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Agrément Certificate
12/4909
Product Sheet 1

ABBEY PYNFORD LTD

ABBEY PYNFORD COMDECK AND HOUSEDECK FOUNDATION SYSTEMS

This Agrément Certificate Product Sheet(1) relates to the Abbey Pynford Comdeck and Housedeck Foundation Systems, comprising a reinforced concrete floor raft slab, and galvanized/stainless steel brick support units either supported directly off a designed working platform or a sacrificial plywood platform.

(1) Hereinafter referred to as 'Certificate'.

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 components of the systems have adequate strength to resist the loads associated with installation and permanent loading (see section 6).

Durability — the systems will have an effective minimum service life of 60 years (see section 14).

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 Third issue: 29 November 2021

Originally certificated on 26 June 2012

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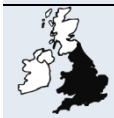
Regulations

In the opinion of the BBA, the Abbey Pynford Comdeck and Housedeck Foundation 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 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 systems will have adequate strength and stiffness. See section 6 of this Certificate.
Requirement:	**A2**	**Ground movement**
Comment:		The systems will have adequate strength and stiffness. See section 6 of this Certificate.
Requirement:	**C2(a)**	**Resistance to moisture**
Comment:		Constructions incorporating the systems can satisfy this Requirement. See section 8 of this Certificate.
Regulation:	**7(1)**	**Materials and workmanship**
Comment:		The systems are acceptable. See sections 14.1 and 14.2 and the *Installation* part of this Certificate.

The Building (Scotland) Regulations 2004 (as amended)

Regulation:	**8(1)**	**Durability, workmanship and fitness of materials**
Comment:		The systems are acceptable. See sections 14.1 and 14.2 and the *Installation* part of this Certificate.
Regulation:	**9**	**Building standards applicable to construction**
Standard:	1.1(a)(b)	Structure
Comment:		The systems will have sufficient strength and stiffness, with reference to clauses 1.1.1(1)(2) to 1.1.4(1)(2), when designed in accordance with section 6 of this Certificate.
Standard:	3.4	Moisture from the ground
Comment:		The systems can contribute to a construction satisfy this Standard, with reference to clauses 3.4.2(1)(2), 3.4.3(1)(2), 3.4.5(1)(2) and 3.4.6(1)(2). See section 8 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.

(1) Technical Handbook (Domestic).
(2) Technical Handbook (Non-Domestic).

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

Regulation:	**23(a)(i)(iii)(b)(i)**	**Fitness of materials and workmanship**
Comment:		The systems are acceptable. See sections 14.1 and 14.2 and the *Installation* part of this Certificate.

Regulation:	**28(a)**	**Resistance to moisture and weather**
Comment:		Constructions incorporating the systems can adequately limit the risk of moisture ingress from the ground. See section 8 of this Certificate.
Regulation:	**30**	**Stability**
Comment:		The systems will have adequate strength and stiffness. See section 6 of this 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.

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

Additional Information

NHBC Standards 2021

In the opinion of the BBA, the Abbey Pynford Comdeck and Housedeck Foundation Systems, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements in relation to *NHBC Standards*, Chapters 3.1 *Concrete and its reinforcement*, 4.2 *Building near trees,* 4.4 *Raft, pile, pier and beam foundations*, 5.1 *Substructure and ground-bearing floors* and 5.2 *Suspended ground floors*.

Technical Specification

1 Description

1.1 The Abbey Pynford Comdeck and Housedeck Foundation Systems are reinforced concrete floor raft slab systems, utilising galvanized/stainless steel brick support, for use in commercial, residential and domestic applications.

1.2 The systems comprise two versions: Comdeck, for commercial applications, and Housedeck, for domestic applications. Comdeck is designed to resist higher loadings. Each version consists of three variations: ground cast pile-supported (adjacent to the ground)(1); suspended on piles; and fully ground bearing without piles. All three variations may have a straight edge, upstand, downstand or nib edge detail, with or without a brick support unit.

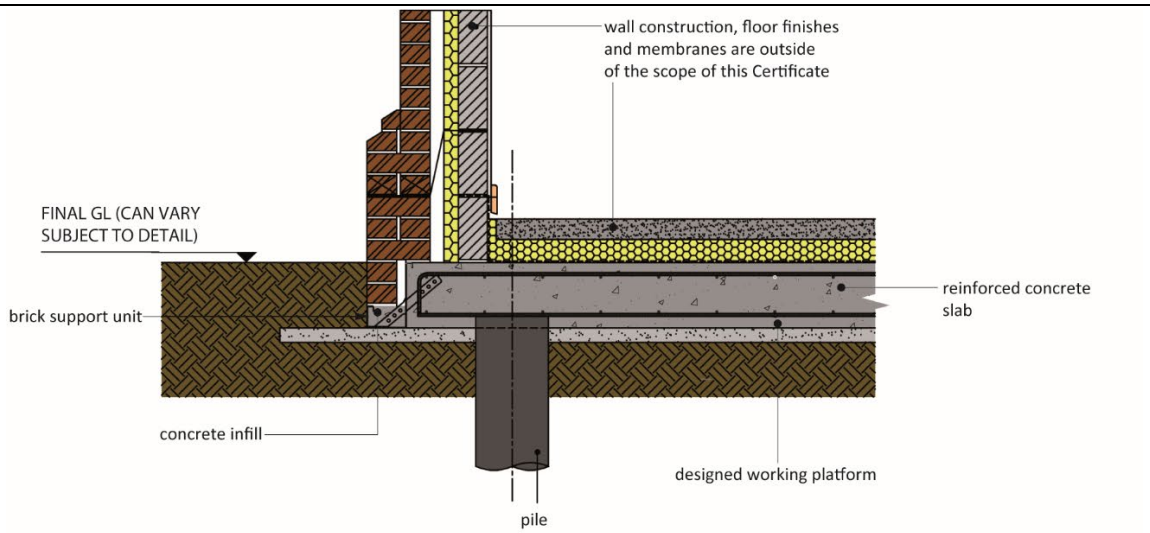
- Ground cast pile-supported Comdeck and Housedeck— cast in-situ onto a preformed designed working platform connected via reinforcement into the piles. This system, generally, is used on sites where a previous ground investigation has been carried out to indicate that the ground-bearing capacity is adequate for the load from the wet concrete, and there is a low risk of clay heave (see Figure 1)

- Suspended Comdeck and Housedeck — cast in-situ onto a sacrificial plywood formwork platform temporarily supported by a patented re-usable, hinged, demountable support system. The formed floor construction is connected via reinforcement into the piles. This system is generally used in areas of high risk of ground heave or subsidence, or in flood-prone areas (see Figure 2).

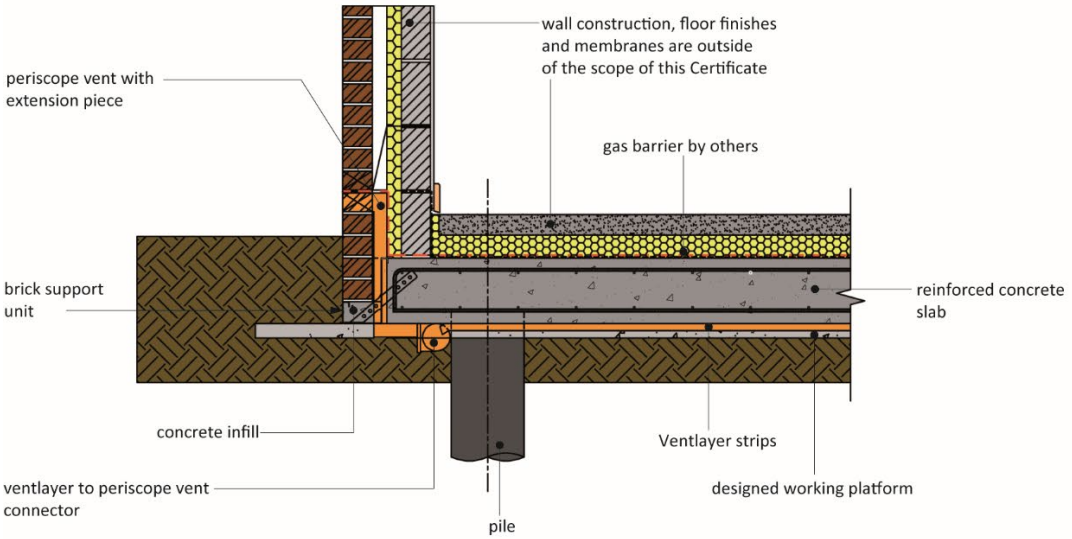
- Ground cast Comdeck and Housedeck — cast in-situ onto a preformed designed working platform resting on natural ground or improved ground(2) (see Figure 3)

(1) Refers to concrete deck being supported by ground until concrete has reached its design strength.
(2) Improved ground techniques are outside the scope of this Certificate.

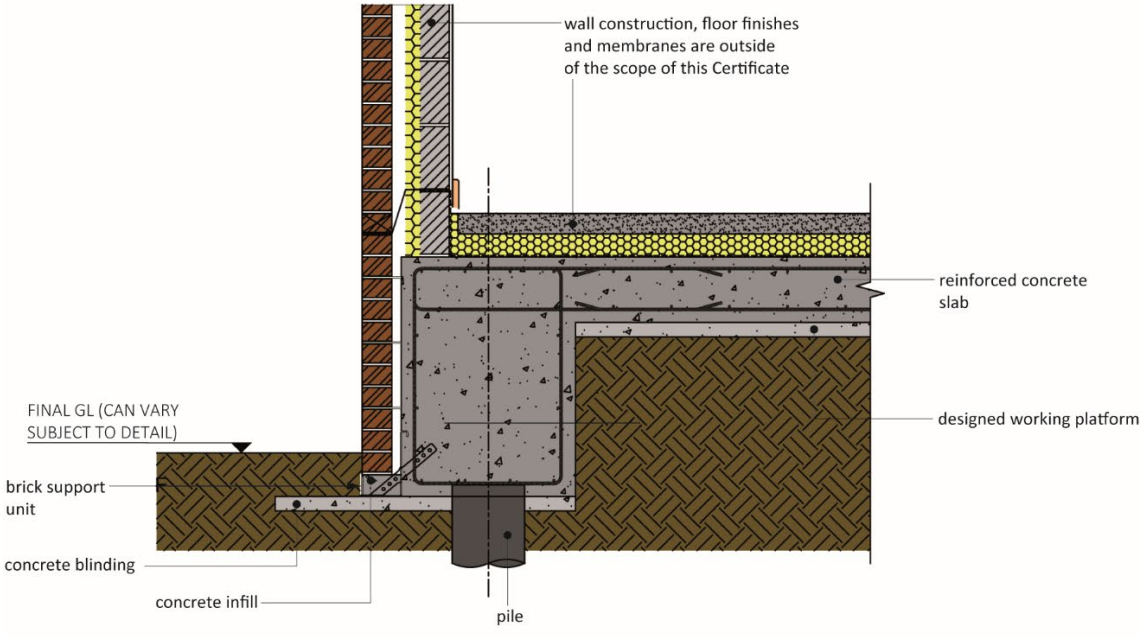
Figure 1 Typical construction details of non-voided Comdeck and Housedeck



typical non voided construction



typical non voided construction incorporating a gas venting system



typical non voided construction incorporating a downstand

Figure 2 Typical construction details of voided suspended Comdeck and Housedeck connected to piles

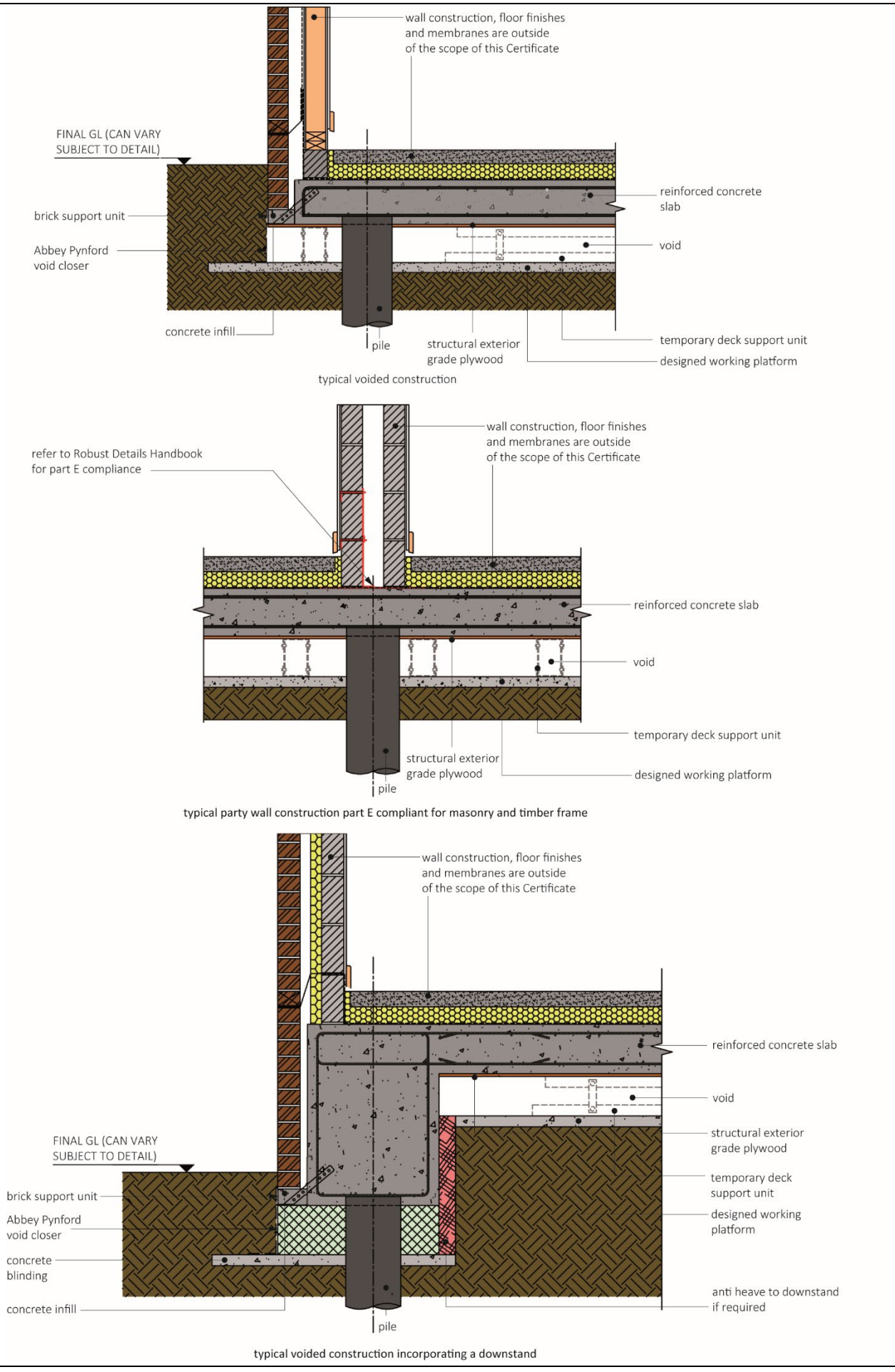
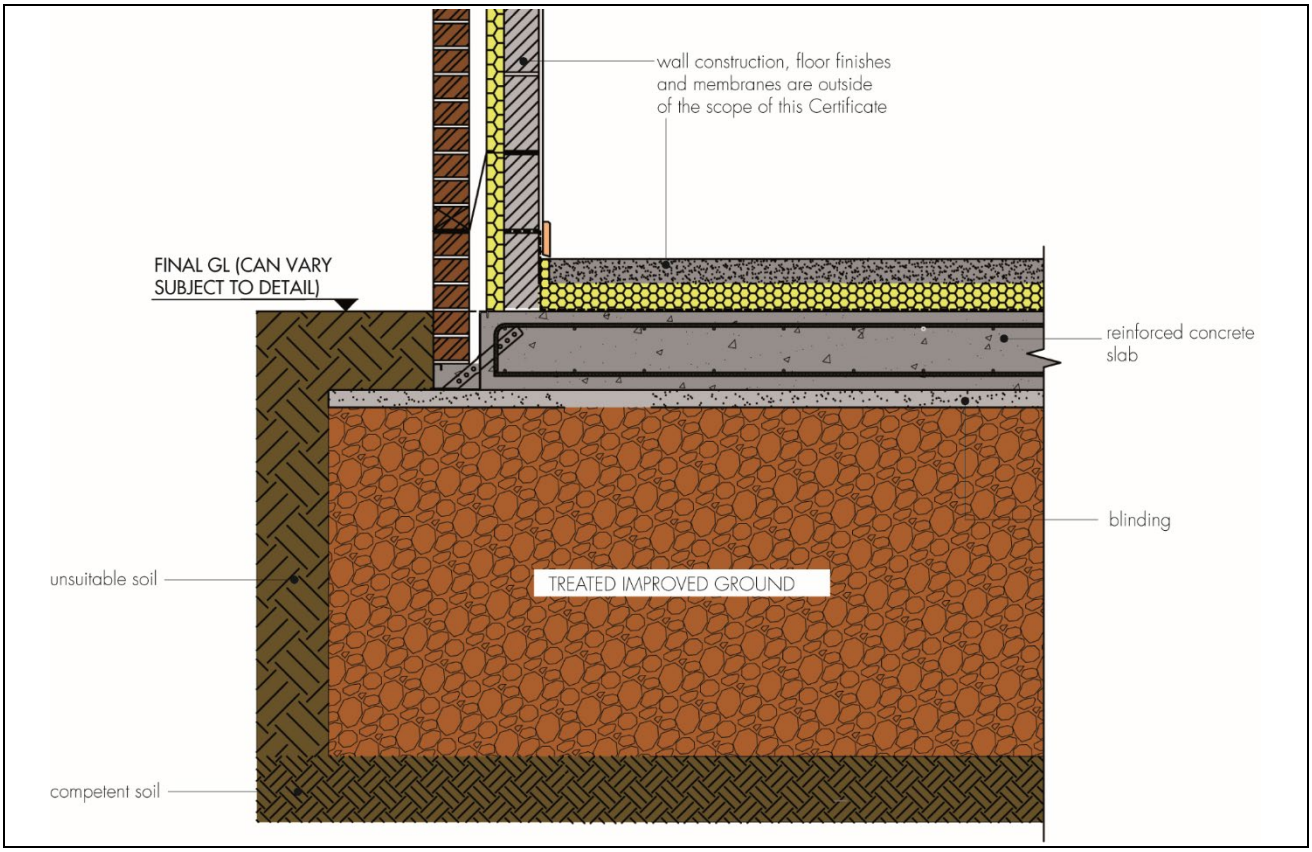


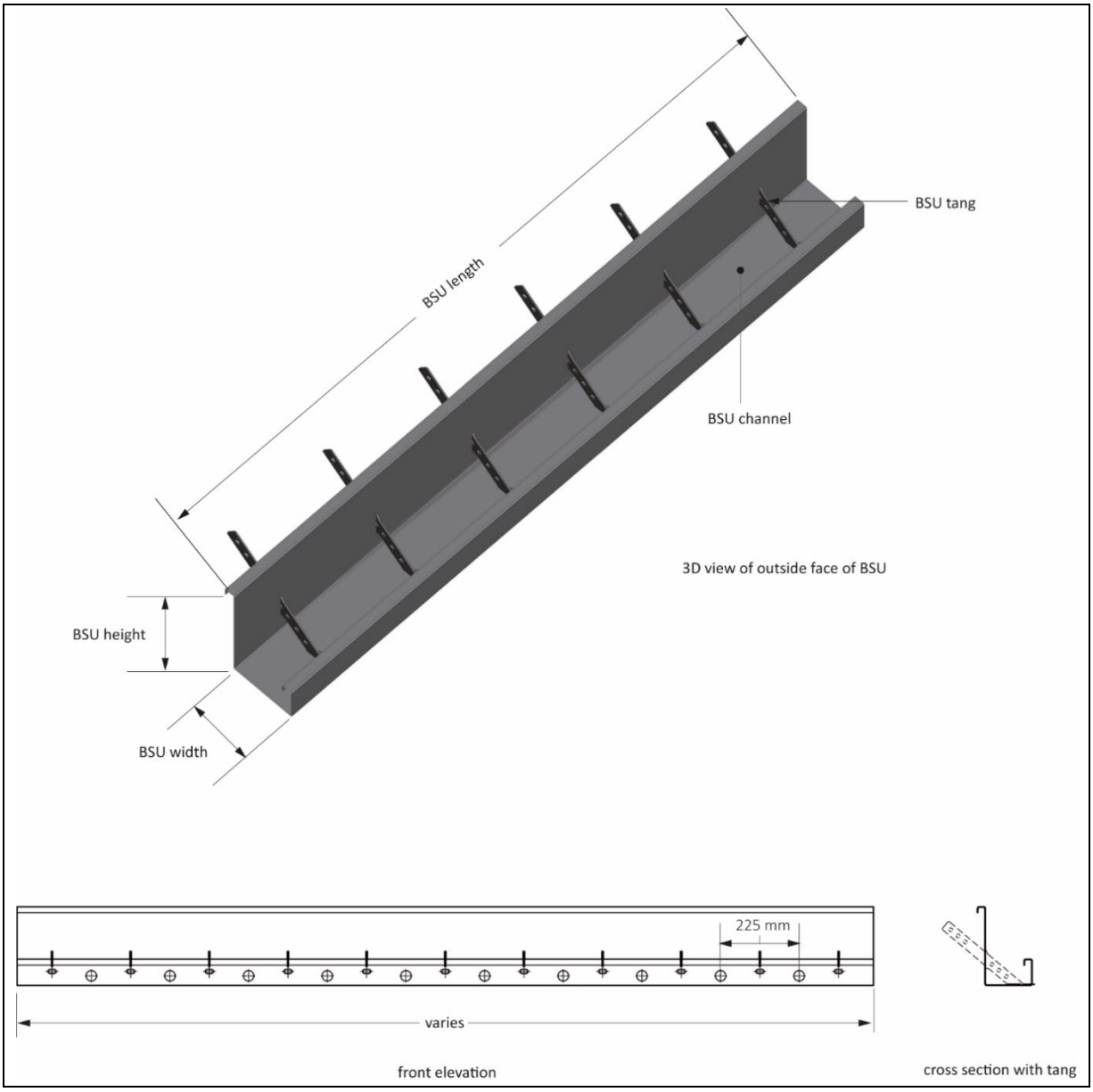
Figure 3 Typical detail of ground cast Comdeck and Housedeck supported off natural ground or improved ground



1.3 Components of the systems include:

- brick support unit (BSU) — acts as edge formwork system for the Comdeck and Housedeck raft slab and as a permanent support system for the outer skin of cavity brickwork. Each unit (see Figure 4) consists of two components:
  - — preformed, pre-galvanized (Z600 or ZM310 grade), minimum 0.9 mm thick mild steel sheet up to 4000 mm long, supported off the sacrificial plywood formwork platform and located around the periphery of the raft slab
  - — stainless steel tangs (anchors) located through the steel sheet made from 30 mm wide by 3 mm thick by 275 mm long grade 304 (1.4301) stainless steel to BS EN 10088-2 : 2014 at typically 225 mm centres

Figure 4 Detail of brick support unit



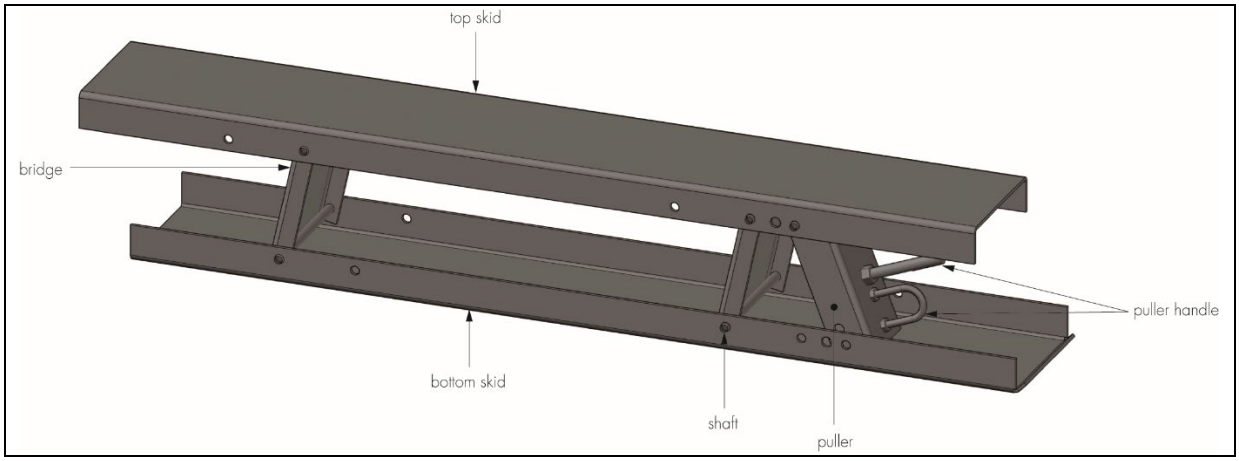
- concrete — minimum strength grade C28/35 Designated Mix (RC28/35 compressive strength class to BS EN 206 : 2013) supplied by plants registered with the Quality Scheme for Ready Mixed Concrete (QSRMC) or BSI Kitemark and to Certificate holder's specified design mix. The concrete specification must meet the requirements of BS EN 206 : 2013, BS 8500-1 : 2015 or BS 8500-2 : 2015 in respect of minimum strength, cement content, cover and maximum water-cement ratio for the exposure conditions
- steel reinforcement — supplied by a third-party approved supplier to BS 4449 : 2005
- sacrificial plywood formwork platform — 2440 mm by 1220 mm by minimum 12 mm thick plywood to BS EN 13986 : 2004

1.4 Ancillary items used in combination with the systems but not covered by the Certificate, include:

- reusable, demountable deck support unit (DSU)(1) (see Figure 5)
- managed piling systems installed and approved by the Certificate holder
- treated ground (designed, detailed and installed by others)
- suitable heave-protection void formers approved by the Certificate holder
- designed working platform
- damp-proofing and gas membranes (designed, detailed and installed by others)
- insulation and screed (above system, designed, detailed and installed by others)
- void closer (around periphery of raft slab).

(1) A patented item supplied by the Certificate holder as part of the system.

Figure 5 Demountable deck support unit (DSU)



2 Manufacture

2.1 The brick support unit is fabricated using conventional metal-working techniques

2.2 Ready-mixed concrete, to an agreed specification, is poured on site into the formwork, over piles incorporating carbon/galvanized/stainless steel reinforcement.

2.3 As part of the assessment and ongoing surveillance of product quality, the BBA has:

- agreed with the manufacturer 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 nonconformities
- 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 manufacturer are being maintained.

2.4 The management system of Abbey Pynford Holdings Ltd has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2015 by BSI (Certificate FS 602833).

3 Delivery and site handling

3.1 All components are delivered for assembly by the Certificate holder's operatives.

3.2 Unless required for immediate use, all components should be stored in a clean, dry environment on firm level ground. Care should be taken to avoid mechanical damage, particularly to edges/corners. Damaged components should not be used.

3.3 Brick support units, sacrificial formwork and reusable demountable formwork support system can be lifted by hand depending on the size of the bundle, or mechanically lifted using appropriate slings, chains or shackles.

3.4 The sacrificial formwork should be supported on timber chocks off the ground. Overstacking should be avoided to ensure stability of the stack.

3.5 Steel reinforcement is supplied pre-cut and bent to shape in bundles and should be stored on firm level ground away from trafficked areas.

3.6 Concrete is normally delivered to site ready-mixed by lorry for immediate use.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on the Abbey Pynford Comdeck and Housedeck Foundation Systems.

Design Considerations

4 Use

4.1 The Abbey Pynford Comdeck and Housedeck Foundation Systems consist of a reinforced concrete raft slab cast directly onto the ground via a previously prepared designed working platform or suspended reinforced raft slab cast onto a sacrificial plywood formwork platform. The chosen system is either used in conjunction with the Certificate holder's piling systems or, in the case of the ground cast version, is fully ground bearing. The system is suitable for use in domestic, residential and commercial construction. Maximum building or storey heights, using the system, are subject to structural design analysis (see sections 6.1 to 6.3), the design capacity of the BSU (see section 6.8) and individual site considerations.

4.2 All structural design and detailing involving the use of the systems must be carried out in accordance with relevant British or European Standards and statutory national Building Regulations. For each project, the Certificate holder's Design Department will examine the loading configuration applied by each structure on the system elements, and check this against the limitations of the system.

4.3 An appropriately qualified and experienced engineer must perform a site-specific assessment to ascertain the suitability of the system for the intended use and the required construction detailing, including the following considerations:

- a geotechnical assessment of the site to identify the mechanical properties of the soil and the potential for shrinkable soils and clay heave, and the presence of shafts, voids, obstructions in the ground or other geotechnical hazards
- the presence of trees near the foundation
- where required, adequate heave-protection provisions
- a geo-environmental assessment to identify the potential for ground contamination and ground gases, including radon gas and volatile organic compounds (VOCs). Where contamination or gases are present, a suitably qualified and experienced person must specify a suitable arrangement of membranes to prevent the ingress of gas into the building. Where required, drainage of any subfloor void and provision for services must also be taken into account
- provision, if required, of ventilation to any sub-floor voids and an appropriate construction detailing for the protection of the building from moisture, including detailing of dpcs, damp-proof membranes and ventilated voids

4.4 Holes, chases or openings may be formed anywhere in the floor slab subject to individual design analysis by the Certificate holder, but must not be core-drilled or otherwise formed after casting of the floor, unless approved in writing by the Certificate holder.

4.5 Where ground gas is present, additional care is required to ensure provision of suitable taped and sealed membrane joints and effective sealing of all service points passing through the floor, in accordance with BS 8485 : 2015. The gas membrane is not covered by this Certificate.

4.6 The ground over which the floors are to be installed must be suitably prepared and cleared of vegetation and any contaminants. Floors may include provision for appropriate underfloor ventilation, generally using telescopic air vent assemblies. A designed working platform (outside the scope of this Certificate) is used over the prepared ground for the Housedeck and Comdeck ground-bearing variants and can be laid prior to piling operations to form a clean working area capable of supporting the piling rig.

4.7 When building near trees in zones liable to be affected by clay heave, the installation may be designed and constructed using the procedure described in NHBC Standards, Part 4, Chapter 4.2.

4.8 Deeper under-slab voids can be provided beneath the suspended raft slab, eg in areas prone to flooding, but have not been assessed by the BBA.

4.9 Floors constructed from the systems have adequate resistance to the hard-body impacts likely to occur during construction

5 Practicability of installation

Construction of the systems is carried out by contractors trained and approved by the Certificate holder in accordance with the Certificate holder's Installation Manual.

6 Structural performance

6.1 Foundations incorporating the systems should be designed to the relevant sections of BS EN 1991-1-1 : 2002, BS EN 1992-1-1 : 2004 and BS EN 1997-1 : 2004 and verified by a qualified structural engineer.

6.2 The loadbearing capacity of the systems has been evaluated by the use of the SOFisSTiK FEM finite element analysis (FEA), adopting maximum bending moment and shear forces using design software. The BBA has assessed a number of structural calculations produced by the Certificate holder against a similar FEA software programme and found the results to be comparable. In the case of improved ground, to ensure acceptable settlement, the subsoil must be treated by a specialist contractor to a given modulus of subgrade reaction or bearing capacity. The Comdeck and Housedeck is additionally strengthened to minimise differential settlements in accordance with UK good practice guidelines. Typical raft slabs are between 225 and 600 mm deep, or larger if required.

6.3 From the structural design and test data provided, the systems have adequate capacity to resist the construction phase and permanent loading. Construction loads (eg mobile cranes used during the superstructure work stage) are assessed separately by the Certificate holder and incorporated within the structural design and modelling.

6.4 To achieve structurally stable formwork during the construction process, the systems use the Deck Support Unit (DSU) (see Figure 5) placed at 300 mm to 600 mm centres on top of the designed working platform in sufficient number to resist the loads imparted on the system by the wet concrete and other construction loads. The units are not normally removed from beneath the sacrificial plywood formwork until at least 7 days after casting, unless by agreement of the Certificate holder.

6.5 The sacrificial plywood formwork boarding is stitched together on site using aluminium strips. The strips bond to the concrete and, when the DSUs are removed, keep the formwork against the soffit of the suspended floor slab variants.

6.6 Lightweight non-loadbearing partitions equivalent to 1 $kN \cdot m^{-2}$ can be built directly off the raft slab. All other situations require analysis using the design software described in section 6.2.

6.7 The nominal concrete cover to reinforcement should be that appropriate for exposure classes as described in BS 8500-1 : 2015, Table A.3, and BS EN 206 : 2013, Table 1.

6.8 The BSU is suitable for supporting the external brick leaf of a building. An unfactored maximum vertical load (safe working load) of 17.8(1) $kN \cdot m^{-1}$, derived from test results, can be used. The effect of this load must be accounted for in the design and detailing of the slab.

(1) A material partial factor of 2.0 for the stainless steel tang and 1.5 for the concrete is taken into account in this value, with an overall capacity-demand ratio of 3 to the mean test result.

6.9 Floors constructed from the systems will have a natural frequency of greater than 4.0 Hz. Use of the systems where vibration due to rhythmic activity (such as dancing) and external sources (eg building construction or rail traffic) may be encountered, are outside the scope of this Certificate.

7 Thermal insulation

Thermal insulation does not form part of the system and is not covered by this Certificate. Adequate provision for insulation within the ground floor construction and for avoiding the effects of thermal bridging, should be considered by the building designer.

8 Moisture penetration

Adequate measures to inhibit the ingress of moisture and minimise the risk of condensation, such as damp-proof (DPM) or gas-resistant membranes, ventilation to voids and appropriate sealing around service penetrations, should be considered by the building designer.

9 Properties in relation to fire

Cavity barriers are not required where the underfloor void is not accessible or is less than 1 m high.

10 Ventilation

10.1 The systems may be used in voided and non-voided configurations, subject to design requirements and ground conditions.

10.2 Where an underfloor void is provided, it can be ventilated by pathways and openings not less than 1500 mm^2 per metre run of external wall in one cross flow direction. Consideration should be given to clay heave or soil movement to ensure that the ventilation pathways remain unobstructed for the service life of the building.

10.3 The BBA has not assessed the systems for use in areas prone to ground gas. Further information is given in BRE Report 414 : 2001, which should be consulted. In areas where full radon precautions are required, BRE Report 211 : 2015 should be consulted and the provisions applied.

11 Condensation risk

The risk of interstitial and surface condensation will depend on the raft slab construction, ground conditions, and the provision of ventilation (if any), insulation, membranes and air and vapour control layer and should be assessed on a site-specific basis by the building designer in accordance with BS EN ISO 13788 : 2012 and BS 5250 : 2021.

12 Resistance to the passage of sound

Foundations for structures containing separating walls must be constructed in accordance with the guidance given in the documents supporting the national Building Regulations, to mitigate passage of sound between dwellings (see Figures 1, 2 and 3). Reference may also be made to the Robust Details Handbook, Appendix A2. For concrete raft slabs continuing under separating walls, the slab must have a unit weight of not less than 365 $kg \cdot m^{-2}$ and may require the incorporation of proprietary products in the wall and floor construction.

13 Maintenance

When in service, the system is protected by thermal insulation and a concrete screed; therefore, maintenance is not envisaged.

14 Durability

14.1 Concrete ground floor raft slabs constructed with the systems will have a service life of not less than 60 years provided they are designed in accordance with sections 6.1 and 6.2.

14.2 The stainless steel tangs of the BSU forming the permanent structural support element for the brick outer skin will have an effective minimum service life of 60 years. The galvanized steel element of the BSU only forms the temporary formwork for the wet concrete and is non-structural in respect of permanent loading from the brick outer skin. Therefore, its life expectancy depends on the external environment and any materials in contact.

14.3 The sacrificial plywood formwork is designed to provide only temporary support during concrete casting and does not provide permanent support to the reinforced concrete raft slab.

15 Reuse and recyclability

15.1 The systems comprise components that can be recycled.

15.2 The deck support system of the suspended Comdeck and Housedeck systems is designed to be reused.

Installation

16 General

16.1 Installation of the Abbey Pynford Comdeck and Housedeck Foundation Systems must be carried out in accordance with the Certificate holder's Installation Manual. Typical construction details are shown in Figures 1, 2 and 3 of this Certificate.

16.2 The type of backfill barrier used for the suspended foundation variants (see Figure 2) should be of sufficient strength to restrain any surcharge load in addition to the lateral soil pressure.

16.3 Where a gas membrane is required (not covered by this Certificate), the membrane must be laid and sealed in accordance with section 4.5 and can incorporate adequate provision for ventilation (if required) in accordance with section 4.6.

16.4 If constructed from concrete, the designed working platform should be a minimum of 50 mm thick ± 10 mm using C25/30, slump class 3 concrete to BS EN 206 : 2013; however, non-concrete solutions are available appropriate to the site conditions. The Certificate holder should be contacted for further advice.

16.5 For the Abbey Pynford Comdeck and Housedeck foundation, where an under-slab void has been specified, a minimum clearance of 150 mm between the ground surface and the underside of the floor should be provided in accordance with BS 8103-1 : 2011, Section 8.6. As greater clearances are required for heave-susceptible soils, in accordance with *NHBC Standards*, the DSUs can be adjusted to provide a void depth of between 180 mm and 300 mm in the suspended variants, or greater by individual design.

16.6 A pile foundation(1) is constructed by the Certificate holder and the pile head finished in accordance with the Certificate holder's specification. Pile reinforcement may be exposed, which is bent to key into the foundation raft slab reinforcement.

(1) Outside the scope of the Certificate.

16.7 Drainage and service ducting are installed in accordance with the building design, located beneath the designed working platform.

17 Procedure

Ground-adjacent pile supported and ground-bearing Comdeck and Housedeck

17.1 Topsoil, vegetation and any deleterious materials are removed, the subsoil levelled and the designed working platform (outside the scope of the Certificate) laid and/or prepared and allowed to reach its design strength before proceeding.

17.2 The piles are formed/installed (outside the scope of the Certificate) in the required locations.

17.3 The BSUs are set out in the required positions around the footprint of the raft slab, set to level and exact position before fixing rigidly to the designed working platform using masonry nails or self-drilling screws.

17.4 The reinforcement is positioned in accordance with layout and reinforced concrete detail drawings and sleeves for services correctly located and fixed into position.

17.5 Generally, using a pump delivery system, concrete of the specified grade is poured into and around reinforcement and BSU troughs, vibrated and checked for correct level. The raft slab surface is floated smooth or lightly tamped and the trough concrete tamped and trowelled level.

Suspended Comdeck and Housedeck

17.6 Operations described in sections 17.1 and 17.2 are carried out.

17.7 The reusable demountable DSUs are located on the designed working platform at the required centres across the footprint of the foundation raft slab and locked in their upright position using breakable dowels.

17.8 The sacrificial plywood formwork is positioned on the DSUs and butt joints reinforced using aluminium strip nailed in place.

17.9 The BSUs are set out in the required positions around the edge of the formwork platform, set to level and exact position before fixing rigidly to the formwork using self-drilling screws.

17.10 The location of the service entries are checked and marked on the formwork platform's upper surface, appropriate holes cut through the formwork and sleeves inserted.

17.11 Operations described in sections 17.4 and 17.5 are carried out.

17.12 When the reinforced concrete has reached its required strength, the DSUs are unlocked, by breaking the dowels, and pulled out from under the formwork.

Technical Investigations

18 Tests

Load testing was carried out on samples provided by the Certificate holder and at a location approved by the BBA, to determine the strength of the stainless steel tangs(1) as part of the brick support unit when cast into a concrete test piece moulded into the standard corbel edge detail (see Figures 1, 2, 3 and 4).

(1) Connection of the tangs to the galvanized steel profile was released, allowing them to perform independently under the test load.

19 Investigations

19.1 The Certificate holder's SOFiSTiK FEM (FEA) software was examined and the results compared with results obtained from a similar FEA design programme.

19.2 The purchasing, checking and distribution-to-site process was examined and details were obtained of the quality and composition of materials.

19.3 A visit was made to a site to assess the practicability of installation.

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

Bibliography

BRE Report 211 : 2015 *Radon : Guidance on protective measures for new buildings*
BRE Report 414 : 2001 *Protective measures for housing on gas-contaminated land*

BS 4449 : 2005 + A3 : 2016 *Steel for the reinforcement of concrete — Weldable reinforcing steel — Bar, coil and decoiled product — Specification*

BS 8485 : 2015 + A1 : 2019 *Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings*

BS 5250 : 2021 *Code of practice for control of condensation in buildings*

BS 8103-1 : 2011 *Structural design of low-rise buildings — Code of practice for stability, site investigation, foundations, precast concrete floors and ground floor slabs for housing*

BS 8500-1 : 2015 + A2 : 2019 *Concrete — Complementary British Standard to BS EN 206 — Method of specifying and guidance for the specifier*
BS 8500-2 : 2015 + A2 : 2019 *Concrete — Complementary British Standard to BS EN 206 — Specification for constituent materials and concrete*

BS EN 206 : 2013 *Concrete — Specification, performance, production and conformity*

BS EN 314-2 : 1993 *Plywood — Bonding quality — Requirements*

BS EN 635-3 : 1995 *Plywood — Classification by surface appearance — Softwood*

BS EN 10088-2 : 2014 *Marine plywood — Stainless steels - Technical delivery conditions for sheet/plate and strip of corrosion resisting steels for general purposes*

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

BS EN 1992-1-1 : 2004 + A1 : 2014 *Eurocode 2 — Design of concrete structures — General rules and rules for buildings*

BS EN 1997-1 : 2004 + A1 : 2013 *Eurocode 7: Geotechnical design — Part 1: General rules*

BS EN ISO 9001 : 2015 *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*

BS EN 13986 : 2004 + A1 : 2015 *Wood-based panels for use in construction. Characteristics, evaluation of conformity and marking*

20 Conditions

20.1 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.

20.2 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.

20.3 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.

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

20.5 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.

20.6 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.