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**Agrément
Certificate
No 04/4119**

Designated by Government
to issue
European Technical
Approvals

DANILITH PREFABRICATED BUILDING SYSTEM

Systeme pour constructions
Bausystem

Product




• THIS CERTIFICATE RELATES TO THE DANILITH PREFABRICATED BUILDING SYSTEM, COMPRISING A RANGE OF FACTORY-FABRICATED REINFORCED CONCRETE PANELS.

- The system is for use as:
 - a loadbearing external wall, incorporating a phenolic foam insulation core, faced externally with cut half-bricks for use above the damp-proof course in dwellings up to two storeys high, with a room in the roof,
 - a loadbearing/non-loadbearing internal wall,
 - a separating wall.
- Installation must be carried out by contractors approved by the Certificate holder.

continued

Regulations

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

 The Secretary of State has agreed with the British Board of Agrément the Requirements of the Building Regulations to which wall and floor panels can contribute in achieving compliance. In the opinion of the BBA, the Danilith Prefabricated Building System, if used in accordance with the provisions of this Certificate, will meet or contribute to meeting the relevant requirements.

Requirement: A1	Loading
Requirement: A2	Ground movement
Comment:	The system will have sufficient strength and stiffness when designed in accordance with sections 10.1 and 10.2 of this Certificate.
Requirement: B2(1)	Internal fire spread (linings)
Comment:	The panels will adequately resist spread of flame over their surface. See section 15.2 of this Certificate.
Requirement: B3(1)(2)	Internal fire spread (structure)
Comment:	The panels can satisfy this Requirement. See sections 15.1 and 15.3 of this Certificate.
Requirement: B4(1)	External fire spread
Comment:	The external wall panel can satisfy this Requirement. See sections 15.2 and 15.3 of this Certificate.
Requirement: C4	Resistance to weather and ground moisture
Comment:	The product can satisfy a building to meet this Requirement. See sections 9.1 and 9.2 of this Certificate.

continued

- It is essential that the product is used in accordance with the conditions set out in the Design Data and Installation sections of this Certificate.
- This assessment does not cover foundations, beams, trusses, lintels, staircases, windows, doorsets, fittings, floors, roofs, adequacy of plumbing, drainage, ventilation, electrical services, flues and heat producing appliances.
- The system can be used to construct buildings with a variety of individual treatments and plan forms.
- Users, when specifying plan form, internal sub-division, siting of the building, access for the disabled, access for fire services, and means of (warning and) escape in case of fire should ensure compliance with the relevant Building Regulations' requirements.
- The system is marketed and distributed in the UK by Milbank Industries Ltd, Earls Colne Business Park, Earls Colne, Colchester, Essex CO6 2NS.
Tel: 01787 223931
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Requirement:	E1	Protection against sound from other parts of the building and adjoining buildings
Comment:		Constructions incorporating the panels can adequately resist sound transmission. See section 14 of this Certificate.
Requirement:	L1	Dwellings
Comment:		Walls will contribute to enabling a building to meet the elemental Target U value or carbon index method of demonstrating compliance. See sections 12.1, 12.3, 12.5 and 13 of this Certificate.
Requirement:	Regulation 7	Materials and workmanship
Comment:		The system is acceptable. See section 17.1 of this Certificate.

2 The Building Standards (Scotland) Regulations 1990 (as amended)



In the opinion of the BBA, the Danilith Prefabricated Building System, if used in accordance with the provisions of this Certificate, will satisfy or contribute to satisfying the various Regulations and related Technical Standards as listed below.

Regulation:	10	Fitness of materials and workmanship
Standard:	B2.1	Selection and use of materials, fittings, and components, and workmanship
Comment:		The panels can contribute to a construction meeting this Standard. See the <i>Installation</i> part of this Certificate.
Standard:	B2.2	Selection and use of materials, fittings, and components, and workmanship
Comment:		The panels are acceptable. See section 17.1 of this Certificate.
Regulation:	11	Structure
Standard:	C2.1	Stability
Comment:		The panels will have sufficient strength and stiffness when designed in accordance with sections 10.1 and 10.2 of this Certificate.
Regulation:	12	Structural fire precautions
Standards:	D2.1 and D2.2	Structural protection — Principles
Comment:		The panels can be used to construct walls with the required duration of fire resistance. See sections 15.1 to 15.3 of this Certificate.
Standard:	D2.3	Structural protection — Non-combustible materials
Comment:		The system can satisfy the exceptions permitted for dwellings. See sections 15.1 and 15.3 of this Certificate.
Standard:	D5.1	Separating walls and separating floors — Principles
Standard:	D5.2	Separating walls and separating floors — Buildings of purpose group 1
Comment:		The panels can satisfy these Standards. See section 15.3 of this Certificate.
Standard:	D5.7	Separating walls and separating floors — Non-combustible materials
Comment:		Separating walls incorporating the panels are non-combustible and can satisfy this Standard.
Standard:	D5.9	Separating walls and separating floors — Junctions
Comment:		Junctions between separating walls and external walls can maintain the required level of fire safety performance. See section 15.3 of this Certificate.
Standard:	D7.1	Fire spread on internal linings — Principles
Comment:		The panels will adequately resist surface spread of flame over their surface. See section 15.2 of this Certificate.
Standard:	D8.1	Fire spread to adjoining buildings — Principles
Comment:		The system uses combustible insulation and therefore cannot meet Standard D8.1. External walls constructed using the panels would be classed as an 'unprotected area' as defined in the Technical Standards Part D8.1 note C. However, in the opinion of the BBA it would not be unreasonable to seek a relaxation of this Standard.
Standard:	D10.1	Fire spread on an external wall
Comment:		The external wall panel can satisfy this Standard. See section 15.2 of this Certificate.
Regulation:	17	Resistance to moisture
Standard:	G3.1	Resistance to precipitation — Resistance to precipitation
Comment:		The external wall panel can satisfy this Standard. See sections 9.1, 9.2 and 11.1 of this Certificate.
Regulation:	18	Resistance to condensation
Standard:	G4.1	Condensation — Interstitial condensation
Standard:	G4.2	Condensation — Surface condensation
Comment:		The external wall panel can satisfy these Standards. See section 11.1 of this Certificate.
Regulation:	19	Resistance to transmission of sound
Standard:	H2.1	Walls and floors to resist sound transmission — Airborne sound
Comment:		Separating walls can adequately resist airborne sound transmission between dwellings. See section 14 of this Certificate.

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Regulation:	22	Conservation of fuel and power
Standard:	J3.4	Buildings in purpose group 1 – Target U-value Method
Standard:	J3.11	Buildings in purpose group 1 – Carbon index Method
Comment:		The external wall panels will contribute to enabling, a building to satisfy the requirements of these Standards. See sections 12.1 and 12.3 of this Certificate.
Standard:	J4.1	Buildings in purpose group 1 – Limiting thermal bridging at junctions and around openings
Standard:	J5.1	Buildings in purpose group 1 – Limiting infiltration
Comment:		External walls can adequately limit heat loss at junctions and restrict air leakage. See sections 12.4, 12.5 and 13 of this Certificate.

3 The Building Regulations (Northern Ireland) 2000



In the opinion of the BBA, the Danilith Prefabricated Building System, if used in accordance with the provisions of this Certificate, will satisfy or contribute to satisfying the various Building Regulations as listed below.

Regulation:	B2	Fitness of materials and workmanship
Comment:		The system is acceptable. See section 17.1 of this Certificate.
Regulation:	C4	Resistance to ground moisture and weather
Comment:		External walls can satisfy this Regulation. See sections 9.1 and 9.2 of this Certificate.
Regulation:	C5	Condensation
Comment:		The external wall panel can satisfy this Regulation. See section 11.1 of this Certificate.
Regulation:	D1	Stability
Comment:		Walls constructed from the product will have sufficient strength and stiffness when designed in accordance with sections 10.1 and 10.2 of this Certificate.
Regulation:	E3	Internal fire spread – Linings
Comment:		The panels will adequately resist spread of flame over their surface. See section 15.2 of this Certificate.
Regulation:	E4	Internal fire spread – Structure
Comment:		The panels can satisfy this Regulation. See sections 15.1 and 15.3 of this Certificate.
Regulation:	E5	External fire spread
Comment:		The external wall panel can satisfy this Regulation. See sections 15.1 and 15.3 of this Certificate.
Regulation:	F2	Building fabric
Comment:		External walls will satisfy the requirements for maximum U values in Table 1.2 of Technical Booklet F. See sections 12.1 to 12.3, 12.5 and 13 of this Certificate.
Regulation:	G2	Separating walls and separating floors
Comment:		Separating walls can adequately resist airborne sound transmission between dwellings. See section 14 of this Certificate.

4 Construction (Design and Management) Regulations 1994 (as amended) Construction (Design and Management) Regulations (Northern Ireland) 1995 (as amended)

Information in this Certificate may assist the client, planning supervisor, designer and contractors to address their obligations under these Regulations.

See sections: 6 *Delivery and site handling* (6.2 to 6.4) and 18 *Installation – General* (18.5).

Technical Specification

5 Description

5.1 The Danilith Prefabricated Building System comprises:

- reinforced concrete panels with an insulating core of phenolic foam for external walls (see Figure 1)
- solid reinforced concrete panels for internal and separating walls.

5.2 The nominal dimensions of the external wall panels are given in Table 1.

Table 1 Panel characteristics

	Panel type	
	external wall	internal wall
Width (m)	up to 10	up to 8.5
Height (m)	up to 2.82	up to 2.68
Thickness (m)	0.250 ⁽¹⁾	0.1–0.15

(1) Other thicknesses are available.

5.3 The panels are manufactured in an automated factory process and include cut-outs for openings.

External walls

5.4 The external wall panel consists of:

- 42 mm cut half-bricks comprising either:
 - clay bricks of FL quality in accordance with BS 3921 : 1985 (F2, S2 in accordance with BS EN 771-2 : 2003)
 - calcium silicate bricks with a compressive strength class of 25 and freeze/thaw resistance to BS EN 772-18 : 2000
 - other types of cut half-bricks are available but are outside the scope of the Certificate. See Certificate holder for details
- 58 mm high-density concrete backing to outer leaf to grade C25/30:2b with a density of 2350 kgm^{-3} reinforced with corrosion-protected galvanized steel fibres
- 65 mm rigid phenolic foam thermal insulation with a density of 38 to 40 kgm^{-3}
- 85 mm concrete grade LC20/25:1 with a density of 1750 kgm^{-3} , reinforced with a welded mesh
- 10 mm site-applied gypsum plaster
- inner and outer layers are connected by stainless steel ties at 600 mm centres
- additional reinforcement is provided around openings and at the top and bottom of panels as required.

Internal walls

5.5 The internal wall panel consists of:

- 80 mm to 150 mm concrete grade LC20/25:1 with a density of 1750 kgm^{-3} or 2350 kgm^{-3} reinforced with a welded mesh and cross beams
- 2 mm thick cement-sand render finish on both sides.

Separating walls

5.6 The separating wall consists of:

- two 100 mm leaves of dense concrete C25/30:2b with a density of 2350 kgm^{-3} separated by a cavity of at least 50 mm

5.7 Floors must be designed in accordance with BS 8110-1 : 1997. See the Certificate holder for details.

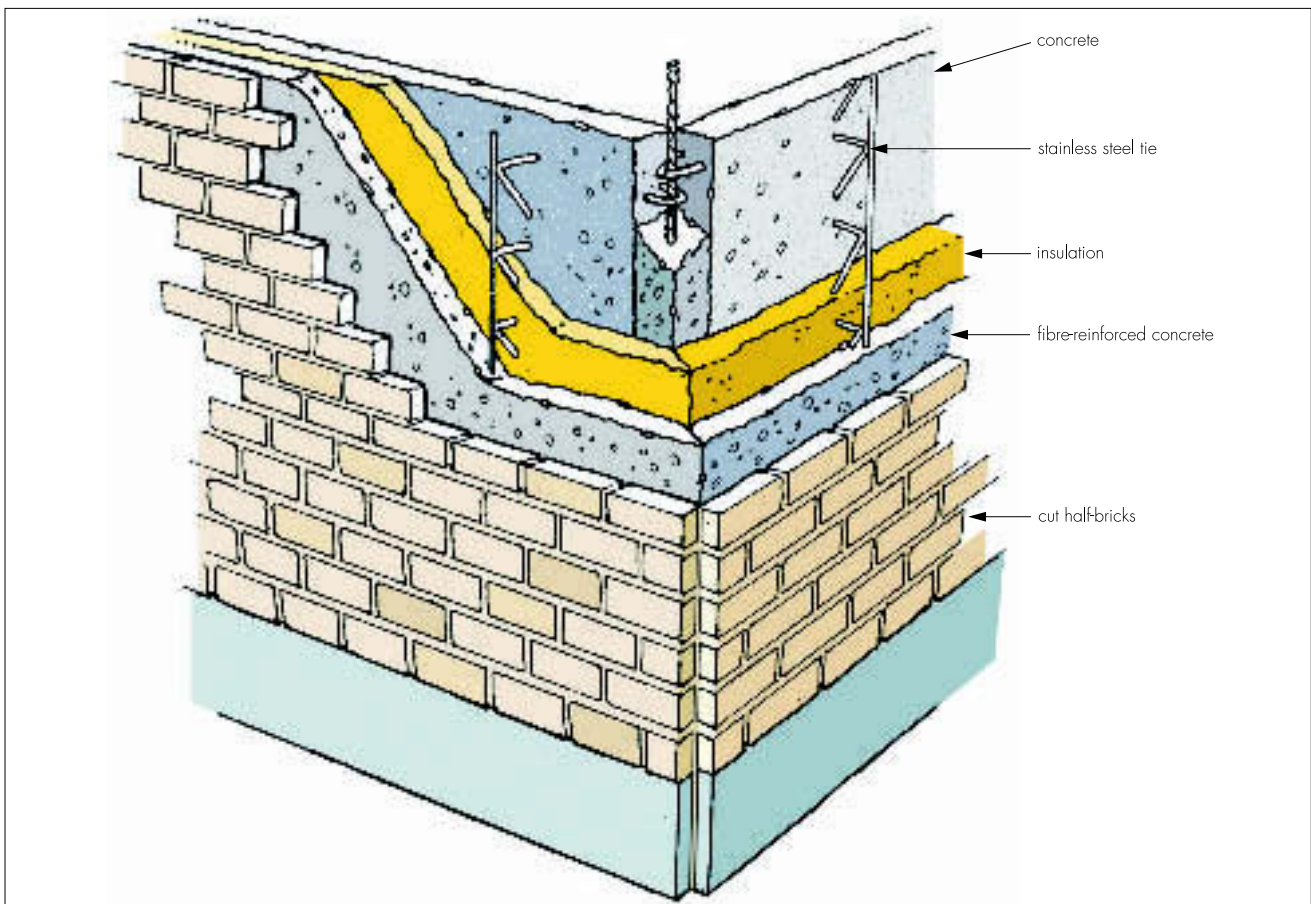
5.8 Fixings used with the panels are:

- anchoring bolts — used to fix cast-in restraint straps to floors
- weld plates — used to secure wall panels during construction
- reinforcing rods — used for external wall corner joints
- cement infill — C20 grade used for filling joints
- mortar — used for bedding and pointing the wall panels.

5.9 Ancillary items for use with this system include:

- fixing screws
- foam joint sealant.

Figure 1 Typical external wall panel



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6 Delivery and site handling

6.1 Wall panels are transported to site on a flat bed lorry or a trailer long enough to fully-support the panel. Each panel carries the name of the manufacturer, the panel identification number and the BBA logo incorporating the number of this Certificate.

6.2 The panels cannot be manhandled on site, and should not be removed from the delivery vehicle until ready for installation.

6.3 Hard standings must be prepared to allow for the delivery vehicle and the use of a mobile crane. Panels must be unloaded with care to avoid damage.

6.4 Lifting points are cast into each panel. Prior to unloading, lifting clutches are attached to all lifting points on the panel. Lifting chains and spreader beams are used with the lifting clutches to unload and position the panels.

Design Data

7 General

7.1 The Danilith Prefabricated Building System, when designed and installed in accordance with this Certificate and the Certificate holder's *Installation Procedures*, is satisfactory for dwellings up to two storeys high plus a room in the roof. The internal wall panels can be used as loadbearing or non-loadbearing walls.

7.2 The building system must be designed and constructed in accordance with BS 8110-1 : 1997 and BS 8110-2 : 1985. This design should take into account, hoisting, wind loadings, stability and the related exposure conditions (see section 9).

7.3 To achieve adequate stability, the various elements (floor, external and internal walls, and roof structure) should be tied together to achieve a box-like structure. Particular attention should be made to the recommendations given in section 10.

7.4 All structural design and detailing involving the use of the product must be carried out in accordance with UK practice and Statutory Building Regulations under the direct supervision of Chartered Structural or Civil Engineers or appropriately qualified persons with experience of this building system. Any changes deemed necessary on site must be agreed with the Certificate holder.

7.5 Where buildings need to meet NHBC Standards or Zurich Building Guarantees Technical Standards, specifiers should observe the requirements of these standards.

8 Practicability of installation

The system is practicable for use in constructing walls of a building up to two storeys high. All site erection must be carried out in accordance with the

Certificate holder's installation instructions and the *Installation* part of this Certificate.

9 Weathertightness



9.1 The external wall surfaces will provide adequate weather resistance. The final weather resistance of the building is dependent upon the efficient positioning and sealing of all joints.

9.2 When the system is used to form an external masonry wall the outer leaf must be designed and constructed in accordance with BS 8110-1 : 1997, BS 8110-2 : 1985 and BS 8000-3 : 2001, incorporating the dpc's position in accordance with BS 5628-3 : 2001. The guidance given in section 3 of BRE Digest 262 *Thermal insulation : avoiding risks* should be followed with regard to rain penetration in that the designer selects a construction appropriate to the local wind-driven rain index, paying due regard to the design detailing, workmanship and materials to be used.

10 Structural performance



10.1 Walls constructed using the panels may be treated as conventional concrete walls and should be designed and constructed in accordance with the recommendations of BS 8110-1 : 1997 and BS 8110-2 : 1985.

10.2 For external walls, the nominal concrete cover to reinforcement is that appropriate to 'mild' exposure in accordance with BS 8110-1 : 1997 Tables 3.2 and 3.4 and the requirements for fire resistance in accordance with BS 8110-2 : 1985, section 4.

10.3 Reinforcement and framing around openings, form an integral part of the wall. Where heavier loads are being supported or large span openings are required, the specification and design must be determined by the Engineer or appropriately qualified person responsible for the stability of the building (see also section 17.2).

10.4 The strength of all connection details which tie walls, comprising the product, to other structural elements (such as floors, roofs) must be evaluated and provide adequate stability for the overall building design. The specification and design for these items must be determined by the Engineer or appropriately qualified person responsible for the stability of the building. Guidance on the design of connection details may be obtained from the Certificate holder.

10.5 When constructed in accordance with the Certificate holder's *Installation Procedures* the completed structure behaves in the same way as traditional masonry construction and adequately resists the effects of wind and combined bending and axial loads.

11 Condensation



11.1 Provided the panels are correctly sealed to each other, the risk of surface and interstitial condensation under normal domestic use will be minimal. (See also section 12.5).

11.2 The risk of interstitial condensation in both the external walling and the roofing is greatest when the building is drying out after construction. Guidance on preventing condensation is given in BRE Digest 369 *Interstitial condensation and fabric degradation* and BRE Digest 262 *Thermal insulation : avoiding risks*.

11.3 Buildings constructed using the wall panels are suitable for use where provision has been made for rapid and background ventilation in accordance with the statutory Building Regulations.

12 Thermal properties



12.1 Typical external wall constructions will contribute to achieving compliance using the Target U-value Method, Carbon Index Method or Carbon Emissions Calculation Method.



12.2 The U value of the external wall panels do not exceed the maximum values in the Elemental Approach given in Technical Booklet F, Table 1.2.



12.3 When modelled in accordance with BS EN 10211 : 1996 the estimated U value of the external wall did not exceed $0.40 \text{ Wm}^{-2}\text{K}^{-1}$.



12.4 The thermal insulation is carried through into the joints and junctions between external wall panels and therefore, will adequately limit heat loss.



12.5 The wall panels can adequately limit heat loss and surface condensation risk at junctions and around openings when detailed in accordance with the relevant design guidance in the Robust details publication *Limiting thermal bridging and air leakage : Robust construction details for dwellings and similar buildings* TSO 2002.

13 Air leakage



When the external wall panel joints and junctions with other elements are properly sealed the wall will adequately limit unwanted air infiltration.

14 Acoustic properties



Separating walls as described in section 5.6 with panel joints and junctions correctly sealed, will provide satisfactory airborne sound insulation and are comparable to:

England and Wales

Approved Document E, Section 2, wall type 2

Scotland

Technical Standards (H2.1 to H2.3), wall type 2

Northern Ireland

Technical Booklet G, paragraph 1.6, wall type 2.

15 Behaviour in relation to fire



15.1 The use of the system will not introduce any additional hazard in respect of behaviour in fire when compared with a system using traditional masonry constructions.

15.2 The internal and external wall, and floor panel surfaces are classified class 0 or 'low risk' as defined in the national Building Regulations thus:

England and Wales

Approved Document B, paragraph A12

Scotland

Technical Standards (D1.3), Table 3

Northern Ireland

Technical Booklet E, Section 2.4.

15.3 When assessed in accordance with BS 8110-2 : 1985 the panels achieved the fire resistance requirements given in Table 2.

Table 2 Minimum fire resistance requirements

Construction type	Description	Result (min)
Separating wall	2 x 100 mm leaves of high-density concrete (2350 kgm^{-3}) separated by a cavity	60
External wall	42 mm cut half-brick, 58 mm high-density concrete, 65 mm phenolic foam insulation, 85 mm lightweight concrete, 10 mm gypsum plaster	30
Typical intermediate floor	50 mm high-density concrete, (2350 kgm^{-3}) covered by structural concrete	30

15.4 When any other form of wall construction incorporating the system is subject to fire resistance requirements, an appropriate assessment or test must be carried out by a UKAS (United Kingdom Accreditation Service) approved testing laboratory.

15.5 Constructions incorporating the product must include suitable provision for cavity barriers and for fire stopping at junctions with other elements in accordance with the requirements of the national Building Regulations.

16 Proximity of flues and appliances

When installing certain flue pipes and/or heat producing appliances into the system, the relevant provisions of the national Building Regulations are applicable:

England and Wales

Approved Document J

Scotland

Technical Standards, Part F. Provisions deemed to satisfy the standards

Northern Ireland

Technical Booklet L.

17 Durability



17.1 Walls comprising the Danilith Prefabricated Building System and approved jointing materials will retain their strength and insulating properties for a service life at least equivalent to that for brick-and-block masonry.

17.2 Building systems constructed with the system must be maintained in accordance with BS 8210 : 1986 with particular attention to the guidance given in Appendix A1.

Installation

18 General

18.1 The installation of the Danilith Prefabricated Building System must comply with the details given in the Certificate holder's Installation manual and the provisions of this Certificate (see Figures 2 and 3).

18.2 The main contractor must ensure the foundations are correct and that the accuracy of all foundations, plinths, substructure masonry, concrete is in accordance with the Certificate holder's instructions.

18.3 To achieve a structurally-stable construction, sufficiently plane for finishes, props must be used to brace the wall panels during construction. Cast-in weld plates are secured with cover plates fixed in accordance with the Certificate holder's installation instructions with a 4 mm fillet weld to the internal leaf of the external wall. These are used to achieve stability during the construction phase. The infill concrete and the interlinking reinforcement provide the permanent stability to the completed structure.

18.4 Electrical and plumbing services are outside the scope of this Certificate. However, in designing and installing these services, precautions must be taken to avoid the possible risk of long-term damage to the structure or the services by such actions as the ingress of water, water vapour, or condensation from cold water service pipes. Electrical ducting and chasing for plumbing are incorporated into the building system.

18.5 When installing intermediate floor units, precautions, eg passive fall arrest and perimeter protection systems, must be used. Advice from the Certificate holder should be sought.

19.1 A suitable damp-proof course must be used with the building system and must be installed in accordance with the Certificate holder's instructions.

Ground floor — walls

19.2 A survey is conducted prior to the installation of the wall panel to check for any excessive variation between levels. Shims are placed as required to ensure the walls are level. It is important that the wall panels are correctly aligned.

19.3 During installation the wall panel is lowered onto a thick mortar bed and held in place with a prop.

19.4 The wall panel remains supported by the lifting gear until the supporting prop is in place. Panels must be supported by at least one prop, however, longer panels may require additional propping.

19.5 The wall panels are secured by fixing the tie bars that are cast into the bottom of each wall panel (see Figure 3). The panels are secured together by cast-in weld plates as described in section 18.3.

19.6 Corner external wall panels have a 45° mitred edge and steel 'U' bars projecting from the inner concrete leaf. Panels are abutted to enable a vertical mortar joint on the outer face. Reinforcing steel rods are threaded through the protecting 'U' bars from above and an aluminium angle is fitted to the inside of the internal corner. The inner leaf of the joint is filled with foam insulation and cement. The aluminium angle profile holds the infill in place and acts as a temporary shutter whilst the cement cures.

19.7 Internal walls are installed using a similar procedure as external wall panels. Once in place internal walls are connected together and connected to external walls using drilled and plug joints and frame anchors.

Intermediate floors

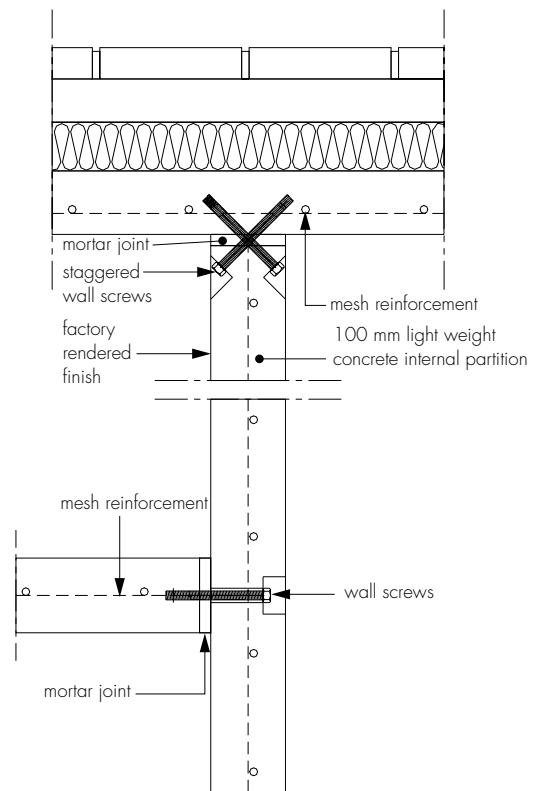
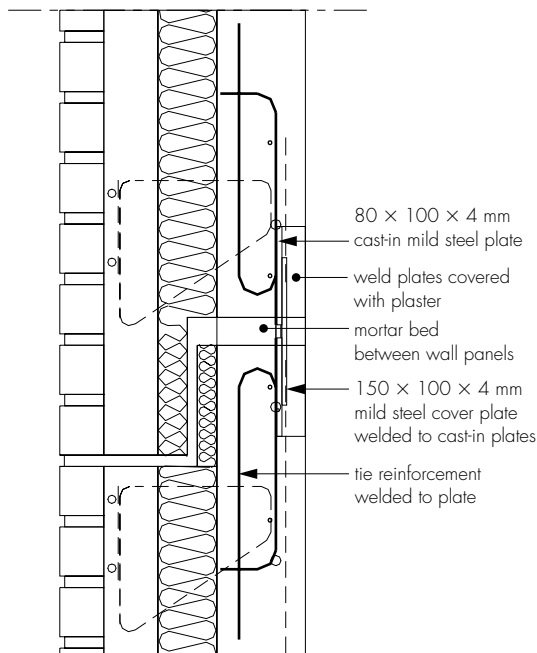
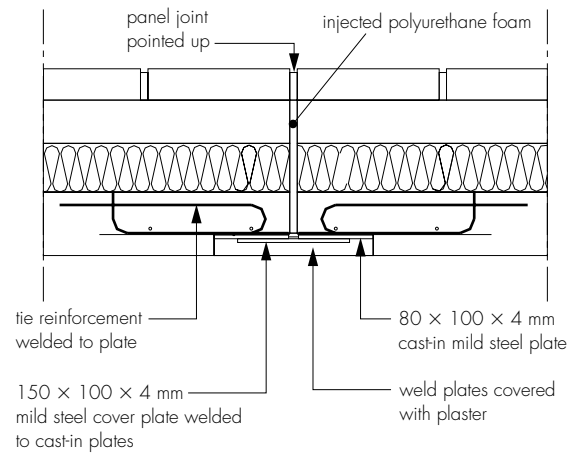
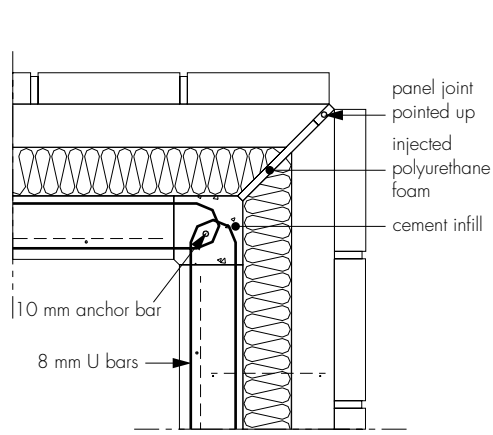
19.8 The intermediate floor is supported by the loadbearing interior wall panels and the inner leaf of the exterior wall panels.

19.9 The internal walls are secured to the intermediate floor by brackets fitted into the lifting eyes cast into the wall panels during manufacture.

19.10 The upper wall unit must be in place before the concrete compression slab is applied. The wall panels incorporate projecting reinforcement or restraint straps that are cast into the floor.

19.11 Wall panels on the upper floor are installed in the same manner as the ground-floor panels (see sections 19.3 to 19.7), however, the lifting points on the top of the lower panel must be filled with mortar and covered with a damp-proof membrane to prevent the ingress of water.

Figure 2 Wall panel connection



Connections between panels

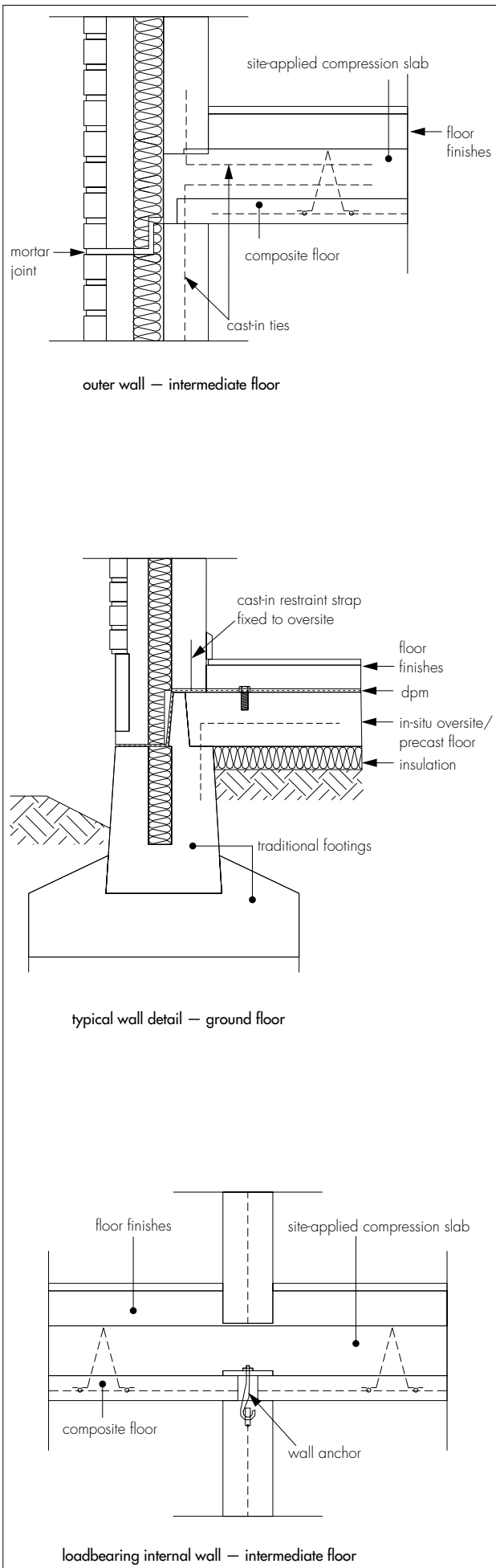
Elements	Exterior wall (loadbearing)	Separating wall	Interior wall
Exterior wall	1-2	2	3
Separating wall	2	-	3
Interior wall	3	3	3
Floor ⁽¹⁾	4	4	5

(1) See the Certificate holder's installation instructions for details of other floor types

Key

- 1 Steel rod threaded through 3 sets of steel eyes (2 steel eyes per set)
- 2 Connection plates are welded onto welding plates incorporated within the panel
- 3 Bolted together using 10 mm diameter screws
- 4 Fixed using 8 mm diameter bars anchored into the compression slab
- 5 The interior panels are coupled to the prefabricated floor slabs with steel rods, which are incorporated into the compression slab

Figure 3 Installation of wall panels to floor constructions



Finishing

19.12 The structural concrete is laid once all of the upper floor units have been placed and all electrical and service runs within the structural floor have been completed.

19.13 As with all masonry, joints/filling should be carried out in accordance with BS 5262 : 1991 and plastering in accordance with BS 5492 : 1990 and BS 8000-10 : 1995.

19.14 The props should be left in position until all of the walls have been connected and a stable structure is achieved. Once the props have been removed the anchor points can be made good.

Technical Investigations

The following is a summary of the technical investigations carried out on the Danilith Prefabricated Building System.

20 Investigations

20.1 Site visits were made to examine the practicability of installation.

20.2 Existing information relating to the building of the system was examined.

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

20.4 Typical panel details were assessed with regard to condensation risk and thermal performance.

20.5 Structural calculations relating to a typical construction were assessed.

Bibliography

BS 3921 : 1985 *Specification for clay bricks*

BS 5262 : 1991 *Code of practice for external renderings*

BS 5492 : 1990 *Code of practice for internal plastering*

BS 5628-3 : 2001 *Code of practice for use of masonry — Materials and components, design and workmanship*

BS 8000-3 : 2001 *Workmanship on building sites — Code of practice for masonry*

BS 8000-10 : 1995 *Workmanship on building sites — Code of practice for plastering and rendering*

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

BS 8110-2 : 1985 *Structural use of concrete — Code of practice for special circumstances*

BS 8210 : 1986 *Guide to building maintenance management*

BS EN 771-2 : 2003 *Specification for masonry units — Calcium silicate masonry units*

BS EN 772-18 : 2000 *Methods of test for masonry units — Determination of freeze-thaw resistance of calcium-silicate masonry units*

BS EN 10211 : 1996 *Chemical analysis of ferrous materials — Determination of titanium in steel and iron — Flame atomic absorption spectrometric method*

Conditions of Certification

21 Conditions

21.1 This Certificate:

- (a) relates only to the product that is described, installed, used and maintained as set out in this Certificate;
- (b) is granted only to the company, firm or person identified on the front cover — no other company, firm or person may hold or claim any entitlement to this Certificate;
- (c) is valid only within the UK;
- (d) has to be read, considered and used as a whole document — it may be misleading and will be incomplete to be selective;
- (e) is copyright of the BBA;
- (f) is subject to English law.

21.2 References in this Certificate to any Act of Parliament, Regulation made thereunder, Directive or Regulation of the European Union, Statutory Instrument, Code of Practice, British Standard, manufacturers' instructions or similar publication, are references to such publication in the form in which it was current at the date of this Certificate.

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

- (a) are maintained at or above the levels which have been assessed and found to be satisfactory by the BBA;

(b) continue to be checked as and when deemed appropriate by the BBA under arrangements that it will determine; and

(c) are reviewed by the BBA as and when it considers appropriate.

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

- (a) the presence or absence of any patent or similar rights subsisting in the product or any other product;
- (b) the right of the Certificate holder to market, supply, install or maintain the product; and
- (c) the nature or standard of individual installations of the product or any maintenance thereto, including methods and workmanship.

21.5 Any recommendations relating to the use or installation of this product which are contained or referred to in this Certificate are the minimum standards required to be met when the product is used. They do not purport in any way to restate the requirements of the Health & Safety at Work etc Act 1974, or of any other statutory, common law or other duty which may exist at the date of this Certificate or in the future; nor is conformity with such recommendations to be taken as satisfying the requirements of the 1974 Act or of any present or future statutory, common law or other duty of care. In granting this Certificate, the BBA does not accept responsibility to any person or body for any loss or damage, including personal injury, arising as a direct or indirect result of the installation and use of this product.



In the opinion of the British Board of Agrément, the Danilith Prefabricated Building System is fit for its intended use provided it is installed, used and maintained as set out in this Certificate. Certificate No 04/4119 is accordingly awarded to Delmulle NV.

On behalf of the British Board of Agrément

Date of issue: 30th June 2004

A handwritten signature in black ink, appearing to read 'P. C. Newstead', is written over a light grey background.

Chief Executive

Electronic Copy

British Board of Agrément

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