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BAW-20-175-S-A-UK
BDA Agrément®
Etopia 4wall CBPB System
SIP Wall System

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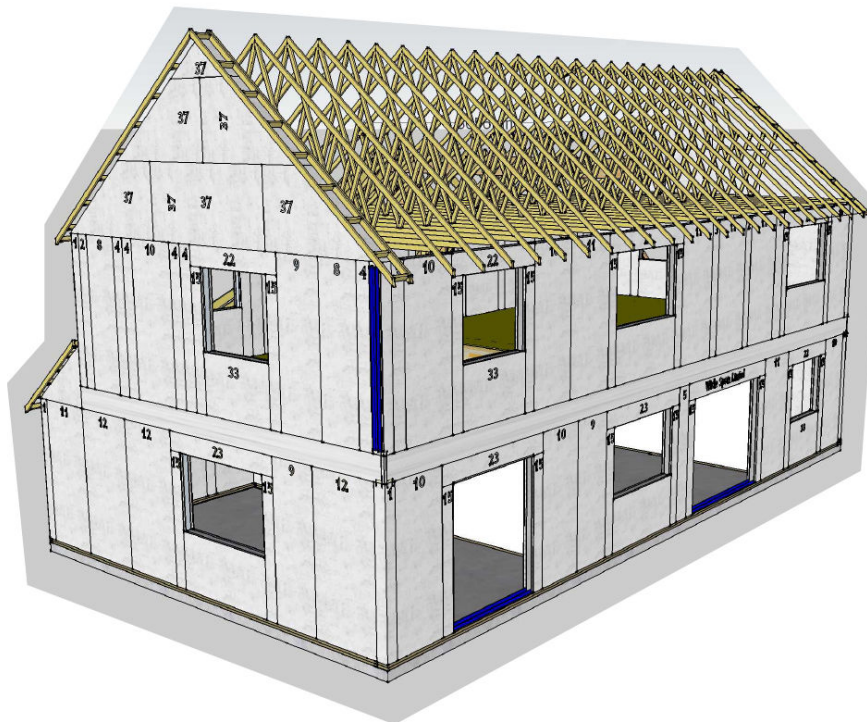
SCOPE OF AGRÉMENT

This Agrément relates to the Etopia 4wall CBPB System (hereinafter the 'System'). The System consists of structural insulated panels (hereinafter 'SIPs') for use in loadbearing and non-loadbearing external walls in residential and non-residential buildings up to 18 m in height in the UK. The System is suitable for use in all areas of exposure.

DESCRIPTION

The System is a modern method of construction (MMC) factory-fabricated SIPs comprising 12 mm thick facings of cement bonded particle board (hereinafter 'CBPB') bonded to a thermally insulating polyurethane (hereinafter 'PU') core. The SIPs are 185 mm thick, supplied in a range of widths, incorporate a galvanised steel profile to each edge and are connected using splines, steel profiles and moisture-curing PU (hereinafter 'MCPU') adhesive.

ILLUSTRATION



THIRD-PARTY ACCEPTANCE

None requested by the Agrément holder.

STATEMENT

It is the opinion of Kiwa Ltd., that the System is safe and fit for its intended use, provided it is specified, installed and used in accordance with this Agrément.

Craig Devine
Technical Compliance Manager,
Building Products



Alpheo Mlotha CEng FIMMM MBA
Business Unit Manager,
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SUMMARY OF AGRÉMENT

This document provides independent information to specifiers, building control personnel, contractors, installers and other construction industry professionals considering the safety and fitness for the intended use of the System. This Agrément covers the following:

- Conditions of use;
- Production Control, Quality Management System and the Annual Verification Procedure;
- System components and ancillary items, points of attention for the Specifier and examples of details;
- Installation;
- Independently assessed System characteristics and other information;
- Compliance with national Building Regulations, other regulatory requirements and Third-Party Acceptance, as appropriate;
- Sources.

MAJOR POINTS OF ASSESSMENT

Moisture control - the System does not require a breathable membrane or additional cladding to resist precipitation (see section 2.2.9).

Strength - the System has adequate strength and stiffness to resist wind, dead and imposed loads likely to be experienced in the UK (see section 2.2.10).

Fire performance - the System has a fire resistance of at least 60 minutes, in accordance with BS EN 1365-1 (see section 2.2.11).

Thermal performance - the System can meet the design U-values specified in the national Building Regulations (see section 2.2.12).

Acoustic performance - the System can contribute to improving the acoustic performance of external walls (see section 2.2.13).

Durability - the service life durability of the System will be dependent upon the environment (operating conditions) in which the System will be used (see section 2.2.14).

CE marking - the Agrément holder has responsibility for CE marking in accordance with all relevant harmonised European Product Standards (see section 2.2.15).

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CHAPTER 1 - GENERAL CONSIDERATIONS

1.1 - CONDITIONS OF USE

1.1.1 Design considerations

See section 2.2.

1.1.2 Application

The assessment of the System relates to its use in accordance with this Agrément and the Agrément holder's requirements.

1.1.3 Assessment

Kiwa Ltd. has assessed the System in combination with relevant test reports, technical literature, the Agrément holder's quality plan, DoPs and site visit as appropriate.

1.1.4 Installation supervision

The quality of installation and workmanship must be controlled by a competent person who must be an employee of the installation company.

The System shall be installed strictly in accordance with the instructions of the Agrément holder and the requirements of this Agrément.

1.1.5 Geographical scope

The validity of this document is limited to England, Wales, Scotland and Northern Ireland, with due regard to Chapter 3 of this Agrément (CDM, national Building Regulations and Third-Party Acceptance).

1.1.6 Validity

The purpose of this BDA Agrément® is to provide for well-founded confidence to apply the System within the Scope described. The validity of this Agrément is three years after the issue date, and as published on www.kiwa.co.uk/bda.

1.2 - PRODUCTION CONTROL AND QUALITY MANAGEMENT SYSTEM

Kiwa Ltd. has determined that the Agrément holder fulfils all obligations in relation to this Agrément, in respect of the System.

The initial audit demonstrated that the Agrément holder has a satisfactory Quality Management System (QMS) and is committed to continuously improving their quality plan. Document control and record-keeping procedures were deemed satisfactory. A detailed Production Quality Specification (PQS) has been compiled to ensure traceability and compliance under the terms of this Agrément.

1.3 - ANNUAL VERIFICATION PROCEDURE - CONTINUOUS SURVEILLANCE

To demonstrate that the System conforms with the requirements of the technical specification described in this Agrément, an Annual Verification Procedure has been agreed with the Agrément holder in respect of continuous surveillance and assessment, and auditing of the Agrément holder's QMS.

This Agrément does not constitute a design guide for the System. It is intended as an assessment of safety and fitness for purpose only.

2.1 - SYSTEM COMPONENTS AND ANCILLARY ITEMS

2.1.1 Components included within the scope of this Agrément

The following components are integral to the System:

Item	Description
4wall panels (hereinafter 'panels')	standard 4wall panel
	standard lintel panel
	standard window base panel
	insulated starter panel
	gable end panel
male steel profile	soleplate
	headbinder
	male plate
splines	
floor skirts for intermediate floors	insulated rim board
	insulated and airtight ring beam
MCPU adhesive	
mechanical fixings	

2.1.2 Ancillary items falling outside the scope of this Agrément

Ancillary items detailed in this section may be used in conjunction with the System but fall outside the scope of this Agrément:

- timber soleplate/soleplate clips;
- mortar/paste/shims for levelling timber soleplate;
- latex self-levelling compound;
- damp-proof course (hereinafter 'DPC') fixation strip (self-adhesive membrane);
- breathable membrane;
- aluminium electrical service conduit;
- illbruck TP651 foam sealing tape;
- intumescent sealant, for sealing the joints between the panels;
- external finish e.g. cladding system, external wall insulation (hereinafter 'EWI') system or a leaf of masonry units; cladding systems and EWI shall have their own verification.

2.2 - POINTS OF ATTENTION TO THE SPECIFIER

2.2.1 Design responsibility

In circumstances where the Agrément holder generates the final project-specific design, the Agrément holder retains full design responsibility unless the design is subsequently modified by others.

2.2.2 Applied building physics (heat, air, moisture)

A competent specialist shall check the hygrothermal behaviour of a project specific design incorporating the System and, if necessary, can offer advice in respect of improvements to achieve the final specification. The Specialist can be either a qualified employee of the Agrément holder or a suitably qualified consultant (in which case it is recommended that the consultant Specialist co-operates closely with the Agrément holder).

2.2.3 General design considerations

The System shall be designed in accordance with:

- BS EN 1991-1-1;
- BS EN 1991-1-4.

Panels forming the System are identified by a reference number, integral to the manufacturing, collation, and erection processes.

The System is designed for compatibility with standard brick dimensions. The panels are supplied in widths from the equivalent of one to five bricks wide; panels of different sizes are connected to achieve the project-specific dimensions. When used in cavity wall applications where the cavity is 50 mm and the outer leaf is of common clay brick, the System width will be equal to that of the outer leaf.

Table 1 - Standard panel sizes

Panel Ref.	Type	Width (mm)
2	1 Brick Minus	215
3	1 Brick Co-ordinated	225
4	1 Brick Co-ordinated Plus	235
5	1.5 Brick	337.5
6	2 Brick	450
7	2.5 Brick	562.5

Panel Ref.	Type	Width (mm)
8	3.0 Brick	675
9	3.5 Brick	787.5
10	4 Brick	900
11	4.5 Brick	1012.5
12	5 Brick	1125

Openings for windows and doors can be supplied as individual panels or supplied pre-assembled for incorporation in the project-specific design.

The installation site shall be adequately drained to prevent the accumulation of standing water.

The requirement for cavity trays is dependent on the project-specific external wall design.

DPCs can act as a flexible cavity tray if connected to a lintel panel via a headbinder.

Consult the Agrément holder for typical CAD-details and project-specific calculations.

2.2.4 Project-specific design considerations

The project-specific design shall take into account the service life durability required - see section 2.2.14.

The project-specific design shall take into account the requirements of the national Building Regulations - see section 3.2.

No pre-installation survey is required for installation.

Panels can incorporate an optional aluminium electrical services conduit, centrally positioned, located directly behind the inner facing.

2.2.5 Permitted applications

Only applications designed according to the specifications given in this Agrément are permitted. In each case, the Specifier and Installer shall co-operate closely with the Agrément holder.

2.2.6 Installer competence level

The System shall be installed strictly in accordance with the instructions of the Agrément holder and the requirements of this Agrément.

Installation can be undertaken by competent persons experienced in this sort of work.

2.2.7 Delivery, storage and site handling

The System is delivered to site in suitable packaging, bearing the System name, the Agrément holder's name and the BDA Agrément® logo incorporating the number of this Agrément.

Prior to installation, store the System components in accordance with the Agrément holder's requirements. When required, particular care shall be taken to:

- avoid exposure to direct sunlight for extended periods of time;
- avoid exposure to high or low temperatures for extended periods of time;
- store in a well-ventilated covered area to protect from rain, frost and humidity;
- store away from possible ignition sources.

2.2.8 Maintenance and repair

Once installed, the System, when fitted with an Agrément holder approved external finish, does not require maintenance. The System may require maintenance if installed without an external finish. For advice in respect of repair and maintenance, consult the Agrément holder.

Performance factors in relation to the Major Points of Assessment

2.2.9 Moisture control

Condensation risk

At design stage, a condensation risk analysis (hereinafter 'CRA') shall be completed by a competent specialist, in accordance with BS 5250, to determine if a vapour control layer (VCL) is required. The CRA shall:

- consider internal and external environmental conditions;
- include the envisaged wall finishes (the internal linings and external cladding);
- confirm that interstitial and surface condensation will not occur and the System will not suffer from any detrimental effect (e.g. moisture accumulation).

Resistance to precipitation including wind-driven rain

The System has adequate resistance to driving rain under pulsating air pressure, in accordance with BS EN 12865.

Moisture will not penetrate to the inside of the building when the System is installed in accordance with the Agrément holder's instructions, with all joints filled and sealed. A breathable membrane or impervious cladding are not required.

Ground moisture

A DPC shall be installed beneath the treated timber soleplates. A latex self-levelling compound shall be applied directly under the steel soleplates.

The CBPB has a propensity towards some capillary water absorption.

Due to the closed cell structure (in excess of 90 %), water absorption by the PU core is negligible.

2.2.10 Strength

The System has adequate strength and stiffness to sustain specified loads when designed in accordance with this Agrément.

In consultation with a structural engineer, the Agrément holder can provide the full project-specific structural design calculations of a building envelope.

2.2.11 Fire performance

The CBPB forming the internal and external facings of the panels will not contribute to any spread of flame or heat release.

The galvanised steel profiles at all edges of the panels act as a seal, preventing the PU core from being exposed to fire in the event of degradation due to heat.

The System is permitted for use with service penetrations and in 'high fire-risk areas'.

Fire resistance

The System has been tested under loaded conditions, in accordance with BS EN 1365-1. When subjected to a line load of 13.3 kN/m, the System achieved fire resistance for 60 minutes - insulation performance, integrity and loadbearing capacity.

In Scotland, the System is classified as having a fire resistance of 'medium duration' (at least 60 minutes).

The System shall not be used on buildings with a storey 18 m or more above ground level. Boundary restrictions will depend on external surface materials of the external wall facing the boundary. Refer to the national Building Regulations for types of buildings and any exclusions that may apply.

When used in cavity wall applications, cavity barriers must be provided to comply with the relevant provisions of the national Building Regulations.

For detailed conditions of use regarding requirements for substrate fire performance, cavity closers and barriers, fire stopping of service penetrations and combustibility limitations for other materials and components used in the overall wall construction, designers should refer to the relevant national Building Regulations.

2.2.12 Thermal performance

For the purpose of thermal transmittance (hereinafter 'U-value') calculations and to determine if the requirements of the national Building (or other statutory) Regulations are met, the thermal resistances of the constructions shall be calculated according to BS EN ISO 6946, BRE Report 443 and BS EN ISO 10211 as appropriate.

The requirement for limiting the heat loss through the building fabric, including the effect of thermal bridging, can be satisfied if the U-values of the building elements do not exceed the maximum values in the relevant Elemental Methods given in the national Building Regulations.

Air permeability

In conjunction with other building elements designed to prevent air permeability, the System, when installed in accordance with this Agrément, will contribute to the airtightness of a building.

2.2.13 Acoustic performance

The System can contribute to improving the acoustic performance of external walls.

2.2.14 Durability

The service life durability of the System will be dependent upon the environment (operating conditions) in which the System will be used. The expected service life durability will be in excess of 50-years.

2.2.15 CE marking

There is no relevant harmonised European standard for the System.

2.3 - EXAMPLES OF TYPICAL DETAILS

Diagram 1 - Standard 4wall panels

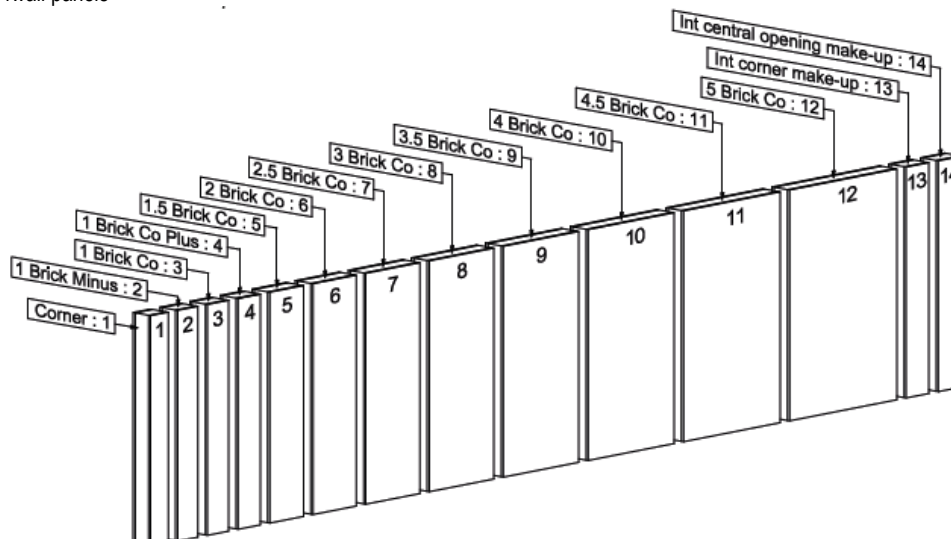


Diagram 2 - Connections and joints

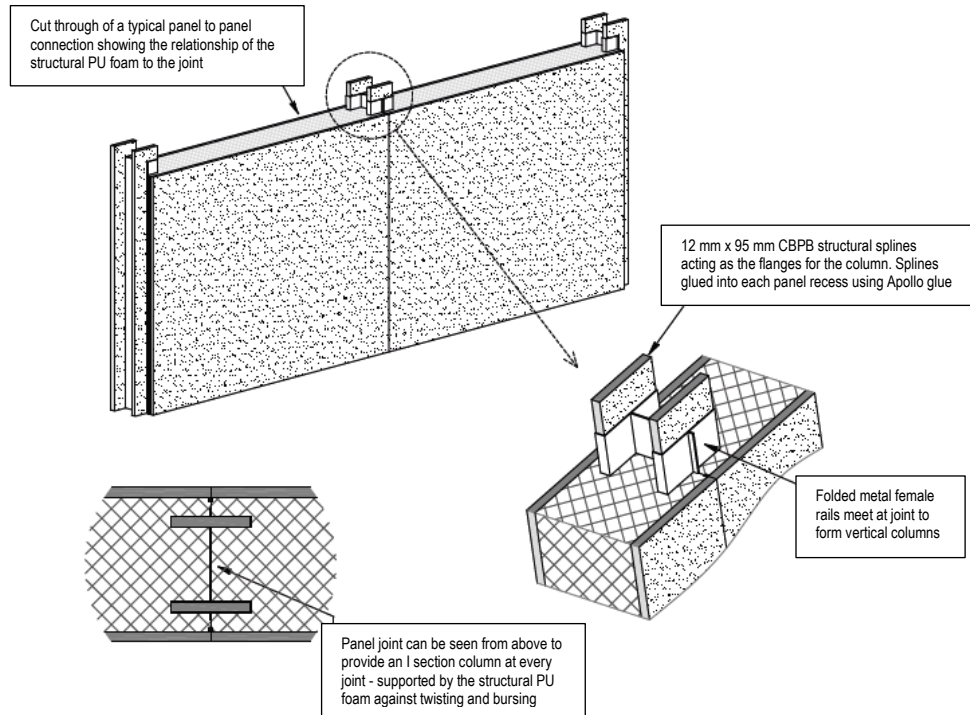


Diagram 3 - Steel soleplate connections near the corners

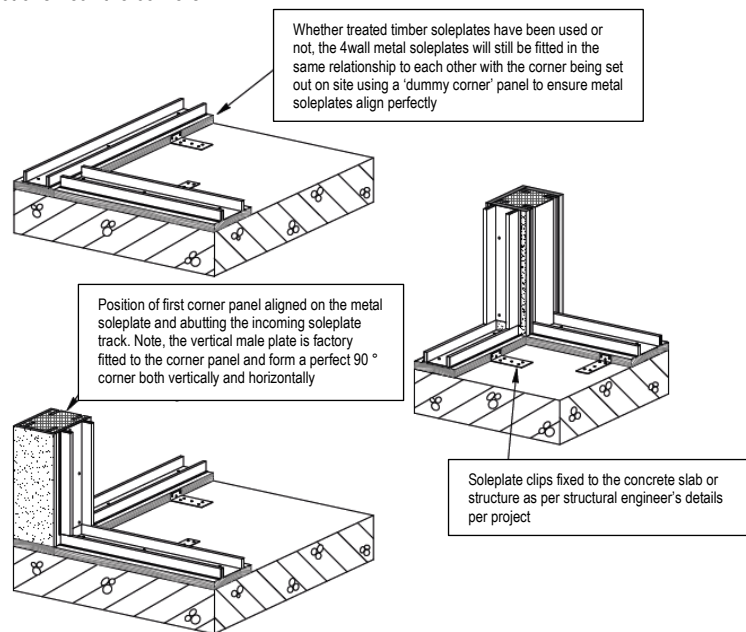


Diagram 4 - Corner arrangement of standard 4wall panels

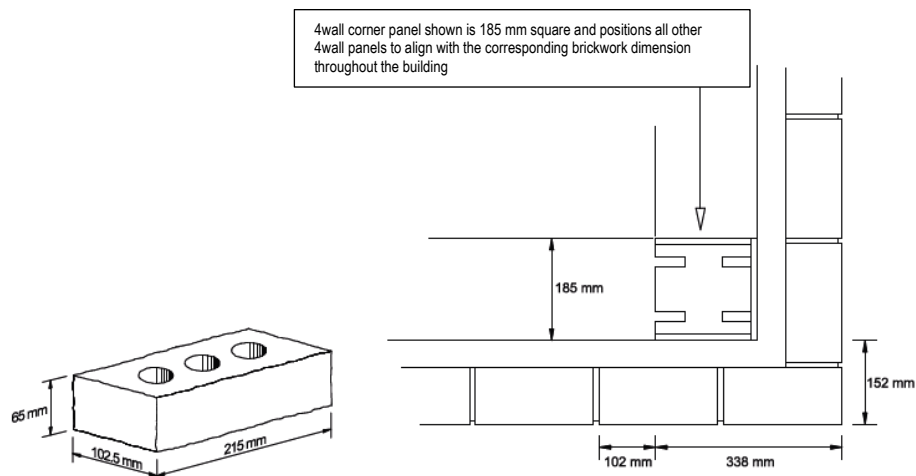


Diagram 5 - External view of connection with Insulated Beam & Block ground floor system

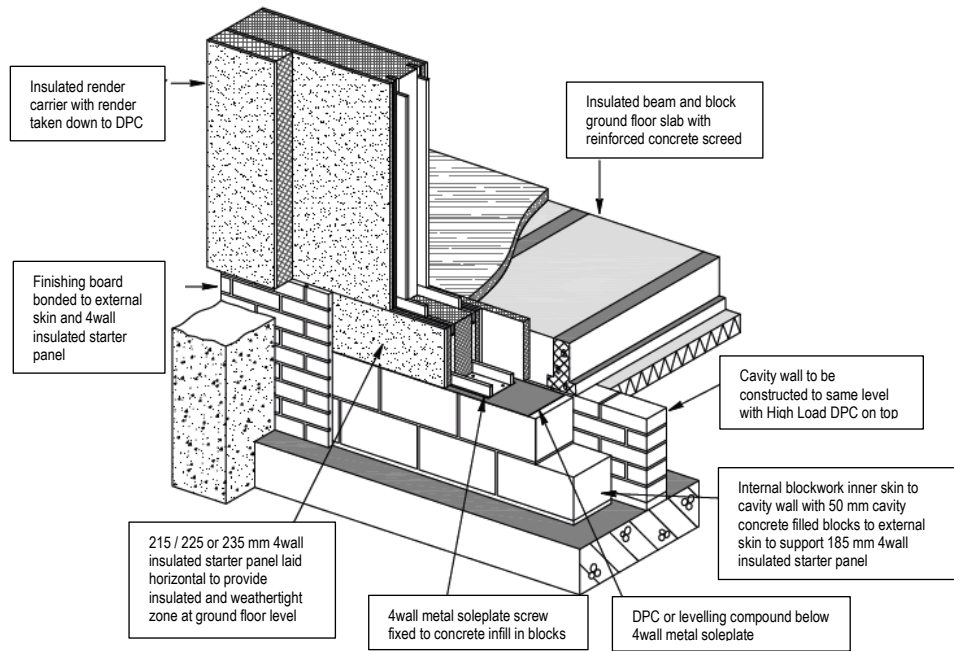


Diagram 6 - Internal view of connection with Insulated Beam & Block ground floor system

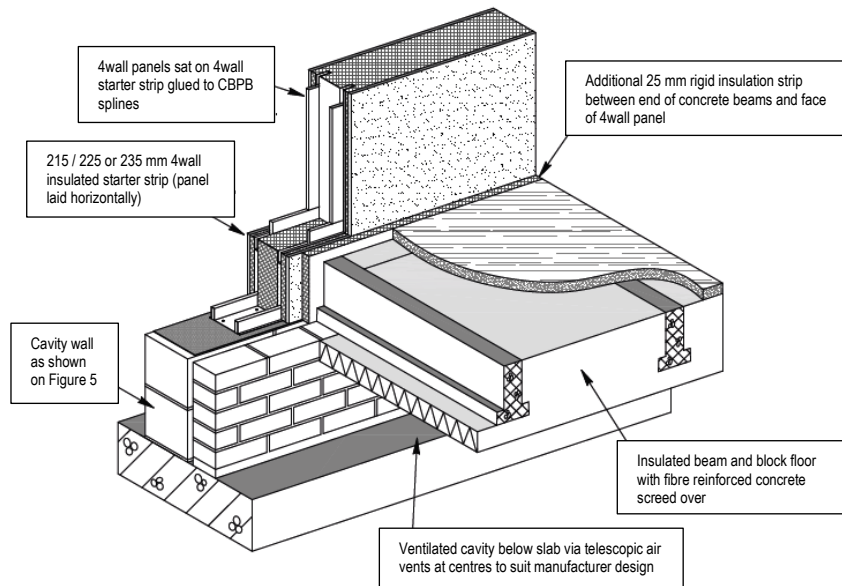


Diagram 7 - Waterproofing connection detail at ground floor

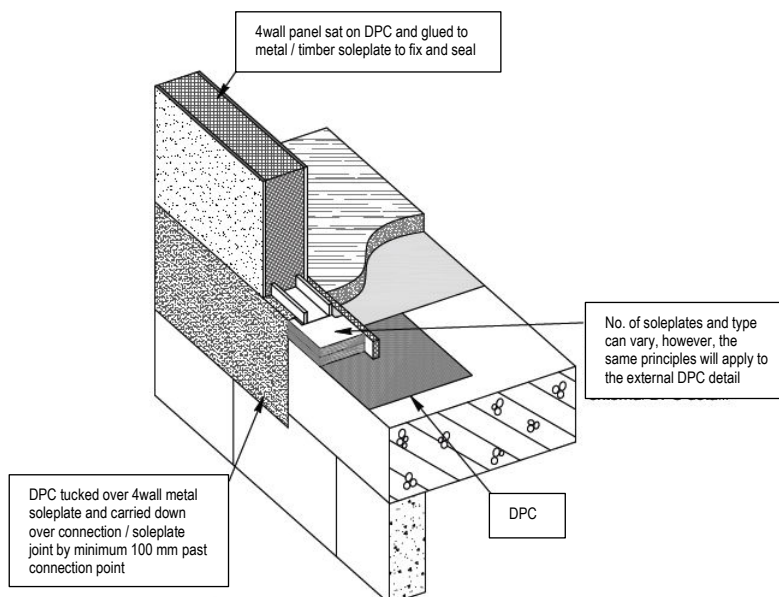


Diagram 8a - Intermediate floor detail with 'insulated rim board'

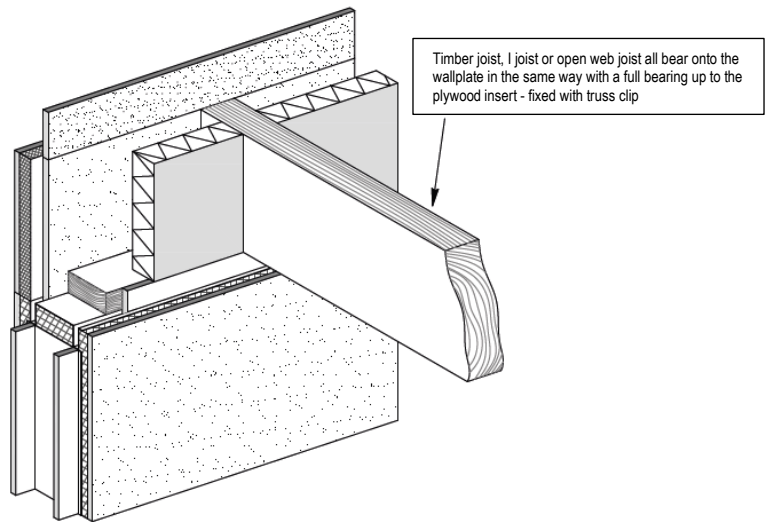


Diagram 8b - Intermediate floor detail showing a (glulam) 'ring beam' with fixed to that a timber ledger as support for the joists

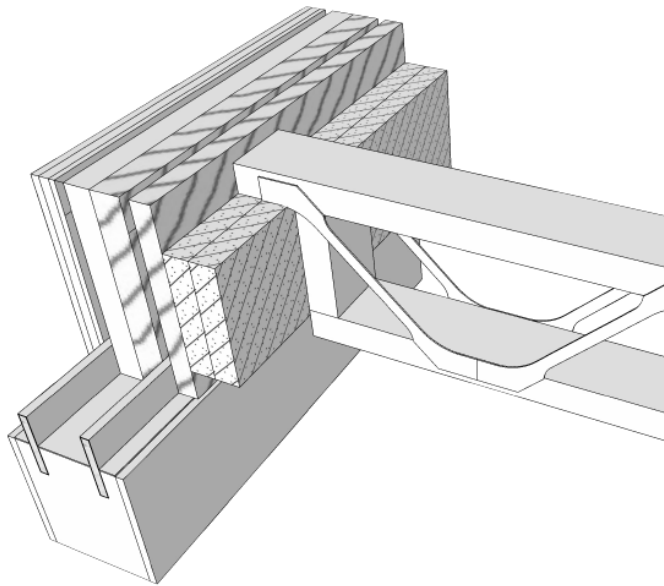


Diagram 9 - Standard cavity wall detail

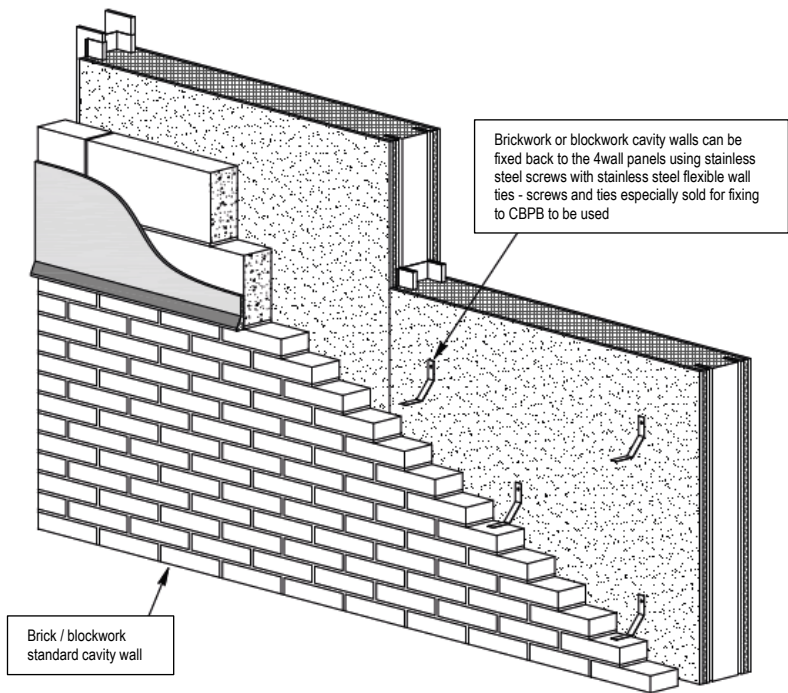
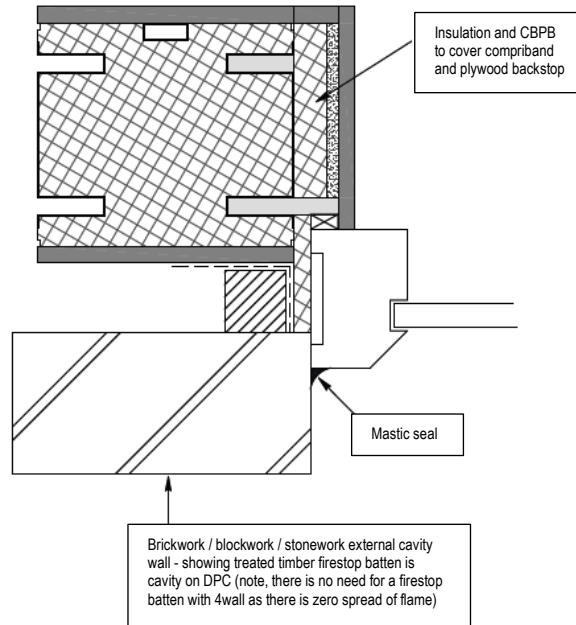


Diagram 10 - Standard window detail



2.4 - INSTALLATION

The System shall be installed strictly in accordance with the instructions (hereinafter 'Installation Manual') of the Agrément holder and the requirements of this Agrément.

2.4.1 Installer competence level

See section 2.2.6.

2.4.2 Delivery, storage and site handling

See section 2.2.7.

2.4.3 Project-specific installation considerations

No pre-installation survey is required for the installation of the System.

2.4.4 Preparation

The following considerations apply before starting the work:

- care shall be taken to avoid damaging the System components before and during installation; any damaged System components shall be repaired or replaced according to the Agrément holder's requirements before resuming installation;
- scaffolding or a safe working platform shall be erected by a competent scaffolding contractor, in accordance with the project-specific design, prior to the delivery of the System to site;
- construct a foundation (e.g. beams, blockwork or structural slab) appropriate for loadbearing walls, in accordance with the Agrément holder's requirements.

2.4.5 Outline installation procedure

The detailed installation sequence can be found in full in the Agrément holder's Installation Manual.

The key sequence for installation is:

- install steel soleplates to the substrate:
 - option A: via single or double-treated timber soleplates installed above a DPC;
 - option B: using a latex self-levelling compound;
- position the first corner panel aligned on the steel soleplate, abutting the incoming soleplate track; the vertical male soleplate is factory-fitted to the corner panel and forms a 90 ° corner both vertically and horizontally;
- continue installing wall panels in the sequence specified by the project-specific design, using splines and MCPU adhesive.

2.4.6 Finishing

The following finishing is required on completion of the installation:

- finish System joints:
 - internally, using an intumescent sealant or suitable plaster; apply fire-stopping where services penetrate the System;
 - externally, using an intumescent sealant or basecoat for an EWI system;
- apply or construct the:
 - Agrément holder approved external finish e.g. cladding system, EWI system or a leaf of masonry units;
 - internal finish.

2.5 - INDEPENDENTLY ASSESSED SYSTEM CHARACTERISTICS

2.5.1 Moisture control

Test	Standard	Result
resistance to driving rain under pulsating air pressure (after hygrothermal cycles in accordance with annex M.1.2 in EAD 090062-00-0404)	BS EN 12865	pass

2.5.2 Strength

Test	Standard	Result
structural lintel tests, mean failure loads	Flexural (FPB)	42.27 kN
	Shear	36.25 kN
	Flexural (point load)	35.45 kN
wind loading	BS EN 1991-1-4	27.4 kPa
axial compression strength for line load	BS EN 1052-1	122 kN/m
eccentric compression strength	Uniformly distributed load	89 kN/m
	Point load at centre of panel with 200 mm spreader plate	36 kN
	Point load at panel joint with 200 mm spreader plate	49 kN
soft-body impact	ISO 7892	no damage at 500 J
hard-body impact	ISO 7892	no damage at 10 J ^a
racking stiffness (R)	No vertical load	1450 N/mm
	5 kN vertical top load per stud	-
racking strength, mean value (F_{max})	No vertical load	27.7 kN
	5 kN vertical load per stud	-

^a very small indentations

2.5.3 Fire performance

Test	Standard	Result
fire resistance for load-bearing walls (with a line load of 13.3 kN/m)	Load-bearing capacity	77 minutes
	Integrity performance	76 minutes
	Insulation performance	76 minutes
reaction to fire	CBPB	BS EN 13501-1 A2-s1, d0

2.5.4 Thermal performance

Test	Standard	Result
U-value	BS EN ISO 10211	0.144 W/m ² K
point thermal transmittance value of the panel joint χ		0.039 W/K
air leakage	CIBSE Guide TM23	0.07 l/s/m

2.5.5 Acoustic performance

Test	Standard	Result
airborne sound insulation testing	System	$R_w (C; C_{tr}) = 32 (-3; -5)$ dB
	Modified System ^a	$R_w (C; C_{tr}) = 50 (-6; -14)$ dB

^a the System was modified with 45 mm thick timber battens, 50 mm thick Rockwool acoustic batts and 12 mm thick CBPBs to both sides to represent a 'party wall' configuration

CHAPTER 3 - CDM, NATIONAL BUILDING REGULATIONS AND THIRD-PARTY ACCEPTANCE

3.1 - THE CONSTRUCTION (DESIGN AND MANAGEMENT) REGULATIONS 2015 AND THE CONSTRUCTION (DESIGN AND MANAGEMENT) REGULATIONS (NORTHERN IRELAND) 2016

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

3.2 - THE NATIONAL BUILDING REGULATIONS

In the opinion of Kiwa Ltd., the System, if installed and used in accordance with Chapter 2 of this Agrément, can satisfy or contribute to satisfying the relevant requirements of the following national Building Regulations.

This Agrément shall not be construed to confer compliance of any project-specific design with the national Building Regulations.

3.2.1 - ENGLAND THE BUILDING REGULATIONS 2010 AND SUBSEQUENT AMENDMENTS

- A1(1)(2) Loading - the System can sustain and transmit all loads to the foundations
- B2(1) Internal fire spread (linings) - the internal linings (outside the scope of this Agrément) shall inhibit the spread of fire within a building
- B3(1) Internal fire spread (structure) - the System has a fire resistance of at least 60 minutes and will resist collapse, fire penetration and the transfer of excessive heat
- B3(4) Internal fire spread (structure) - the System is constructed such that the unseen spread of fire and smoke within the System is restricted
- B4(1) External fire spread - the external surface or cladding (outside the scope of this Agrément) shall resist the spread of fire over the walls and from one building to another
- C2(a) Resistance to ground moisture - the System meets this Requirement when installed with a DPC or latex self-levelling compound
- C2(b) Resistance to precipitation - the System meets this Requirement
- C2(c) Resistance to condensation - a CRA shall show the System can meet this Requirement
- L1(a)(i) Conservation of fuel and power - the System can contribute to limiting heat gains and losses
- Regulation 7(1) Materials and workmanship - the System is manufactured from suitably safe, durable materials for the application and can be installed to give a satisfactory performance
- Regulation 23(1) Requirements relating to thermal elements - the System can contribute to a floor complying with the requirements of L1(a)(i)
- Regulation 26 CO₂ emission rates for new buildings - the System can contribute to a building to not exceed its CO₂ emission rate
- Regulation 26A Fabric energy efficiency rates for new dwellings - the System can contribute to satisfying this Requirement
- Regulation 26C Target primary energy rates for new buildings - the System can contribute to satisfying this Requirement

3.2.2 - WALES THE BUILDING REGULATIONS 2010 AND SUBSEQUENT AMENDMENTS

- A1(1)(2) Loading - the System can sustain and transmit all loads to the foundations
- B2(1) Internal fire spread (linings) - the internal linings (outside the scope of this Agrément) shall inhibit the spread of fire within a building
- B3(1) Internal fire spread (structure) - the System has a fire resistance of at least 60 minutes and will resist collapse, fire penetration and the transfer of excessive heat
- B3(4) Internal fire spread (structure) - the System is constructed such that the unseen spread of fire and smoke within the System is restricted
- B4(1) External fire spread - the external surface or cladding (outside the scope of this Agrément) shall resist the spread of fire over the walls and from one building to another
- C2(a) Resistance to ground moisture - the System meets this Requirement when installed with a DPC or latex self-levelling compound
- C2(b) Resistance to precipitation - the System meets this Requirement
- C2(c) Resistance to condensation - a CRA shall show the System can meet this Requirement
- L1(a)(i) Conservation of fuel and power - the System can contribute to limiting heat gains and losses
- Regulation 7(1) Materials and workmanship - the System is manufactured from suitably safe, durable materials for the application and can be installed to give a satisfactory performance
- Regulation 23(1) Requirements relating to thermal elements - the System can contribute to a floor complying with the requirements of L1(a)(i)
- Regulation 26 CO₂ emission rates for new buildings - the System can contribute to a building to not exceed its CO₂ emission rate
- Regulation 26A Primary energy rates for new buildings - the System can contribute to satisfying this Requirement
- Regulation 26B Fabric performance values for new dwellings - the System can contribute to satisfying this Requirement
- Regulation 26C Energy efficiency rating - the System can contribute to satisfying this Requirement

3.2.3 - SCOTLAND THE BUILDING (SCOTLAND) REGULATIONS 2004 AND SUBSEQUENT AMENDMENTS

3.2.3.1 Regulation 8(1)(2) Durability, workmanship and fitness of materials

- The System is manufactured from acceptable materials and is adequately resistant to deterioration and wear under normal service conditions, provided it is installed in accordance with the requirements of this Agrément

3.2.3.2 Regulation 9 Building Standards - Construction

- 1.1(a) Structure - the System can sustain and transmit all loads to the foundations
- 2.3 Structural protection - the System contributes to satisfying this Requirement
- 2.4 Cavities - the System is constructed such that the unseen spread of fire and smoke within the System is restricted

- 2.5 Internal linings - the System can be used as part of an enclosure for a protected zone (e.g. escape route or lobby)
- 2.6 Spread to neighbouring buildings - the System can inhibit the spread of fire to neighbouring buildings
- 2.7 Spread on external walls - the external wall cladding (outside the scope of this Agrément, as are specified attachments) shall resist the spread of fire on walls and from one building to another
- 3.4 Moisture from the ground - the System shall be fitted with a DPC or latex self-levelling compound
- 3.10 Precipitation - the System will prevent moisture from precipitation penetrating to the inner face of a building
- 3.15 Condensation - a CRA shall show the System can meet this Requirement
- 6.2 Building insulation envelope - the System can contribute to limiting heat loss
- 7.1(a)(b) Statement of sustainability - the System can contribute to satisfying the relevant Requirements of Regulation 9, Standards 1 to 6, and will therefore contribute to a construction meeting a bronze level of sustainability as defined in this Standard. In addition, the Product can contribute to a construction meeting a higher level of sustainability as defined in this Standard

3.2.3.3 Regulation 12 Building Standards - Conversions

- All comments given under Regulation 9 also apply to this Regulation, with reference to Schedule 6 of The Building (Scotland) Regulations 2004 and subsequent amendments and clause 0.12 of the Technical Handbook (Domestic) and clause 0.12 of the Technical Handbook (Non-Domestic)

3.2.4 - NORTHERN IRELAND THE BUILDING REGULATIONS (NORTHERN IRELAND) 2012 AND SUBSEQUENT AMENDMENTS

- 23(1)(a)(i)(iii)(b) Fitness of materials and workmanship - the System is manufactured from materials which are suitably safe and acceptable for use as described in this Agrément
- 28(a) Resistance to moisture from the ground - the System shall be fitted with a DPC or latex self-levelling compound
- 28(b) Resistance to the weather - the System prevents the passage of moisture to any part of a building
- 29 Condensation - a CRA shall show the System can meet this Requirement
- 30(a) Structure, stability - the System can sustain and transmit all loads to the foundations
- 34 Internal fire spread, linings - the internal linings (outside the scope of this Agrément) shall inhibit the spread of fire within a building
- 35(1) Internal fire spread, structure - the System has a fire resistance of at least 60 minutes and will resist collapse, fire penetration, and the transfer of excessive heat
- 35(4) Internal fire spread, structure - the System is constructed such that the unseen spread of fire and smoke within the System is restricted
- 36(a) External fire spread - the external surface or cladding (out of scope for this Agrément) shall meet all requirements to resist the spread of flame over the external surface and the spread of fire from one building to another
- 39(a)(i) Conservation measures - the System can contribute to limiting heat gains and losses through walls
- 40(2) Target carbon dioxide emission rate - the System can contribute to meeting the target carbon dioxide emission rate

3.3 - THIRD-PARTY ACCEPTANCE

None requested by the Agrément holder.

CHAPTER 4 - SOURCES

- BS EN ISO 6946:2017 Building components and building elements. Thermal resistance and thermal transmittance. Calculation methods
- BS EN ISO 10140-2:2010 Acoustics. Laboratory measurement of sound insulation of building elements. Measurement of airborne sound insulation
- BS EN ISO 10211:2017 Thermal bridges in building constructions. Heat flows and surface temperatures. Detailed calculations
- BS EN ISO 12572:2016 Hygrothermal performance of building materials and products. Determination of water vapour transmission properties. Cup method
- BS EN 594:2011 Timber structures. Test methods. Racking strength and stiffness of timber frame wall panels
- BS EN 826:2013 Thermal insulating products for building applications. Determination of compression behaviour
- BS EN 846-9:2016 Methods of test for ancillary components for masonry. Determination of flexural resistance and shear resistance of lintels
- BS EN 1052-1:1999 Methods of test for masonry. Determination of compressive strength
- BS EN 1365-1:2012 Fire resistance tests for loadbearing elements. Walls
- BS EN 1991-1-1:2002 Eurocode 1. Actions on structures. General actions
- NA to BS EN 1991-1-1:2002 UK National Annex to Eurocode 1. Actions on structures. General actions. Densities, self-weight, imposed loads for buildings
- BS EN 1991-1-4:2005+A1:2010 Eurocode 1. Actions on structures. General actions
- NA to BS EN 1991-1-4:2005+A1:2010 UK National Annex to Eurocode 1. Actions on structures. General actions
- BS EN 1995-1-1:2004+A2:2014 Eurocode 5: Design of timber structures. General. Common rules and rules for buildings
- NA to BS EN 1995-1-1:2004+A2:2014 UK National Annex to Eurocode 5: Design of timber structures. General. Common rules and rules for buildings
- BS EN 1995-1-2:2004 Eurocode 5. Design of timber structures. Part 1-2: General – Structural fire design
- NA to BS EN 1995-1-2:2004 UK National Annex to Eurocode 5. Design of timber structures. General
- BS EN 10346:2015 Continuously hot-dip coated steel flat products for cold forming. Technical delivery conditions
- BS EN 12667:2001 Thermal performance of building materials and products. Determination of thermal resistance by means of guarded hot plate and heat flow meter methods. Products of high and medium thermal resistance
- BS EN 12865:2001 Hygrothermal performance of building components and building elements. Determination of the resistance of external wall systems to driving rain under pulsating air pressure
- BS EN 13501-1:2018 Fire classification of construction products and building elements. Classification using data from reaction to fire tests
- BS 5250:2021 Management of moisture in buildings. Code of practice
- ISO 7892:1988 Vertical building elements. Impact resistance tests. Impact bodies and general test procedures
- BRE Report 443:2006 Conventions for U-value calculations
- BRE Report 497:2016 Conventions for calculating linear thermal transmittance and temperature factors
- CIBSE Guide TM23:2000 Testing Buildings for Air Leakage
- ETAG 016:2004 Guideline for European Technical Approval of self-supporting composite lightweight panels

Remark - Apart from these sources, technical information and confidential reports have been assessed; any relevant documents are in the possession of Kiwa Ltd. and kept in the Technical Assessment File of this Agrément. The Installation Manual for the System may be subject to change, and the Agrément holder should be contacted for clarification of revisions.

CHAPTER 5 - AMENDMENT HISTORY

Revision	Amendment description	Author	Approver	Date
-	First Issue	C Devine	C Vurley	January 2021
A	Minor format update	C Devine	C Vurley	April 2021
B	Re-issue upon successful 3 Year Renewal; update to branding	C Hewer	C Devine	June 2026

CHAPTER 6 - CONDITIONS OF USE

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