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Agrément Certificate
07/4411
Product Sheet 2 Issue 1

SPRINGVALE FLOORING SYSTEMS

SPRINGVALE BEAMSHIELD TOP SHEET SYSTEMS

This Agrément Certificate Product Sheet(1) relates to Springvale Beamshield Top Sheet Systems, comprising EPS Beamshield Infill or EPS Beamshield Plus Units, Board Units and EPS Top Sheet. The systems also includes ancillary items including concrete beams, structural concrete topping and closure blocks. The systems are for use in suspended concrete ground floors in single-family dwellings, flats and communal areas in blocks of flats within the load criteria specified in this Certificate.

(1) Hereinafter referred to as 'Certificate'.

The assessment includes

Product factors:

- compliance with Building Regulations
- compliance with additional regulatory or non-regulatory information where applicable
- evaluation against technical specifications
- assessment criteria and technical investigations
- uses and design considerations

Process factors:

- compliance with Scheme requirements
- installation, delivery, handling and storage
- production and quality controls
- maintenance and repair

Ongoing contractual Scheme elements†:

- regular assessment of production
- formal 3-yearly review

KEY FACTORS ASSESSED

Section 1. Mechanical resistance and stability
Section 2. Safety in case of fire
Section 3. Hygiene, health and the environment
Section 4. Safety and accessibility in use
Section 5. Protection against noise
Section 6. Energy economy and heat retention
Section 7. Sustainable use of natural resources
Section 8. Durability

The BBA has awarded this Certificate to the company named above for the systems described herein. These systems have been assessed by the BBA as being fit for their intended use provided they are installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

Date of issue: 6 June 2023

Hardy Giesler
Chief Executive Officer

This BBA Agrément Certificate is issued under the BBA's Inspection Body accreditation to ISO/IEC 17020. Sections marked with † are not issued under accreditation.

The BBA is a UKAS accredited Inspection Body (No. 4345), Certification Body (No. 0113) and Testing Laboratory (No. 3537).

Readers MUST check that this is the latest issue of this Agrément Certificate by either referring to the BBA website or contacting the BBA directly.

The Certificate should be read in full as it may be misleading to read clauses in isolation.

Any photographs are for illustrative purposes only, do not constitute advice and should not be relied upon.

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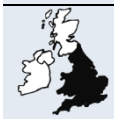
SUMMARY OF ASSESSMENT AND COMPLIANCE

This section provides a summary of the assessment conclusions; readers should refer to the later sections of this Certificate for information about the assessments carried out.

Compliance with Regulations

Having assessed the key factors, the opinion of the BBA is that Springvale Beamshield Top Sheet Systems, 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 Building Regulations 2010 (England and Wales) (as amended)

Requirement:	**A1(1)**	**Loading**
Comment:		The systems can sustain and transmit permanent and variable actions applied on the floor to the ground. See section 1 of this Certificate.
Requirement:	**C2(c)**	**Resistance to moisture**
Comment:		The systems can contribute to limiting the risk of surface and interstitial condensation. See section 3 of this Certificate.
Requirement:	**L1(a)(i)**	**Conservation of fuel and power**
Comment:		The sytems can contribute to satisfying this Requirement. See section 6 of this Certificate.
Requirement:	**7(1)**	**Materials and workmanship**
Comment:		The systems are acceptable. See sections 8 and 9 of this Certificate.
Regulation:	**25B**	**Nearly zero-energy requirements for new buildings**
Regulation:	**26A**	**Fabric energy efficiency rates for new dwellings (applicable to England only)**
Regulation:	**26A**	**Primary energy consumption rates for new buildings (applicable to Wales only)**
Regulation:	**26B**	**Fabric performance values for new dwellings (applicable to Wales only)**
Regulation:	**26C**	**Target primary energy rates for new buildings (applicable to England only)**
Comment:		The systems can contribute to satisfying these Regulations. See section 6 of this Certificate.

The Building (Scotland) Regulations 2004 (as amended)

Regulation:	**8(1)**	**Fitness and durability of materials and workmanship**
Comment:		The systems can contribute to a construction meeting this Regulation. See sections 8 and 9 of this Certificate.
Regulation:	**9**	**Building standards in relation to construction**
Standard:	1.1(a)(b)	Structure
Comment:		The systems can sustain and transmit permanent and variable actions applied on the floor to the ground, with reference to clause 1.1.1(1) of this Standard. See section 1 of this Certificate.
Standard:	3.15	Condensation
Comment:		The systems can contribute to limiting the risk of surface and interstitial condensation, with reference to clauses 3.15.1(1), 3.15.4(1) and 3.15.5(1) of this Standard. See section 3 of this Certificate.
Standard:	6.1(b)(c)	Energy demand and carbon dioxide emission
Comment:	(d)	The systems can contribute to satisfying this Standard, with reference to clause 6.1.1(1). See section 6 of this Certificate.

Standard:	6.2	Building insulation envelope
Comment:		The systems can contribute to satisfying this Standard with reference to clauses 6.2.1(1), 6.2.3(1), 6.2.8(1) 6.2.9(1) and 6.2.12(1). See section 6 of this Certificate.
Standard:	7.1(a)	Statement of sustainability
Comment:		The systems 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. In addition, the blocks can contribute to a construction meeting a higher level of sustainability as defined in this Standard, with reference to clauses 7.1.4(1) [Aspects 1(1) and 2(1)], 7.1.6(1) [Aspects 1(1) and 2(1)] and 7.1.7(1) [Aspect 1(1)]. See section 6 of this Certificate.

(1) Technical Handbook (Domestic).

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

Regulation:	**23(1)(a) (i)(iii)(b)**	**Fitness of materials and workmanship**
Comment:		The systems are acceptable. See sections 8 and 9 of this Certificate.
Regulation:	**29**	**Condensation**
Comment:		The systems can contribute to limiting the risk of interstitial condensation. See section 3 of this Certificate.
Regulation:	**30**	**Stability**
Comment:		The systems can sustain and transmit permanent and variable actions applied on the floor to the ground. See section 1 of this Certificate.
Regulation:	**39(a)(i)**	**Conservation measures**
Regulation:	**40(2)**	**Target carbon dioxide emission rate**
Regulation:	**43B**	**Nearly zero-energy requirements for new buildings**
Comment:		The systems can contribute to satisfying these Regulations. See section 6 of this Certificate.

Additional Information

NHBC Standards 2023

In the opinion of the BBA, Springvale Beamshield Top Sheet Systems with steel or macro-polymer fibres or steel mesh concrete toppings(1), if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements in relation to *NHBC Standards*, Chapter 5.2 *Suspended ground floors*.

(1) NHBC do not accept micro-polymer-fibre-only structural concrete toppings (see Table 6, footnote 9 of this Certificate).

Fulfilment of Requirements

The BBA has judged Springvale Beamshield Top Sheet Systems to be satisfactory for use as described in this Certificate. The systems have been assessed as EPS Top Sheet systems for use in suspended concrete ground floors in single-family dwellings, flats and communal areas in blocks of flats within the load criteria specified in this Certificate.

ASSESSMENT

Product description and intended use

The Certificate holder provided the following description for the product under assessment. Springvale Beamshield Top Sheet Systems consist of expanded polystyrene (EPS) components. See Table 1, and Figures 1 and 2 of this Certificate.

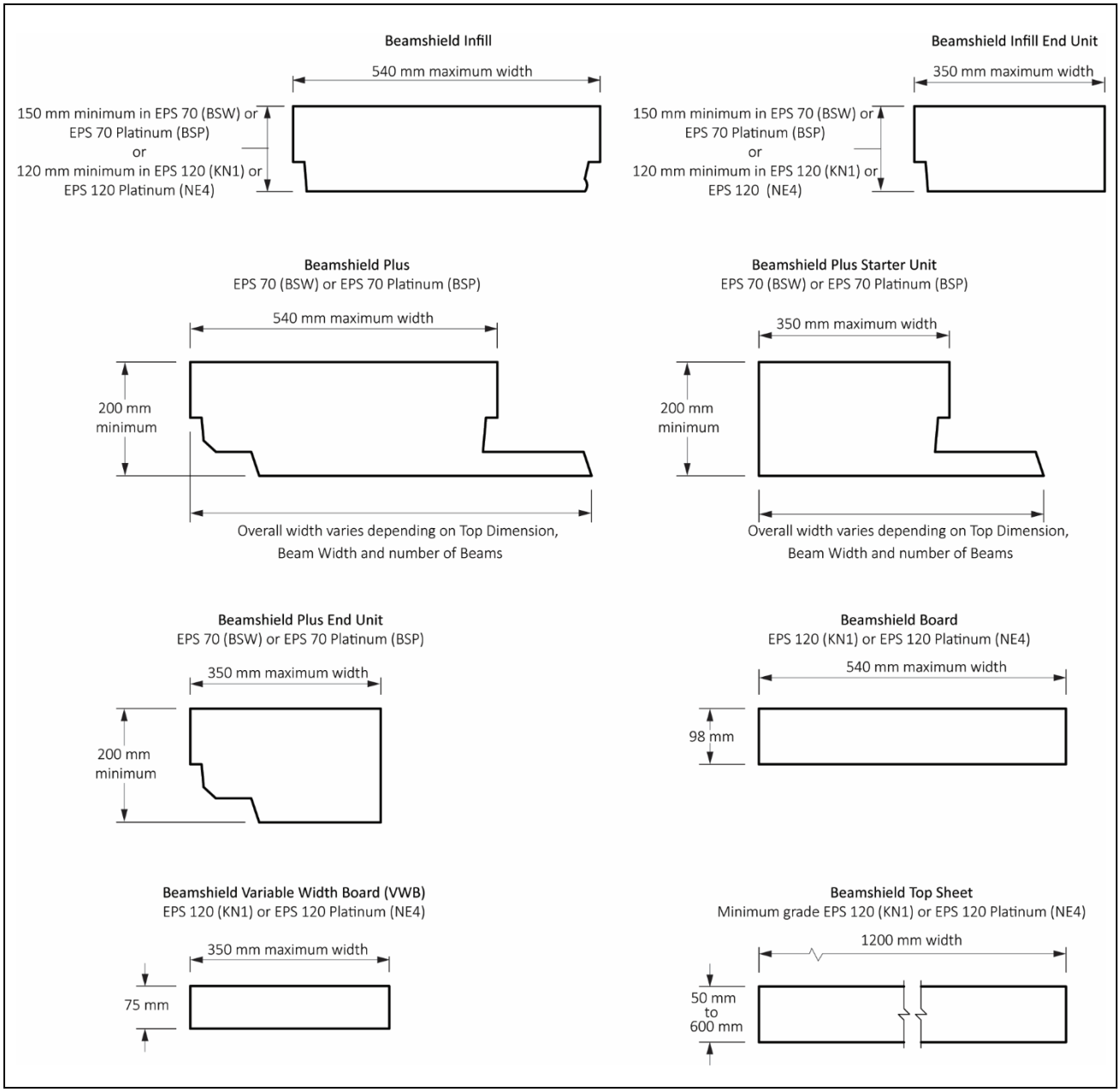
The EPS components have the nominal characteristics given in Table 1.

Table 1 Nominal characteristics of the EPS Top Sheet and other EPS components

Reference	Description	Minimum Thickness (mm)	Maximum top width (mm)	Length (mm)	Classification to BS EN 15037-4 : 2010	Compressive stress at 10% deformation to BS EN 13163 : 2012 (kPa)	Colour
1	Infill Units	150(1)	540	1200	(R1 a) 1.5kN	CS(10)70-EPS 70 (BSW)	White
	Plus Units(3)	200				CS(10)70-EPS 70 (BSP) Platinum	Grey
2	Infill Units	120(2)				CS(10)120-EPS 120 (KN1)	White
						CS(10)120-EPS 120 (NE4) Platinum	Grey
3	Board Units	98				CS(10)120-EPS 120 (KN1)	White
						CS(10)120-EPS 120 (NE4) Platinum	Grey
4	Plus Starter Unit (3)	200	350			CS(10)70-EPS 70 (BSW)	White
						CS(10)70-EPS 70 (BSP) Platinum	Grey
5	Plus End Unit	200				CS(10)70-EPS 70 (BSW)	White
						CS(10)70-EPS 70 (BSP) Platinum	Grey
6	Infill End Unit	150(1)				CS(10)70-EPS 70 (BSW)	White
						CS(10)70-EPS 70 (BSP) Platinum	Grey
7	Infill End Unit	120(2)				CS(10)120-EPS 120 (KN1)	White
						CS(10)120-EPS 120 (NE4) Platinum	Grey
8	Variable Width Board	75				CS(10)120-EPS 120 (KN1)	White
						CS(10)120-EPS 120 (NE4) Platinum	Grey
9	Top Sheet(4)	50 to 600(5)	1200	2400	–	CS(10)120-EPS120	White
						CS(10)120-EPS 120 Platinum	Grey
						CS(10)150-EPS 150	White
						CS(10)150-EPS 150 Platinum	Grey
						CS(10)200-EPS 200	White
						CS(10)200-EPS 200 Platinum	Grey

(1) 150 mm minimum for Beamshield Infill Unit (White BSW) or Beamshield Infill Unit (Platinum BSP).
(2) 120 mm minimum for Beamshield Infill Unit and Infill End Unit in White EPS 120 (KN1) or Platinum EPS 120 (NE4).
(3) Plus Units and Plus Starter Units are available with toe lengths to cover single or multiple beam layouts.
(4) Bending strength of the EPS Top Sheet are in accordance with the principles of BS EN 13163 : 2012 Table C.1.
(5) Thickness range of EPS Top Sheet.

Figure 1 Springvale Beamshield Top Sheet Systems – dimensions of EPS components



Subject to order size, the EPS for the Beamshield Plus system can be manufactured to suit a different beam profile from that shown in Figure 2. The toe width of the EPS Beamshield Plus Units must provide a close fit to ensure the toe gap due to tolerance of components does not exceed 6 mm. The toes of EPS Beamshield Plus Units can be extended to accommodate double, triple and other multiple beams.

Ancillary Items

The following ancillary item is essential to use with the systems and has been assessed with the systems:

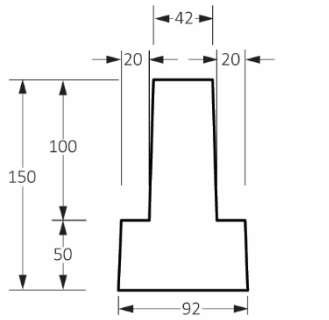
- concrete topping — normal or self-compacting concrete to the specifications given in Table 6 of this Certificate

The Certificate holder recommends the following ancillary items for use with the systems , but these materials have not been assessed by the BBA and are outside the scope of this Certificate:

- insulation strips — for perimeter of structural concrete toppings
- concrete closure blocks — with a compressive strength equal to, or greater than, that of the blocks used to form the inner leaf of the wall
- inner leaf concrete block
- outer leaf brick wall
- precast pre-stressed concrete beams CE/UKCA marked to EN 15037 -1 : 2008 and designed in accordance with the principles of BS EN 1992-1-1: 2004 and its UK National Annex, BS EN 206 : 2013, BS 8500-1 : 2015 and BS 8500-2 : 2015
- gas barrier membranes(1)
- air and vapour control layer (AVCL)(1) — where required
- damp-proof membranes (DPM(1)) — where required
- concrete blocks to use for floor [refer to Figure 3(f)].

(1) Must be compatible with EPS.

Figure 2 Typical pre-stressed precast concrete beam(1)



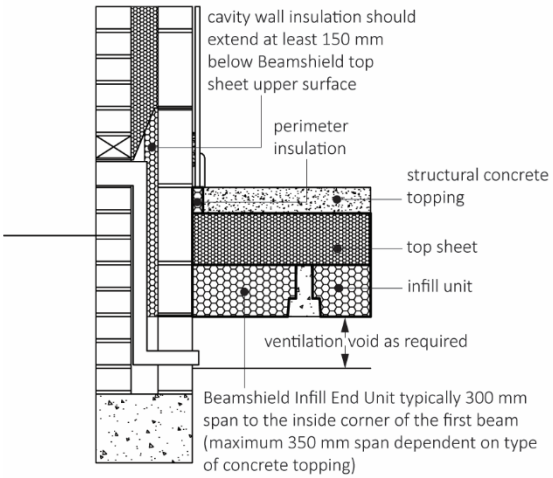
(1) Other pre-stressed concrete beams are acceptable if the top width of the beam is equal to, or greater than, 42 mm provided that they are CE/UKCA marked to EN 15037-1 : 2008 and designed to BS EN 1992-1-1 by a suitably competent and experienced individual.

For different external wall and floor junctions, see Figure 3 of this Certificate. The Plus Starter Unit or Infill End Unit (BSW for white and BSP for Platinum) can be replaced with:

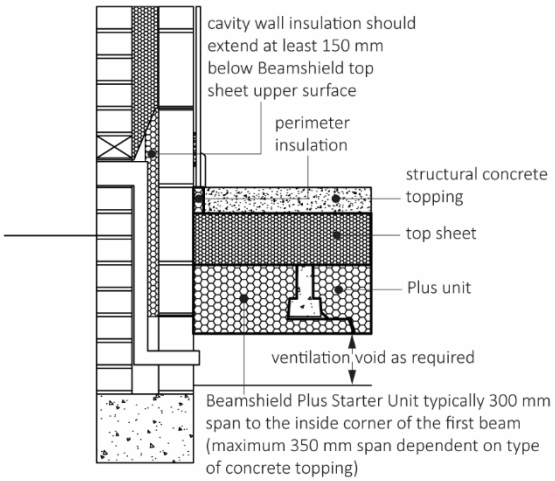
- a beam up against the internal leaf of the wall (parallel to the beam), or a 50 mm gap between the beam and the wall to be filled with EPS insulation. Refer to Figures 3(d) and 3(e) for further details
- concrete blocks 440 mm width, covered by BBA Certificates or BS EN 15037-2 : 2009. Refer to Figure 3(f) for further details.

Figure 3 External wall and floor junctions (AVCL and gas membrane may be required, but are not shown)

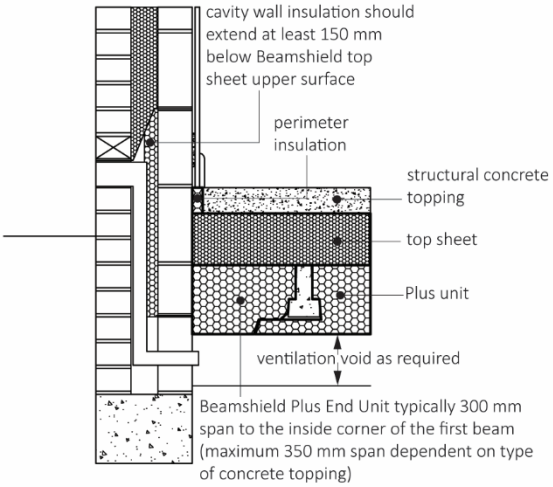
(a) External wall with Beamshield Infill End Unit next to a Beamshield Infill Unit



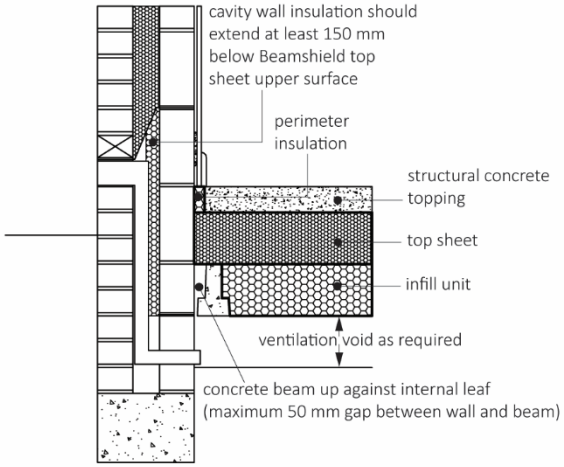
(b) External wall with Beamshield Plus Starter Unit next to a Beamshield Plus Unit with the Toe pointing away from the wall



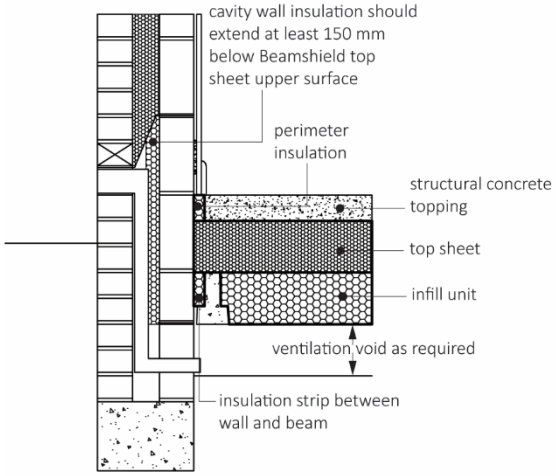
(c) External Wall with a Beamshield Plus End Unit next to a Beamshield Plus Unit with the Toe pointing towards the wall



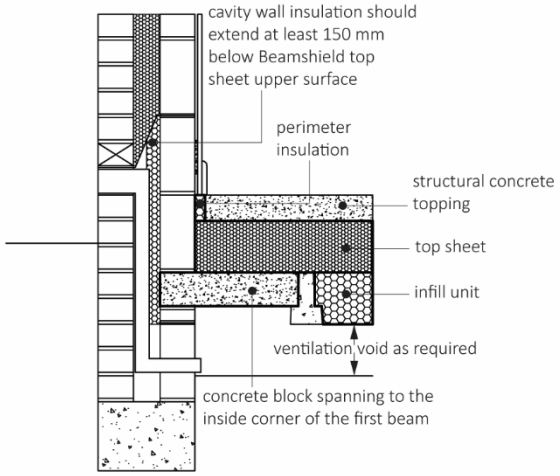
(d) External Wall with a concrete beam up against the internal leaf



(e) External Wall with an insulation strip between the internal leaf and the concrete beam



(f) External Wall with a concrete block across internal leaf and spanning to the first beam



Notes: The following are outside the scope of this Certificate:

- foundation
- inner leaf concrete block
- outer leaf brick wall
- pre-stressed concrete beam
- concrete topping
- concrete block spanning to the inside corner of the first beam

Product assessment – key factors

The product was assessed for the following key factors, and the outcomes of the assessments are shown below. Conclusions relating to the Building Regulations apply to the whole of the UK unless otherwise stated.

1 Mechanical resistance and stability

Data were assessed for the following characteristics.

1.1 EPS Top Sheet grades and thicknesses

1.1.1 The EPS Top Sheet grades and thicknesses shown in Table 7, in conjunction with the EPS Beamshield Plus Units, EPS Beamshield Infill Units, Beamshield Board and Variable Width Board, provide a permanent formwork for the structural concrete topping. Structural calculation indicates that the EPS Top Sheets also contribute to the short- and long-term structural performance of the floor by transferring the vertical variable and permanent actions shown in Table 8 of this Certificate as described below:

1.1.1.1 The strain against stress performance of the Top Sheets under the applied loads at serviceability limit state (SLS) [G_k(1) + Q_k (2)] condition (refer to characteristic load combination of BS EN 1990 : 2002, Equation 6.14a) remains within the permitted elastic performance limit of 1.0 to 1.5 %.

(1) G_k is permanent action.
(2) Q_k is variable action.

1.1.1.2 The long-term thickness reduction of the Top Sheet under quasi permanent load combination [$G_k + \psi_2$(1) Q_k] remains within the acceptable limit of 2% after 60 years, when subjected to a permanent compressive stress of 0.3 σ10 (σ10 is the compressive stress of the EPS at 10 % deformation).

(1) For residential applications, ψ_2 equals 0.3 (refer to NA to BS EN 1990 : 2002 Table NA.A1.1).

1.1.1.3 The EPS Top Sheets have adequate compressive resistance against stress from ultimate limit state (ULS) loads divided by γ_m(1). For ULS loads (1.35 G_k+1.5 Q_k), refer to BS EN 1990 : 2002, Equation 6.10.

(1) γ_m is the material factor for the EPS and equals 1.10.

1.1.1.4 The EPS Plus Starter/Plus End Unit, Infill End Units and Variable Width Board must not be more than 350 mm wide at the top (refer to Table 6 for cantilever length of 350 mm).

1.1.1.5 The EPS Top Sheet must be used in conjunction with a concrete beam that has a top width ≥ 42 mm (see Figure 2).

1.1.1.6 The structural calculations mentioned in sections 1.1.1.1 to 1.1.1.5 indicate that the structural concrete topping specifications shown in Table 6, in conjunction with the EPS Top Sheets specified in Table 7 and Figure 1, and the pre-stressed concrete beam with the width of the top flange as shown in Figure 2, are suitable for use in building loading categories defined in Table 8.

1.1.1.7 Subject to compliance with the design and installation requirements of this Certificate, the EPS components (refer to EPS References 1 to 8 of Table 1) have adequate strength to carry the normal temporary loads expected during the construction phase of the floor system.

2 Safety in case of fire

Not applicable.

3 Hygiene, health and the environment

Data were assessed for the following characteristics.

3.1 Water vapour permeability

3.1.1 The Certificate holder has declared the water vapour resistance factors (μ values) shown in Table 2.

Table 2 Water vapour diffusion resistance factors (μ values)

Product assessed	Assessment method	Requirement	Result (μ)
EPS 70	BS EN 13163 : 2012	Reference value	20-40
EPS 120/150	BS EN 13163 : 2012		30-70
EPS 200	BS EN 13163 : 2012		40-100

Interstitial condensation

3.1.2 The risk of interstitial condensation is minimal when no AVCL/membrane is used or when a suitable AVCL/membrane is placed between the Top Sheet and the concrete topping.

3.1.3 Where it is proposed to install an AVCL or gas barrier below the Top Sheet, there is a risk of interstitial condensation forming, particularly in the vicinity of the beam. Therefore, each such proposed use should be assessed in accordance with the principles of BS EN ISO 13788 : 2012 and BS 5250 : 2021, accounting for each beam/EPS configuration, dwelling type and dwelling location.

Surface condensation

3.1.4 The minimum temperature factor within the main floor area is greater than 0.89 and the consequent risk of surface condensation is therefore minimal in accordance with the guidance in BRE Information paper IP 1/06.

3.1.5 The risk of condensation at junctions will depend on the overall wall construction and the continuity of insulation between the floor and wall. As a minimum, cavity or external wall insulation should extend at least 150 mm below the Top Sheet upper surface, and the concrete topping should include a suitable edge insulation at the perimeter.

4 Safety and accessibility in use

Not applicable.

5 Protection against noise

Not applicable.

6 Energy economy and heat retention

Data were assessed for the following characteristics.

6.1 Thermal conductivity

6.1.1 The Certificate holder has declared the thermal conductivity values (λ_D) shown in Table 3.

Table 3 Declared thermal conductivity - (λ_D) values

Product assessed	Assessment method	Requirement	Result (λ_D - $W \cdot m^{-1} \cdot K^{-1}$)
EPS 70 white	BS EN 13163 : 2012	Declared value	0.038
EPS 120 white	BS EN 13163 : 2012	Declared value	0.035
EPS 150 white	BS EN 13163 : 2012	Declared value	0.034
EPS 200 white	BS EN 13163 : 2012	Declared value	0.033
EPS 70/120/150/200 Platinum	BS EN 13163 : 2012	Declared value	0.030

6.2 Thermal performance

6.2.1 A suspended floor deck's thermal resistance (from upper surface to underside surface) will depend significantly on the size and spacing of precast concrete beams and the type and thickness of the Top Sheet and Infill Units/Plus Units, Board Units and Variable Width Board selected. The thermal resistance of each beam and EPS configuration must be numerically modelled to BS EN ISO 10211 : 2017 and BS EN 15037-4 : 2010 and, where Plus Units are used, a design toe gap width of 6 mm must be included. The floor deck's thermal resistance value may then be taken as an area-weighted average of each beam and insulation configuration, and the overall floor U value calculated as described in section 6.2.2.

6.2.2 The overall floor U value will depend significantly on the floor deck's thermal resistance (see section 6.2.1), the ratio of the exposed (and semi-exposed) floor perimeter length to floor area (p/a), the wall thermal transmittance value, the amount of underfloor ventilation and the ground thermal conductivity. Each floor U value must be calculated to BS EN ISO 13370 : 2017 and BRE Report BR 443 : 2019. Example floor U values are given in Table 4 of this Certificate.

Table 4 Example U value – for single beam configurations(1) ($W \cdot m^{-2} \cdot K^{-1}$)

Beam option	p/a ratio	50 mm EPS 120 White Top Sheet with 150 mm EPS 70 White Beamshield Infill Unit	150 mm EPS 120 Platinum Top Sheet with 450 mm EPS 70 Platinum Beamshield Plus Unit
150 x 92 mm(1)	0.4	0.18	0.06
	0.6	0.20	0.06
	0.7	0.20	0.06
	0.9	0.21	0.06

(1) These calculations assume:

- single beams at 588 mm centres, with dimensions shown in Figure 2, beam straightness is < 5 mm and λ is 2.0 $W \cdot m^{-1} \cdot K^{-1}$
- 75 mm concrete topping λ is 1.15 $W \cdot m^{-1} \cdot K^{-1}$
- a 300 mm thick perimeter wall with a U value of 0.35 $W \cdot m^{-2} \cdot K^{-1}$
- underfloor ventilation area is 0.0015 $m^2 \cdot m^{-1}$
- ground conductivity is 1.5 $W \cdot m^{-1} \cdot K^{-1}$
- all other parameters are default values from BRE Report BR 443 : 2019.

7 Sustainable use of natural resources

7.1 Environmental information

EPS material can be recycled if free from debris and contamination. The concrete and reinforcement steel can also be recycled.

8 Durability

8.1 Service life

Under normal service conditions, the systems will have a life of at least 60 years provided it is designed, installed and maintained in accordance with this Certificate and the Certificate holder's instructions.

8.1.1 The potential mechanisms for degradation and the known performance characteristics of the materials in the systems were assessed.

8.1.2 The EPS components are protected in service from agents liable to cause deterioration and will be effective as insulation for the life of the building in which they are installed.

8.1.3 The concrete topping reinforced with steel mesh will have adequate durability for exposure class XC1.

8.1.4 The durability of concrete topping reinforced with polymer and steel fibres will be at least equivalent to that of plain concrete of the same grade.

PROCESS ASSESSMENT

Information provided by the Certificate holder was assessed for the following factors:

9 Design, installation, workmanship and maintenance

9.1 Design

9.1.1 The design process was assessed by the BBA and the following requirements apply in order to satisfy the performance assessed in this Certificate.

9.1.2 A suitably competent and experienced individual must perform a site-specific assessment/design to ensure that the EPS Beamshield Infill Unit, Plus Unit, Board Unit, Plus Starter Unit, Plus End Unit, Infill End Unit, Variable Width Board and Top Sheet are in accordance with the principles and requirements of this Certificate and the relevant parts of BS EN 13163 : 2012 and BS EN 15037-4 : 2010. A suitably competent and experienced individual also must ensure that the concrete beams and structural concrete toppings are in accordance with the requirements of this Certificate and the relevant parts of BS EN 15037-1 : 2008.

9.1.3 The BBA internal test method indicates that EPS components can resist the temporary loads during the construction phase, including the weight of the structural concrete topping as shown below:

9.1.3.1 For grade EPS 70, all units must have a normal bearing width of 18 mm (this includes a 3 mm allowance for misalignment and manufacturing tolerances in the straightness of the concrete beam with a minimum bearing width of 15 mm)(1).

(1) For concrete beams with a bearing width of 15 mm (this includes a 3 mm allowance for misalignment and manufacturing tolerances in the straightness of the concrete beam), the minimum bearing width of 12 mm must be maintained and used in conjunction with a higher grade of EPS unit (grade EPS 120), White KN1 or Platinum NE4, for the Beamshield Plus Units and Beamshield Infill Units, at a minimum thickness of 120 mm. The Variable Width Board may be used; however, the Beamshield Board Units are not suitable with a minimum 12 mm bearing width.

9.1.3.2 The Variable Width Board must not be used at widths greater than 350 mm.

9.1.3.3 Spacers for supporting steel mesh reinforcement can be placed on spreader plates over the EPS Top Sheets. This will reduce the risk of accidental penetration of the EPS during the construction phase and the resulting misalignment of the reinforcement within the structural concrete topping depth.

9.1.4 The selected structural concrete topping must be designed and installed strictly in accordance with this Certificate. The dosage rate for micro-polymer, macro-polymer and steel fibres must be in accordance with Table 6.

9.1.5 A qualified and experienced individual must ensure that the floor system is suitable for the intended application as defined below:

9.1.5.1 The concrete topping thickness, reinforcement specification and length of cantilever slab must be as shown in Table 6 for loadings defined in Table 8.

9.1.5.2 The structural concrete topping specifications shown in Table 6, in conjunction with EPS Top Sheets specified in Table 7 and Figure 1, and the pre-stressed concrete beam with a top width ≥ 42 mm are suitable for use in the building loading categories defined in Table 8.

9.1.5.3 Permitted characteristic loadings for structural concrete toppings reinforced with micro-polymer, macro-polymer and steel fibre are shown in Table 6.

9.1.5.4 Where required, lateral restraint is provided at ground floor level in accordance with the requirements of the national Building Regulations, BS 8103-1 : 2011 and *NHBC Standards* 2023

9.1.6 To minimise the risk of condensation, the void space beneath the lowest point of the floor construction must be at least 150 mm high above the ground surface, with provision for adequate through-ventilation in the form of ventilation openings provided in two opposing external walls. The ventilation openings must be sized at not less than 1500 mm² per metre run of external wall or 500 mm² per square metre of floor area, whichever is the greater. Where pipes are used to carry ventilating air, these must be at least 100 mm in diameter.

9.1.7 To reduce the risk of surface condensation, a minimum of 25 mm perimeter insulation is recommended to the concrete topping and floor construction.

9.1.8 To minimise the risk of condensation at service penetrations, care must be taken to minimise gaps in the insulation layer (for example, by filling with expanding foam insulation).

9.1.9 For buildings in England and Wales, floors will adequately limit the risk of surface condensation when the thermal transmittance (U value) does not exceed 0.7 $W \cdot m^{-2} \cdot K^{-1}$ at any point and the junctions with walls are in accordance with the relevant requirements of *Limiting thermal bridging and air leakage : Robust construction details for dwellings and similar buildings* TSO 2002 or BRE Information Paper IP 1/06.

9.1.10 For buildings in Scotland, floors will adequately limit the risk of surface condensation when the thermal transmittance (U value) does not exceed 1.2 $W \cdot m^{-2} \cdot K^{-1}$ at any point and when designed and constructed to BS 5250 : 2021. Additional guidance can be found in BRE Report BR 262 : 2002.

9.1.11 Care must be taken in the overall design and construction of junctions between the floor and external, internal, and party walls, to limit excessive heat loss and air infiltration.

9.1.12 The junction ψ (psi) values given in Table 5 must be used in SAP calculations, unless values are modelled in accordance with the requirements and guidance in BRE Report BR 497 : 2016, BRE Information paper IP 1/06 and the provisions in the documents supporting the national Building Regulations relating to competency to perform calculations, to determine robustness of design/construction and limiting heat loss by air infiltration by a suitably competent and experienced individual. When using a concrete block as an alternative to an EPS end unit, as shown in Figure 3(f), the junction ψ (psi) values and f-factors must be calculated.

Table 5 Default junction psi values

Junction	Ψ (psi) value ($W \cdot m^{-1} \cdot K^{-1}$)
External wall	0.32 (1)(2)
Party wall	0.32 (1) / 0.16 (2)

(1) Conservative default values from SAP 10.2.
(2) Conservative default values from SAP 2012.

9.1.13 In locations where clay heave is anticipated, a greater void depth may be required to accommodate the possible expansion of the ground below the floor. In such cases where the risk of clay heave has been confirmed by geotechnical investigations, a total void of up to 300 mm (refer to the *NHBC Standards* 2023 Chapter 4.2 *Building near trees*) may be required as follows:

- high-volume change potential (300 mm total void)
- medium-volume change potential (250 mm total void)
- low-volume change potential (200 mm total void).

Table 6 Specifications, thicknesses of structural concrete toppings[1][2][3] and length of cantilever slab for various building categories

Ref no.	Reinforcement specifications	Single-family dwellings [10][11]	Communal areas in blocks of flats[10][11]	Cantilever length [12] (mm)			Concrete thickness above services (mm)				Minimum concrete strength class
				300	335	350	60	65	70	75	
1	One layer of A142 mesh[4] to BS 4483 : 2005 with a characteristic yield strength of (fyk) 500 N·mm^{-2}	x	x	x	x	x	-	x	x	x	C25/30
2	Durus S400 macro-polymer fibre, fibre dosage [5][6][8] of 4 kg·m^{-3}, 45 mm long, 0.9 mm diameter, tensile strength 465 N·mm^{-2}, modulus of elasticity 3350 N·mm^{-2}	x	x	x	-	-	-	-	-	x	C25/30
3		x	-	x	x	-	-	x	x	x	
4	Novomesh B&BA5[5][6][8] (macro-polymer and micro-polyolefin fibre), dosage rate 3.84 kg·m^{-3}, shape of macro-fibre continuously deformed, 60 mm long, 0.56 mm diameter, tensile strength 600 N·mm^{-2}, modulus of elasticity 7000 N·mm^{-2}	x	-	x	x	-	-	x	x	x	C28/35
5	Novomesh B&BA[6][7][8] (steel fibre), dosage rate 17.5 kg·m^{-3}, steel flat end, fibre length 50 mm, diameter 1.0 mm, tensile strength 1150 N·mm^{-2}	x	-	x	x	-	-	x	x	x	C28/35
6	Durus Easy Finish [5][6][8] (macro-polymer fibre), dosage rate 3.00 kg·m^{-3}, 40 mm long, 0.7 mm equivalent diameter, tensile strength 470 N·mm^{-2}, modulus of elasticity 6000 N·mm^{-2}	x	-	x	x	-	-	x	x	x	C25/30

Table 6 Specifications, thicknesses of structural concrete toppings[1][2][3] and length of cantilever slab for various building categories (continued)

Ref no.	Reinforcement specifications	Single-family dwellings [10][11]	Communal areas in blocks of flats[10][11]	Cantilever length [12] (mm)			Concrete thickness above services (mm)				Minimum concrete strength class
				300	335	350	60	65	70	75	
7	Durus Easy Finish [5][6][8] (class II macro-polymer fibre), dosage rate 2.50 kg·m^{-3}, 40 ± 2 mm long, 0.7± 0.03 mm equivalent diameter, aspect ratio 57 ± 7% tensile strength 500 – 37.5 N·mm^{-2}	x	-	x	x	-	-	x	x	x	C20/25
8	Adfil SF86[6][7][8] (steel fibre), dosage rate 13.33 kg·m^{-3}, 60 mm long, diameter 0.75 mm, tensile strength 1225 N·mm^{-2}, modulus of elasticity 200000 N·mm^{-2}	x	-	x	x	-	-	x	x	x	C25/30
9	Adfil SF86 [6][7][8] (hook end steel fibre), dosage rate 7.5 kg·m^{-3}, 60 mm long, diameter 0.75 mm, tensile strength 1225 N·mm^{-2}, modulus of elasticity 200000 N·mm^{-2}	x	-	x	x	-	-	x	x	x	C20/25
10	Nexus 85[5][6][8] (macro-polymer fibre), dosage rate 2.5 kg·m^{-3}, shape (continuously deformed), specific gravity 0.91, melting point 165, 60 mm long, 0.7 mm nominal diameter	x	-	x	x	-	-	x	x	x	C20/25
11	Zenith 60[6][7][8] (steel fibre), dosage rate 10 kg·m^{-3}, shape (straight with hook end), 60 mm long, nominal diameter 1.0 mm	x	-	x	x	-	-	x	x	x	C20/25

Table 6 Specifications, thicknesses of structural concrete toppings[1][2][3] and length of cantilever slab for various building categories (continued)

Ref no.	Reinforcement specifications	Single-family dwellings [10][11]	Communal areas in blocks of flats[10][11]	Cantilever length[12] (mm)			Concrete thickness above services (mm)				Minimum concrete strength class
				300	335	350	60	65	70	75	
12	SikaFiber-1050 B&BA HF[6][7][8] (steel fibre) dosage rate 11.5 kg, shape (corrugated/ wavy), steel grade (low carbon), tensile strength 700 $N \cdot mm^{-2}$, 50 ± 3 mm long, width 3 ± 0.5, thickness 0.75 ± 0.25 mm, depth 2.25 ± 0.25, density 7850 $kg \cdot m^{-3}$	x	-	x	x	-	-	x	x	x	C20/25
13	Fibrin X-T[6][9] monofilament polypropylene micro fibre), minimum dosage rate 0.91 $kg \cdot m^{-3}$, 13-19 mm long, 22 microns diameter, tensile strength 380 $N \cdot mm^{-2}$	x	x	x	-	-	-	-	-	x	C25/30
14	Fibrin 23[6][9] (polypropylene micro-fibre), dosage rate 0.91 $kg \cdot m^{-3}$, 12 mm long, 19.5 microns diameter, tensile strength 416 $N \cdot mm^{-2}$	x	x	x	-	-	-	-	-	x	C25/30
15	Fibrin PC-12[6][9] (polypropylene micro-fibre), dosage rate 0.75 $kg \cdot m^{-3}$, 12 mm long, 19.5 microns diameter, tensile strength 163 $N \cdot mm^{-2}$	x	x	x	-	-	x	x	x	x	C28/35

(1) For standard concrete, the slump must be Class S3 (100 to 150 mm) or S4 (for spot samples taken from initial discharge, 140 to 230 mm).
(2) For self-compacting concrete, the slump flow class must be SF1 (550 to 650 mm) or SF2 (660 to 750 mm). The sand content should be greater than 45%.
(3) The maximum aggregate size is 20 mm and the aggregate for concrete must comply with BS EN 12620 : 2002.
(4) The nominal cover to steel reinforcement must comply with BS 8500-1 : 2015.
(5) For fresh concrete, macro-polymer fibre content must be measured in accordance with the principles of BS EN 14488-7 : 2006.
(6) The dosage rates of steel and macro polymer fibres for concrete Ref no. 3 to 6 and 8 in this Table include 15% additional fibres and are designed to give the minimum required residual flexural tensile strength of concrete toppings with steel and macro-polymer fibres including a tolerance for batching and fibre distribution. Dosage rates of fibres used in full-scale tests (Ref no. 2, 7, 9 to 13 and 15) are approved with the as-tested dosage. Concrete Ref no. 14 is verified as alternative micro fibre concrete topping and can be used at the specified dosage rate with no additional fibres required.
(7) For fresh and hardened concrete, steel fibre content must be measured in accordance with the principles of BS EN 14721 : 2005.
(8) The steel and polymer fibres for concrete topping must comply with BS EN 14889-1 : 2006 and BS EN 14889-2 : 2006 respectively.
(9) Micro-polymer-fibre-only structural concrete toppings are not accepted on NHBC sites.

(10) See Table 7 for maximum permissible line load (permanent action), variable action concentrated load or UDL that can be applied on the Top Sheet grades EPS 120, EPS 150 and EPS 200 .
(11) See Table 8 for maximum characteristic variable action, partition loads (variable and permanent actions) and weight of finishes (permanent action) for structural concrete toppings reinforced with micro-polymer, macro-polymer, steel fibres or steel mesh A142.
(12) The maximum allowable distance of concentrated load from the centreline of the beam, including provision of wall finishes and skirting board, must not exceed the following values:

- for 300 mm length of Plus Starter Unit, Plus End Unit or Infill End Unit from the top face of the beam to the wall = 229 mm
- for 335 mm length of Plus Starter Unit, Plus End Unit or Infill End Unit from the top face of the beam to the wall = 264 mm
- for 350 mm length of Plus Starter Unit, Plus End Unit or Infill End Unit from the top face of the beam to the wall = 279 mm.

Table 7 Minimum compressive stress at 10% deformation to BS EN 13163 : 2012 of the EPS Top Sheet for loadings related to each building category (see Table 8) subject to the concrete specification and length of cantilever defined in Table 6

UDL (1) Variable action ($kN·m^{-2}$)	Concentrated load (1) (2) Variable action (kN)	Line load (3) partition wall Permanent action ($kN·m^{-1}$)	Finishes Permanent action ($kN·m^{-2}$)	Minimum grade of EPS Top Sheet for thickness range between 50 and 600 mm (kPa)
Max.1.5	Max. 2.0	1.0	0.5	EPS 120
		3.0		EPS 120
		5.0		EPS 120
Max. 3.0	Max. 4.0	1.0		EPS 120
		3.0		EPS 120
		5.0		EPS 200

(1) Variable concentrated load action must not be combined with the variable UDL action or other variable actions.
(2) Variable concentrated load action is assumed to be applied over a square plate not less than 50 by 50 mm.
(3) Either the variable action for lightweight moveable partitions or permanent action for line load partition must be considered.

Table 8 Maximum characteristic variable actions, partition loads and weight of finishes (permanent actions) for permitted building categories subject to the concrete specification and cantilever defined in Table 6(1)

Description	Characteristic value of loads		
	for single-family dwellings	for communal areas in blocks of flats	for communal areas in blocks of flats – micro-fibre only
Variable action uniformly distributed load (UDL) ($kN·m^{-2}$)(2)	1.5	3.0(9)	1.5(3)
Variable action concentrated load (kN)(2)(4)	2.0	4.0(9)	2.0
Permanent action line load partition, parallel and perpendicular to the beam ($kN·m^{-1}$)(5)(6)	1.0(3)(7)	Max. 5.0(9)	1.0(3)(7)
	Max. 3.0(8)		
	Max. 5.0(9)		
Variable action allowance for moveable partition ($kN·m^{-2}$)(5)(6)		1.0(3)	
Permanent action for finishes ($kN·m^{-2}$)		0.5	

(1) Concrete topping thickness and length of cantilever slab is subject to the concrete specification and cantilever allowed as per Table 6.
(2) See footnote 1 of Table 7.
(3) The total characteristic variable actions (UDL and moveable partition) in communal areas in flats must not exceed 2.5 $kN·m^{-2}$ for micro-fibre concrete toppings. Floors with concrete topping reinforced with micro-polymer fibres can resist a lightweight partition, eg stud wall, lighter or equal to 1 $kN·m^{-1}$. Non-load bearing partition walls heavier than 1 $kN·m^{-1}$, parallel to the beams, must be either supported by the foundation or bear directly on the concrete beams. Non-load bearing partitions of 3 $kN·m^{-1}$ parallel to the beams, if the total length of partition wall is less than 25% of the span, can be built off the floor.
(4) Variable concentrated load action is assumed to be applied over a square plate not less than 50 by 50 mm.
(5) See footnote 3 of Table 7.
(6) Non-load bearing partition walls heavier than the permitted value (see Table 8), in any orientation to the concrete beams, must either be supported by a foundation or bear directly on the concrete beams designed to sustain the specific loading.
(7) Floors with concrete topping reinforced with micro-polymer fibres can resist only lightweight partitions, subject to the provisions of footnote (3) for this Table.
(8) Only applies to concrete topping reinforced with steel fibre or macro-polymer fibre or steel mesh reinforcement A142.
(9) Only applies to concrete topping reinforced with steel mesh reinforcement A142 or Durus S400 . See Table 6, Ref no. 1 and 2.
Note: Refer to certificate 07/4411 PS1 for commercial buildings.

9.1.14 The EPS components for Beamshield Infill and Beamshield Plus systems are for use with self-bearing pre-stressed concrete beams of normal weight concrete, which provide the final strength of the floor system independently of any other constituent of the floor system.

9.1.15 The precast prestressed concrete beams are outside the scope of this Certificate and must be specified and designed by a suitably competent and experienced individual.

9.1.16 A suitably competent and experienced individual must design the concrete beam required for the floor in accordance with the principles of BS EN 1992-1-1 : 2004 and its UK National Annex, and ensure that the natural frequency (f) of the concrete beam due to footfall(1) is greater than 4 Hertz (Hz) as defined below for each floor under the specified loading conditions:

(a) the concrete beam must have a natural frequency greater than 4 Hz when loaded with full permanent action plus 0.1 x variable UDL action
(b) the natural frequency (f) in Hz of a simply supported concrete beam under UDL loading is determined from equation: $f = 18/\Delta^{0.5}$, where Δ is the deflection of the concrete beam in mm for variable UDL action [as defined in item (a)] and permanent UDL actions.

(1) The vibration due to rhythmic activity (such as dancing) and external sources (such as building construction or rail traffic) must be designed to satisfy the requirements. However, assessment of such vibration is outside the scope of this Certificate.

9.2 Installation

9.2.1 Installation instructions provided by the Certificate holder were assessed and judged to be appropriate and adequate.

9.2.2 Installation must be carried out in accordance with this Certificate and the Certificate holder's instructions. A summary of instructions and guidance is provided in Annex A.

9.2.3 Where two or more concrete beams are placed side by side, eg beneath load bearing walls, the spaces between the beam webs must be in-filled with concrete with a minimum strength class of C25/30 to give unity of action.

9.2.4 The minimum bearing width to support the concrete beam is 90 mm in accordance with the principles of BS EN 8103-1 : 2011.

9.2.5 Electrical cables running within the EPS components must be enclosed in a suitable conduit, such as rigid PVC.

9.2.6 On sites which may be subject to emissions of gas or volatile organic compounds (VOCs), a suitably experienced and qualified person must assess the compatibility of the insulation with any potential emissions.

9.3 Workmanship

9.3.1 Practicability of installation was assessed by the BBA on the basis of the Certificate holder's information. To achieve the performance described in this Certificate, installation of the systems must be carried out by a competent general builder, or contractor, experienced with this type of product.

9.4 Maintenance and repair

9.4.1 As the systems are installed within the floor structure and has suitable durability, maintenance is not required.

10 Manufacture

10.1 The production processes for the systems have been assessed, and provide assurance that the quality controls are satisfactory according to the following factors:

10.1.1 The systems are manufactured by expanding polystyrene beads using conventional moulding techniques.

10.1.2 The manufacturer has provided documented information on the materials, processes, testing and control factors.

10.1.3 The quality control operated over batches of incoming materials has been assessed and deemed appropriate and adequate.

10.1.4 The quality control procedures and testing to be undertaken have been assessed and deemed appropriate and adequate.

10.1.5 The process for management of non-conformities has been assessed and deemed appropriate and adequate. An audit of each production location was undertaken, and it was confirmed that the production process was in accordance with the documented process, and that equipment has been properly tested and calibrated.

†10.1.6 The BBA has undertaken to review the above measures on a regular basis through a surveillance process, to verify that the specifications and quality control operated by the manufacturer are being maintained.

11 Delivery and site handling

11.1 The Certificate holder has stated that the EPS is delivered to site in packaging bearing the component name, Certificate holder's name and batch number.

11.2 Delivery and site handing must be performed in accordance with the Certificate holder's instructions and this Certificate, including the following:

11.2.1 The EPS components are wrapped in polythene but are otherwise unprotected. Therefore, reasonable care must be taken during transit and storage to avoid damage. Particular attention will be required for blocks with extended toe widths.

11.2.2 The EPS components must be stacked on a flat base, clear of the ground, protected against prolonged direct sunlight and secured to avoid wind damage. Care must be taken to avoid contact with organic solvents.

11.2.3 The EPS components must not be exposed to flame or ignition sources. Careful consideration should also be given to the management of fire risk when in storage.

ANNEX A – SUPPLEMENTARY INFORMATION †

Supporting information in this Annex is relevant to the product but has not formed part of the material assessed for the Certificate.

Construction (Design and Management) Regulations 2015
Construction (Design and Management) Regulations (Northern Ireland) 2016

Information in this Certificate may assist the client, designer (including Principal Designer) and contractor (including Principal Contractor) to address their obligations under these Regulations.

UKCA marking

The Certificate holder has taken the responsibility of UKCA marking the components of the product, in accordance with Designated Standards EN 13163 : 2012 and EN 15037-4 : 2010.

Management Systems Certification for production

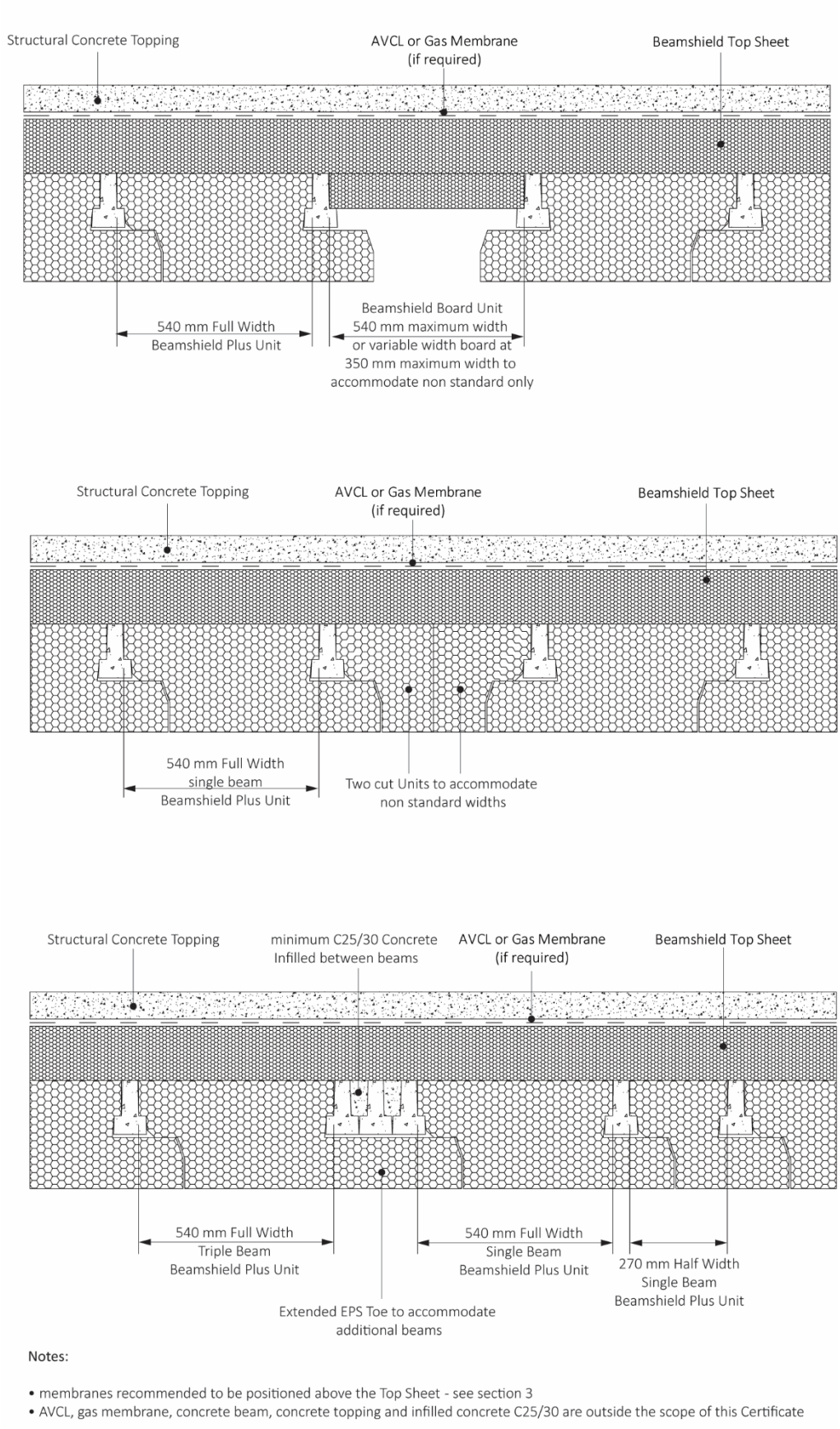
The management system of the manufacturer has been assessed and registered as meeting the requirements of ISO/IEC 9001 : 2015 by the BSI (Certificate FM13871) and ISO/IEC 14001 : 2015 by QMS International (Certificate 14130944).

Additional information on installation

A.1 Installation must be in accordance with the Certificate holder's instructions and this Certificate.

A.2 Details of example cross sections for Springvale Beamshield Top Sheet Systems are shown in Figures 4 and 5 of this Certificate.

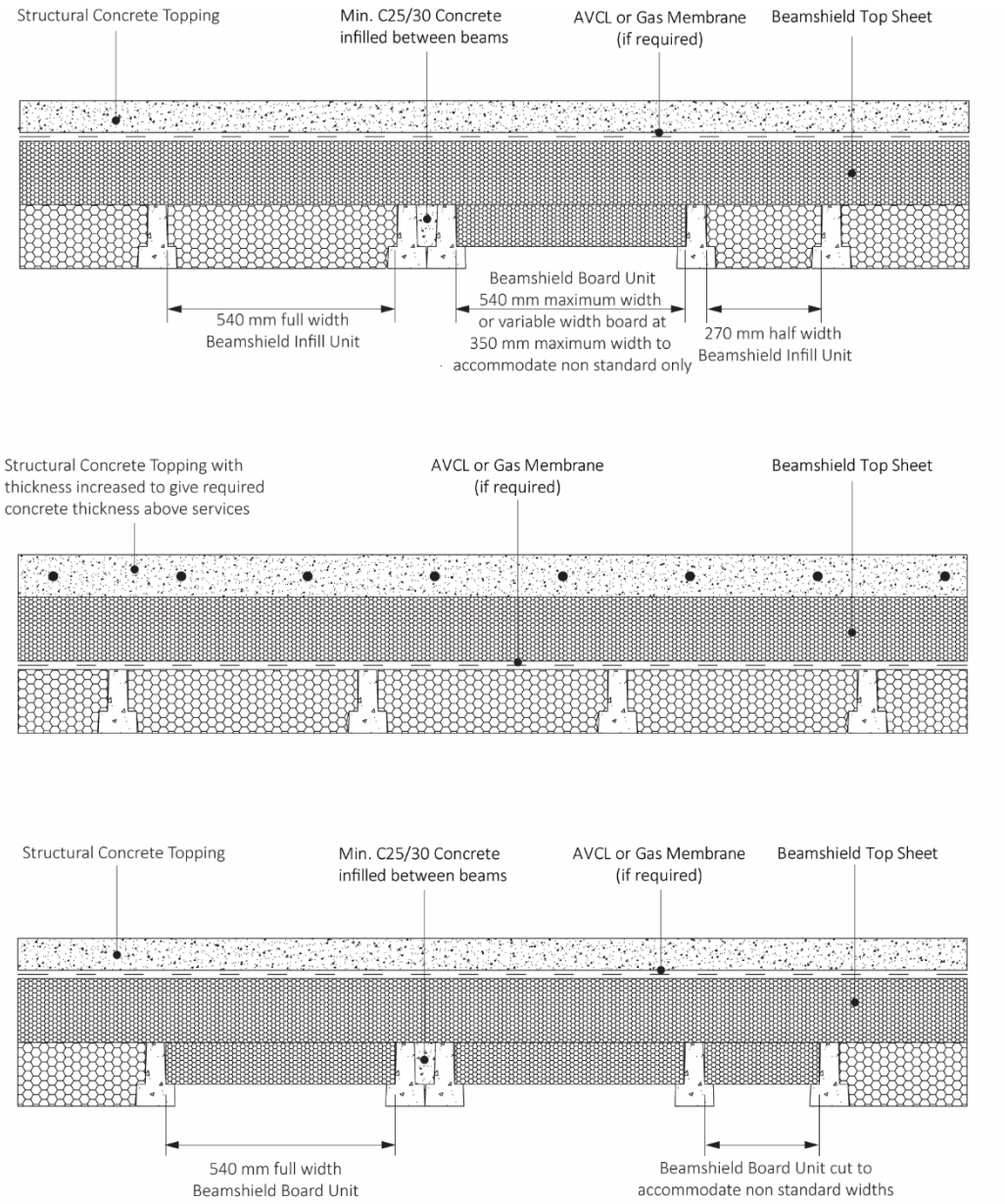
Figure 4 Example of cross sections for the Springvale Beamshield Plus Top Sheet System



Notes:

- membranes recommended to be positioned above the Top Sheet - see section 3
- AVCL, gas membrane, concrete beam, concrete topping and infilled concrete C25/30 are outside the scope of this Certificate

Figure 5 Example of cross sections for the Springvale Beamshield Infill Top Sheet System



Notes:

- membranes recommended to be positioned above the Top Sheet - see section 3
- AVCL, gas membrane, concrete beam, concrete topping, steel reinforcement, concrete C25/30 are outside the scope of this Certificate

Site preparation

A.3 Where clay soil of low-, medium- or high-volume change potential exists, the final minimum void depth should be increased appropriately 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 (see section 9.1.13).

A.4 The ground beneath the floor should be free of topsoil and vegetation. Oversite concrete or other surface seal is not required, but material added to bring the solum to an even surface must be hard and dry.

A.5 A continuous damp-proof course should be laid along the support wall below the floor in accordance with the principles of BS 8102 : 2009.

Procedure for the Springvale Beamshield Top Sheet Plus System

A.6 Normal precautions for handling EPS materials should be taken to avoid damaging the EPS Units during offloading, storage, handling and installation. Any damaged EPS Units must be replaced before pouring the concrete.

A.7 Plus Starter Units are attached to the first beam. The beams and Plus Starter Units are then positioned tightly against the wall. The beams are laid in the positions shown on the floor plan and each beam is manually 'tightened' up against the EPS Unit as each run of EPS Unit is installed.

A.8 Where a Beamshield Plus Unit's length must be cut down to accommodate varying beam lengths, it should be located at the edge of the floor and extra care must be taken to avoid damage and foot traffic. The EPS Beamshield Plus Unit should not be cut to lengths of less than 300 mm.

A.9 It is essential that the correct EPS Plus Units are used with the single and multiple beams to ensure that the vertical gap between an EPS Plus toe and the adjacent EPS Plus Unit does not exceed 6 mm, so that cold air does not by-pass the insulation and significantly reduce the thermal performance of the floor.

A.10 Plus Starter and End Units must not be more than 350 mm wide at the top. Should any other cutting be required, the advice of the Certificate holder should be sought, but such activities are outside the scope of this Certificate.

A.11 Beamshield Board Units (540 mm maximum width) or the Variable Width Board (350 mm maximum width) are used where shown on the design layout to accommodate non-standard beam spacing. Beamshield Plus End Units are used to complete the floor.

A.12 The EPS Top Sheet insulation is laid over the floor and cut with a handsaw to accommodate service penetrations and part sheet widths where necessary.

A.13 If applicable, AVCL or gas membranes should be installed in accordance with good practice. See sections 3.1.2 and 3.1.3 of this Certificate.

A.14 If specified, underfloor heating pipes can be installed. These can be secured to the Top Sheet insulation material using standard pipe clips. Care must be taken not to puncture any membranes if installed.

A.15 If steel mesh is specified, spacers should be positioned over spreader plates, minimum four per m^2 and minimum 50 by 50 mm. These should be installed to position the steel mesh at the correct level.

A.16 Although the EPS Beamshield Units can withstand light foot traffic, care should still be taken not to walk unnecessarily over the installed EPS Beamshield Units. If a temporary working platform is required, the EPS Beamshield Plus Units should be covered with a suitably rigid board. To avoid damage to the EPS Beamshield Units, the structural concrete topping should be laid as soon as possible after the EPS Beamshield Units and Top Sheets have been installed.

A.17 When using a concrete pump, truck or skip, concrete should not be discharged onto the polystyrene units from heights greater than 500 mm and concrete heaps must not be formed over 300 mm high.

A.18 When wheelbarrows are used, planks must be placed to spread the wheel load to the precast concrete beams. Spot boards must be used when tipping and shovelling.

A.19 The structural concrete topping is placed and compacted. Provision should be made for a suitable concrete finish to be achieved, preferably without standing on the EPS components, eg by the use of a self-compacting concrete topping (see Figure 6 for an example of the Beamshield Top Sheet Plus System assemblies).

Procedure for the Springvale Beamshield Top Sheet Infill System

A.20 Section A.6 relating to Beamshield Top Sheet Plus will also apply to Beamshield Top Sheet Infill Installation.

A.21 The precast concrete beams are positioned at approximate locations and centres. Once an EPS Unit is positioned the beams must be tightly butted up to the EPS Units.

A.22 The Infill End Units are positioned against the inside face of the wall and must not be more than 350 mm wide at the top. The adjacent beam is then moved into position to support the profiled edge of the unit. The flat face of the unit provides a tight friction fit against the wall.

A.23 Beamshield Infill Units may be cut where required. Offcuts greater than 300 mm may be used elsewhere in the floor. The Infill Units are cut to accommodate varying beam lengths and are to be positioned at the floor edges, subject to a minimum cut length of 300 mm.

A.24 Section A.11 applies for non-standard beam spacing of the Springvale Beamshield Infill System.

A.25 The EPS Top Sheet insulation is laid over the floor and cut with a handsaw to accommodate service penetrations and part sheet widths where necessary. Small offcuts can be used to seal around service penetrations.

A.26 Section A.13 relating to Beamshield Top Sheet Plus will also apply to Beamshield Top Sheet Infill Installation.

A.27 Sections A.14 to A.19 will apply to the Beamshield Infill System installation (see Figure 7 for an example of the Beamshield Infill System assemblies).

Figure 6 Example of the Beamshield Top Sheet Plus System assemblies

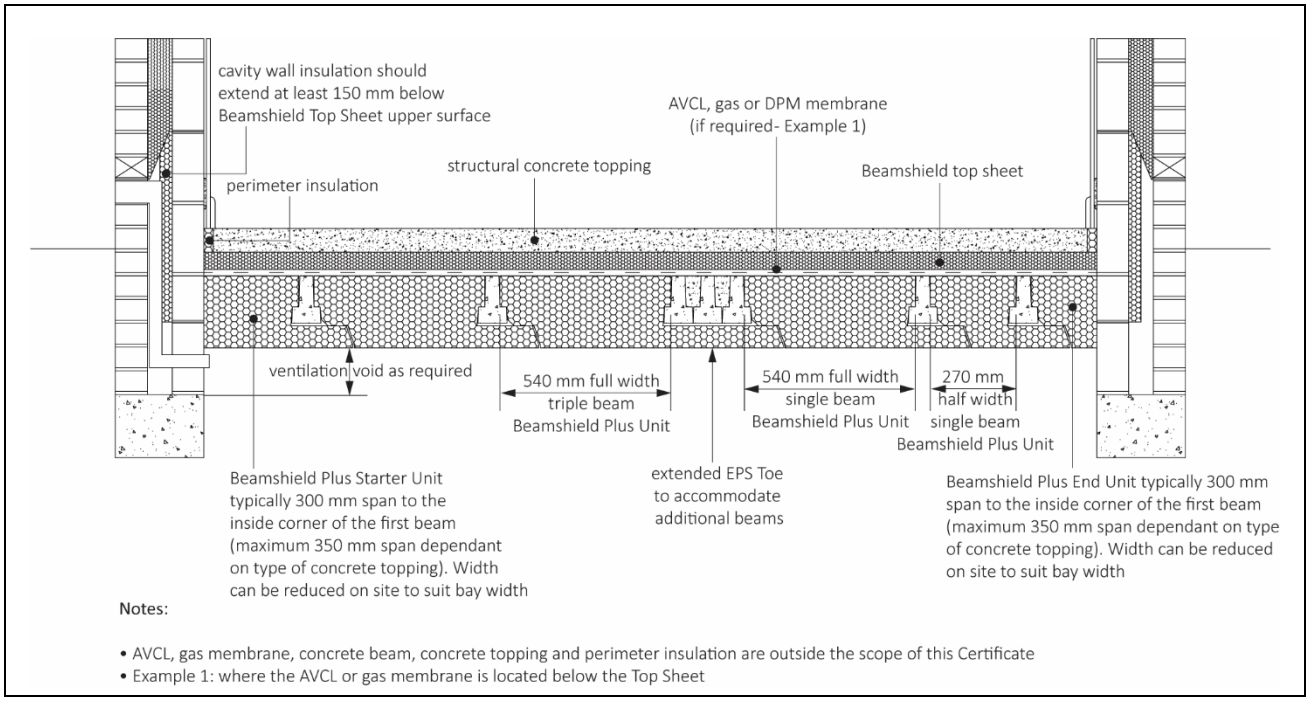
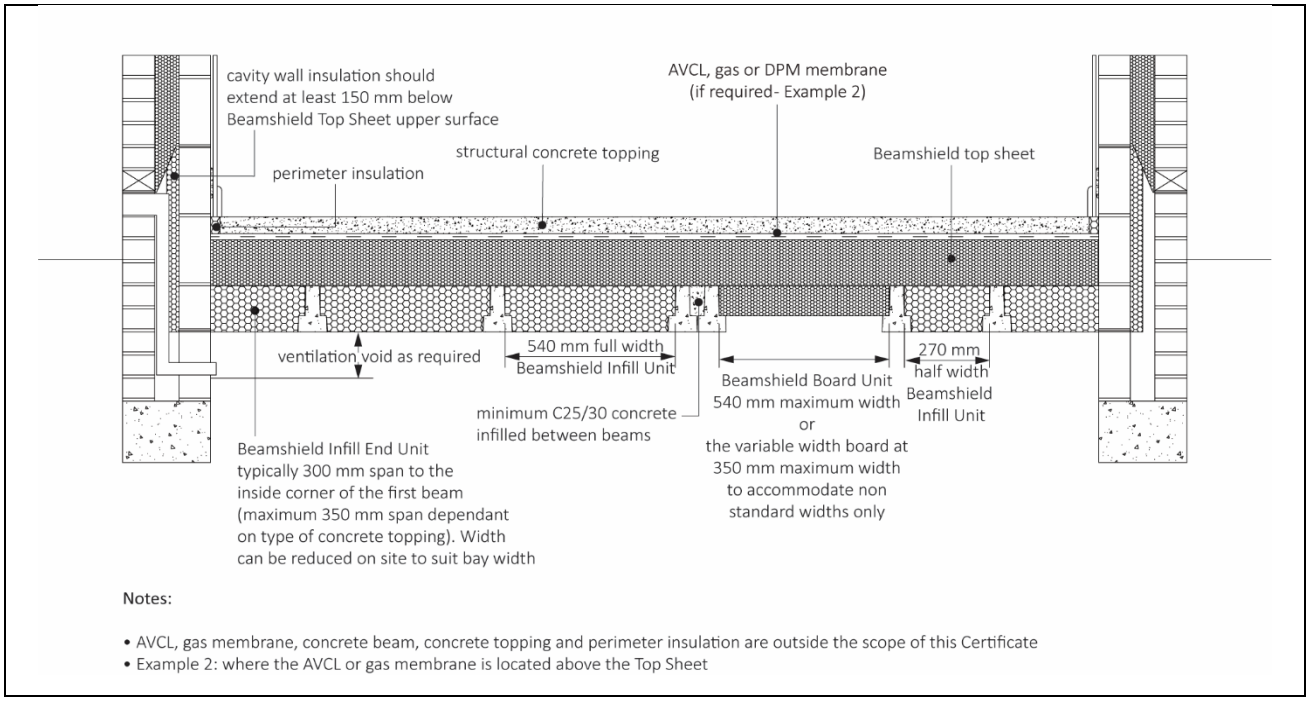


Figure 7 Example of the Beamshield Infill Top Sheet System assemblies



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Conditions

1 This Certificate:

- relates only to the product 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.

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.

3 This Certificate will be displayed on the BBA website, and the Certificate Holder is entitled to use the Certificate and Certificate logo, provided that the product 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.

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

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

6 Any information relating to the manufacture, supply, installation, use, maintenance and removal of this product which is contained or referred to in this Certificate is the minimum required to be met when the product 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.

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