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Agrément Certificate
13/4983
Product Sheet 1

SAS (EUROPE) CLADDING SYSTEMS

PROWALL RAINSCREEN CLADDING — RENDER FINISH

This Agrément Certificate Product Sheet(1) relates to ProWall Rainscreen Cladding — Render Finish, comprising the ProRend Colourtex Render System applied on ProBoard render carrier board, for use as an exterior wall façade panel system in timber-frame and steel-frame residential and commercial buildings.

(1) Hereinafter referred to as 'Certificate'.

CERTIFICATION INCLUDES:

- factors relating to compliance with Building Regulations where applicable
- factors relating to additional non-regulatory information where applicable
- independently verified technical specification
- assessment criteria and technical investigations
- design considerations
- installation guidance
- regular surveillance of production
- formal three-yearly review.

KEY FACTORS ASSESSED

Strength and stability — the system can resist wind actions normally encountered in the UK (see section 6).

Performance in relation to fire — the system is unrestricted by the national Building Regulations (see section 7).

Weathertightness — the system can resist the passage of moisture from weather (see section 9).

Durability — the system has acceptable durability and can be expected to have a service life in excess of 30 years. This period can be extended to up to 60 years when a programme of inspection and maintenance is introduced (see section 12).

The BBA has awarded this Certificate to the company named above for the system described herein. This system has been assessed by the BBA as being fit for its intended use provided it is installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

Date of Second issue: 23 August 2017

Originally certificated on 1 May 2013

Certificate amended on 16 April 2018 to correct delivery information, Use Categories and Table 5.

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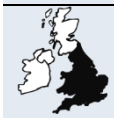
Regulations

In the opinion of the BBA, ProWall Rainscreen Cladding — Render Finish, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements of the following Building Regulations (the presence of a UK map indicates that the subject is related to the Building Regulations in the region or regions of the UK depicted):



The Building Regulations 2010 (England and Wales) (as amended)

Requirement:	**A1(1)**	**Loading**
Comment:		The system is acceptable. See section 6 of this Certificate.
Requirement:	**B4(1)**	**External fire spread**
Comment:		The system can contribute to satisfying this Requirement. See section 7 of this Certificate.
Requirement:	**C2(b)(c)**	**Resistance to moisture**
Comment:		The system will contribute to satisfying this Requirement. See sections 9 and 10 of this Certificate.
Regulation:	**7**	**Materials and workmanship**
Comment:		The system is acceptable. See sections 12.1 and 12.2 and the *Installation* part of this Certificate.

The Building (Scotland) Regulations 2004 (as amended)

Regulation:	**8(1)(2)**	**Durability, workmanship and fitness of materials**
Comment:		The system can contribute to a construction satisfying this Regulation. See sections 11, 12.1 and 12.2 and the *Installation* part of this Certificate.
Regulation:	**9**	**Building standards applicable to construction**
Standard:	1.1(a)(b)	Structure
Comment:		The system is acceptable, with reference to clause 1.1.1$^{(1)(2)}$ of this Standard. See section 6 of this Certificate.
Standard:	2.4	Cavities
Comment:		The system, when used in conjunction with fire-resistant materials, can satisfy this Standard, with reference to clauses 2.4.1$^{(1)(2)}$, 2.4.2$^{(1)(2)}$ and 2.4.9$^{(1)(2)}$. See section 7.5 of this Certificate.
Standard:	2.6	Spread to neighbouring buildings
Standard:	2.7	Spread on external walls
Comment:		The system can contribute to satisfying these Standards, with reference to clauses 2.6.4$^{(1)(2)}$ and 2.7.1$^{(1)(2)}$. See section 7 of this Certificate.
Standard:	3.10	Precipitation
Comment:		The system will contribute to satisfying this Standard, with reference to clauses 3.10.1$^{(1)(2)}$ to 3.10.3$^{(1)(2)}$, 3.10.5$^{(1)(2)}$ and 3.10.6$^{(1)(2)}$. See sections 9 and 10 of this Certificate.
Standard:	7.1(a)(b)	Statement of sustainability
Comment:		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.

Regulation:	**12**	**Building standards applicable to conversions**
Comment:		Comments in relation to the system under Regulation 9, Standards 1 to 6 also apply to this Regulation, with reference to clause 0.12.1[(1)(2)] and Schedule 6[(1)(2)]. (1) Technical Handbook (Domestic). (2) Technical Handbook (Non-Domestic).

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

Regulation:	**23(a)(i) (iii)**	**Fitness of materials and workmanship**
Comment:		This system is acceptable. See sections 12.1 and 12.2 and the *Installation* part of this Certificate.
Regulation:	**28(b)**	**Resistance to moisture and weather**
Comment:		The system will contribute to satisfying this Regulation. See sections 9 and 10 of this Certificate.
Regulation:	**30**	**Stability**
Comment:		The system is acceptable as set out in section 6 of this Certificate.
Regulation:	**36(a)**	**External fire spread**
Comment:		The system can contribute to satisfying this Regulation. See section 7 of this Certificate.

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

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

See sections: 3 *Delivery and site handling* (3.2 and 3.4) and 16 *Installation* (16.5) of this Certificate.

Additional Information

NHBC Standards 2017

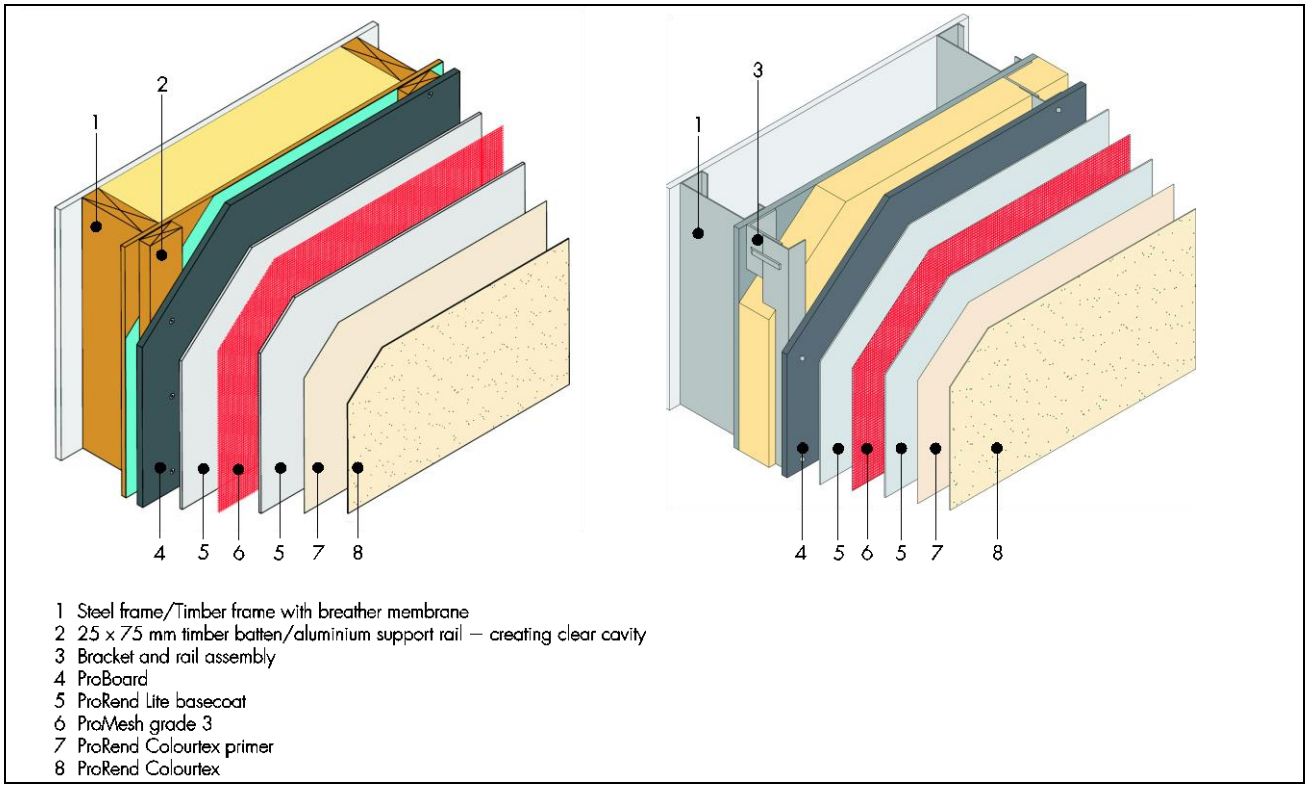
In the opinion of the BBA, ProWall Rainscreen Cladding — Render Finish, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements in relation to *NHBC Standards*, Part 6 *Superstructure (excluding roofs),* Chapters 6.2 *External timber frame walls*, 6.9 *Curtain walling and cladding* 6.10 *Light steel framed walls and floors*, 6.11 *Render* part 6.11.8 *Weather Resistance,* and 9.1 *A consistent approach to finishes*.

Technical Specification

1 Description

1.1 ProWall Rainscreen Cladding — Render Finish is an exterior wall façade panel system comprising ProBoard finished with ProRend Colourtex Render System (see Figure 1).

Figure 1 Typical details



1 Steel frame/Timber frame with breather membrane
2 25 x 75 mm timber batten/aluminium support rail – creating clear cavity
3 Bracket and rail assembly
4 ProBoard
5 ProRend Lite basecoat
6 ProMesh grade 3
7 ProRend Colourtex primer
8 ProRend Colourtex

1.2 Details of the system components are:

- ProBoard — a lightweight render carrier board with tapered double-wrapped edges manufactured with Portland cement, aggregate and glassfibre reinforcing mesh to BS EN 12467 : 2012. The board is classified as Category A to this Standard as suitable for use in exterior wall conditions. The characteristics and dimensions of the boards are:
  — Length (mm) 2400
  — Width (mm) 1200
  — Thickness (mm) 12.5
  — Weight ($kg \cdot m^{-2}$) 14.7
- ProRend Colourtex Render System comprising:
  — ProRend Lite Basecoat Mortar — a cement-based powder basecoat plaster
  — ProRend Colourtex Primer — a primer coating containing quartz used over ProRend Lite Basecoat Mortar prior to application of the finishing coat
  — ProRend Colourtex Render — a finishing coat of ready-to-use render, based on a styrol acryl-silicone resin binder with either particle sizes of 1.5 mm (Uniform) or 3.0 mm (Grained), depending on the textured finish. The render is applied to a thickness equal to the particle size and is available in a range of colours.

1.3 Ancillary components for use with the system are:

- board fixings to timber batten — 37 or 42 mm long stainless steel grade 304 St/St, ISO group A2 — EJOT reference SH3-STS-5.0, at maximum 200 mm centres
- board fixings to aluminium support rail — 24 mm long stainless steel grade 304 St/St, ISO group A2 — EJOT reference JT4-STS3-5.5, at maximum 200 mm centres
- ProMesh Grade 3 Reinforcing Mesh — a 1 m wide, woven glassfibre reinforcing mesh (embedded in the basecoat) with an alkali and slide-resistant polymer coating. The mesh size is 3 by 3.5 mm with a thickness of less than 1 mm, and a nominal weight of 160 $g \cdot m^{-2}$.

1.4 Other ancillary components for use with the system, but outside scope of this Certificate, include:

- timber battens — 25 by 75 mm preservative treated kiln-dried (grade C16)
- aluminium support rails — vented T or L profiles (grade 6005)
- bracket assembly — to support vertical support rails in steel-frame

- ProBead — external render beads of various profiles, extruded from recycled PVC-U (as covered by BBA Certificate 06/4382)
- ProWall Stainless Steel Beads — grade 1.4401 to BS EN 10088-2 : 2014
- PVC-U slip joint bead — profile fixed to ProBoard and used for horizontal expansion joints
- PVC-U expansion bead — profile fixed to ProBoard and used for vertical expansion joints
- stainless steel slip joint bead — grade 1.4401 to BS EN 10088-2 : 2014 profile fixed to ProBoard and used for horizontal expansion joints
- stainless steel expansion bead — grade 1.4401 to BS EN 10088-2 : 2014 profile fixed to ProBoard and used for vertical expansion joints
- breather membrane — used in conjunction with timber sheathing
- flashing tape — 150 mm wide used around openings
- ventilated base bead component
- intumescent strip.

2 Manufacture

2.1 ProBoard is manufactured from Portland cement, aggregate and glass-fibre reinforcing mesh.

2.2 The ProRend Colourtex Render System components are a factory batched proprietary primer and render based on Portland cement or silicone resin.

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

- agreed with the manufacturer the quality control procedures and product testing to be undertaken
- assessed and agreed the quality control operated over batches of incoming materials
- monitored the production process and verified that it is in accordance with the documented process
- evaluated the process for management of nonconformities
- checked that equipment has been properly tested and calibrated
- undertaken to carry out the above measures on a regular basis through a surveillance process, to verify that the specifications and quality control operated by the manufacturer are being maintained.

2.4 ProBoard is manufactured in Canada under the name PermaBase and rebranded by the Certificate holder. The management system at the factory has been assessed and registered as meeting the requirements of ISO 9001 : 2008 by SAI Global (Certificate 0067954).

2.5 The management system of SAS (Europe) Ltd has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2008 and BS EN ISO 14001 : 2004 by QMS International plc (Certificates GB 11301 and GB 17295 respectively).

3 Delivery and site handling

3.1 ProBoard is delivered to site on pallets (36 sheets per pallet) wrapped in polythene. Each pallet bears a label giving details of the contents and date of manufacture.

3.2 Boards must be stored flat on a dry, level surface protected from contamination and moisture from weathering. Stacks should not exceed seven pallets high. The Certificate holder's instructions on site handling and storage must be followed. The boards can be easily handled on site and can be cut or trimmed using a sharp knife or fine-toothed saw. Precautions must be taken to ensure panels are not damaged before, during and subsequent to installation.

3.3 The render materials should be stored in a cool dry place and protected from moisture, frost and direct sunlight.

3.4 Components are delivered to site in the quantities and packages listed in Table 1. Each package carries the manufacturer and product identification and batch number.

Table 1 Packaging and weights — render components

Render component	Form	Weight	Shelf life (months)	pH	Packaging
ProRend Lite Basecoat Mortar	powder	20 kg	6	6	paper bag
ProMesh Grade 3 Reinforcing Mesh	fibre	160 g·m^{-2}	—	—	1 m wide rolls (50 m lengths)
ProRend Colourtex Primer	liquid	16 and 22 kg	24	7.9	bucket
ProRend Colourtex Render	paste	17 kg	24	8	bucket

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on ProWall Rainscreen Cladding — Render Finish.

Design Considerations

4 General

4.1 The ProWall Rainscreen Cladding — Render Finish is satisfactory for use as a back ventilated wall cladding on exterior walls of timber-frame and steel-frame buildings. The system is designed to transmit self-weight and wind actions into the structural frame.

4.2 The design should include:

- a minimum 25 mm ventilated and drained cavity system incorporating an insect guard to all ventilation openings
- effective detailing around window openings, including appropriate flashing, to ensure that wind-driven rain is excluded from hidden members in the surround and from the cavity
- an effective vapour control layer on the inside, to ensure the frame structure is protected.

4.3 The application of the ProRend Colourtex Render System must comply with the guidelines given in *NHBC Standards* 2017 Chapter 9.1, clause 9.1.2 *External walls.*

4.4 The thermal conductivity of the ProBoard can be taken as 0.20 W·m^{-1}·K^{-1}.

5 Practicability of installation

The system is designed to be installed by installers who have been trained and approved by the Certificate holder.

6 Strength and stability

6.1 A suitably qualified and experienced individual must check the design and installation of the system.

6.2 Design wind actions should be calculated in accordance with BS EN 1991-1-4 : 2005 and its UK National Annex. Due consideration should be given to the higher-pressure coefficients applicable to corners of the building as recommended in this Standard.

6.3 The contribution of the boards and finishes on the stability of the substrate is assumed to be negligible. The substrate wall, without the ProWall Rainscreen Cladding System, must be able to take the full wind actions and racking loads and be capable of sustaining the weight of the system. The adequacy of the substrate is outside the scope of this Certificate and must be verified by a suitably qualified and experienced individual.

6.4 The characteristic pull-through resistance of ProBoard, calculated from failure pull-through values determined by tests in accordance with ETAG 034 : 2012 for the stainless steel screws as described in section 1.2, using an edge distance of 20 mm, are given in Table 2.

Table 2 ProBoard characteristic pull-through resistance (kN)

Position	Pull-through resistance (kN)	
	Fixing type	
	JT4-STS3-5.5 (24 mm)	SH3-STS-5.0 (37 mm)(1)
Centre	0.128	0.321
Edge	0.096	0.269
Corner	0.064	0.164

(1) These pull-through results are also valid for the 42 mm long SH3-STS-5.0 mm screws.

6.5 The characteristic pull-out resistance of the JT4-STS3-5.5 x 24 mm and SH3-STS-5.0 x 37 mm from T section aluminium rails (grade 6005 T6) and timber battens (C16 75 by 25 mm) respectively were calculated from pull-out failure values (determined by tests) and are given in Table 3.

Table 3 Characteristic pull-out resistance (kN)

	Pull-out resistance (kN)	
	Fixing type	
	JT4-STS3-5.5 (24 mm)	SH3-STS-5.0 (37 mm)
Resistance (kN)	1.44	0.39

6.6 Tests confirm that the ultimate resistance of the system is 3 $kN \cdot m^2$. The characteristic wind load resistance should be taken as 2 $kN \cdot m^2$, allowing for a normal wind load factor of 1.5 on the ultimate resistance value, provided the designer ensures that the:

- fixing of the support rail/timber batten to the substrate has adequate pull-out resistance for the calculated loads (not covered by this Certificate)
- design of the timber-frame or steel-frame must be such as to limit the mid-span deflections to L/200 or 12 mm, whichever is the lesser, under design load and L/500 under 1.5 times the design load
- the vertical timber battens or aluminium rails are no more than 600 mm centres apart
- the timber/steel substrate frame studs are at no more than 600 mm centres.

6.7 The system should be designed to adequately resist the wind pressures likely to be experienced in the UK.

Impact resistance

6.8 When tested for hard and soft body impacts, ProWall Rainscreen Cladding — Render Finish achieved adequate resistance to impact and therefore, may be considered suitable for use in Categories I to IV, as defined in Table 4 of ETAG 034 : 2012, Part I (reproduced in Table 4 of this Certificate).

Table 4 Definition of use categories (reproduced from ETAG 034, Part I Table 4)

Use category	Description
I	A zone readily accessible at ground level to the public and vulnerable to hard body impacts but not subjected to abnormally rough use.
II	A zone liable to impacts from thrown or kicked objects, but in public locations where the height of the kit will limit the size of the impact; or at lower levels where access to the building is primarily to those with some incentive to exercise care.
III	A zone not likely to be damaged by normal impacts caused by people or by thrown or kicked objects.
IV	A zone out of reach from ground level.

7 Performance in relation to fire

7.1 ProWall Rainscreen Cladding — Render Finish has the following fire classifications:

- ProBoard Class A1 reaction to fire in accordance with EN 13501-1 : 2007
- ProRend Colourtex Render System on ProBoard is classified as A2-s1,d0 in accordance with EN 13501-1 : 2007.

7.2 The system is therefore classified as a material of 'limited combustibility' as defined by the national Building Regulations.

7.3 When independently tested in accordance with BS EN 1363-1 : 1999 and EOTA TR31, a construction comprising 45 mm by 225 mm timber frame wall lined with OSB boards and supporting ProBoard via 75 mm by 25 mm thick timber battens (25 mm cavity) spanned 75 mm apart and fitted with 35 mm wide by 4 mm thick ProWall foil wrapped intumescent strips was found to achieve a fire resistance of 99 minutes (after 99 minutes when testing was terminated). Fire resistance of different construction details must be confirmed by testing from a UKAS-accredited laboratory.

7.4 The system is not subjected to any height restriction when used on a substrate and with components that meet the non-combustibility requirement of materials in the relevant national Building Regulations. When used in conjunction with combustible materials, the whole wall construction should meet the requirements of BRE Report BR 135 : 2013.

7.5 To limit the risk of fire spread between floors in buildings subject to the national Building Regulations, fire barriers should be incorporated behind the cladding as required under these Regulations, but should not block essential ventilation pathways. Guidance on fire barriers can be found in BRE Report BR 135 : 2013.

8 Proximity of flues

When installing the system in close proximity to certain flue pipes or heat-producing appliances, the following provisions of the national Building Regulations should be met:

England and Wales — Approved Document J
Scotland — Mandatory Standard 3.19, clauses 3.19.1[(1)(2)] to 3.19.4[(1)(2)] and 3.19.8[(1)(2)].

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

Northern Ireland — Technical Booklet L.

9 Weathertightness

The system will resist the passage of moisture from weather. Any water collecting in the cavity due to rain or condensation will be removed by drainage and ventilation.

10 Condensation risk

10.1 When using the system, consideration must be given to the overall wall design using the recommendations of BS 5250 : 2011 to minimise the risk of condensation.

10.2 As the system incorporates a 25 mm ventilated cavity, the risk of interstitial condensation within the system is reduced.

11 Maintenance

11.1 If an extended service life is required (see section 12.1), a detailed maintenance plan should be prepared and provided to the building manager/owner on completion. As a minimum, this should include an inspection for evidence of defects 12 months after the installation and then subsequently every five years. Planned inspection and maintenance should include:

- visual inspection of the render for signs of damage, such as cracking
- examination of the sealant around openings and service entry points
- visual inspection of architectural details designed to shed water to confirm that they are performing properly
- visual inspection to ensure that there is no water leakage from external downpipes or gutters that could penetrate the rendering
- immediate repair of any problems discovered.

11.2 Damaged areas must be repaired using the appropriate components and procedures detailed in the Certificate holder's installation instructions and taking into account the relevant recommendations of BS EN 13914-1 : 2016.

12 Durability

12.1 The system will have a service life of not less than 30 years. The system's service life can extend to 60 years provided a planned inspection and maintenance programme is introduced in accordance with section 11.1 and stainless steel bead components are used. In order to achieve this, depending on the building's location, degree of exposure and detailing, it may be necessary to repair or replace isolated areas.

12.2 Any render containing Portland cement may be subject to lime bloom. The occurrence of this may be reduced by avoiding application in adverse weather conditions. The effect is transient and is less noticeable on lighter colours.

12.3 The render may become discoloured with time, the rate depending on the initial colour, the degree of exposure and atmospheric pollution, as well as the design and detailing of the wall. In common with traditional renders, discoloration by algae and lichens may occur in wet areas. The appearance may be restored by a suitable power wash or, if required, by overcoating.

12.4 To maintain a high quality aesthetic appearance, it may be necessary to periodically overcoat the building using a compatible masonry coating. However, care should be taken in selecting a paint specification that does not adversely affect the water vapour transmission or fire characteristics of the system. The advice of the Certificate holder should be sought as to the suitability of a particular product.

Installation

13 Site survey and preliminary work

13.1 A pre-installation survey must be carried out by the Installer to determine the suitability of the building for installation and any repairs that will be necessary prior to installation of the system. A specification is prepared for each elevation of the building including:

- detailing around windows, doors and at eaves
- any alterations to external plumbing
- areas where flexible sealants will be required
- the positions of fire barriers (where required)
- pull-out strength of the fixings used to secure the members to the structure.

13.2 The design of each installation must be checked by a suitably qualified and experienced individual (or similarly competent person) and take into account the nature and quality of the substrate, location, supporting structure and fixings.

13.3 It is recommended that external plumbing is removed, and where appropriate on existing buildings alterations are made to underground drainage to accommodate the repositioning on the finished face.

14 Approved installers

Application of ProWall Rainscreen Cladding — Render Finish, within the context of this Certificate, is carried out by installers recommended or recognised by the Certificate holder. Such an installer is a company which:

- employs operatives who have been trained and approved by the Certificate holder to install the system
- has undertaken to comply with the Certificate holder's installation procedure, containing the requirement for each installation team to include at least one member with the correct trade/supervisory skills
- is subject to supervision by the Certificate holder. This may include unannounced site inspections.

15 General

15.1 Full system details of ProWall Rainscreen Cladding — Render Finish for each installation are available from the Certificate holder and must be installed in accordance with the specification laid down in section 13.2.

15.2 The frame to which the boards are fixed must be structurally sound and constructed in accordance with the requirements of the relevant national Building Regulations and Standards:

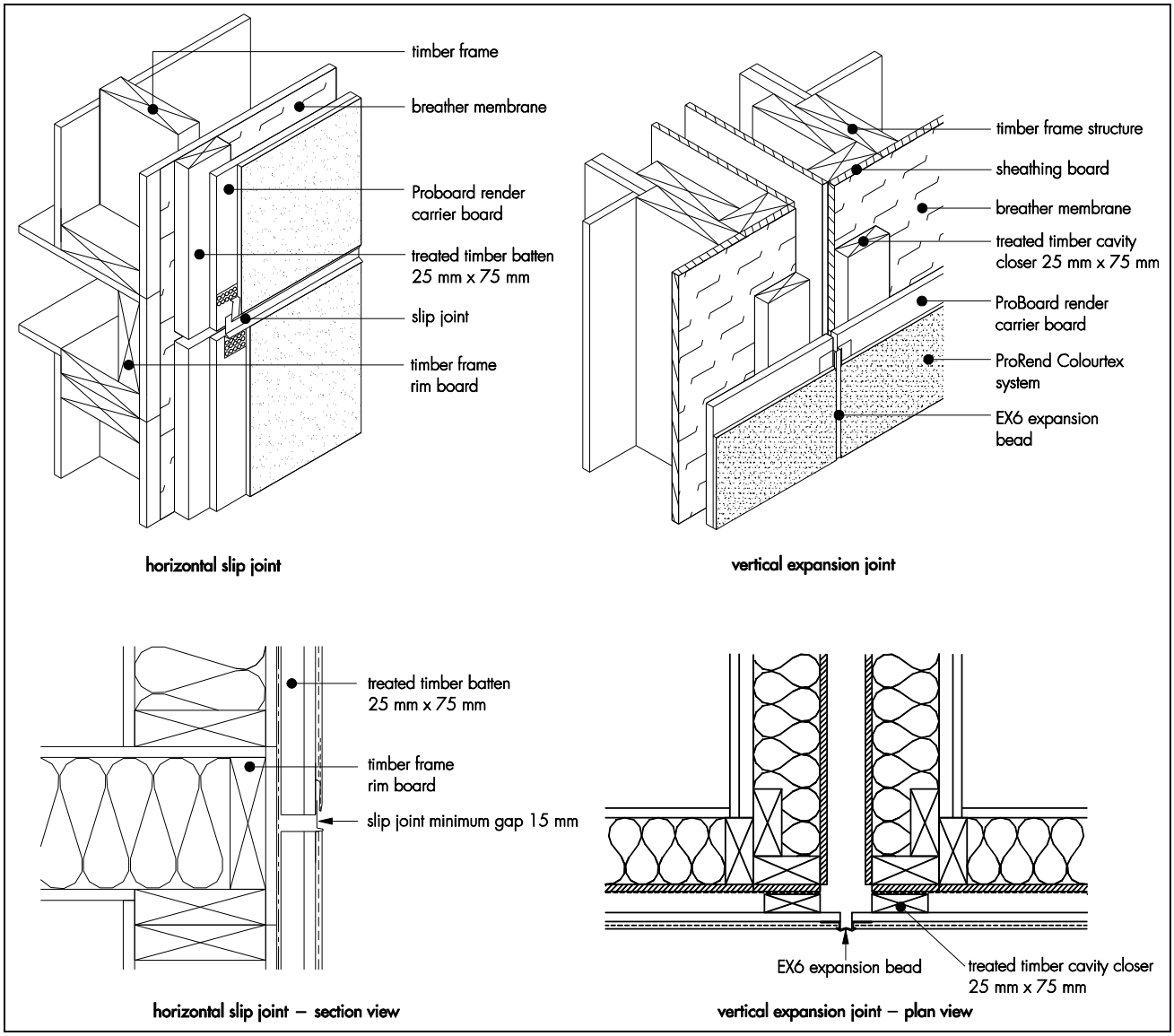
- timber stud walls and timber battens — must be structurally sound, designed and constructed in accordance with BS EN 1995-1-1 : 2004, and preservative treated in accordance with BS EN 351-1 : 2007
- galvanized steel framework — must be structurally sound, designed and constructed in accordance with BS EN 1993-1-1 : 2005 and BS EN 1993-1-3 : 2006.

15.3 The support framework and panels must be capable of transmitting its self-weight and wind actions to the structure. Particular care is required around window and door openings to ensure that the structure is capable of sustaining the additional weight of the system.

15.4 Horizontal movement joints in accordance with BS EN 13914-1 : 2016 must be provided at every floor to accommodate vertical shrinkage of up to 6 mm in the timber-frame and to follow movement joints in the substructure. For steel-frame structures, reference to the Structural Engineer's details for deflection at floor level and movement joints in the substructure should be made.

15.5 Vertical movement joints in accordance with BS EN 13914-1 : 2016 should be provided at a maximum of 15 m intervals. The actual spacing and position of the joints will be determined by the shape of the area to be rendered and should coincide with movement joints in the structure and allow for the same degree of movement (see Figure 2).

Figure 2 Typical movement joints



15.6 The system should be kept above damp-proof course level and a minimum of 150 mm above ground level.

Renders

15.7 The Certificate holder's advice should be sought regarding the preparation and application of the ProRend Colourtex Render System, including application details relating to starter tracks, around apertures, control joints including fire breaks and expansion joints and ventilation.

15.8 The surface of ProBoard must be protected from extreme weather conditions prior to application of subsequent layers of the ProRend Colourtex Render System. The system should not be applied in rain or mist, at temperatures below 5°C or above 30°C, or if temperatures are expected to drop below 5°C within 24 hours (ie if exposure to frost is likely to occur during curing). In common with traditional sand/cement renders, the system must not be applied to frost-bound walls.

15.9 In sunny weather, work should commence on the shady side of the building and be continued round, following the sun, to prevent the render drying out too rapidly.

15.10 To minimise colour shade variations and avoid dry line jointing, continuous surfaces should be completed without a break. If breaks cannot be avoided they should be made where services or architectural features, such as drainpipes, reveals or lines of doors and windows help mask cold joints. Where long uninterrupted runs are planned, buckets should be mixed together for colour consistency.

16 Procedure

ProBoard

16.1 The support timber battens or steel rails are installed at the appropriate centres to coincide with stud centres to substrate.

16.2 Prior to installation, ProBoard must be free from frost, dust, loose particles, damp, and other pollution which can interfere with the fixing to the substrate. The boards can be cut to size using a utility knife or a circular saw.

16.3 Boards are installed in block bond fashion, avoiding stress lines around apertures. The board is applied such that the printed face is facing outwards to receive the ProRend Colourtex Render System. Adjacent boards are installed ensuring a 3 mm wide joint is left.

16.4 Screws fixing the board to the timber batten/aluminium support rail should be fixed at a minimum of 15 mm from board edges and at maximum spacing of 200 mm centres. To avoid over-tightening, the screws must be inserted in accordance with the Certificate holder's installation guide.

Render finish

16.5 When mixing, a filter respirator should be worn. Where excessive concentrations of dust may accumulate, the measures defined in the Health and Safety Executive Publication EH40/05 *Occupational Exposure Limits 2005* for unlisted substances should be followed. Note that EH40 is published annually, and the current edition should be followed.

16.6 Details of the render component application are given in Table 5. It is essential that the render system components are thoroughly mixed using a traditional mixer or in a tub with a mechanical paddle, until the correct workability is achieved. Care must be taken to ensure even dispersion.

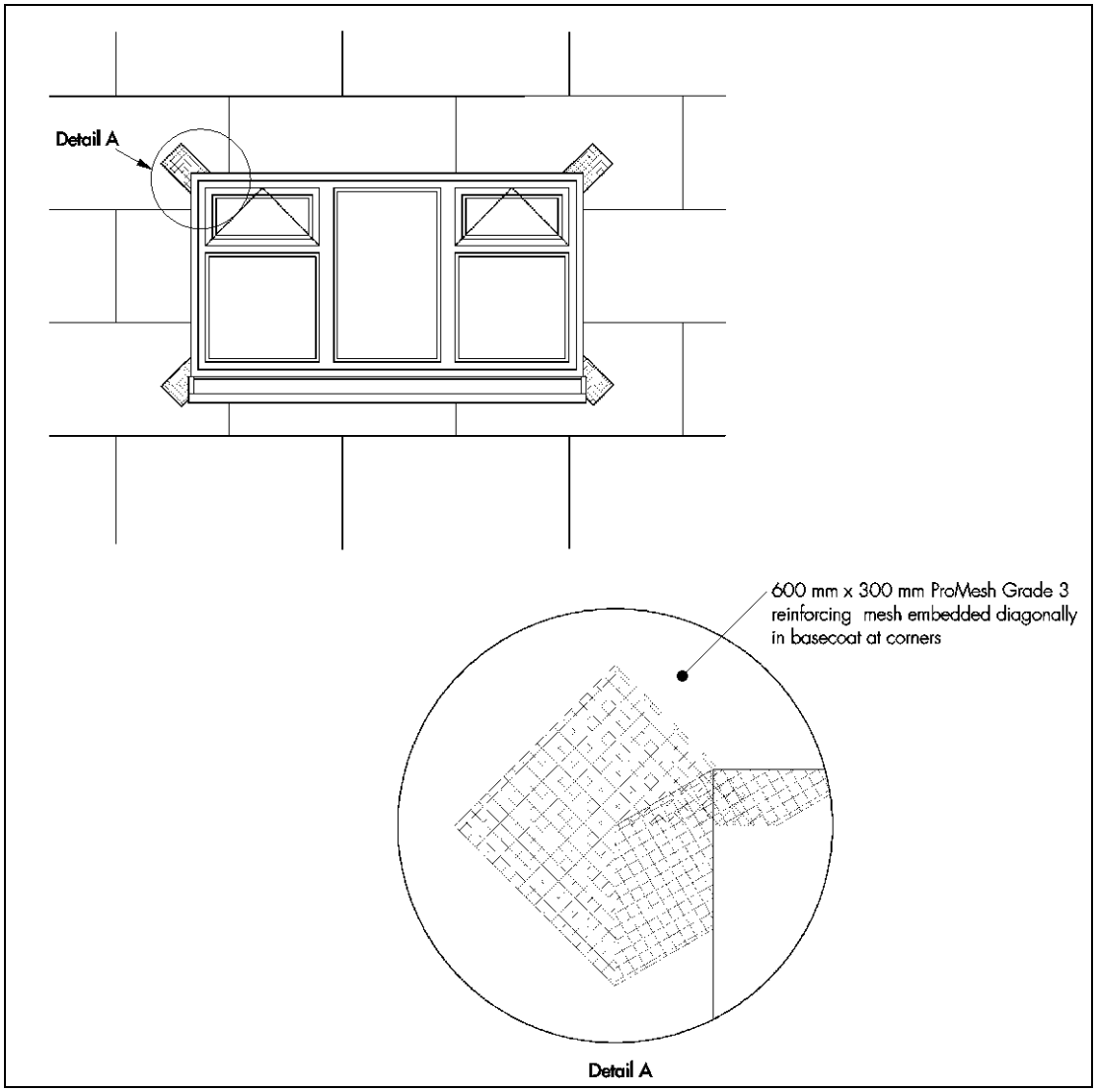
Table 5 Render mixing, coverage and curing rates

Render component	Weight (kg)	Water	Coverage	Cure time (hours)
Render Lite Basecoat Mortar	20	7 litres	0.9 kg·mm^{-1}	24 (per 1 mm)
ProRend Colourtex Primer	16	5 – 10%	35 m^2	24 (surface)
ProRend Colourtex Render				
Uniform	17	2%	6 – 6.5 m^2	24 (surface)/
Grained	17	2%	4.5 – 5 m^2	48 – 72 (through)

16.7 ProRend Lite Basecoat Mortar is applied in conjunction with ProMesh Grade 3 Reinforcing Mesh with nominal application thickness of 4 to 7 mm by hand using a hawk and trowel. It can also be pump applied to the same thickness.

16.8 At corners, corner profiles are embedded, and at window and other openings extra reinforcement around the corners with additional pieces (minimum size 600 by 300 mm) of ProMesh Grade 3 Reinforcing Mesh are also embedded (see Figure 3).

Figure 3 Installation of ProMesh Grade 3 Reinforcing Mesh



16.9 ProRend Colourtex Primer is applied over the entire surface of the dried ProRend Lite Basecoat and left to cure for at least 24 hours before the topcoat is applied.

16.10 The render system is completed with a finishing coat of ProRend Colourtex Render applied by trowel at a thickness of 1.5 mm for the Uniform or 3 mm of the Grained textured finishes. The desired texture is achieved by using a PVC finishing float between 10 and 20 minutes after application.

16.11 The system must be protected from rain, mist or cold (less than 5°C on a falling thermometer) conditions, or drying may be excessively prolonged.

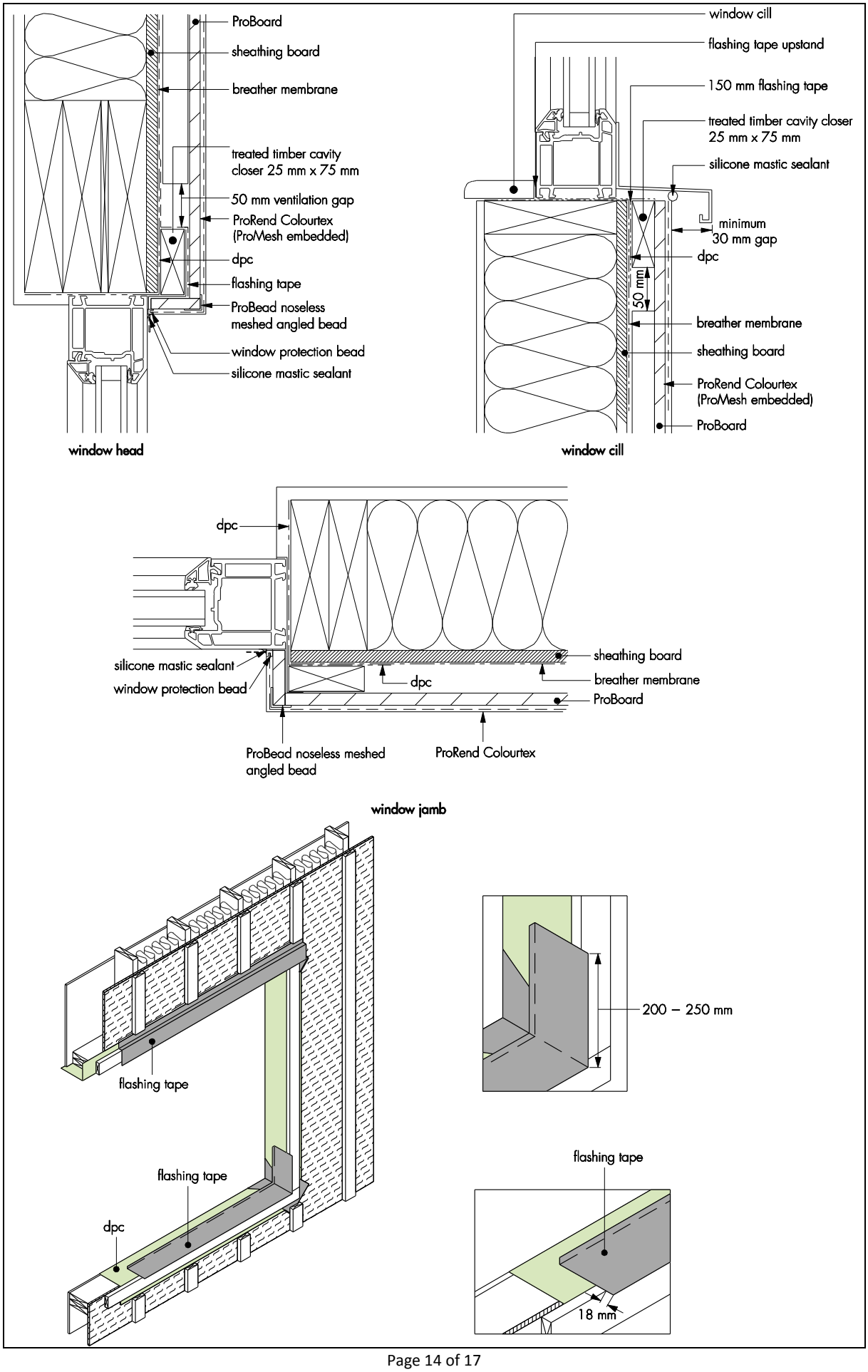
16.12 The use of polythene sheeting is recommended during curing and should be arranged to hang clear of the face of the wall in such a way that it does not form a tunnel through which the wind could increase the evaporation of water from the system.

16.13 Care must be taken to protect the system from rapid drying due to exposure to direct sun or drying wind.

Finishing

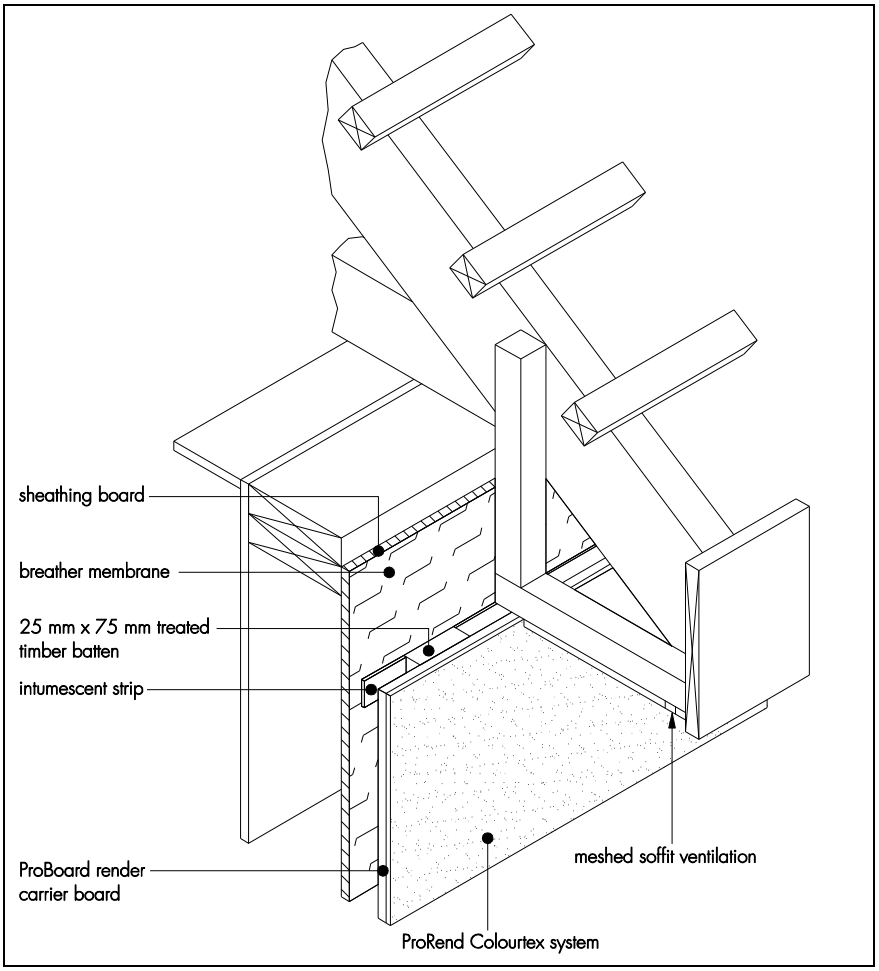
16.14 All window and door openings are sealed strictly in accordance with the Certificate holder's installation instructions to ensure that they are weathertight (see Figure 4).

Figure 4 Opening detail – timber-frame



16.15 At the top of walls, the system must be protected by an adequate overhang or by an adequately sealed, purpose-made flashing (see Figure 5).

Figure 5 Typical Eaves details – timber-frame



17 Repair

Damage to the system must be repaired immediately in accordance with the relevant recommendations of BS EN 13914-1 : 2016. Only materials specified by the Certificate holder may be used to repair damage to the system. The advice of the Certificate holder should be sought for particular installations.

Technical Investigations

18 Investigations

An assessment was made of the test data relating to:

- wind actions
- soft and hard body impact
- pull-through resistance
- bond strength
- pull out resistance
- fire resistance
- reaction to fire
- condensation risk
- thermal conductivity
- water vapour transmission
- water absorption
- hygrothermal behaviour.

Bibliography

BS 5250 : 2011 + A1 : 2016 *Code of practice for control of condensation in buildings*

BS EN 351-1 : 2007 *Durability of wood and wood-based products — Preservative-treated solid wood — Classification of preservative penetration and retention*

BS EN 1363-1 : 1999 *Fire resistance tests — General requirements*

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 *Eurocode 1 — Actions on structures — General actions — Wind actions*

BS EN 1993-1-1 : 2005 + A1 : 2114 *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*

BS EN 1995-1-1 : 2004 + A2 : 2014 *Eurocode 5 — Design of timber structures — General — Common rules and rules for buildings*

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

BS EN 12467 : 2012 + A1 : 2016 *Fibre-cement flat sheets — Product specification and test methods*

BS EN 13501-1 : 2007 + A1 : 2009 *Fire classification of construction products and building elements — Classification using test data from reaction to fire tests*

BS EN 13914-1 : 2016 *Design, preparation and application of external rendering and internal plastering — External Rendering*

BS EN ISO 9001 : 2008 *Quality management systems — Requirements*

BS EN ISO 14001 : 2004 *Environmental management systems — Requirements with guidance for use*

BRE Report BR 135 : 2013 *Fire Performance of External Thermal Insulation For Walls of Multi-Storey Buildings*

EOTA TR31 *Fire Resistance Tests for Cavity Barriers*

ETAG 034 : 2012 *Guideline for European Technical Approval of Kits for External Wall Claddings*

19 Conditions

19.1 This Certificate:

- relates only to the product/system that is named and described on the front page
- is issued only to the company, firm, organisation or person named on the front page – no other company, firm, organisation or person may hold claim that this Certificate has been issued to them
- is valid only within the UK
- has to be read, considered and used as a whole document – it may be misleading and will be incomplete to be selective
- is copyright of the BBA
- is subject to English Law.

19.2 Publications, documents, specifications, legislation, regulations, standards and the like referenced in this Certificate are those that were current and/or deemed relevant by the BBA at the date of issue or reissue of this Certificate.

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

- are maintained at or above the levels which have been assessed and found to be satisfactory by the BBA
- continue to be checked as and when deemed appropriate by the BBA under arrangements that it will determine
- are reviewed by the BBA as and when it considers appropriate.

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

19.5 In issuing this Certificate the BBA is not responsible and is excluded from any liability to any company, firm, organisation or person, for any matters arising directly or indirectly from:

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

19.6 Any information relating to the manufacture, supply, installation, use, maintenance and removal of this product/system which is contained or referred to in this Certificate is the minimum required to be met when the product/system is manufactured, supplied, installed, used, maintained and removed. It does not purport in any way to restate the requirements of the Health and Safety at Work etc. Act 1974, or of any other statutory, common law or other duty which may exist at the date of issue or reissue of this Certificate; nor is conformity with such information to be taken as satisfying the requirements of the 1974 Act or of any statutory, common law or other duty of care.

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