire, to BS 5896 : 1980, having a minimum tensile strength of 1670 $N \cdot mm^{-2}$.

1.5 Prestressed concrete beams I004 and RD09/RC10 are made by a horizontal slip-forming machine travelling over a long casting bed that places and compacts concrete around the pre-tensioned prestressing wires. Individual beams are cut to length when the concrete has achieved adequate strength. Quality control includes checks on quality of materials, mix proportions, cover to prestressing tendons, concrete strength and visual appearance, dimensional accuracy, stiffness and strength of the finished beams.

1.6 BT02 and T008 beams are wet-cast and compacted by vibration on a long-line bed. These beams are cast upside down.

1.7 The polystyrene infill blocks are available in types WS25, WS20, WS15, WR25, WR20 and WR15 for 150 mm deep beams and WR225 and WRD15 for the 225 mm deep beam type T008 (see Figures 1 and 3) and can be cut to suit various beam lengths.

1.8 Polystyrene sheets 40 mm and 75 mm thick are used in conjunction with concrete and aircrete perimeter blocks to provide continuous insulation cover of the floor (see Figure 1).

1.9 The polystyrene infill blocks and polystyrene sheets are manufactured using conventional moulding techniques from expandable polystyrene beads with a flame-retardant additive and have a minimum density of 18 $kg \cdot m^{-3}$.

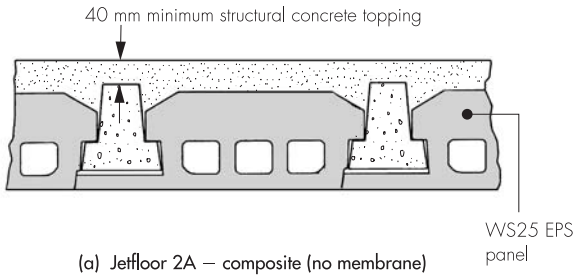
1.10 The aircrete perimeter blocks have a minimum compressive strength of 7 $N \cdot mm^{-2}$. Quality control checks are generally in accordance with BS 6073-1 : 1981 and include checks on dimensions, compressive strength and flexural strength. Typical blocks (types JB6, TS and TSN) used are shown in Figure 4.

1.11 The support pins are 2 mm in diameter, manufactured from stainless steel to BS 970-1 : 1991, and are used to support the polystyrene sheet. Other proprietary clips, as described in the Certificate holder's literature may be used, but are outside the scope of this Certificate.

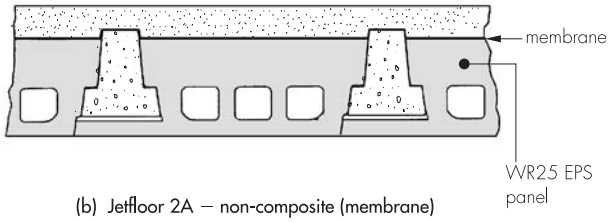
1.12 The structural concrete topping consists of a minimum 40 mm thickness (above the top of the beam) of grade RC20/25 to BS 8500-1 : 2006 with a maximum aggregate size of 20 mm, reinforced with D98 mesh to BS 4483 : 1998. Alternatively, a concrete topping can be reinforced with polypropylene fibres at a rate of 0.9 $kg \cdot m^{-3}$ and in accordance with BS 8204-1 : 1987 or BS 8204-2 : 1987.

1.13 The remaining components of the system (ie the finishes) are not included in this Certificate but must comply with the specifications given in the *Jetfloor Installation Guide* and *Technical Guidance Notes*.

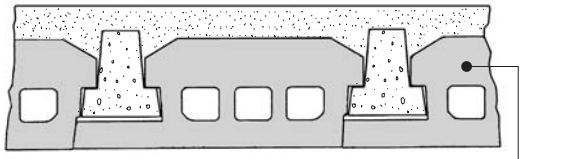
Figure 1 The Jetfloor System



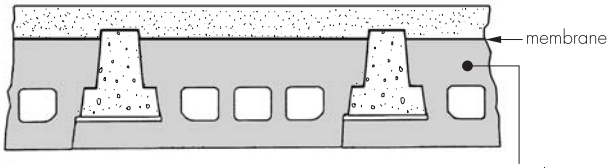
(a) Jetfloor 2A – composite (no membrane)



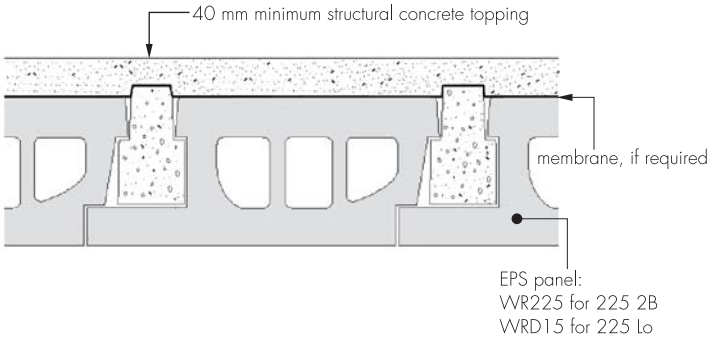
(b) Jetfloor 2A – non-composite (membrane)



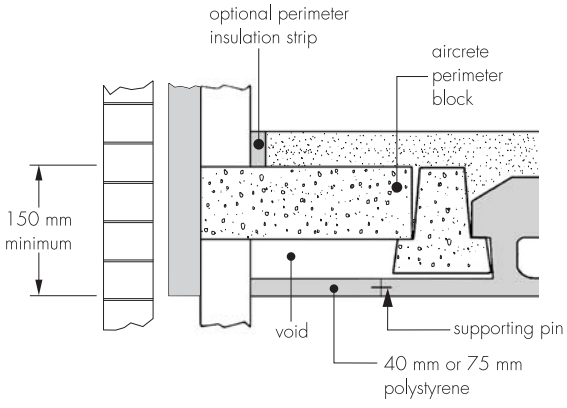
(c) Jetfloor 2B and Lo – composite (no membrane)



(d) Jetfloor 2B and Lo – non-composite (membrane)



(e) Jefloor 225 2B and 225 Lo



(f) edge detail

Figure 2 Prestressed concrete beams

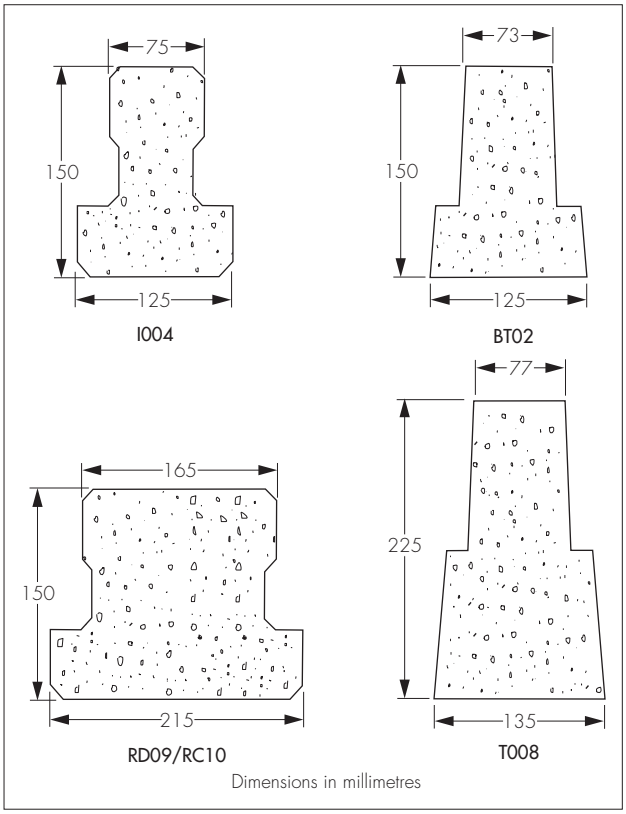


Table 1 Prestressed concrete beam properties

Beam reference	Width (mm)	Height (mm)	Weight ($kg \cdot m^{-1}$)
I004	125	150	32.8
BT02	125	150	33.2
RD09	215	150	63.4
RC10[1]	215	150	63.4
T008	135	225	58.7

(1) As RD09 but with one extra pre-stressing wire.

Figure 3 Polystyrene infill block dimensions

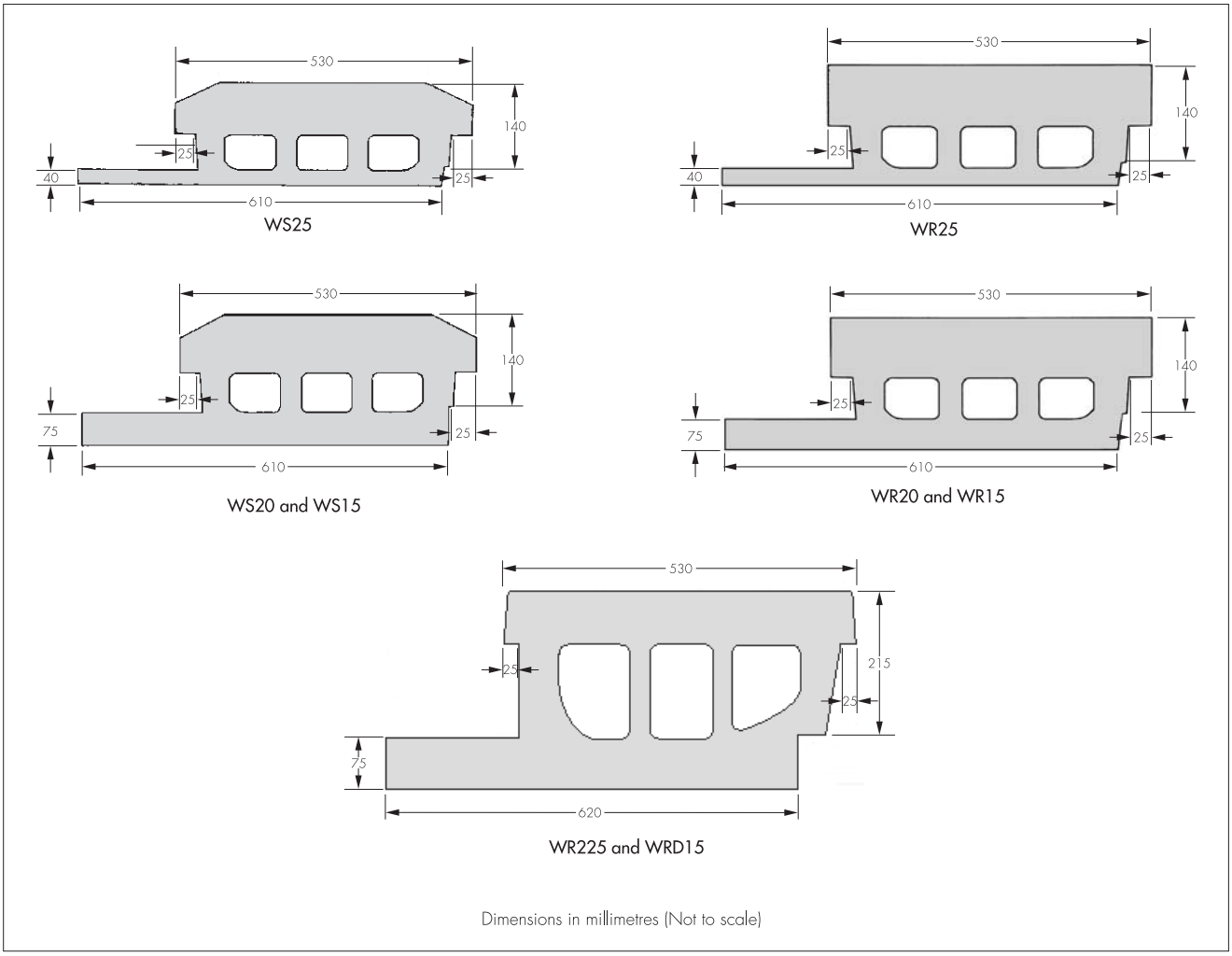
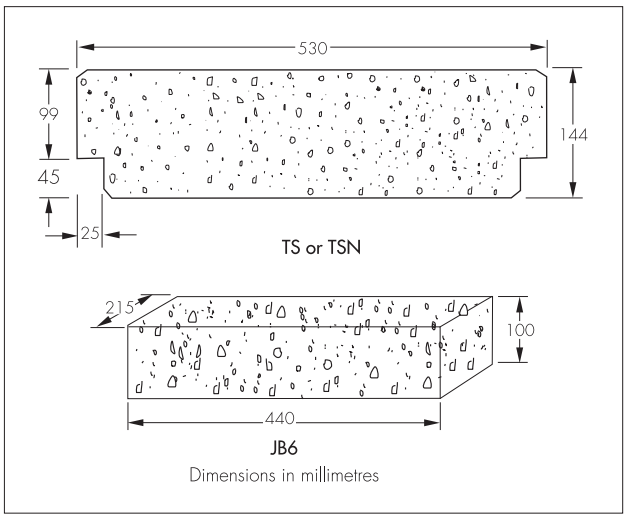


Figure 4 Aircrete perimeter blocks



2 Delivery and site handling

Prestressed concrete beams

2.1 The prestressed concrete beams are delivered to site stacked and supported on vertically-aligned timber bearers at 300 mm from each end.

2.2 Care must be taken in unloading, stacking and storing the beams to prevent damage. They should be lifted as near as possible to each end and should be handled and stacked the right way up at all times. On site, beams must be stored on firm, level ground, clear of the ground and stacked. Timber bearers should be used to separate the beams and should be placed in line with each other near the ends of the beams.

2.3 For storage periods exceeding three months, the beams should be under cover.

Polystyrene components

2.4 Polystyrene components are shrink-wrapped and banded in packs, but are unprotected. Reasonable care must be taken during transit, storage and installation to avoid damage.

2.5 The polystyrene components should be stacked on a flat base, clear of the ground and protected against direct sunlight and secured to avoid wind damage. Care must be taken to avoid contact with solvents and with materials containing volatile organic components, such as coal tar, pitch and timber newly treated with creosote.

Aircrete perimeter blocks

2.6 The aircrete perimeter blocks are delivered to site unprotected.

2.7 The blocks should be stacked on a flat base, clear of the ground.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on the Jetfloor 2A, 2B and Lo Floor Systems.

Design Considerations

3 General

The Jetfloor 2A, 2B and Lo Floor Systems are assessed as suitable for ground floor installations when used in accordance with this Certificate.

4 Practicability of installation

The system can be installed by a competent general builder, or a contractor, experienced with this type of product.

5 Structural performance

5.1 The Jetfloor 2A, 2B and Lo systems utilise composite action between the prestressed beam and structural concrete topping[1] when the WS25, WS20 and WS15 EPS panels are used respectively (see Figures 1 and 3). When a damp-proof or gas membrane is used between the prestressed beams and the concrete topping, the design is non-composite and uses the WR25, WR20 and WR15 EPS panels respectively. With the Jetfloor 225 2B and 225 Lo systems, the WR225 and WRD15 EPS panels are used in non-composite constructions with or without a membrane.

(1) A membrane must not be used with composite action.

5.2 The structural properties of the beams when calculated in accordance with BS 8110-1 : 1997, are shown in Table 2, subject to:

(a) the bearing length of the prestressed concrete beams must be determined in accordance with BS 8110-1 : 1997. Support walls must be designed to carry the full dead and imposed floor loadings

(b) where multiple beams are used to support blockwork walls, the spaces between the top flanges should be infilled with concrete of minimum C20/25 grade, to ensure unity of action

(c) due to manufacturing and construction tolerances, the bearings of the polystyrene infill blocks may be reduced. The minimum acceptable bearing width is 15 mm

(d) maximum allowable spans with partitions are not covered by this Certificate.

Table 2 Maximum allowable clear spans (metres) for single[1] prestressed concrete beams

Beam type	Floor self-weight ($kN·m^{-2}$)	Superimposed loadings[2] ($kN·m^{-2}$)					
		1.5	2.0	2.5	3.0	4.0	5.0
Composite[3]							
I004	2.84	4.98	4.86	4.76	4.65	4.47	4.02
BT02	2.84	4.98	4.86	4.76	4.65	4.47	4.02
RD09	3.15	5.97	5.84	5.71	5.60	5.38	5.19
RC10	3.15	5.16	5.05	4.95	4.85	4.67	4.50
T008	3.22	6.07	5.79	5.55	5.34	4.98	4.66
Non-composite[3]							
I004	1.108	3.90	3.71	3.55	3.40	3.15	2.94
BT02	1.108	3.90	3.71	3.55	3.40	3.15	2.94
RD09	1.389	5.14	4.90	4.69	4.51	4.20	3.95
RC10	1.389	4.63	4.42	4.23	4.07	3.79	3.56
T008	1.460	6.07	5.79	5.55	5.34	4.98	4.66

(1) Multiple beams can be used to increase the load/span capacity for particular situations (advice should be sought from the Certificate holder's Technical department).

(2) Values include a superimposed load for finishes of 0.5 $kN·m^{-2}$ (2.3 $kN·m^{-2}$ for beam type T008) and a superimposed load for a structural concrete topping of 75 mm thick above the top of the beam.

(3) For 150 mm deep beams, composite action occurs with polystyrene infill block types WS25, WS20 and WS15 and non-composite action occurs with block types WR25, WR20 and WR15 only. With 225 mm deep beams, non-composite action occurs with block types WR225 and WRD15 but can be used with a membrane, if required.

5.3 Calculations[1] in accordance with DD ENV 1992-1.1 : 1992 (Eurocode 2) confirm that 40 mm thick concrete toppings can support partition loads up to 4 $kN·m^{-1}$ and 75 mm thick concrete toppings up to 10 $kN·m^{-1}$.

(1) The calculations were based on a permissible concrete tensile strength of 1.5 $N·mm^{-2}$ and partial load factor of 1.5.

5.4 The allowable spans in Table 2 have been determined in accordance with BS 8110-1 : 1997 and include partial safety factors for dead loads and imposed loads of 1.4 and 1.6 respectively.

5.5 The prestressed concrete beams, under the specified loadings satisfy the requirements for serviceability limit states of deflection given in BS 8110-1 : 1997 of:

- upward camber < span/300
- deflection below the level of supports, and < span/250
- deflection after the construction of partitions caused by creep or shrinkage. < span/350

5.6 For the calculation of long-term deflections of prestressed concrete beams, it has been assumed that infill blocks and partitions are not installed until one month after casting and full imposed loads are not applied until three months after casting. Beams supporting blockwork walls will exhibit long-term creep deflections which may cause minor cracking at doors and other openings.

6 Thermal performance

6.1 Example calculations to BS EN ISO 13370 : 1998 for floors incorporating I004 and BT02 beams indicate the U values shown in Table 3 (see also note to Table 3). Calculations for specific projects or for different floor parameters can be carried out to the same standard.

6.2 A floor with a U value of 0.25 $W·m^{-2}·K^{-1}$ or less will meet or satisfy the Elemental Method of compliance with the National Building Regulations:

England and Wales — Approved Documents L1 and L2, Table 1

Scotland — Mandatory Standard 6.2, clauses 6.2.1[1][2] to 6.2.3[1][2]

(1) Technical Handbook (Domestic).

(2) Technical Handbook (Non-Domestic).

Northern Ireland — Technical Booklet F, Tables 1.2 and 1.4.

Table 3 Floor U values (I004 or BT02 beams)

Perimeter/area ratio	U value ($W \cdot m^{-2} \cdot K^{-1}$)(1)		
	2A	2B	Lo
0.30	0.22	0.18	0.17
0.35	0.22	0.19	0.17
0.40	0.23	0.19	0.17
0.45	0.24	0.20	0.18
0.50	0.24	0.20	0.18
0.55	0.25	0.20	0.18
0.60	0.25	0.20	0.19
0.65	0.26	0.21	0.19
0.70	0.26	0.21	0.19
0.75	0.26	0.21	0.19
0.80	0.26	0.21	0.19

Note to Table 3: The calculated U values are based on the following parameters:

- structural concrete topping : thickness 75 mm above the top of the beam — conductivity 1.33 $W \cdot m^{-1} \cdot K^{-1}$
- precast concrete beam — conductivity 1.75 $W \cdot m^{-1} \cdot K^{-1}$
- polystyrene — conductivity ($\lambda_{90/90}$ *value*):
  — 2A and 2B 0.036 $W \cdot m^{-1} \cdot K^{-1}$
  — Lo 0.030 $W \cdot m^{-1} \cdot K^{-1}$
- air (large cavities) — conductivity 0.2 $W \cdot m^{-1} \cdot K^{-1}$
- air (thin cavities) as in polystyrene/concrete gaps — conductivity 0.067 $W \cdot m^{-1} \cdot K^{-1}$
- soil (taken as typical clay) — conductivity 1.5 $W \cdot m^{-1} \cdot K^{-1}$
- wall (300 mm thick) U value — 0.35 $W \cdot m^{-2} \cdot K^{-1}$
- design wind speed — 5 $m \cdot s^{-1}$
- underfloor ventilation — 0.0015 $m^2 \cdot m^{-1}$
- wind shielding factor — 0.05
- void depth under slab — 150 mm (nominal).

(1) The average slab U value is slightly dependent on the number and type of concrete perimeter blocks within the floor area, use of multiple beams and floor finishes, and must be taken into account in any calculation.

6.3 A floor with a U value of 0.26 $W \cdot m^{-2} \cdot K^{-1}$ or greater, can contribute to a building meeting or satisfying the requirements of the national Building Regulations by the alternative methods of compliance described in the supporting documents given in section 6.2.

6.4 Junctions with walls will adequately limit heat loss where the edge of the perimeter block is appropriately insulated (see section 7.1).

6.5 Provided that service penetrations and junctions with other elements are adequately sealed, the floor will provide adequate resistance to heat loss through air infiltration.

7 Condensation risk

7.1 To minimise the risk of interstitial condensation at junctions with external walls, specifiers should ensure that wall insulation extends to at least 150 mm below the bottom of the structural concrete topping [see Figure 1(f)].

7.2 The risk of surface condensation will be minimal in normal circumstances.

8 Ventilation

Ventilators should provide the void beneath the floor with an equivalent open area of 1500 mm^2 per metre run of external perimeter wall.

9 Behaviour in relation to fire

An assessment was made of the contribution of the system to the development stages of a fire. The assessment concluded, in relation to floors constructed in accordance with the Certificate holder's specifications, that the polystyrene infill blocks will be contained within the floor by the structural concrete topping, until the topping itself is destroyed. Therefore, they will not contribute to the development stages of a fire or present a smoke or toxic hazard. Electrical cables running within the polystyrene should be enclosed in a suitable conduit, such as rigid PVC.

10 Maintenance

As the product will be inaccessible once installed and the components have suitable durability, maintenance is not normally required. Damaged components must not be used during the installation.

11 Durability

11.1 The exposure condition beneath a suspended ground floor over a ventilated void and soil without oversite concrete or other surface seal is considered to be 'moderate' for the prestressed beams and 'mild' for structural screed as defined in BS 8110-1 : 1997 (Table 3.2). The prestressed concrete beams and structural screed will have adequate durability for these exposure conditions.

11.2 The polystyrene components are protected in service from agencies liable to cause deterioration and will be as durable as the prestressed concrete beams.

12 Site preparation

12.1 The ground beneath the floor should be free of topsoil and vegetable matter. Oversite concrete or other surface seal is not required, but material added to bring the solum to an even surface should be hard and dry.

12.2 Damp-proofing and ventilation arrangements must be in accordance with normal good practice, for example, provision of damp-proof sleeves to ventilators and adequate drainage of the sub-floor.

12.3 A continuous damp-proof course should be laid along the support wall below the floor in accordance with BS 8102 : 1990.

12.4 A void at least 150 mm deep must be provided between the underside of the floor and the ground surface. With heavy clay soil, the depth should be increased to prevent problems associated with heave. With good natural drainage or where site drains are provided to prevent water collecting and standing, the ground level beneath the floor does not need to be raised to the external ground level but, where the levels differ, the ability of the perimeter walls to act as retaining walls must be checked.

13 General

13.1 Typical details of the Jetfloor 2A, 2B and Lo Floor Systems are shown in Figure 1, the *Jetfloor Installation Guide* and *Technical Guidance Notes*.

13.2 The bearings for the prestressed concrete beams should be level and clear of debris.

13.3 For cavity wall construction the minimum bearing [see section 5.2(c)] should be provided on the inner leaf and beams should not project into the cavity. Careful setting-out will be required when the beams are built into cavity walls at both ends.

13.4 The beams must not be cut or otherwise altered on site without formal authorisation from the Certificate holder.

13.5 Beams are hoisted into position. Lifting straps must be positioned at the ⅛ and ⅞ points on the beams.

13.6 The 40 mm and 75 mm polystyrene sheets are make-up sheets and placed between the polystyrene blocks at the lower surface to provide continuity of insulation of the floor, eg where a number of beams are laid side by side.

13.7 Perimeter blocks are to be installed in accordance with the *Technical Guidance Notes* and the relevant layout drawings.

13.8 The prestressed concrete beams must be accurately positioned and fixed to ensure that the infill blocks can be installed at a later stage without damage and with adequate bearings. This can be achieved by using the purpose-made aircrete spacer blocks, while the ends of the beams are built into the support wall. The spacing of the beams should also be checked at mid-span.

13.9 Care should be taken to avoid overloading the prestressed concrete beams during construction. Planks should be laid across the beams before materials are stacked; such materials should be as close as possible to the beam bearings.

13.10 To avoid damage to the EPS infill blocks, the structural concrete topping should be laid as soon as possible after the blocks have been installed.

13.11 Before pouring the structural concrete layer finish, it must be ensured that the polystyrene blocks are centrally located between the beams with a maximum gap of 8 mm between the polystyrene and the beam face. These gaps may be due to normal construction or manufacturing tolerances.

13.12 Where gaps occur, concrete is placed along the edges of the polystyrene blocks to prevent displacement during the main concreting operation.

13.13 When using a concrete pump, truck or skip, concrete should not be discharged onto the polystyrene blocks from heights greater than 300 mm and concrete heaps must not be formed over 200 mm high.

13.14 When wheelbarrows are used, planks must be placed to spread the wheel load to the beams.

13.15 Spot boards must be used when tipping and shovelling.

14 Finishes

These should be selected and used as described in the *Jetfloor Installation Guide* but are outside the scope of this Certificate.

15 Tests

Tests were carried out to determine:

- the ability of the floor to withstand short- and long-term static loads and to distribute point loads to adjacent parallel beams
- that the beam and the concrete topping act compositely in resisting loading
- the adequacy of the polystyrene blocks for use as permanent formwork.

16 Investigations

16.1 Existing data was examined relating to:

- durability of the system
- condensation risk
- thermal properties
- fire risk assessment
- U values (derived for the floor system using modelling to BS EN ISO 13370 : 1998)
- allowable spans for prestressed concrete beams (verified in accordance with BS 8110-1 : 1997)
- allowable loads for different concrete topping thicknesses were verified in accordance with DD ENV 1992-1.1 : 1992.

16.2 Site visits were carried out to assess the practicability of installation including setting out and placement of the prestressed concrete beams, installing the infill blocks and polystyrene sheets and placing the concrete.

16.3 The manufacturing processes for the prestressed concrete beams, polystyrene infill blocks and sheets and concrete blocks were examined including the methods adopted for quality control, and details obtained of the quality and composition of the materials used.

Bibliography

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BS 6073-1 : 1981 *Precast concrete masonry units — Specification for precast concrete masonry units*

BS 8102 : 1990 *Code of practice for protection of structures against water from the ground*

BS 8110-1 : 1997 *Structural use of concrete — Code of practice for design and construction*

BS 8204-1 : 1987 *In-situ floorings — Code of practice for concrete bases and screeds to receive in-situ floorings*

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DD ENV 1992-1.1 : 1992 *Eurocode 2. Design of concrete structures — General rules for buildings*

17 Conditions

17.1 This Certificate:

- relates only to the product/system that is named and described on the front page
- is granted only to the company, firm or person named on the front page — no other company, firm or person may hold or claim any entitlement to this Certificate
- is valid only within the UK
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17.3 This Certificate will remain valid for an unlimited period provided that the product/system and the manufacture and/or fabrication including all related and relevant 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.

17.4 In granting this Certificate, the BBA is not responsible for:

- 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
- individual installations of the product/system, including the nature, design, methods and workmanship of or related to the installation
- the actual works in which the product/system is installed, used and maintained, including the nature, design, methods and workmanship of such works.

17.5 Any information relating to the manufacture, supply, installation, use and maintenance 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 and maintained. It does not purport in any way to restate the requirements of the Health & Safety at Work etc Act 1974, or of any other statutory, common law or other duty which may exist at the date 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. In granting this Certificate, the BBA does not accept responsibility to any person or body for any loss or damage, including personal injury, arising as a direct or indirect result of the manufacture, supply, installation, use and maintenance of this product/system.

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