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Brick Slip Façade
Cladding System



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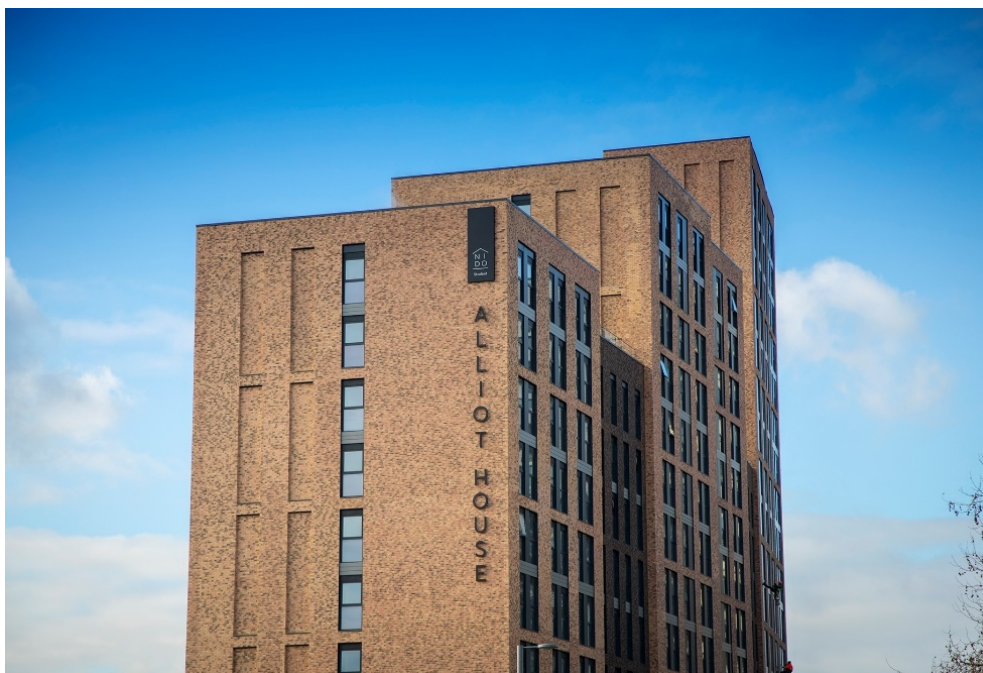
SCOPE OF AGRÉMENT

This BDA Agrément® (hereinafter 'Agrément') relates to Genbrix (hereinafter the 'System'). The System is a mechanically fixed brick slip façade cladding system and is suitable for installation above damp-proof course (hereinafter 'DPC') level. The System is for installation on external sheathed light-gauge steel frame (hereinafter 'LGSF'), sheathed structural timber frame (hereinafter 'STF'), structural insulated panels (hereinafter 'SIP') or solid masonry (where masonry includes clay and calcium silicate bricks, concrete blocks, and natural and reconstituted stone blocks) supporting walls. The System is for existing and new dwellings, and buildings other than dwellings.

DESCRIPTION

The System consists of clay brick slips, mechanically clamped to a horizontal brick slip aluminium track (hereinafter 'brick slip track'), fixed to the sub frame comprising T-rails or L-rails and helping-hand brackets, which creates a cavity. The helping-hand brackets are mechanically fixed to the LGSF, STF, SIP or masonry substrate. The System is finished with brick slips and pointed with mortar.

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
Operations Manager, Building Products

Alpheo Mlotha CEng FIMMM MBA
Technical Manager, Building Products

SUMMARY OF AGRÉMENT

This document provides independent information to specifiers, specialists, engineers, building control personnel, contractors, installers and other construction industry professionals who are considering the safety and fitness for purpose 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

The System described in this Agrément meets the requirements defined on Kiwa Technical Requirement KTR-04.

Moisture control - see Section 2.2.7 - the System will resist wind-driven rain penetration across the ventilated cavity to the supporting wall.

Strength - see Section 2.2.8 - the System has adequate strength and is designed to adequately resist impact damage and wind loads normally encountered in the UK.

Fire performance - see Section 2.2.9 - the System is classified as European Classification A1, in accordance with BS EN 13501-1.

Durability - see Section 2.2.10 - the service life durability of the System will be dependent upon the environment (operating conditions) in which the System will be used.

UKCA and CE marking - see Section 2.2.11 - the manufacturers of the constituent products used within the System have responsibility for conformity marking, in accordance with all relevant British and European Product Standards.

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1 GENERAL CONSIDERATIONS

1.1 CONDITIONS OF USE

1.1.1 Limitations

This Agrément has been prepared in accordance with the mandatory requirements defined in Kiwa Technical Requirement KTR-04. Some information in this Agrément is provided for guidance or reference purposes only; this information falls outside the scope of the Technical Requirement.

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 shall be controlled by a competent person who shall be an employee of an Approved Installer.

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 Section 3 of this Agrément (CDM, national Building Regulations and Third-Party Acceptance).

1.1.6 Validity

The purpose of this Agrément is to provide well-founded confidence to apply the System within the scope described. The validity of this Agrément is as published on www.kiwa.co.uk/bda.

1.2 PRODUCTION CONTROL AND QUALITY MANAGEMENT SYSTEM

Kiwa Ltd. has conducted an audit of the Agrément holder and determined that they fulfil all their 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.

2 TECHNICAL ASSESSMENT

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

2.1 SYSTEM COMPONENTS AND ANCILLARY ITEMS

2.1.1 Components included within the scope of this Agrément

The components listed in Table 1 below are integral to the use of the System.

Table 1 - Integral components

Component	Description	Dimensions
Support System Façade Cladding	BR single L-shaped aluminium helping-hand brackets with rigid polyvinyl chloride (hereinafter 'PVC') thermal isolator pads	45 mm by 100 mm by 75 mm long, 3 mm thick
	BRD double-L shaped aluminium helping-hand brackets with rigid PVC thermal isolator pads	50 mm by 100 mm by 150mm long, 3 mm thick
	Generix Lite T-rail - aluminium alloy EN AW-6063 rail, in accordance with BS EN 573-3	125 mm by 60 mm by 2.2 mm, 3 m or 6 m long
	Generix Lite L-rail - aluminium alloy EN AW-6063 rail, in accordance with BS EN 573-3	60 mm by 40 mm by 2.2 mm, 3 m or 6 m long
brick slip track	Generix 1 - single-course aluminium alloy EN AW-6063 horizontal track	75 mm high, 5 m long
	Generix 3 - three-course aluminium alloy EN AW-6063 horizontal track	229 mm high, 5 m long
mechanical fixings for brackets, rails and track	Rawlplug OCS-55025 stainless steel self-drilling screw	5.5 mm by 25 mm to 70 mm long
clay brick slip	Genbrix natural brick slip in accordance with BS EN 771-1, supplied in various colours	215 to 300 mm by 65 mm, 28 mm thick
pointing mortar	Parex Historic Mortar KL - a lime pointing mortar comprising ground granulated blast-furnace slag, silica sands and natural aggregates with additives, supplied in various colours	
	Tradijoint pointing mortar comprising of mineral fillers, white cement, lime, mass water-repellent and mineral pigments supplied in various colours	

2.1.2 Ancillary items falling outside the scope of this Agrément

The following ancillary items detailed in this Section may be used in conjunction with the System, but fall outside the scope of this Agrément:

- supporting wall - LGSF, STF, SIP or masonry;
- breathable membrane;
- intumescent strips;
- profiles - a range of standard profiles for end stop, edge, corner mesh and expansion joints, base profile or starter track, provided to the specifier's requirements;
- under-and-over cills, cill extenders;
- roof verge extenders;
- movement joint sealant - low modulus silicone sealant;
- cavity barriers;
- insulation.

2.2 POINTS OF ATTENTION TO THE SPECIFIER

2.2.1 Design

2.2.1.1 Design responsibility

A Specifier may undertake a project-specific design, in which case it is recommended that the Specifier co-operates closely with the Agrément holder. The Specifier or Installer is responsible for the final as-built design. The Agrément holder retains full design responsibility unless the design is subsequently modified by others.

2.2.1.2 Basis of design

The characteristics detailed in the section titled 'Major Points of Assessment' shall be considered during the use of System.

2.2.1.3 General design considerations

A project-specific design is required. This shall be developed in close co-operation with the Agrément holder.

This Agrément covers the use of the System in all UK exposure zones, in accordance with BS 8104.

Assessment of the structural performance of the System shall be carried out by a suitably qualified structural engineer, to confirm that the System can:

- resist the design impact, wind, dead and imposed loads;
- safely transfer loads to the building;
- accommodate all anticipated thermal movements without damage.

The System shall be installed above DPC level and a minimum of 150 mm above ground level.

New masonry supporting walls shall be designed in accordance with:

- BS EN 1992-1-1;
- BS EN 1996-1-1;
- BS EN 1996-2;
- PD 6697.

LGSF supporting walls shall be designed in accordance with BS EN 1993-1-1 and BS EN 1993-1-3; the steel structure shall be not less than 1.2 mm thick with a minimum of 50 mm flanges.

STF supporting walls shall be designed in accordance with BS EN 1995-1-1 and BS EN 14081-1; the timber structure shall not be less than 37 mm thick with a minimum width of 72 mm.

The System can be installed on supporting walls constructed from LGSF and STF, where sheathing consists of exterior-grade cement-bonded particle board (hereinafter 'CBPB'), marine-grade plywood, oriented strand board (hereinafter 'OSB') or fibre cement boards. Manufacturing requirements are as follows:

- CBPB shall be manufactured in accordance with BS EN 12467 or BS EN 634-2, with a minimum thickness of 10 mm;
- marine-grade plywood shall be manufactured in accordance with BS EN 313-1, with a minimum thickness of 12 mm;
- OSB shall be manufactured in accordance with BS EN 300, with a minimum thickness of 11 mm;
- fibre cement boards shall be weather resistance category A or B and bending strength class 2 or 3, manufactured in accordance with BS EN 12467, with a minimum thickness of 9 mm.

Sheathing boards shall be:

- weather resistance Category A or B and bending strength Class 2 or 3, in accordance with BS EN 12467;
- classified as European Classification A1 or A2-s1, d0, in accordance with BS EN 13501-1, when the height of the project-specific design is over:
 - 18 m in England, Wales and Northern Ireland;
 - 11 m in Scotland.

SIP supporting walls shall be designed to have adequate strength and stiffness. In the project design phase, a suitably qualified structural engineer shall take consideration of:

- the long-term creep effects of permanent loading and cracking to internal finishes;
- fire resistance restrictions;
- sliding, overturning and panel racking.

Racking resistance and disproportionate collapse of the SIPs shall be assessed in accordance with BS EN 1995-1-1 and BS EN 1991-1-7, respectively.

Supporting walls shall be designed in accordance with the relevant Standards to limit mid-span deflections to prevent damage to the System (see Section 2.2.8).

Buildings incorporating the System shall be designed and constructed to prevent moisture penetration and air infiltration, in accordance with the relevant Codes and Standards.

Care is needed for design detailing of joints around openings, penetrations and movement joints, in accordance with BS 6093.

The System shall incorporate a drained and ventilated cavity between the sheathing boards and the brick slip tracks. Ventilation openings shall be arranged to prevent the ingress of rain, snow, birds and small animals, and reduce the risk of blockage by other building operations.

Movement joints (designed to cater for the calculated degree of movement to control expansion, contraction and cracking without reducing the stability and weathertightness of the wall) shall be carried through the System using movement beads of PVC, powder-coated galvanised steel or austenitic stainless steel as appropriate, subject to the project-specific design. The movement joints within the System shall be installed as follows:

- to allow for horizontal movement, vertical expansion joints shall be provided through brick slips, mortar and brick slip tracks at a maximum of 12 m centres in the brick slip cladding;
- to allow for vertical movement, horizontal expansion joints shall be provided at maximum 9 m centres and shall coincide with movement joints in the substrate wall and allow for the same degree of movement.

Walls incorporating the System shall be detailed to reduce the risk of damage due to movement in the supporting walls, taking into consideration differential movement in dissimilar materials.

The sheathing board shall be covered with a breathable membrane; without a covering, water can penetrate a wall via taped butt joints, fasteners and penetrations (e.g. flues, ducts).

The U-value of a completed wall construction will depend on the insulation type, thickness, degree of ventilation to the drained cavity, fixing method, type of fixing and the insulating value of the supporting wall and its internal finish.

For the purposes of U-value calculations and to determine if the requirements of national Building Regulations are met, the thermal resistance and U-value of the walls incorporating the System shall be calculated according to BS EN ISO 10211 (taking into consideration BS EN ISO 6946, BS EN ISO 10456 and BRE Report 443), using the declared thermal conductivity (λ_0) of the insulation.

The System shall be secured to the supporting wall with fixings installed through the helping-hand brackets and rails that form the cavity between the sheathing board of the supporting wall and the brick slip tracks.

2.2.1.4 Project-specific design considerations

The project-specific design shall:

- be determined by the Agrément holder;
- take into account the requirements of the relevant national Building Regulations (see Section 3.2);
- take into account the service life durability required (see Section 2.2.10).

A pre-installation survey is required to allow determination of the project-specific design (see Section 2.4.1).

The Agrément holder shall ensure that the following considerations are included in the development of a project-specific design:

- structural adequacy of the supporting wall;
- thermal expansion effects of the supporting wall and the System;
- likely local impact resistance;
- pull-through of fixings;
- pull-out of fixings;
- effect of wind actions on the System.

Supporting walls shall be vapour permeable, to ensure that moisture can escape from inside the building.

Account shall be taken of Government Accredited Construction Details for Part L - Masonry External Wall Insulation Illustrations, Timber Frame Illustrations and Steel Frame Illustrations for England and Wales and Accredited Construction Details for Scotland (hereinafter 'Government Accredited Construction Details').

During the assessment and survey, fixing pull-out strength (kN) tests shall be conducted on the supporting wall surface, in accordance with EOTA TR 051. The results of the assessment and survey shall assist the Agrément holder in determining the type and size of the fixings and the fixing centres for required cleats. When using pull-out data for fixings, the material safety factor γ_m shall be considered.

2.2.2 Applied building physics (heat, air, moisture)

A Specialist shall check the hygrothermal behaviour of a project-specific design incorporating the System and, if necessary, offer advice on 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 Specialist co-operates closely with the Agrément holder).

2.2.3 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.

2.2.4 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 shall be by an Approved Installer, trained and approved by the Agrément holder.

2.2.5 Delivery, storage and site handling

The System components are delivered in suitable packaging bearing relevant identification information (such as the System name, production identification date or batch number, the Agrément holder's name etc.) and, where applicable, the BDA Agrément® logo incorporating the number of this Agrément.

Prior to installation, the System components shall be stored in accordance with the Agrément holder's requirements. Good housekeeping protocols shall be followed to avoid damage.

Where required, particular care shall be taken to:

- avoid exposure of pointing mortar to high or low temperatures for extended periods of time;
- store System components in a well-ventilated covered area to protect them from rain, frost and humidity.

For storage of liquid components, minimum and maximum temperatures shall be observed, including limitations of the shelf life, in accordance with the manufacturer's recommendations.

2.2.6 Maintenance and repair

Once installed, the System requires regular maintenance. For 60-year durability, a bespoke extended repair and maintenance protocol will apply. For advice in respect of repair and maintenance, consult the Agrément holder.

The maintenance schedule for the installed System shall include regular visual inspection checks for:

- signs of loose brick slips; dislodged slips shall be refixed;
- signs of damaged brick slips; damaged slips shall be removed and replaced with new ones;
- integrity of the sealant around openings and service entry points;
- adequate performance of architectural details designed to shed water;
- leaks from external plumbing and fittings, gutters and drainpipes.

The brick slip finish may become discoloured in damp areas by algae and lichens. Cleaning with fresh warm water and light brushing or replacing the brick slips will mitigate this. A mild detergent or traffic-film remover can be applied and washed off. Any surface algae can be cleaned off using an algicide.

Any damage shall be repaired immediately in accordance with the Agrément holder's Maintenance and Repair Manual.

Maintenance shall include regularly replacing and resealing joints at window and door frames to prevent failure. Failed elements such as sealants, joint seals and corroded materials shall be replaced to ensure that water ingress does not occur.

Lime bloom is likely to occur in pointing mortar containing Portland cement and can be avoided by application during weather conditions recommended by the Agrément holder.

Performance factors in relation to the Major Points of Assessment

2.2.7 Moisture control

Condensation risk

Ventilation gaps at head and base rails aid the release of moisture from the inside of the building. The ventilation area at the base rail shall be equivalent to 500 mm² per linear metre run.

Resistance to precipitation including wind-driven rain

The System will resist rain penetration across the drained and ventilated cavity to the supporting wall surface and satisfy this requirement as given in either the relevant national Building Regulations or BRE Report 262.

The project-specific design shall include detailing around openings, penetrations and movement joints to minimise the risk of wind-driven rainwater ingress, in accordance with BS 6093.

The System will provide protection against rainwater ingress. However, care shall be taken to ensure that supporting walls are adequately weathertight prior to installation of the System. The guidance given in BRE Report 262 shall be followed in connection with the weathertightness of wall constructions.

At the tops of walls, the System shall be protected by an adequate coping, overhang or other project-specific detail.

Drainage deflection beads and ethylene propylene diene monomer (hereinafter 'EPDM') membrane are incorporated into the System to deflect any water in the drained and ventilated cavity around openings, penetrations or items that block the cavity.

The System has adequate resistance to artificial weathering and resistance to thermal shock, in accordance with EAD 090062-00-0404 and EAD 040427-00-0404.

The drained and ventilated cavity between the supporting wall and brick slip tracks must be a minimum width of 25 mm. Any water collecting in the cavity owing to rainwater or condensation shall be removed by drainage and ventilation.

2.2.8 Strength

Structural loading

The supporting wall shall have sufficient strength to withstand all wind, dead and imposed loads applied to and from the System, including racking and any temporary loads that could be applied during installation. The strength of the supporting wall shall be verified by a suitably qualified engineer. The project-specific design shall ensure that:

- the System attachment to the supporting wall has adequate fixing pull-out capacity for the calculated wind loads;
- thermal expansion effects of metal rails, structural frames and brick slip tracks to be supported are taken into consideration in the design and detailing.

The System shall be designed to withstand wind action loads in accordance with BS EN 1991-1-1 and BS EN 1991-1-4. Account shall be taken of the location, shape and size of the building. The average yearly wind-load action data for the site location shall be collated and used to calculate the required design wind resistance (positive and negative) of a given support spacing. Special consideration shall be given to locations with high wind-load pressure coefficients, as extra rails/brackets may be required.

The framed supporting wall shall be designed in accordance with the relevant Standards to limit mid-span deflections to L/360 (mid-span) and L/200 (cantilever).

The System was tested for serviceability and safety loads in accordance with CWCT Standards. The requirements for serviceability load of 2.4 kN/m² and for safety load of 3.6 kN/m² were satisfactory (see Section 2.5.2).

Positive wind load is transferred to the supporting wall directly via bearing and compression of the brick slips, brick slip tracks, supporting rails and the brackets. Negative wind load is resisted by the mechanical bond between brick slips and brick slip tracks; the brick slip tracks and rails; and rails and brackets, which are retained by the mechanical fixings fixed to the supporting wall.

Impact resistance

When tested for hard- and soft-body impact resistance, in accordance with Technical Note 76 of CWCT, the System performance is classified as of Negligible Risk.

2.2.9 Fire performance

The System is classified as European Classification A1, in accordance with BS EN 13501-1.

The System when fixed to sheathed LGSF or masonry supporting walls, is not subject to any restriction on proximity to boundaries and building height, in accordance with the national Building Regulations. Sheathing board and insulation, if used, shall be classified as European Classification A1 or A2-s1, d0, in accordance with BS EN 13501-1. However, the insulation falls outside of the scope of this Agrément.

The System when fixed to a SIP or sheathed STF supporting walls, is subject to restrictions on proximity to boundaries and building height under the national Building Regulations:

- the System may be specified for use up to and including 18 m in height in England, Wales and Northern Ireland. Refer to the national Building Regulations for full details of building types where restrictions apply;
- in Scotland, the System is restricted to buildings with no floor more than 11 m above ground level and not less than 1 m from the boundaries. In such cases, the System may be excluded from the unprotected area calculation, regardless of openings. Refer to the national Building Regulations for full details of building types where restrictions apply.

Walls shall be designed and constructed:

- to adequately resist the passage and penetration of fire;
- to inhibit the unseen spread of fire and smoke within concealed spaces in the wall.

The fire resistance of walls is based on the occupancy, size and use of a building and shall be a minimum of 30 minutes. It is then specified in 60-minute intervals thereafter.

Cavity fire barriers shall be installed in line with compartment walls and floors, as advised in BRE Report 135 and as required under the national Building Regulations. Materials used for cavity barriers and firestops shall be capable of producing adequate resistance to fire and smoke. Intumescent strips shall be applied behind each fire barrier.

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

Proximity of flues and appliances

The SIP and sheathed STF supporting walls (with the installed System) shall be adequately separated from any chimney, heat-producing appliance or incinerator flue pipe passing through a wall. Recommended means of separation are detailed in the Approved Documents supporting the national Building Regulations.

Guidance on separation in STF supporting walls can be found in:

- IGE/UP/7;
- BSRIA/TRADA IEP6.

2.2.10 Durability

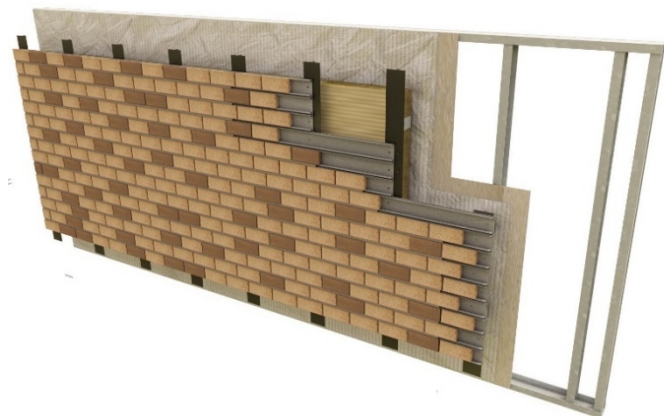
The service life durability of the System will be dependent upon the environment (operating conditions) in which the System will be used. The expected service life durability will be in excess of 60 years.

2.2.11 UKCA and CE marking

There is no relevant Product standard for the System.

2.3 EXAMPLES OF TYPICAL DETAILS

Diagram 1 - typical construction detail



Key for diagrams 2 to 11

- 01 helping-hand bracket
- 02 thermal isolator pad
- 03 Generix Lite T-rail or L-rail
- 04 breathable membrane
- 05 Generix horizontal brick slip track
- 06 mechanical fixing (stainless steel)
- 07 10 mm mortar joint
- 08 non-combustible insulation (as per project-specific design)
- 09 mechanical fixing (stainless steel)
- 10 CBPB sheathing
- 11 LGSF supporting wall
- 12 Genbrix brick slip
- 13 flashing
- 14 internal finish
- 15 mechanical fixing (stainless steel)
- 16 vapour control layer
- 17 EPDM membrane
- 18 aluminium window pod or reveal flashing
- 19 window/door fixing and sealing
- 20 2 mm corner support angle
- 21 1mm vermin mesh
- 22 coping and support bracket
- 23 low profile rivet
- 24 plywood
- 25 vertical fire barrier
- 26 cavity barrier
- 27 horizontal fire barrier

Diagram 2 - external corner detail

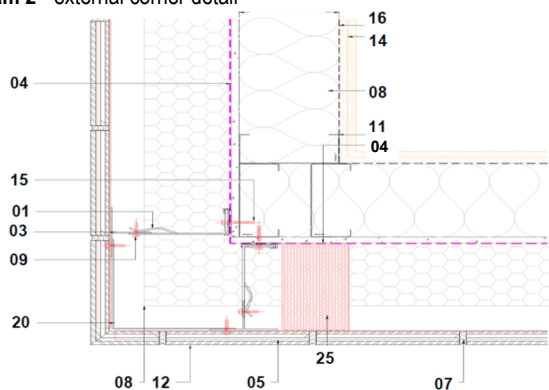


Diagram 3 - internal corner detail

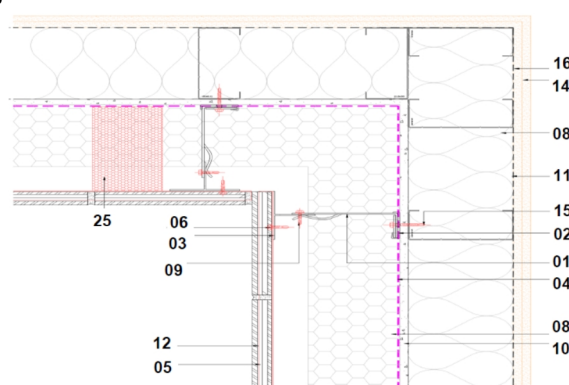


Diagram 4 - head detail

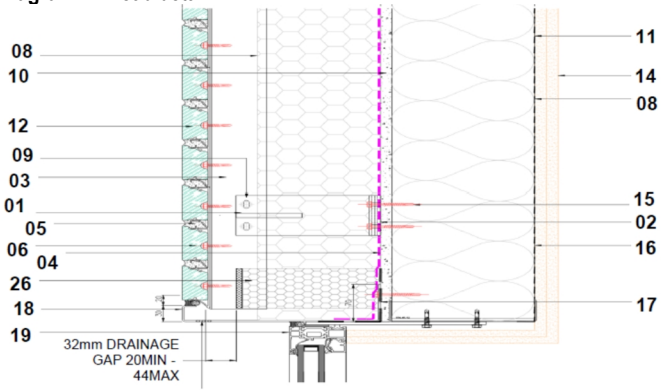


Diagram 5 - cill detail

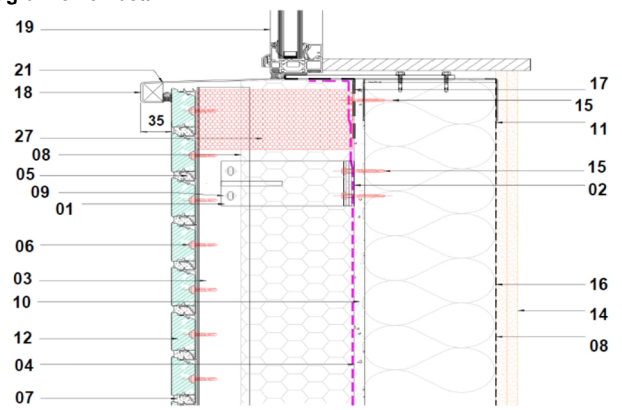


Diagram 6 - jamb detail

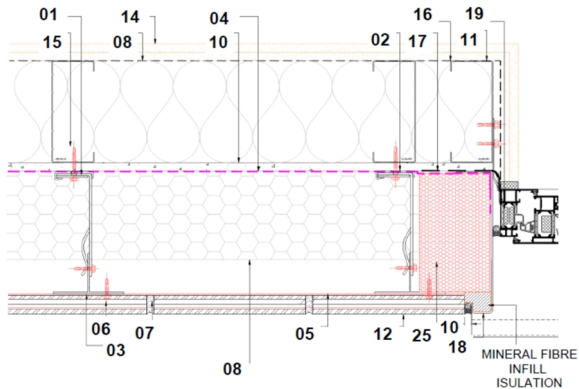


Diagram 7 - base detail

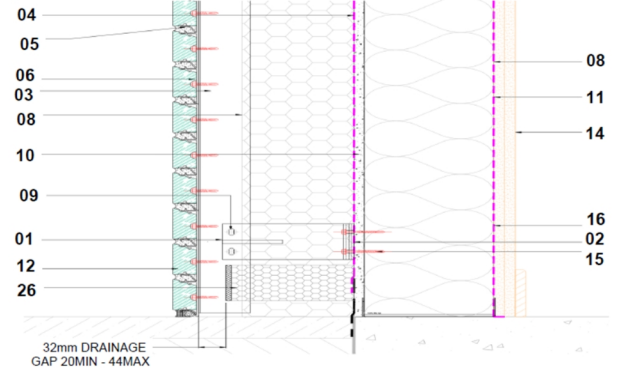


Diagram 8 - horizontal joint detail

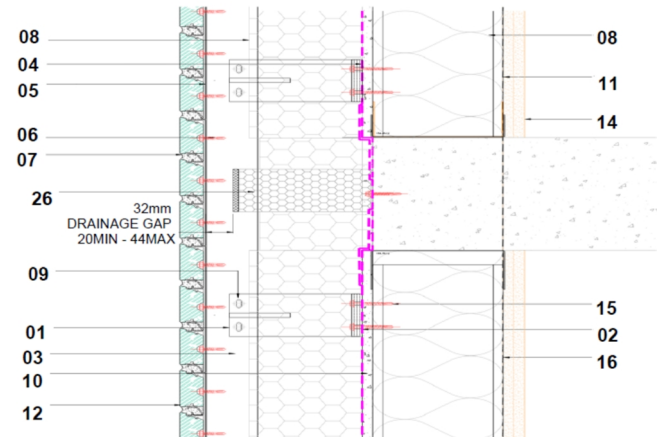


Diagram 9 - horizontal movement joint detail

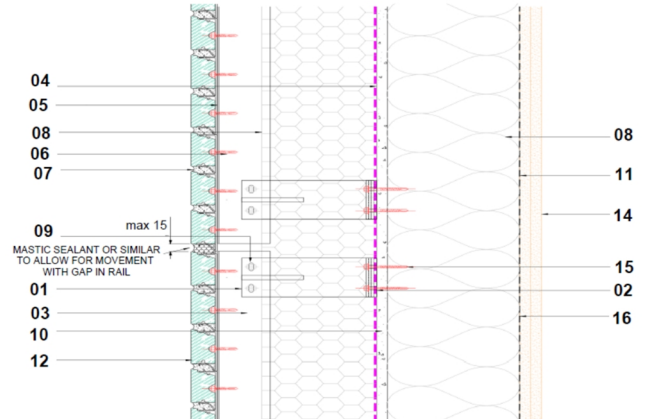


Diagram 10 - corbel detail

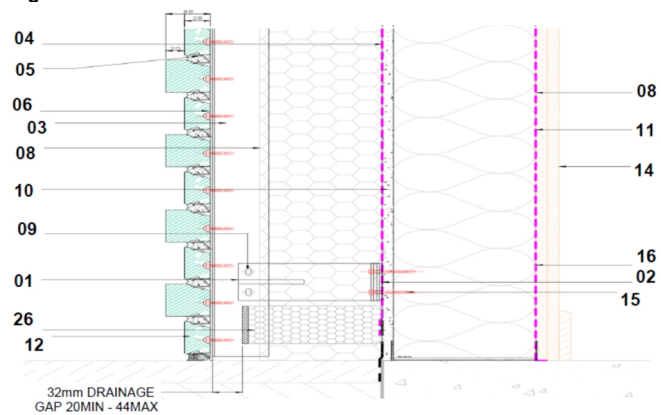
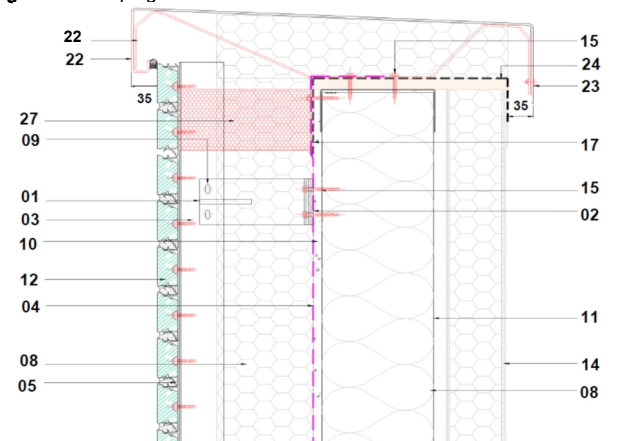


Diagram 11 - coping detail



The System shall be installed strictly in accordance with the instructions (hereinafter 'Installation Manual') of the Agrément holder, the requirements of this Agrément and the requirements of BS 8000-0.

2.4.1 Project-specific installation considerations

The project-specific design shall be determined from a pre-installation survey.

A specification shall be prepared for each elevation of the building indicating, where appropriate:

- DPC level, the position of starter track, vented profile, water deflection beads/rails, expansion joints and weather seals;
- detailing around windows, doors, etc.;
- identification of:
 - services and any fittings requiring removal or alteration to facilitate installation of the System;
 - areas where silicone/flexible sealants shall be used.

This process includes fixing pull-out tests of the supporting wall according to the Construction Fixings Association Guidance Note 'Procedure for site testing construction fixings', to determine pull-out strength values (see Section 2.2.1.4). Pull-out test loads shall be 2.5 x design load. The design pull-out resistance strengths of the supporting wall, brackets, rails, brick slip track mechanical fixings and brick slips shall be checked by a competent person and evidenced to be adequate before installation of the System.

Subsequent project-specific design considerations include confirmation that:

- there is no existing rising damp and there are no signs of damp on the inner face of the supporting wall, other than those caused solely by condensation;
- existing walls are:
 - structurally sound, in a good state of repair and show no evidence of rain or frost damage;
 - watertight, clean and meet the requirements of the relevant Standards and national Building Regulations for airtightness.

Application of the pointing mortar shall only be carried out in suitable weather conditions and shall not be applied in rain, fog or mist, at temperatures below 5 °C or above 30 °C.

2.4.2 Preparation

The following works shall be undertaken before the installation of the System:

- the supporting wall shall be finished and free from protrusions and uneven jointing;
- any necessary repairs or modifications (e.g. removal of fittings which can be relocated after the System is installed);
- if necessary, a protection channel to safely sleeve cabling shall be installed;
- the roof shall be in place and window and door openings sealed;
- surfaces shall be clean, dry and free from dirt, grease, oils, solvents and loose particles;
- flues, chimneys and combustion air ventilators shall be continuously sleeved through the wall. Reference shall be made to CIGA's 'Technician's guide to best practice: Flues, chimneys and combustion air ventilators';
- supports for services/fittings, e.g. soil pipes, shall be fixed back to the supporting wall; no load is to be transferred to the System;
- external power cables covered by cover plates shall be well labelled with warning signs;
- external soil stacks, wastewater pipes, overflows, ducts and vent pipes shall be extended beyond the surface and securely re-fixed, where required.

2.4.3 Outline installation procedure

Detailed installation procedures can be found in the Agrément holder's Installation Manual.

The outline procedure is as follows:

- mechanically fix the helping-hand brackets to the substrate, including isolation pads, in accordance with the project-specific design, at maximum 600 mm horizontal centres, with the appropriate screws through the slotted holes;
- fit and align the vertical T-rails and L-rails, and mechanically fix with appropriate screws to the brackets;
- install insulation and fire breaks (outside of the scope of the Agrément);
- align and mechanically fix the horizontal brick slip track at the base with three mechanical fixings per connection (alternating pattern) to the vertical T-rails and L-rails;
- clip the second row of brick slip track to the first row of brick slip track and mechanically fix to the vertical T-rails and L-rails with three mechanical fixings per connection;
- continue with the installation of the brick slip tracks up to the height of the building, in accordance with the project-specific design;
- install the clay brick slips into the brick slip tracks by knocking-in with a rubber mallet, starting from the bottom row; space the brick slips with a 10 mm gap using a spacer in accordance with project-specific design pattern;
- apply pointing mortar using a gun or a trowel into the joints.

2.4.4 Finishing

The following finishing is required on completion of the installation:

- check all trunked air vents and flues (by an appropriate test if necessary) to verify they are clear and unobstructed;
- apply mastic sealant around windows, door frames, etc. and where the installation abuts any other building or surface, to ensure a weathertight joint.

Post-installation inspection checks shall be carried out to ensure that the installation has been successfully completed and that the building has not been damaged. These checks shall be conducted as soon as possible after completion of the work and before removing scaffolding; any defects shall be reported immediately.

2.5 INDEPENDENTLY ASSESSED SYSTEM CHARACTERISTICS

2.5.1 Moisture control

Test	Standard	Result
Hygrothermal conditioning	EAD 090062-00-0404	no defects
Freeze-thaw conditioning	EAD 040427-00-0404	
Water penetration [^]	CWCT	

[^] static differential pressure of 600 Pa for 15 minutes

2.5.2 Strength

Test	Standard	Result
Wind load resistance ^{^^}	CWCT	2.4 kN/m ²
		3.6 kN/m ²
Hard-body impact	CWCT TN 76	negligible risk
Soft-body impact		

^{^^} test specimen consisted of mechanically fixed BR 220 brackets at 600 mm horizontal centres, vertical rails 100 mm by 60 mm by 2.2 mm, horizontal brick slip track, fixed with Tecscrow SS 5.5x25 and mechanically clamped brick slips

2.5.3 Fire performance

Test	Standard	Result
Reaction to fire	BS EN 13501-1	A1

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 Section 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 the compliance of any project-specific design with the national Building Regulations.

3.2.1 England

The Building Regulations 2010 and subsequent amendments

- A1 Loading - the System can sustain and transmit combined dead, imposed and wind loads to the ground via the supporting wall
- B3(4) Internal fire spread (structure) - the System can inhibit the unseen spread of fire and smoke within concealed spaces
- B4(1) External fire spread - the System can adequately resist the spread of fire over walls and from one building to another
- C2(b) Resistance to moisture - the System can adequately protect the building from precipitation, including wind-driven spray
- Regulation 7(1) Materials and workmanship - the System is manufactured from suitably safe and durable materials for their application, and can be installed to give a satisfactory performance
- Regulation 7(2) Materials and workmanship - the System can contribute to satisfying this Requirement

3.2.2 Wales

The Building Regulations 2010 and subsequent amendments

- A1 Loading - the System can sustain and transmit combined dead, imposed and wind loads to the ground via the supporting wall
- B3(4) Internal fire spread (structure) - the System can inhibit the unseen spread of fire and smoke within concealed spaces
- B4(1) External fire spread - the System can adequately resist the spread of fire over walls and from one building to another
- C2(b) Resistance to moisture - the System can adequately protect the building from precipitation, including wind-driven spray
- Regulation 7(1) Materials and workmanship - the System is manufactured from suitably safe and durable materials for their application, and can be installed to give a satisfactory performance
- Regulation 7(2) Materials and workmanship - 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 Structure - the System can sustain and transmit combined dead, imposed and wind loads to the ground via the supporting wall
- 2.4 Cavities - the System can inhibit the unseen spread of fire and smoke within concealed spaces
- 2.6 Spread to neighbouring buildings - the System can inhibit the spread of fire to neighbouring buildings
- 2.7 Spread on external walls - the System can inhibit the spread of fire on external walls
- 2.8 Spread from neighbouring buildings - the System can inhibit the spread of fire to the building
- 3.10 Precipitation - the System can resist precipitation penetrating to the inner face of the building
- 7.1(a)(b) Statement of sustainability - the System can contribute to meeting 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

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, 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(a)(i)(iii)(b) Fitness of materials and workmanship - the System is manufactured from materials which are suitably safe and acceptable as described in this Agrément
- 28(b) Resistance to moisture and weather - the System can be constructed to prevent the passage of moisture
- 30 Stability - the System can sustain and transmit combined dead, imposed and wind loads to the ground via the supporting structure
- 35(4) Internal fire spread (structure) - the System can inhibit the unseen spread of fire and smoke within concealed spaces
- 36(a) External fire spread - the System can adequately resist the spread of fire over walls and from one building to another

3.3 THIRD-PARTY ACCEPTANCE

None requested by the Agrément holder.

- Kiwa Technical Requirement KTR-04 (provisional)
- BS EN ISO 6946:2017 Building components and building elements. Thermal resistance and thermal transmittance. Calculation methods
- BS EN ISO 9001:2015 Quality management systems. Requirements
- BS EN ISO 10211:2017 Thermal bridges in building construction. Heat flows and surface temperatures. Detailed calculations
- BS EN ISO 10456:2007 Building materials and products. Hygrothermal properties. Tabulated design values and procedures for determining declared and design thermal values
- BS EN 300:2006 Oriented strand boards (OSB). Definitions, classification and specifications
- BS EN 313-1:1996 Plywood. Classification and terminology - Plywood. Classification and terminology. Classification
- BS EN 573-3:2019 Aluminium and aluminium alloys. Chemical composition and form of wrought products - Chemical composition and form of products
- BS EN 634-2:2007 Cement-bonded particleboards. Specifications - Requirements for OPC bonded particleboards for use in dry, humid and external conditions
- BS EN 771-1:2011+A1:2015 Specification for masonry units - Clay masonry units
- BS EN 1991-1-1:2002 Eurocode 1. Actions on structures - General actions - Densities, self-weight, imposed loads for buildings
- 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 - Wind actions
- NA to BS EN 1991-1-4:2005+A1:2010 UK National Annex to Eurocode 1. Actions on structures - General actions - Wind actions
- BS EN 1991-1-7:2006+A1:2014 Eurocode 1. Actions on structures - General actions - Accidental actions
- NA+A1:2014 to BS EN 1991-1-7:2006+A1:2014 National Annex to Eurocode 1. Actions on structures - Accidental actions
- BS EN 1992-1-1:2004+A1:2014 Eurocode 2: Design of concrete structures - General rules and rules for buildings
- NA+A2:2014 to BS EN 1992-1-1:2004+A1:2014 UK National Annex to Eurocode 2. Design of concrete structures - General rules and rules for buildings
- BS EN 1993-1-1:2005+A1:2014 Eurocode 3. Design of steel structures - General rules and rules for buildings
- NA+A1:2014 to BS EN 1993-1-1:2005+A1:2014 UK National Annex to Eurocode 3. Design of steel structures - General rules and rules for buildings
- BS EN 1993-1-3:2006 Eurocode 3. Design of steel structures - General rules - Supplementary rules for cold-formed members and sheeting
- NA to BS EN 1993-1-3:2006 UK National Annex to Eurocode 3. Design of steel structures - General rules - Supplementary rules for cold-formed members and sheeting
- 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 1996-1-1:2005+A1:2012 Eurocode 6. Design of masonry structures - General rules for reinforced and unreinforced masonry structures
- NA to BS EN 1996-1-1:2005+A1:2012 UK National Annex to Eurocode 6. Design of masonry structures - General rules for reinforced and unreinforced masonry structures
- BS EN 1996-2:2006 Eurocode 6. Design of masonry structures - Design considerations, selection of materials and execution of masonry
- NA to BS EN 1996-2:2006 UK National Annex to Eurocode 6. Design of masonry structures - Design considerations, selection of materials and execution of masonry
- BS EN 12467:2012+A2:2018 Fibre-cement flat sheets. Product specification and test methods
- BS EN 13501-1:2018 Fire classification of construction products and building elements - Classification using test data from reaction to fire tests
- BS EN 14081-1:2016+A1:2019 Timber structures. Strength graded structural timber with rectangular cross section - General requirements
- BS 6093:2006+A1:2013 Design of joints and jointing in building construction. Guide
- BS 8000-0:2014 Workmanship on construction sites - Introduction and general principles
- BS 8104:1992 Code of practice for assessing exposure of walls to wind-driven rain
- Accredited Construction Details for Scotland:2019
- BRE Report 135:2013 Fire performance of external thermal insulation for walls of multistorey buildings
- BRE Report 262:2002 Thermal insulation: avoiding risks
- BRE Report 443:2019 Conventions for U-value calculations
- BSRIA/TRADA IEP6:2006 Services in timber framed construction - Guidance to a defect-free interface
- CWCT:2005 Standard for systemised building envelopes
- CWCT TN 76:2012 Impact performance of building envelopes: method for impact testing of cladding panels
- EAD 040427-00-0404:2018 Kits for External Thermal Insulation Composite System (ETICS) with mortar as thermal insulation product and renderings or discontinuous claddings as exterior skin
- EAD 090062-00-0404:2018 Kits for external wall cladding mechanically fixed
- EOTA TR 051:2018 Recommendations for job site tests of plastic anchors and screws
- Government Accredited Construction Detail for Part L:2019
- IGE/UP/7 Edition 2 +A:2008 - Gas installations in timber framed and light steel framed buildings
- PD 6697:2019 Recommendations for the design of masonry structures to BS EN 1996-1-1 and BS EN 1996-2

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

5 AMENDMENT HISTORY

Revision	Amendment description	Author	Approver	Date
-	First issue	A Chapman	C Devine	August 2022

6 CONDITIONS OF USE

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