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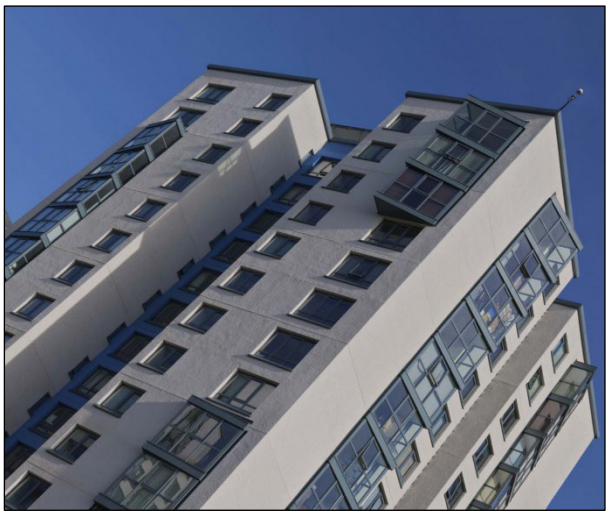
Agrément Certificate
91/2691
Product Sheet 3 Issue 3

WEBER EXTERNAL WALL INSULATION SYSTEMS

WEBERTHERM XM EXTERNAL WALL INSULATION SYSTEM

This Agrément Certificate Product Sheet(1) relates to the webertherm XM External Wall Insulation System, comprising mineral wool (MW) insulation slabs, mechanically fixed, with supplementary adhesive where required, and reinforced basecoat, primer and render finishes. The system is suitable for use, with height restrictions in some cases, on the outside of external masonry walls in new and existing domestic and non-domestic buildings.

(1) Hereinafter referred to as 'Certificate'.



The assessment includes

Product factors:

- compliance with Building Regulations
- compliance with additional regulatory or non-regulatory information where applicable
- evaluation against technical specifications
- assessment criteria and technical investigations
- uses and design considerations

Process factors:

- compliance with Scheme requirements
- installation, delivery, handling and storage
- production and quality controls
- maintenance and repair

Ongoing contractual Scheme elements†:

- regular assessment of production
- formal 3-yearly review

KEY FACTORS ASSESSED

Section 1. Mechanical resistance and stability
Section 2. Safety in case of fire
Section 3. Hygiene, health and the environment
Section 4. Safety and accessibility in use
Section 5. Protection against noise
Section 6. Energy economy and heat retention
Section 7. Sustainable use of natural resources
Section 8. Durability

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 Third issue: 4 January 2024
Originally certified on 25 November 1991

Hardy Giesler
Chief Executive Officer

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SUMMARY OF ASSESSMENT AND COMPLIANCE

This section provides a summary of the assessment conclusions; readers should refer to the later sections of this Certificate for information about the assessments carried out.

Compliance with Regulations

Having assessed the key factors, the opinion of the BBA is that the webertherm XM External Wall Insulation System, 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 Building Regulations 2010 (England and Wales) (as amended)

Requirement:	**A1**	**Loading**
Comment:		The system can sustain and transmit wind loads to the substrate wall. See section 1 of this Certificate.
Requirement:	**B4(1)**	**External fire spread**
Comment:		The system may be restricted by this Requirement. See section 2 of this Certificate.
Requirement:	**C2(b)**	**Resistance to moisture**
Comment:		The system provides a degree of protection against rain ingress. See section 3 of this Certificate.
Requirement:	**C2(c)**	**Resistance to moisture**
Comment:		The system can contribute to minimising the risk of interstitial and surface condensation. See section 3 of this Certificate.
Requirement:	**L1(a)(i)**	**Conservation of fuel and power**
Comment:		The system can contribute to satisfying this Requirement; however, compensating fabric measures may be required. See section 6 of this Certificate.
Regulation:	**7(1)**	**Materials and workmanship**
Comment:		The system is acceptable. See sections 8 and 9 of this Certificate.
Regulation:	**7(2)**	**Materials and workmanship**
Comment:		The system may be restricted by this Regulation. See section 2 of this Certificate.
Regulation:	**25B**	**Nearly zero-energy requirements for new buildings**
Regulation:	**26**	**CO_2 emission rates for new buildings**
Regulation:	**26A**	**Fabric energy efficiency rates for new dwellings (applicable to England only)**
Regulation:	**26A**	**Primary energy consumption rates for new buildings (applicable to Wales only)**
Regulation:	**26B**	**Fabric performance values for new dwellings (applicable to Wales only)**
Regulation:	**26C**	**Target primary energy rates for new buildings (applicable to England only)**
Regulation:	**26C**	**Energy efficiency rating (applicable to Wales only)**
Comment:		The system can contribute to satisfying these Regulations; however, compensating fabric/service measures may be required. See section 6 of this Certificate.

The Building (Scotland) Regulations 2004 (as amended)

Regulation:	**8(1)(2)**	**Fitness and durability of materials and workmanship**
Comment:		The system can contribute to the construction satisfying this Regulation. See sections 8 and 9 of this Certificate.
Regulation:	**8(3)**	**Fitness and durability of materials and workmanship**
Comment:		The system may be restricted by this Regulation. See section 2 of this Certificate.

Regulation:	**9**	**Building standards — construction**
Standard:	1.1	Structure
Comment:		The system can sustain and transmit wind loads to the substrate wall. See section 1 of this Certificate.
Standard:	2.4	Cavities
Comment:		The system can contribute to satisfying this Standard, with reference to clauses 2.4.4(1) and 2.4.6(2). See section 2 of this Certificate.
Standard:	2.6	Spread to neighbouring buildings
Comment:		The system may be restricted by this Standard, with reference to clauses 2.6.4(1)(2), 2.6.5(1) and 2.6.6(2). See section 2 of this Certificate.
Standard:	2.7	Spread on external walls
Comment:		The system may be restricted by this Standard, with reference to clause 2.7.1(1)(2). See section 2 of this Certificate.
Standard:	3.10	Precipitation
Comment:		The system can contribute to a construction satisfying this Standard, with reference to clauses 3.10.1(1)(2) and 3.10.6(1)(2). See section 3 of this Certificate.
Standard:	3.15	Condensation
Comment:		The system can satisfy the requirements of this Standard, with reference to clauses 3.15.1(1)(2), 3.15.4(1)(2) and 3.15.5(1)(2). See section 3 of this Certificate.
Standard:	6.1(b)(c)(d)	Energy demand and carbon dioxide emissions
Comment:		The system can contribute to satisfying this Standard, with reference to clauses, or parts of, 6.1.1(1) and 6.1.6(1); however, compensating fabric/service measures may be required. See section 6 of this Certificate.
Standard:	6.2	Building insulation envelope
Comment:		The system can contribute to satisfying this Standard, with reference to clauses, or parts of, 6.2.1(1)(2), 6.2.3(1), 6.2.4(2), 6.2.5(2), 6.2.6(1), 6.2.7(1), 6.2.8(2), 6.2.9(1)(2), 6.2.10(1), 6.2.11(1)(2), 6.2.12(2) and 6.2.13(1)(2); however, compensating fabric measures may be required. See section 6 of this Certificate.
Standard:	7.1(a)(b)	Statement of sustainability
Comment:		The system can contribute to satisfying the relevant requirements of Regulation 9, Standards 1 to 6, and therefore will contribute to a construction meeting the bronze level of sustainability as defined in this Standard. In addition, the system can contribute to a construction meeting a higher level of sustainability as defined in this Standard with reference to clauses 7.1.4(1), 7.1.6(1)(2), 7.1.7(1), 7.1.9(2) and 7.1.10(2). See section 6 of this Certificate.
Regulation:	**12**	**Building standards — 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(1)(a)(i) (iii)(b)(i)(ii)**	**Fitness of materials and workmanship**
Comment:		The system is acceptable. See sections 8 and 9 of this Certificate.
Regulation:	**23(2)**	**Fitness of materials and workmanship**
Comment:		The system may be restricted by this Regulation. See section 2 of this Certificate.

Regulation:	**28(b)**	**Resistance to moisture and weather**
Comment:		The system provides a degree of protection against rain ingress. See section 3 of this Certificate.
Regulation:	**29**	**Condensation**
Comment:		Walls insulated with the system can contribute to satisfying the requirements of this Regulation. See section 3 of this Certificate.
Regulation:	**30**	**Stability**
Comment:		The system can sustain and transmit wind loads to the substrate wall. See section 1 of this Certificate.
Regulation:	**36(a)**	**External fire spread**
Comment:		The system may be restricted by this Regulation. See section 2 of this Certificate.
Regulation:	**39(a)(i)**	**Conservation measures**
Comment:		The system can contribute to satisfying this Regulation; however, compensating fabric measures may be required. See section 6 of this Certificate.
Regulation:	**40(2)**	**Target carbon dioxide emission rate**
Regulation	**43(1)(2)**	**Renovation of thermal elements**
Regulation:	**43B**	**Nearly zero-energy requirements for new buildings**
Comment:		The system can contribute to satisfying these Regulations; however, compensating fabric/service measures may be required. See section 6 of this Certificate.

Additional Information

NHBC Standards 2024

In the opinion of the BBA, the webertherm XM External Wall Insulation System 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)*, Chapter 6.9 *Curtain walling and cladding*.

Fulfilment of Requirements

The BBA has judged the webertherm XM External Wall Insulation System to be satisfactory for use in reducing the thermal transmittance (U value) of external walls of masonry, normal weight concrete, lightweight concrete, autoclaved concrete and no-fines concrete construction, of new or existing domestic and non-domestic buildings (with or without existing render), as described in this Certificate.

ASSESSMENT

Product description and intended use

The Certificate holder provided the following description for the system under assessment.

The webertherm XM External Wall Insulation System comprises mineral wool (MW) insulation slabs, mechanically fixed to the substrate wall with supplementary adhesive where required(1) (with a minimum 50% coverage of adhesive), reinforced basecoat and finishes (see Tables 1 and 2).

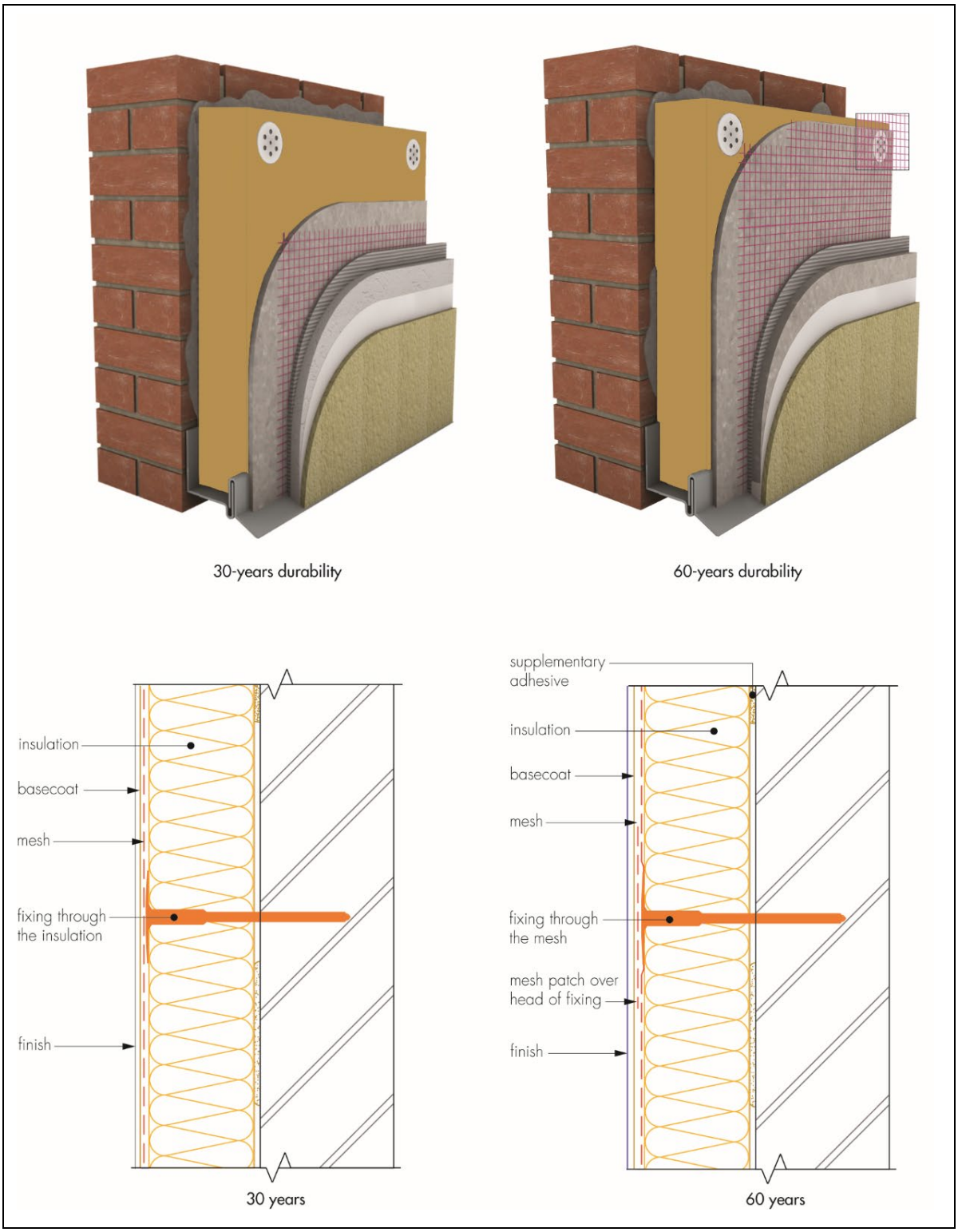
(1) Adhesive is compulsory for the 60-year durability system, and when the insulation thickness is greater than 160 mm for any system. Additionally, for 60-year durability systems, the requirements given in this Certificate for the mechanical fixings and profiles must be satisfied.

The system can be designed to achieve either a 30- or 60-year service life (see Figure 1 for examples). For the 30-year system, mechanical fixings are applied through the insulation slabs, or through the reinforcing mesh and insulation slabs, to the external surface of the substrate wall. For the 60-year system, mechanical fixings are applied through the reinforcing mesh and insulation slabs, to the external surface of the substrate wall.

The system configurations, by method of fixing, covered under this Certificate are:

- mechanically fixing through the insulation only, with a minimum 50% supplementary adhesive (30-year durability systems only)
- mechanically fixed through the mesh/insulation, with a minimum 50% supplementary adhesive (30- or 60-year durability systems)
- dry-fixed system – fixed through the insulation only or through the mesh/insulation (30-year durability systems only). This system includes:
  - 50 to 160 mm insulation thicknesses, basecoats and finishes
  - EJOT H1 eco fixing.

Figure 1 The webertherm XM External Wall Insulation System



The system components are given in Tables 1 and 2 and below:

Table 1 Summary for the system utilising weberend LAC basecoat

Components	Option 1	Option 2
Supplementary adhesive	weberend LAC weberend LAC rapid	weberend LAC weberend LAC rapid
Insulation	webertherm MFD	webertherm MFD
Basecoat	weberend LAC	weberend LAC
Reinforcement	weber mesh	weber mesh
Topcoat	weberend PTC	—
Primer	weber PR310 (where required)	weber PR310
Finish	weber dry dash aggregate weberplast TF webersil TF webermineral TF	 weberplast TF webersil TF webermineral TF

Table 2 Summary for the system utilising weberwall brick external adhesive or weberend LAC rapid basecoat(1)

Components	Option 1	Option 2 (weberwall brick)	Option 3
Supplementary adhesive	weberend LAC weberend LAC rapid	weberend LAC weberend LAC rapid	weberend LAC weberend LAC rapid
Insulation	webertherm MFD	webertherm MFD	webertherm MFD
Basecoat	weberend LAC rapid	weberwall brick external adhesive	weberend LAC rapid
Reinforcement	weber mesh	weber mesh	weber mesh
Topcoat	weberend PTC	—	—
Primer	weber PR310 (where required)	—	—
Finish	weber dry dash aggregate weberplast TF webersil TF webermineral TF	 weberwall brick pointed with weberwall brick pointing mortar	 weberplast TF webersil TF webermineral TF

Adhesive (supplementary)

- weberend LAC — a polymer-modified cementitious basecoat mortar, supplied as a powder to which 5 litres of clean water is added. Applied at a coverage of 3 kg·m^{-2}
- weberend LAC rapid — a polymer-modified cementitious basecoat mortar, supplied as a powder to which 5 litres of clean water is added. Applied at a coverage of 3 kg·m^{-2}.

Insulation(1)

- webertherm MFD (mineral fibre dual-density) Insulation Slabs — 1200 by 600 mm in a range of thicknesses between 50 and 200 mm, with an average density of 110 kg·m^{-3}, a minimum compressive strength of 10 kPa and a minimum tensile strength perpendicular to the faces of 10 kN·m^{-2}. Slabs are manufactured to comply with BS EN 13162 : 2012.

(1) For the declared thermal conductivity (λ_D) value, see section 6.1.

Mechanical fixings

- mechanical fixings[1][2][3] — fixing anchors with various lengths to suit the substrate and insulation thickness, approved and supplied by the Certificate holder, and selected from:
  - Fischer Termoz CS 8 — polypropylene with a electro-galvanized screw
  - EJOT STR U 2G[4] — HDPE anchor sleeve with a stainless steel or electro-galvanized centre screw
  - EJOT H1 eco[5] — HDPE anchor sleeve with an electro-galvanized pin and a polyamide, PA GF 50 mounting plug.

(1) Other fixings may be used provided they can be demonstrated to have equal (or higher) pull-out strength, plate diameter and plate stiffness characteristics to the fixings used for the tests in section 1, and provided that a steel pin or screw is used.
(2) The fixings must be surface mounted only, ie not embedded into the insulation.
(3) HDPE, polyamide or polypropylene anchor sleeve with a stainless steel pin or screw to grades 1.4301 or 1.4401 to BS EN 10088-2 : 2014 is required in order to achieve a 60-year durability performance.
(4) Only these fixings are suitable when the system is fixed through minimum 50 mm thick MFD where the design pull-through resistance value of 63 N applies (see section 1).
(5) EJOT H1 eco is the only fixing that can be used for the dry-fix system – see section 1; footnote (1), therefore, does not apply.

Basecoat

- weberend LAC — a polymer-modified cementitious basecoat mortar, supplied as a powder to which 5 litres of clean water is added. Applied in two passes at a coverage of 6.5 kg·m^{-2} and overall thickness of 6 mm
- weberend LAC rapid — a polymer-modified cementitious basecoat mortar, supplied as a powder to which 5 litres of clean water is added. Applied in two passes at a coverage of 6.5 kg·m^{-2} and overall thickness of 6 mm
- weberwall brick external adhesive — a polymer-modified cementitious basecoat/adhesive mortar, supplied as a powder to which 5 litres of clean water is added. Applied in two passes at a coverage of 6.5 kg·m^{-2} and overall thickness of 6 mm.

Reinforcement

- weber mesh — a woven glass fibre reinforcing mesh (3.8 by 3.5 mm) with a polymer coating and a nominal weight of 160 g·m^{-2}.

Topcoat

- weberend PTC — a factory-batched, polymer-modified cementitious mortar, supplied as a powder to which 5 litres of clean water is added. Applied at a coverage of 10 kg·m^{2} to give a thickness of 6 to 8 mm. Used as a dash receiver and a topcoat.

Primer

- weber PR310 — a ready to use, white styrene-acrylic-resin-based emulsion containing fine filters and coalescing agent (see Tables 1 and 2 for compatibility with the system components). Applied at a coverage of 0.25 l·m^{-2}.

Finishing coats

Render finishes

- weberplast TF — an acrylic-bonded, textured render supplied as a paste containing aggregates of 1.5 mm. Applied at a coverage of 2.8 kg·m^{-2} to give a thickness of 1.5 mm. Available in a range of colours
- webersil TF — a silicone-bonded, textured render supplied as a paste containing aggregates of 1.5 mm. Applied at a coverage of 2.7 kg·m^{-2} to give a thickness of 1.5 mm. Available in a range of colours
- webermineral TF — a polymer-modified mineral finishing coat containing aggregates of 1.5 mm, requiring the addition of 3.4 to 4.4 litres of clean water per 20 kg bag. Applied at a coverage of 2.7 kg·m^{-2} to give a thickness of 1.5 mm. Available in a range of colours.

Brick slip finish and pointing mortar

- weberwall brick — flexible mineral brick slips, typically supplied in standard size of dimensions 65 by 215 by 5 mm with a nominal weight of 6 kg·m^{-2} and formed of a sheet comprising several brick-slips prepressed on glass fibre mesh-reinforcement. Available as straight brick-slips and corner brick-slips and in a range of colours
- weberwall brick pointing mortar — a polymer-modified, dry powder, cement-based mortar for use with weberwall brick.

Dash aggregate finish

- weber Dry Dash Aggregate — sized up to 6 mm and available in a range of colours, applied direct to weberend PTC. Applied at a coverage of 10 to 15 kg·m^{-2}.

Ancillary items

The Certificate holder recommends the following ancillary items for use with the system, but these materials have not been assessed by the BBA and are outside the scope of this Certificate:

- a range of aluminium, PVC-U or stainless-steel profiles(1), comprising:
  - base profile
  - edge profile
  - corner profile with optional PVC-U nosing
  - render stop profile
  - movement joint
  - expansion joint
- profile connectors and fixings
- fungicidal wash
- silicone sealant in accordance with BS EN ISO 11600 : 2003.

(1) For the 60-year durability system, these profiles must be made of stainless steel (see section 8.3).

Product assessment – key factors

The system was assessed for the following key factors, and the outcome of the assessments is shown below. Conclusions relating to the Building Regulations apply to the whole of the UK unless otherwise stated.

1 Mechanical resistance and stability

Data were assessed for the following characteristics (see section 9).

1.1 Wind loading

1.1.1 Dry fix (ie with no supplementary adhesive) – dry-fix installations correctly designed in accordance with this Certificate will safely accommodate the applied loads due to the self-weight of the system, wind and impact when using insulation with a maximum thickness of 160 mm, any render system and the EJOT H1 eco fixing only. Installations with 50% supplementary adhesive can safely accommodate such loads for all material combinations covered by this Certificate.

1.1.2 The data in sections 1.1.3 to 1.1.7 are applicable to systems which are mechanically fixed through the insulation (with or without supplementary adhesive):

1.1.3 Bond strength – the bond resistance between the insulation and render interface derived from test results must be taken as the value given in Table 3. The design resistance of the bond between the insulation and render (N_{RD1}) must be taken as the bond resistance divided by a partial factor of 9.

Table 3 Bond strength

System assessed	Assessment method	Requirement	Result
webertherm XM External Wall Insulation System	EAD 040083-00-0404 Section 2.2.20	– To be at least 80 kPa with cohesive or adhesive rupture, or – The rupture occurs in the thermal insulation system (100% cohesive rupture), if resistance is <80 kPa	10 kN·m^{-2} Rupture occurred in the insulation system

1.1.4 Pull out resistance – typical characteristic pull-out resistances for the fixings taken from the corresponding European Technical Assessment (ETA) are given in Table 4; the values are dependent on the fixing type and must be selected to suit the specific loads and substrate concerned. In situations where suitable data do not exist(1), the characteristic pull-out resistance must be established from site-specific pull-out tests conducted on the substrate of the building to ascertain the minimum resistance to pull-out failure of the fixings, and determined in accordance with the guidance given in EOTA TR051 : 2016 (minimum test characteristic value = 0.6 x mean of 5 lowest test results). To obtain the design pull-out resistance of the fixings (N_{RD2}), this characteristic pull-out resistance mus be divided by the partial factor given in Table 4.

(1) To qualify as suitable data, the age and condition of the substrate must be equivalent to that used to establish the values in the ETA.

Table 4 Fixings — typical characteristic pull-out resistances

Fixing type	ETA number	Substrates	Drill diameter (mm)	Effective anchorage depth (mm)	Characteristic pull-out resistance (kN)(3)	Partial factor
Fischer Termoz CS 8	14/0372	Concrete C12/15 Clay brickwork	8	35(4)	1.5 1.2	2
Ejot H1 eco(1)	11/0192	Concrete C12/15 Clay brickwork	8	25	0.9	2
EJOT STR U 2G (2)	04/0023	Concrete C12/15 Clay brickwork	8	25(4)	1.5	2

(1) The minimum value for plate stiffness of fixings is 0.6 kN·mm^{-2} and anchor plate load resistance is 1.4 kN, which relate to resistance values achieved with the EJOT H1 eco fixing for the relevant pull-through test, dynamic wind uplift test and displacement test.
(2) The minimum anchor plate stiffness of fixings is 0.6 kN·mm^{-2} and anchor plate load resistance is 2.08 kN, which relate to resistance values achieved with the EJOT STR U fixing for the relevant pull-through tests (see Table 5).
(3) Values are determined in accordance with EAD 330196-00-0604 : 2016 and are dependent on the substrate. The Use Categories are defined in the corresponding ETA.
(4) The fixing ETA lists the effective anchorage depth for other substrates.

1.1.5 Pull through resistance – the characteristic pull-through resistance of the fixings was determined from tests using a 60 mm diameter fixing plate and a minimum insulation thickness of 50 mm. The design resistance per metre square (N_{RD3}) must be obtained by applying an appropriate partial factor as shown in Table 5.

Table 5 Design pull-through resistances

Factor (unit)	Assessment method[2]	
	MFD insulation 1200 x 600 mm	
	Pull-through	
Tensile resistance of the insulation (kN·m^{-2})	≥ 10	
Fixing type[1]	Ejot STR U	Ejot H1 eco
Fixing plate diameter (mm)	60	
Insulation thickness (mm)	50	100
Characteristic pull-through resistance[2] per fixing (kN)	0.157	0.301
Partial factor[3]	2.5	
Design pull-through resistance per fixing (N_{RD3}) kN	0.063	0.121
Design pull-through resistance per slab kN (based on minimum number of fixings)[4]	0.315	0.605
Design pull-through resistance per slab kN (based on maximum number of fixings)[5]	0.504	0.968

(1) See Table 4 for typical characteristic pull-out resistance of the fixings.
(2) Characteristic pull-through resistance of insulation over the head of the fixing, in accordance with BS EN 1990 : 2023, Annex D7.2 and its UK National Annex using test results from section 2.2.13.1 of EAD 040083-00-0404.
(3) The partial factor is based on the assumption that all insulation slabs are quality controlled and tested to establish tensile strength perpendicular to the face of the slab.
(4) The minimum design pull-through resistance per slab is based on a minimum of 5 fixings per slab (1200 x 600 mm), which equates to approximately 7 fixings per m^2. The design resistance for the minimum number of fixings is based on the fixing pattern provided in Figure 6 and minimum insulation thickness specified in this Table. The fixing pattern and interaction of the fixings must be considered when calculating the design resistance per slab.
(5) The maximum design pull-through resistance per slab is based on a maximum of 8 fixings per slab (1200 x 600 mm), which equates to approximately 11 fixings per m^2. The design resistance for the maximum number of fixings is only applicable to the minimum insulation thickness tested and as specified in this Table. The fixing pattern, insulation thickness and interaction of the fixings must be considered when calculating the design resistance per slab.

1.1.6 The number and spacing of fixings must be determined by the Certificate holder. The number of fixings must not be less than the minimum specified for the system and the fixings must be symmetrically positioned and evenly distributed about the centre of the slab both vertically and horizontally, except at openings and building corners.

1.1.7 The data obtained from sections 1.1.3 to 1.1.5 must be assessed against the design wind load and the following expression must be satisfied:

For safe design:

$Rd \geq W_e$

$Rd_{b.ins/rend} = A_r * N_{RD1}$
$Rd_{pull\text{-}out} = n * N_{RD2}$
$Rd_{pull\text{-}through} = (N_{RD3panel} * n_{panel}) + (N_{RD3joint} * n_{joint})/A_{slab}$

Where:

Rd	is the design ultimate resistance (kN·m^{-2}) taken as the minimum of $Rd_{b.ins/rend}$, $Rd_{pull\text{-}out}$ and $Rd_{pull\text{-}through}$
W_e	is the applied ultimate wind load (kN·m^{-2})
$Rd_{b.ins/rend}$	is the design bond resistance between the insulation and render (kN·m^{-2})
$Rd_{pull\text{-}out}$	is the design pull-out resistance of the insulation fixings per metre square (kN·m^{-2})
$Rd_{pull\text{-}through}$	is the design pull-through resistance of the insulation fixings per metre square (kN·m^{-2})
A_r	is the reinforced basecoat bond area (based on % area covered)
N_{RD1}	is the design adhesive bond resistance between the insulation and render, based on test (kN·m^{-2})
n	is the number of anchor fixings per m^2
N_{RD2}	is the design pull-out resistance per fixing based on test (kN)
$N_{Rd3panel}$	is the design pull-through resistance per anchor not placed at the panel joint, based on test (kN)
$N_{Rd3joint}$	is the design pull-through resistance per anchor placed at the panel joint, based on test (kN)
n_{panel}	is the number of internal anchors in a panel
n_{joint}	is the number of joint anchors in a panel
A_{slab}	is the area of the slab (m^2).

1.1.8 The insulation system must be mechanically fixed to the substrate wall with a minimum of 5 fixings per slab or approximately 7 fixings per metre square (1200 by 600 mm), as per the fixing pattern shown in Figure 6, and in conjunction with a minimum 50% coverage of supplementary adhesive (see Annex A of this Certificate). Additional fixings may be required, depending on the results of the calculations detailed above for the specific site.

1.1.9 The data in sections 1.1.3 to 1.1.12 are applicable to systems which are mechanically fixed through the mesh/insulation (with or without supplementary adhesive).

1.1.10 The DWU test was carried out on a webertherm XM External Wall Insulation System mechanically fixed onto a masonry substrate. Mineral wool slabs of 100 mm(1) thickness were initially fixed with two EJOT H1 eco fixings through each insulation slab, and then a further 4 EJOT H1 eco fixings per m^2 were applied through the reinforced basecoat/insulation, providing an overall fixing frequency of 7 fixings per m^2, before the render finish was applied. The maximum characteristic negative wind load resistance that can be sustained by the webertherm XM External Wall Insulation System as determined from the DWU test is 3.96 $kN \cdot m^{-2}$. The maximum design wind load resistance (Rd_{Test}) is derived by dividing the maximum characteristic wind load resistance by a partial safety factor of 1.5, and equals 2.64 $kN \cdot m^{-2}$(2)(3)(4)(5)(6).

(1) The DWU maximum design wind load resistance only applies to systems with mineral wool slab thicknesses from 100 to 200 mm. The pull-through resistances from Table 5 must be used for the 60-year durability system and in all cases when carrying out a system fixing assessment.
(2) The maximum design wind load that can be resisted by the system corresponds to the maximum allowed spacing, centres and layout of fixings. This fixing configuration with the appropriate fixings will also adequately transfer the system's self-weight, wind and impact loads to a suitable substrate wall.
(3) The test was undertaken without supplementary adhesive.
(4) The partial factor for the DWU test is based on the mode of failure obtained in the test.
(5) The design resistance is determined by dividing the characteristic resistance value obtained from a DWU test by a partial factor of 1.5.
(6) Alternative fixings may be used provided it can be demonstrated that they have equal or higher plate diameter (minimum 60 mm), plate stiffness (≥ 0.6 $kN \cdot mm^{-2}$) and anchor plate load resistance (≥ 1.4 kN) characteristics.

1.1.11 The data derived from sections 1.1.3 and 1.1.10 must be assessed against the design wind load, and the following expressions must be satisfied:

For safe design:

$R_{dTest} \geq W_e$ and $n_{RD2} \geq W_e$

where:

R_{dTest} is the design negative wind load resistance of the system based on test ($kN \cdot m_{-2}$)
W_e is the maximum design wind load ($kN \cdot m^{-2}$)
n_{RD2} is the design pull-out resistance of the system based on characteristic values from site tests and the number of fixings per unit area must be ≥ as tested in a Static Foam Block test ($kN \cdot m^{-2}$).

1.1.12 The insulation system is mechanically fixed through mesh/insulation to the substrate wall with a minimum of 7 fixings per square metre, as per the fixing pattern shown in Figure 8. The design wind load resistance is only applicable to the system tested and as described in section 1.1.3. Additional fixings may be required, depending on the design and installation conditions. However, any resulting additional wind load resistance cannot be quantified by the results of the test and, as such, enhancements are outside the scope of the Certificate.

1.2 Resistance to impact

1.2.1 The results of hard body impact tests are given in Table 6.

Table 6 System impact resistance

Render systems assessed: Basecoat + finishing coats indicated below:	Assessment method	Category[1]
weberend LAC + weber PR310 + weberplast TF weberend LAC rapid + weberplast TF	Section 2.2.8 of EAD 040083-00-0404	I
weberend LAC + weberend PTC + weber Dry Dash Aggregate weberend LAC + weber PR310 + webersil TF weberend LAC + weberend PTC + weber PR310 + webersil TF weberend LAC + weberend PTC + weber PR310 + weberplast TF weberend LAC rapid + weberend PTC + weber Dry Dash Aggregate weberend LAC rapid + webersil TF weberend LAC rapid + weberplast TF weberend LAC rapid + weberend PTC + weber PR310 + weberplast TF weberend LAC rapid + weberend PTC + weber PR310 + webersil TF weberend LAC rapid + weberwall brick + weberwall brick weberend LAC rapid + weberend PTC + weber PR310 + webermineral TF weberend LAC rapid + webermineral TF weberend LAC + weberend PTC + weber PR310 + webermineral TF weberend LAC + weberend PTC + webermineral TF weberwall brick external adhesive + weberwall brick + weberwall brick pointing mortar	Section 2.2.8 of EAD 040083-00-0404	II

(1) The Use Categories are defined EAD 040083-00-0404 as:

- Category I — a zone readily accessible at ground level to the public and vulnerable to hard body impacts but not subjected to abnormally rough use
- Category II — a zone liable to impacts from thrown or kicked objects, but in public locations where the height of the system 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
- Category III — a zone not likely to be damaged by normal impacts caused by people or by thrown or kicked objects.

1.2.2 On the basis of data assessed, the system is suitable for use in Categories l and II of EAD/UKAD 040083 00-0404, depending on the system used.

2 Safety in case of fire

2.1 Reaction to fire

2.1.1 The reaction to fire classifications of the system are given in Table 7. These classifications apply to the full range of insulation thicknesses covered by this Certificate.

Table 7 Reaction to fire classification

System assessed Basecoat + finishing coats as indicated	Assessment method	Test report[1]	Fire classification
Substrate – any D-s2, d0 or better masonry webermineral TF webersil TF weberend PTC + webermineral TF weberend PTC + webersil TF All topcoat colours	BS EN 13501-1 : 2018	Warringtonfire Testing and Certification Ltd. Report numbers 417450, 417451, 417463, 428391, 429117, 428357, 429352, 428235, 429118 and 435353	A2-s1, d0
Substrate – any D-s2, d0 or better masonry weberwall brick All colours	BS EN 13501-1 : 2018		A2-s1, d0
Substrate – any D-s2, d0 or better masonry weberend PTC (Dry dash finish) All topcoat colours	BS EN 13501-1 : 2018		A2-s1, d0
Substrate – any D-s2, d0 or better masonry weberend PTC + weberplast TF weberplast TF All topcoat colours	BS EN 13501-1 : 2018		B-s1, d0

(1) Copies are available from the Certificate holder on request.

2.1.2 The classification and permissible areas of use of other constructions must be established in accordance with the documents supporting the national Building Regulations.

2.1.3 The mineral wool insulation material in isolation is classified A1 to BS EN 13501-1 : 2018.

Systems with an A2-s1, d0 reaction to fire classification (see Table 7)

2.1.4 On the basis of the data assessed, the system is suitable for use on or at any distance from a relevant boundary and without height restrictions.

System with a B-s1, d0 reaction to fire classification (see Table 7)

2.1.5 On the basis of the data assessed, the system will be restricted under the documents supporting the national Building Regulations.

2.1.6 In England, the system must not be used on buildings that have a storey more than 18 m above ground level or on residential buildings that are more than 11m in height.

2.1.7 In Wales and Northern Ireland, the system must not be used on buildings that have a storey more than 18 m above ground level.

2.1.8 In Scotland, the system must not be used on buildings with a storey 11 m or more above ground level and, except on houses, 1 m or less from a relevant boundary. Restrictions also apply on some entertainment, assembly, hospital and residential care buildings. The system must be included in calculations of unprotected area.

2.1.9 For application to second storey walls and above, the designer must consider at least one stainless steel fixing per square metre and fire barriers in line with compartment walls and floors, as given in BRE Report BR 135 : 2013.

2.1.10 NHBC Standards require in all cases that a minimum of one non-combustible fixing through the reinforcement mesh, per square metre or per insulation slab, whichever provides the greater number, must be provided, in addition to the other fixings.

2.1.11 Designers must refer to the documents supporting the national Building Regulations for detailed conditions of use, particularly in respect of requirements for substrate fire performance, cavity barriers, service penetrations and combustibility limitations for other materials and components used in the overall wall construction and components used in the overall wall construction.

3 Hygiene, health and the environment

Data were assessed for the following characteristics.

3.1 Water vapour permeability

The water vapour resistance (μ) factor (for the insulation slab) and equivalent air layer thicknesses (s_d) (for the render systems) are shown in Table 8.

Table 8 Water vapour resistance factor and equivalent air layer thickness

System assessed	Result s_d (m) [1]	Result (μ)
Mineral wool thicknesses 50 to 200 mm	—	1 [2]
Rendering system : weberend LAC (6 mm thick) + render system (specific particle size), as indicated below:		
weberend PTC + weberend dry dash	0.33	—
weberend PTC (8 mm thick) + weber PR310 + weberplast TF (particle size 1.5 mm)	0.80	
weberend PTC (8 mm thick) + weber PR310 + webersil TF (particle size 1.5 mm)	0.78	
weberend PTC (8 mm thick) + weber PR310 + webermineral TF (particle size 1.5 mm)	0.52	—
weber PR310 + weberplast TF (particle size 1.5 mm)	0.69	—
weber PR310 + webersil TF (particle size 1.5 mm)	0.67	—
weber PR310 + webermineral TF (particle size 1.5 mm)	0.41	—
Rendering system : weberend LAC rapid (6 mm thick) + rendering system (specific particle size), as below:		
weberend PTC + weberend dry dash	0.36	—
weberend PTC (8 mm thick) + weber PR310 + weberplast TF (particle size 1.5 mm)	0.83	—
weberend PTC (8 mm thick) + weber PR310 + webersil TF (particle size 1.5 mm)	0.81	—
weberend PTC (8 mm thick) + weber PR310 + webermineral TF (particle size 1.5 mm)	0.55	—
weberplast TF (particle size 1.5 mm)	0.47	—
webersil TF (particle size 1.5 mm)	0.46	—
webermineral TF (particle size 1.5 mm)	0.44	—
Rendering system : weberend LAC rapid (3 mm thick) + rendering system, as indicated below:		
weberwall brick external adhesive (3 mm) + weberwall brick + weberwall brick pointing mortar	0.42	—

(1) The system was tested and met the criteria of $s_d \leq 1$ metre, from section 2.2.9 of EAD 040083-00-0404.
(2) Obtained from BS EN ISO 10456 : 2007, Table 4.

3.2 Condensation

3.2.1 The BBA has assessed the system for the risk of interstitial condensation, and the following must be implemented.

3.2.1.1 Designers must ensure that an appropriate condensation risk analysis has been carried out for all parts of the construction, including openings and penetrations at junctions between the insulation system and windows, to minimise the risk of condensation. The recommendations of BS 5250 : 2021 must be followed.

3.2.2 Walls incorporating the system will adequately limit the risk of interstitial condensation when they are designed and constructed in accordance with BS 5250 : 2021 and section 3.1 of this Certificate.

4 Safety and accessibility in use

Not applicable.

5 Protection against noise

Not applicable.

6 Energy economy and heat retention

Data were assessed for the following characteristics.

6.1 Thermal conductivity

Calculations of thermal transmittance (U value) must be carried out in accordance with BS EN ISO 6946 : 2017 and BRE Report BR 443 : 2019, using the insulation manufacturer's declared thermal conductivity (λ_D) value of the insulation given in Table 9 of this Certificate.

Table 9 Declared thermal conductivity (λ_D) values and available thicknesses

Insulation type	Insulation slab thickness range (mm)	Thermal conductivity ($W \cdot m^{-1} \cdot K^{-1}$)
Mineral wool	50 to 200	0.036

6.2 Thermal performance

6.2.1 The U value of a completed wall will depend on the selected insulation type and thickness, the fixing method and type and number of fixings, and the insulating value of the substrate masonry and its internal finish. Calculated U values for sample constructions in accordance with the national Building Regulations are given in Tables 10 and 11 of this Certificate, and are based on the thermal conductivity values given in Table 9.

Table 10 Insulation thickness required to achieve U value[1][2] — using galvanized steel fixings (30-year durability)

U value[3] ($W \cdot m^{-2} \cdot K^{-1}$)	Insulation thickness[4] requirement (mm)	
	215 mm brickwork, λ = 0.56 $W \cdot m^{-1} \cdot K^{-1}$	200 mm dense blockwork, λ = 1.75 $W \cdot m^{-1} \cdot K^{-1}$
	webertherm MFD	webertherm MFD
0.18	—[5]	—[5]
0.19	200	—[5]
0.25	140	150
0.26	140	150
0.28	130	130
0.30	120	120
0.35	100	100

(1) Wall construction inclusive of 13 mm plaster (λ = 0.57 $W \cdot m^{-1} \cdot K^{-1}$), brickwork (protected) with 17.1% mortar or dense blockwork with 6.7% mortar (λ = 0.88 $W \cdot m^{-1} \cdot K^{-1}$). Declared thermal conductivity (λ_D) of insulation is as shown in Table 9. A render thickness of 12 mm (with λ= 1.0 $W \cdot m^{-1} \cdot K^{-1}$) is also included. A 5 mm thick adhesive layer (λ = 1 $W \cdot m^{-1} \cdot K^{-1}$) covering 50% of the area is also included, together with a slab emissivity of 0.9 and an external render thickness of 12 mm (λ = 1 $W \cdot m^{-1} \cdot K^{-1}$).

(2) Calculations based on a mechanical system that included 7 galvanized steel fixings per m^2 with 8 mm diameter and a point thermal transmittance (χ_p) of 0.004 $W \cdot K^{-1}$ per pin. Use of other types of fixings must be calculated in accordance with BS EN ISO 6946 : 2017.

(3) Based upon incremental insulation thickness of 10 mm.

(4) When applying the maximum available insulation thickness, these walls can achieve U values from 0.19 to 0.20 $W.m^{-2} \cdot K^{-1}$ depending on insulation and wall type.

(5) See section 9.1.3.

Table 11 Insulation thickness required to achieve U value[1][2] — using stainless steel fixings (60-year durability)

U value[4] ($W \cdot m^{-2} \cdot K^{-1}$)	Insulation thickness[3] requirement (mm)	
	215 mm brickwork, λ = 0.56 $W \cdot m^{-1} \cdot K^{-1}$	200 mm dense blockwork, λ = 1.75 $W \cdot m^{-1} \cdot K^{-1}$
	webertherm MFD	webertherm MFD
0.18	190	200
0.19	180	190
0.25	130	140
0.26	130	140
0.28	120	120
0.30	110	120
0.35	90	100

(1) Wall construction inclusive of 13 mm plaster (λ = 0.57 $W \cdot m^{-1} \cdot K^{-1}$), brickwork (protected) with 17.1% mortar or dense blockwork with 6.7% mortar (λ = 0.88 $W \cdot m^{-1} \cdot K^{-1}$). Declared thermal conductivity (λ_D) of insulation is as shown in Table 9. A render thickness of 12 mm (with λ = 1.0 $W \cdot m^{-1} \cdot K^{-1}$) is also included. A 5 mm thick adhesive layer (λ = 1 $W \cdot m^{-1} \cdot K^{-1}$) covering 50% of the area is also included, together with a slab emissivity of 0.9 and an external render thickness of 12 mm (λ = 1 $W \cdot m^{-1} \cdot K^{-1}$).

(2) Calculations based on a mechanical system that included 7 steel fixings with 8 mm diameter and a point thermal transmittance (χ_p) of 0.002 $W \cdot K^{-1}$ per pin. Use of other types of fixings must be calculated in accordance with BS EN ISO 6946 : 2017.

(3) Based upon incremental insulation thickness of 10 mm.

(4) When applying the maximum available insulation thickness, these walls can achieve U values of 0.18 $W \cdot m^{-2} \cdot K^{-1}$.

6.2.2 Care must be taken in the overall design and construction of junctions with other elements and openings, to minimise thermal bridges and air infiltration. Detailed guidance can be found in the documents supporting the national Building Regulations.

7 Sustainable use of natural resources

Not applicable.

8 Durability

8.1 The potential mechanisms for degradation and performance characteristics of the materials used in the system were assessed.

8.2 Specific test data were assessed for the following:

Table 12 Watertightness - hygrothermal behaviour

System assessed	Assessment method	Requirement	Result
webertherm XM External Wall Insulation System	EAD 040083-00-0404 Section 2.2.6 Watertightness of the EWIS: Hygrothermal behaviour	– No blistering or peeling of any finishing coat – No detachment of the rendering system – No failure or cracking associated with joints between insulation slabs – No cracking allowing water penetration to the insulating layer (normally ≤ 0.2mm)	Pass

8.3 Service life

8.3.1 Under normal service conditions, the system will have a service life of at least 30 years, provided any damage to the surface finish is repaired immediately and regular maintenance is undertaken, as described in section 9 of this Certificate.

8.3.2 The service life can be extended to 60 years provided a planned inspection and maintenance programme is introduced in accordance with section 9 of this Certificate. An extended 60 years' service life requires the use of insulation adhesive, stainless steel base and aluminium mesh wing embedded corner profiles, stainless steel fixings or centre pin grades 1.4301 or 1.4401 and plastic anchor sleeve material such as polyamide (PA6 and PA6.6), polyethylene (PE) or polypropylene (PP) and the following of an appropriate repair and maintenance schedule as covered by the Certificate holder's Repair and Maintenance Manual. In order to achieve this, and depending on the building's location, degree of exposure and detailing, it may be necessary to repair or replace isolated areas. Any damage to the surface finish must be repaired within a time period agreed in the Certificate holder's Maintenance Manual.

8.3.3 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 less noticeable on lighter colours.

8.3.4 The finishes 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 over coating, provided the coating does not adversely affect the water vapour transmission or fire characteristics of the system. The advice of the Certificate holder must be sought as to the suitability of a particular system, but such advice is outside the scope of this Certificate.

8.3.5 To maintain a high-quality aesthetic appearance, it may be necessary to periodically overcoat the building using a suitable masonry coating. Care must be taken not to adversely affect the water vapour transmission or fire characteristics of the system. The advice of the Certificate holder must be sought as to the suitability of a particular system, but such advice is outside the scope of this Certificate.

PROCESS ASSESSMENT

Information provided by the Certificate holder was assessed for the following factors:

9 Design, installation, workmanship and maintenance

9.1 Design

9.1.1 The design process was assessed, and the following requirements apply in order to satisfy the performance assessed in this Certificate.

9.1.2 It is essential that the detailing techniques specified in this Certificate are carried out to a high standard if the ingress of water into the insulation is to be avoided and the full thermal benefit obtained from treatment with the system (e.g. the insulation must be protected by an overhang, and window sills must be designed and installed so as to direct water away from the building).

9.1.3 For improved thermal/carbon-emissions performance of the structure, the designer must consider additional/ alternative fabric and/or services measures.

9.1.4 New walls subject to national Building Regulations must be constructed in accordance with the relevant recommendations of:

- BS EN 1992-1-1 : 2004 and its UK National Annex
- BS EN 1996-1-1 : 2005 and its UK National Annex
- BS EN 1996-2 : 2006 and its UK National Annex
- BS 8000-0 : 2014
- BS 8000-2.2 : 1990
- BS 8000-3 : 2001
- PD 6697 : 2019.

9.1.5 New walls not subject to regulatory requirements must also be built in accordance with the Standards identified in section 9.1.4.

9.1.6 Movement joints must be incorporated into the system in line with existing movement joints in the building structure and in accordance with the Certificate holder's recommendations for the specific installation.

9.1.7 The system will improve the weather resistance of a wall and provide a decorative finish.

9.1.8 The effect of the system on the acoustic performance of a construction is outside the scope of this Certificate.

9.1.9 The fixing of sanitary pipework, plumbing, rainwater goods, satellite dishes, clothes lines, hanging baskets and similar items to the system is outside the scope of this Certificate (see section 9.1.10).

9.1.10 External pipework and ducts must be removed before installation, and alterations made to underground drainage to accommodate repositioning of the pipework to the finished face of the system. The Certificate holder may advise on suitable fixing methods, but these are outside the scope of this Certificate.

9.1.11 Where a 60-year durability system is required, the insulation slab adhesive must be used and the mechanical fixings must be applied through the reinforcing mesh. Additionally, the following components must be constructed from stainless steel grade 1.4301 or 1.4401 to BS EN 10088-2 : 2014:

- base profile and render stop end including the fixings. In addition, any other profile component which would remain exposed after the application of the finishing coat
- corner profile (if exposed after application of the system)
- pin or screw for mechanical fixings.

9.1.12 The detailed provisions given in the documents supporting the national Building Regulations when the system is installed in close proximity to certain flue pipes and/or heat-producing appliances must be followed.

Surface condensation

9.1.13 In England and Wales, walls will adequately limit the risk of surface condensation when the thermal transmittance (U value) does not exceed 0.7 $W \cdot m^{-2} \cdot K^{-1}$ at any point and the junctions with other elements and openings comply with section 6.2.2 of this Certificate.

9.1.14 In Scotland, walls will adequately limit the risk of surface condensation when the thermal transmittance (U value) does not exceed 1.2 $W \cdot m^{-2} \cdot K^{-1}$ at any point.

Resistance to weather

9.1.15 The system will provide a degree of protection against water ingress. However, care must be taken to ensure that substrate walls are adequately weather resistant prior to application of the system. The system must only be installed where there are no signs of dampness on the inner surface of the substrate other than those caused solely by condensation.

9.1.16 Designers and installers must take particular care in detailing around openings, penetrations and movement joints to minimise the risk of water ingress.

9.1.17 The guidance given in BRE Report BR 262 : 2002 must be followed in connection with the weathertightness of solid wall constructions. The designer must select a construction appropriate to the local wind-driven rain index, paying due regard to the design detailing, workmanship and materials to be used.

9.1.18 At the top of walls, the system must be protected by an adequate overhang or other detail designed for use with this type of system (see Annex A). On flat roofs and parapet walls, waterproofing and drainage must be adequate and in good condition.

Structural performance

9.1.19 The Certificate holder is ultimately responsible for the design of the system and it is the responsibility of the company installing the system to accurately follow the installation instructions. The Certificate holder must also verify that a suitably experienced and qualified individual (with adequate professional indemnity) establishes that:

- the wind loads on the different zones of the building's elevation for the specific geographical location have been calculated correctly
- the system can adequately resist and safely transfer the calculated loads, accounting for all possible failure modes, to the substrate wall and supporting structure.

9.1.20 The substrate and supporting structure must be capable of transferring all additional loading due to the installation of the system, to the ground in a satisfactory manner. The adequacy of the substrate and supporting structure must be verified by the person or party responsible for the global stability of the building to which the system is applied. Any defects must be made good prior to the system being installed.

9.1.21 The wind loads on the walls must be calculated by a suitably experienced and competent individual, taking into account all relevant factors such as location and topography, in accordance with BS EN 1991-1-4 : 2005 and its UK National Annex. All of the factors affecting wind load on each elevation and specific zones of the building must be considered. In accordance with BS EN 1990 : 2022 and its UK National Annex, a partial factor of 1.5 must be applied to the calculated characteristic wind pressure values to establish the design wind load to be resisted by the systems.

9.1.22 Installations correctly designed in accordance with this Certificate will safely accommodate the applied loads due to the self-weight of the system, wind and impact.

9.1.23 For systems mechanically fixed with supplementary adhesive(1) through the insulation only, and for dry fix systems fixed through the insulation only, the negative wind load is transferred to the substrate wall via:

- the bond between the insulation and render system (see section 1.1.2)
- the pull-out resistance of the fixing from the substrate wall (see section 1.1.3)
- the pull-through resistance of the fixing (see section 1.1.4).

(1) For mechanically fixed systems with supplementary adhesive, fixed through the insulation only, the contribution of the adhesive is not considered when calculating resistance to wind load.

9.1.24 For systems mechanically fixed through the mesh/insulation(1), including dry fix systems, the negative wind load is transferred to the substrate wall via:

- the cohesion resistance of the rendering system
- the pull-out resistance of the fixing from the substrate wall (see section 1.1.3)
- the resistance of the anchor plate to breakdown or detachment
- the resistance of mesh fabric to tearing around the anchor plate.

(1) For mechanically fixed system with supplementary adhesive, fixed through the mesh/insulation, the resistance of the system to negative wind load is obtained from the Dynamic Wind Uplift (DWU) test.

9.2 Installation

9.2.1 Installation instructions provided by the Certificate holder were assessed and judged to be appropriate and adequate.

9.2.2 Weather conditions must be monitored to ensure correct application and curing conditions. If exposure to frost is likely or in damp/wet conditions, the render must be protected. The system must not be applied at temperatures below 5°C or above 25°C.

9.2.3 All rendering must be in accordance with the relevant recommendations of BS EN 13914-1 : 2016.

9.2.4 Installation must be carried out in accordance with this Certificate and the Certificate holder's instructions. A summary of instructions and guidance is provided in Annex A.

9.3 Workmanship

Practicability of installation was assessed on the basis of the Certificate holder's information. To achieve the performance described in this Certificate, the system must only be installed by installers competent in installing external wall insulation who have been trained and approved by the Certificate holder. Such an installer is a company:

- employing operatives who have been trained and approved by the Certificate holder to install the system
- which has undertaken to comply with the Certificate holder's application procedure, containing the requirement for each application team to include at least one member-operative trained by the Certificate holder
- subject to at least one inspection per annum by the Certificate holder to ensure suitable site practices are being employed. This may include unannounced site inspections.

Note: The BBA operates a UKAS-accredited Approved Installer Scheme for external wall insulation; details of approved installer companies are included on the BBA website (www.bbacerts.co.uk).

9.4 Maintenance and repair

9.4.1 An initial inspection must be made within 12 months and regularly thereafter to include:

- visual inspection of the render for signs of damage. Cracks in the render exceeding 0.2 mm must be repaired
- 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 water is not leaking from external downpipes or gutters; such leakage could penetrate the rendering
- necessary repairs effected immediately and any sealant joints at window and door frames replaced at regular intervals
- maintenance schedules, which must include the replacement and resealing of joints (for example, between the insulation system and window and door frame).

9.4.2 For a 60-year durability system, a detailed maintenance plan must be prepared and provided to the building manager/owner on completion. As a minimum, this must include an inspection for evidence of defects twelve months after the application and, subsequently, every five years. This plan must include full details of the required inspection regime and a record of these inspections must be retained.

9.4.3 Damaged areas must be repaired using the appropriate components and procedures detailed in the Certificate holder's installation instructions and in accordance with BS EN 13914-1 : 2016.

10 Manufacture

10.1 The production processes for this system have been assessed and provide assurance that the quality controls are satisfactory according to the following factors:

10.1.1 The manufacturer has provided documented information on the materials, processes, testing and control factors.

10.1.2 The quality control operated over batches of incoming materials has been assessed and deemed appropriate and adequate.

10.1.3 The quality control procedures and testing to be undertaken have been assessed and deemed appropriate and adequate.

10.1.4 The process for management of non-conformities has been assessed and deemed appropriate and adequate.

10.1.5 An audit of each production location was undertaken, and it was confirmed that the production process was in accordance with the documented process, and that equipment has been properly tested and calibrated.

† 10.2 The BBA has 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.

11 Delivery and site handling

11.1 The system components are delivered to site in the packaging and quantities listed in Table 13. Each package carries the product identification and batch number.

Table 13 System component supply details

Component	Quantity/packaging
insulation	Shrink-wrapped in polythene on pallets
weberend LAC adhesive and basecoat	20 kg bags
weberend LAC rapid adhesive and basecoat	20 kg bags
weberwall brick external adhesive	20 kg bags
weber mesh	1 m wide by 50 m lengths
weberend PTC	25 kg bags
weber PR310	10 litre containers
weber dry-dash aggregate	25 kg bags
weberplast TF	15 kg plastic pails
webersil TF	15 kg plastic pails
webermineral TF	20 kg bags
weberwall brick slips	boxed by manufacturer
weberwall brick pointing mortar	25 kg bags
mechanical fixings	boxed by manufacturer, 100 per box

11.2 Delivery and site handing must be performed in accordance with the Certificate holder's instructions and this Certificate, including:

11.2.1 The insulation must be stored on a firm, clean, level base, off the ground and under cover until required for use. Care must be taken when handling to avoid damage.

11.2.2 The insulation must be stored off the ground on a firm, clean, level base and under cover until required for use. Care must be taken when handling to avoid damage.

11.2.3 The powder and paste components must be stored in dry conditions between 5 and 30°C, off the ground and protected from moisture. Contaminated materials must be discarded.

11.2.4 The primer and finishes must be stored in a safe area, under cover, and protected from excessive heat and frost at all times.

11.2.5 Bagged aggregate must be stored in a dry location.

ANNEX A – SUPPLEMENTARY INFORMATION †

Supporting information in this Annex is relevant to the system but has not formed part of the material assessed for the 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.

CLP Regulations

The Certificate holder has taken the responsibility of classifying and labelling the components under the *GB CLG Regulation* and *CLP Regulation (EC) No 1272/2008 - the classification, labelling and packaging of substances and mixtures*. Users must refer to the relevant Safety Data Sheet(s).

Management Systems Certification for production

The management system of Saint-Gobain Construction Products UK Limited t/a Saint-Gobain Weber has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2015 by BSI (Certificates FM 641234 and FM 01209).

Additional information on installation

A.1 Site survey and preliminary work

A.1.1 A pre-installation survey of the property must be carried out to determine suitability for treatment and the need for any necessary repairs to the building structure before application of the system. A specification is prepared for each elevation of the building indicating:

- the position of beads
- detailing around windows, doors and at eaves
- damp-proof course (DPC) level
- exact position of expansion joints, if required
- where required, additional corner mesh and reinforcement
- areas where flexible seal must be used
- any alterations to external plumbing, if required.

A.1.2 The survey must include tests conducted on the walls of the building by the Certificate holder or their approved installers (see section 9.3) to determine the pull-out resistance of the proposed mechanical fixings for the appropriate substrate. An assessment and recommendation is made on the type and number of fixings required to withstand the building's expected wind loading based on calculations using the test data and pull-out resistance (see section 1.1.3).

A.1.3 Surfaces must be sound, clean and free from loose material. The flatness of surfaces must be checked; this may be achieved using a straight edge spanning the storey height. Any excessive irregularities, ie greater than 10 mm in one metre, must be made good prior to installation to ensure that the insulation slabs are installed with a smooth, in-plane finished surface.

A.1.4 Where surfaces are covered with an existing rendering, it is essential that the bond between the background and the render is adequate. All loose areas must be hacked off and reinstated.

A.1.5 On existing buildings, purpose-made window sills must be fitted to extend beyond the finished face of the system. New buildings must incorporate suitably deep sills (see Figure 11).

A.1.6 In new buildings, internal wet work (eg screed or plastering) must be completed and allowed to dry prior to the application of the system.

A.1.7 All modifications, such as alterations to external plumbing and necessary repairs to the building structure, must be completed before installation of the system commences.

A.2 Installation

A.2.1 Installation of the system must be carried out in accordance with the Certificate holder's current installation instructions and this Certificate.

A.2.2 Weather conditions must be monitored to ensure correct application and curing conditions. If exposure to frost is likely or in damp/wet conditions, the render must be protected. The system must not be applied at temperatures below 5°C or above 25°C.

A.2.3 All rendering must be in accordance with the relevant recommendations of BS EN 13914-1 : 2016.

Installation procedures common to both 30- and 60-year systems

A.2.4 The procedures described in sections A.2.5 to A.2.15 are common to both 30- and 60-year systems.

Insulation slabs

A.2.5 The base profile is secured to the external wall above the DPC using mechanical fixings at maximum 700 mm centres. Base profile connectors are installed at all profile joints. Extension profiles are fixed at the front lip of the base rail or stop end profile as appropriate. Profiles and expansion joints are fitted as specified (see Figure 2).

A.2.6 The insulation slabs must be bonded to the wall using supplementary adhesive when required (adhesive is mandatory for the 60-year durability system). The adhesive is prepared with the required amount of water (20 kg of weberend LAC or weberend LAC rapid to 5 litres of potable water) and mixed with a paddle mixer until the desired consistency is achieved. After allowing the adhesive to rest for 5 minutes, it is stirred again. The adhesive is applied to the insulation in four vertical strips, 100 mm wide and 25 to 30 mm thick. The adhesive must cover a minimum 50% of the slab and care must be taken to ensure that any incidental vertical cavities resulting from the staggered insulation slab layout are closed at each row with the supplementary adhesive.

A.2.7 The first run of insulation slabs is positioned on the base profile with adhesive applied, and pressed firmly against the wall, butted tightly together and aligned to achieve a level finish. Subsequent rows of slabs are positioned so that the vertical slab joints are staggered and overlapped at the building corners and so that the slab joints do not occur within 200 mm of the corners of openings (see Figure 3) and any incidental vertical cavities are closed at each row with the supplementary adhesive. Joints between slabs greater than 2 mm should be filled with slivers of insulation slab or expansion foam. Gaps greater than 10 mm should be closed by repositioning or, where appropriate, by cutting slabs to fit.

A.2.8 To fit around details such as doors and windows, insulation slabs may be cut with a sharp knife or a fine-tooth saw. Purpose-made window sills, flashing and seals designed to prevent or manage water ingress must be fitted. The performance of these components is outside the scope of this Certificate.

A.2.9 At all locations where there is a risk of insulant exposure (e.g. window reveals or eaves), the system must be protected, e.g. by an adequate overhang or by purpose made sub-sills, seals or flashing.

A.2.10 Building corners, door and window heads and jambs are formed using corner profiles, in accordance with the Certificate holder's instructions. Corner profiles must be fixed to all building corners. For a 60-year durability system, any portion of the corner profile that remains exposed after the application of the finishing coat must be constructed from stainless steel.

A.2.11 Installation continues until the whole wall is completely covered including, where appropriate, the building soffits.

A.2.12 After sufficient stabilisation of the installed insulation (during which time the insulation must be protected from exposure to extreme weather conditions to prevent degradation), the wall is ready for the application of the basecoat.

Figure 2 Typical section at base profile

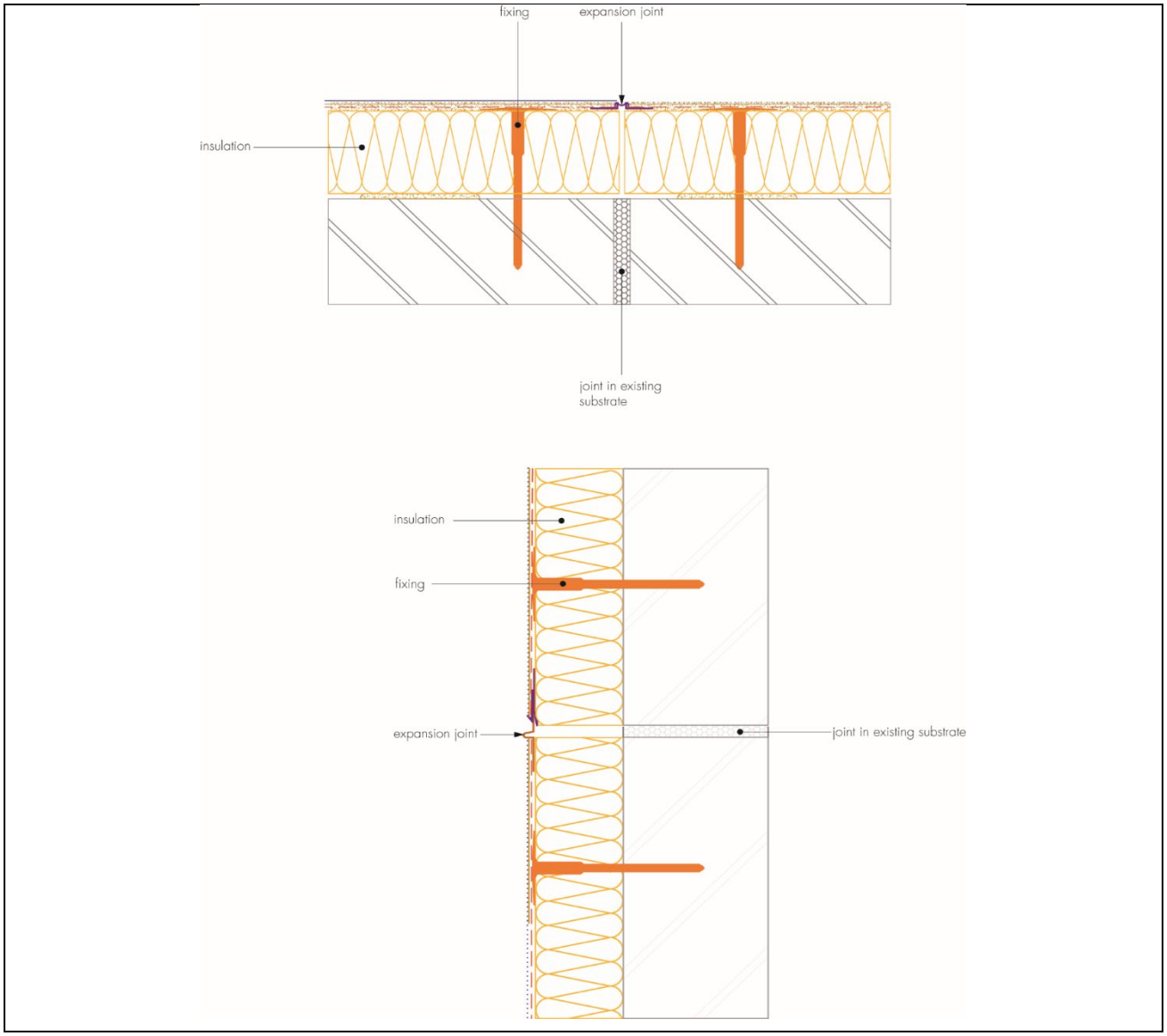
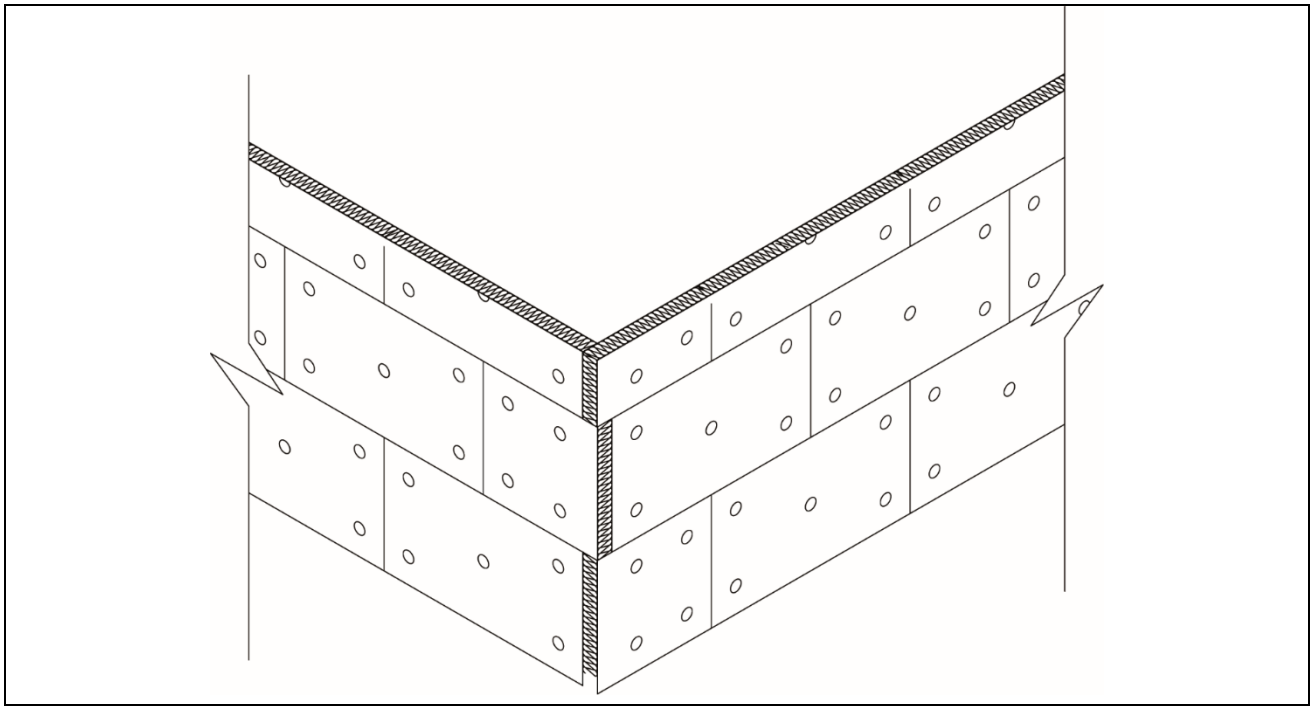


Figure 3 Slab layout on the wall and at corners of the building



Movement joints

A.2.13 Generally, movement joints in the substrate must be continued through the system by cutting through the insulation slabs to coincide with the building's movement joint. The weber expansion joint profile is fully bedded in mortar on the insulation slab surface (see Figure 4). For systems incorporating weberend PTC topcoat, unbroken panels of render must be restricted to areas between 45 and 50 m^2, with an aspect ratio no greater than 4:1. Systems incorporating only weberend LAC or weberend LAC rapid and a synthetic finish do not have area limitations.

Application of the basecoat and reinforcing mesh

A.2.14 The basecoats are prepared (20 kg of weberend LAC, weberend LAC rapid or weberwall brick external adhesive to 5 litres of potable water).

A.2.15 To provide the necessary reinforcement, stress patches of reinforcing mesh (approximate size 250 by 250 mm) are applied with basecoat, diagonally over the insulation slabs at the corners of openings so that they extend equally either side of the corner (see Figure 5). Angle beads and stop beads are positioned in accordance with the Certificate holder's installation instructions.

A.2.16 Installation procedures specific to the 30- and 60-year durability systems are described in sections A.2.17 to A.2.21 and A.2.23 to A.2.27, respectively.

Application of 30-year durability system — mechanical fixings through the insulation slabs

A.2.17 Details of mechanical fixings (including their layout) are specified in the project-specific design requirements based on pull-out test results and wind-loading data. Holes are drilled through the insulation slab into the substrate wall and mechanical fixings (minimum of 7 per square metre) are inserted and tapped or screwed firmly into place, following the fixing pattern shown in Figure 6. If required, extra fixings can be applied at the edge zones to satisfy the wind load conditions. Installation of the fixings must commence whilst the supplementary adhesive (if required) is wet, unless using a dry fix system. Care must be taken to ensure that the fixings are not overdriven.

A.2.18 The basecoat is applied in two passes. The first layer of basecoat is applied progressively by trowel or spray machine to the surface of the dry insulation to achieve an approximate thickness of 3 mm.

A.2.19 Reinforcing mesh is applied and immediately embedded into the basecoat using the trowel, and overlapped at all mesh joints by at least 100 mm. For systems other than the weberwall brick system, a further layer of basecoat is applied to give an overall minimum thickness of 6 mm, and the surface ruled level. For synthetic finish applications, the basecoat must be finished with a sponge float as the basecoat starts to "take-up", working in a figure-of-eight motion. Where a topcoat (weberend PTC) is to be applied, the surface of the basecoat must be comb scratched. The basecoat must be allowed to dry/cure (minimum 24 hours for weberend LAC rapid basecoat and a minimum of 3 days for weberend LAC basecoat) before the application of the primer/finishing coat (when using weberend LAC rapid, a primer is not required at this stage).

A.2.20 For the weberwall brick system, a further 3 mm thick layer of weberwall brick external adhesive is applied over the wet first layer of basecoat to give an overall minimum thickness of 6 mm, using a 10 mm square notched trowel to comb through the adhesive to prepare the wet adhesive for application of weberwall brick.

A.2.21 It is important that the reinforcing mesh is free of wrinkles and completely covered, and that the required minimum thickness of basecoat is achieved.

A.2.22 A 30-year durability may also be achieved with a system fixed through the reinforced basecoat, provided that the installation procedures for 60-year durability systems described in sections A.2.23 to A.2.27 are followed, but the use of adhesive is optional and there is no requirement to use stainless steel components.

Figure 4 Example vertical and horizontal movement joints

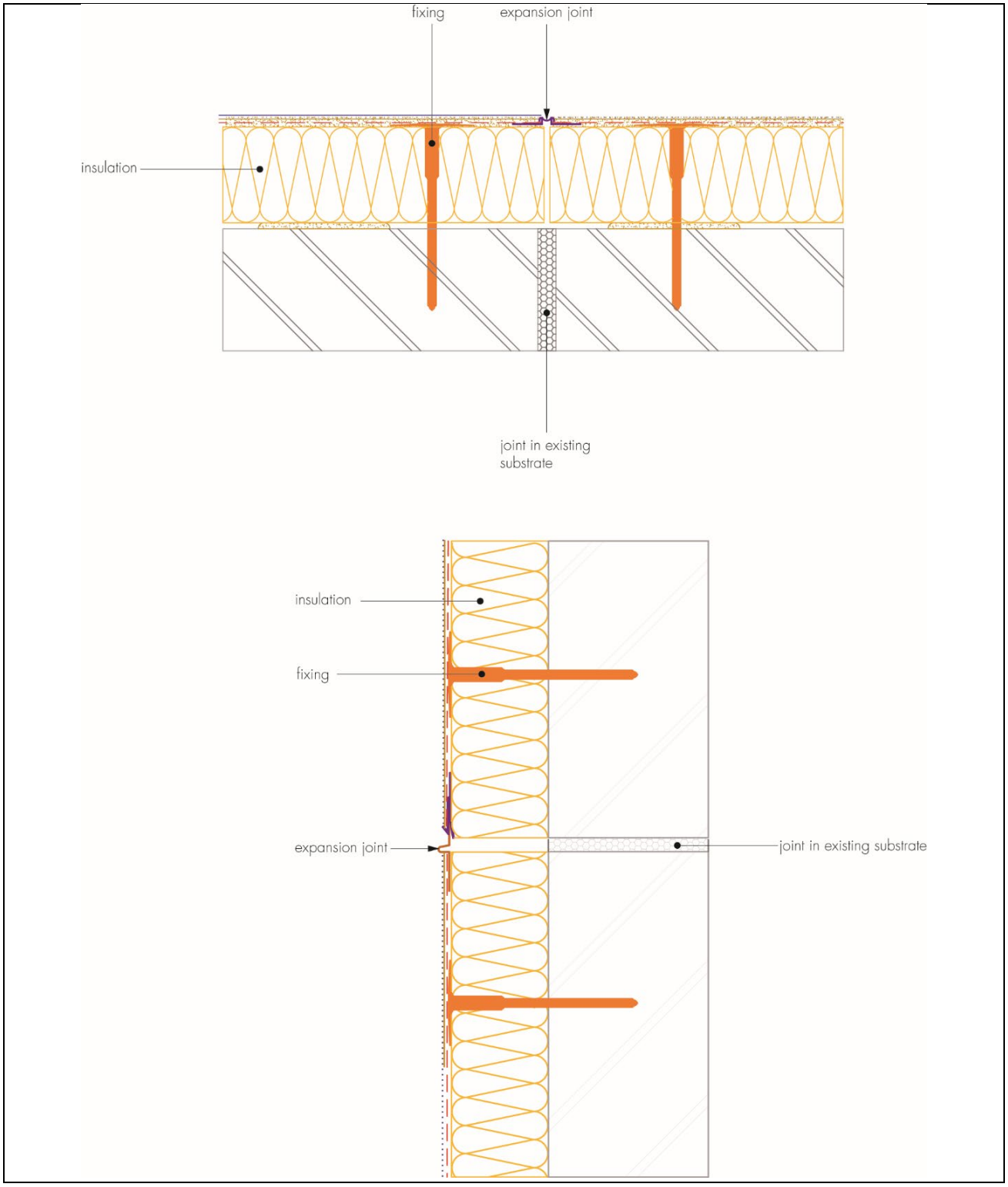


Figure 5 Additional reinforcement at openings

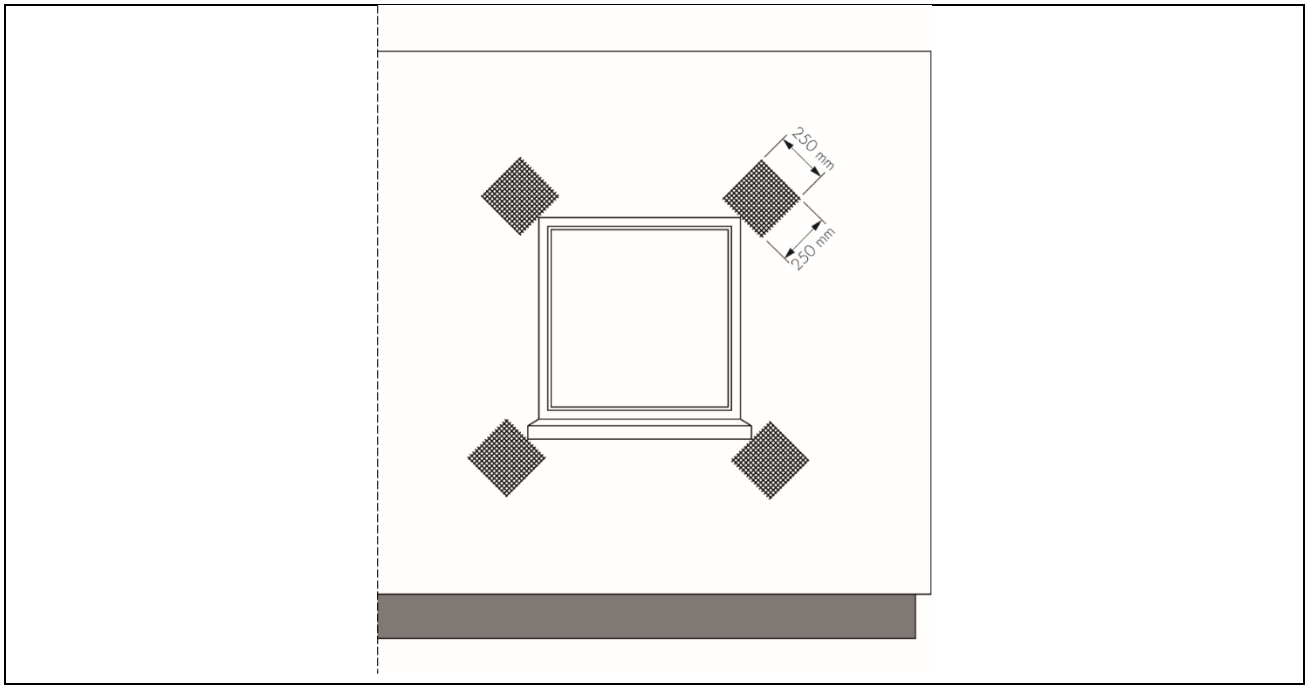
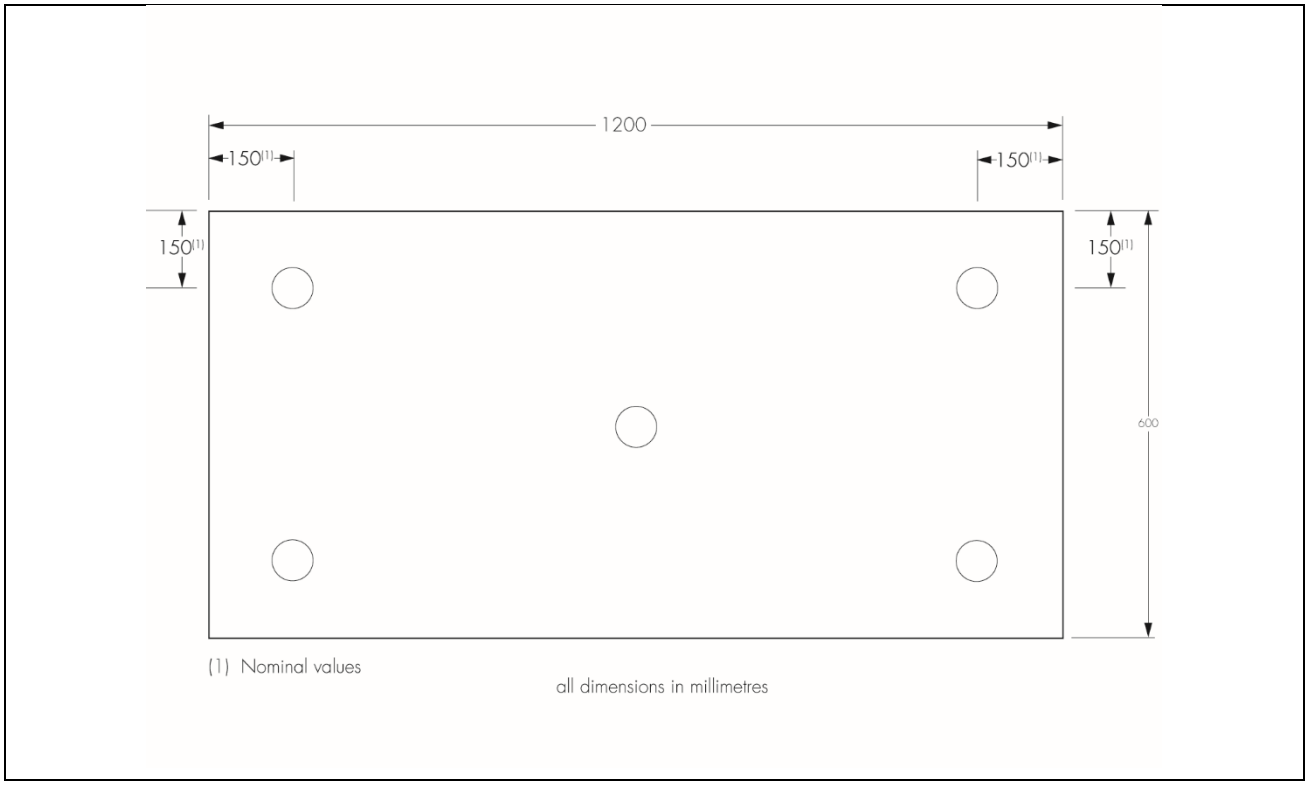


Figure 6 Typical fixing pattern – 30-years' durability



Application of 60- year durability system — mechanical fixings through the reinforcing mesh

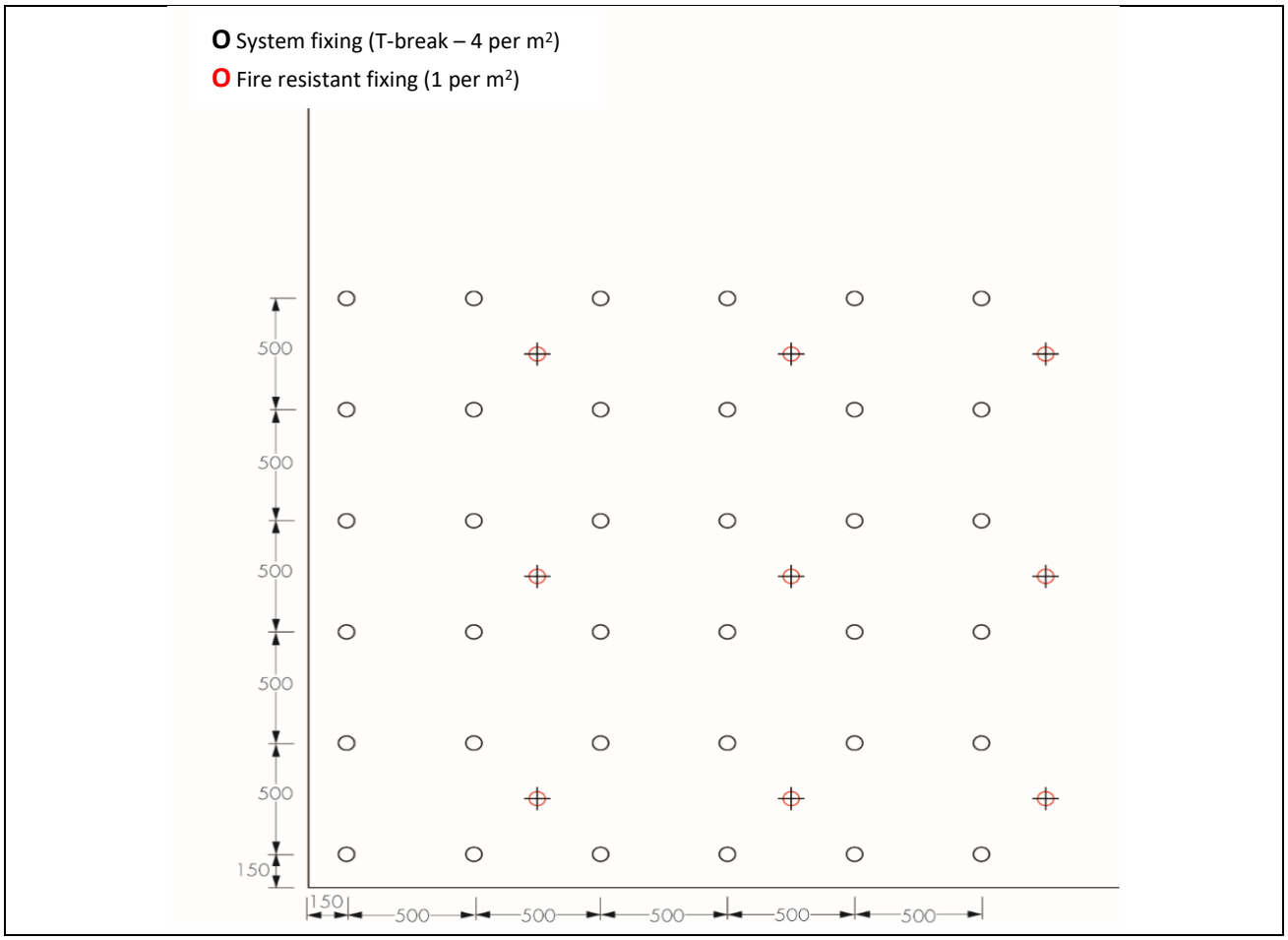
A.2.23 While the supplementary adhesive is still wet, two mechanical fixings are applied though each insulation slab to secure the slabs during installation of the system. The basecoat is applied no earlier than 24 hours after the application of adhesive. The first layer of basecoat is applied progressively to the surface of the insulation to a thickness of approximately 3 mm.

A.2.24 Reinforcing mesh is applied and immediately embedded into the basecoat using the trowel, and overlapped at all mesh joints by not less than 100 mm.

A.2.25 It is important that the reinforcing mesh is free of wrinkles and completely covered, and that the required minimum thickness of basecoat is achieved.

A.2.26 While the basecoat is still wet, holes are drilled through the reinforcing mesh and insulation slabs into the substrate wall to the required depth at the specified frequency and pattern, but not less than four fixings per square metre (see Figure 7). The mechanical fixings are inserted and tapped or screwed firmly into place, securing the mesh and insulation slabs to the substrate wall, providing an overall minimum fixing frequency of 7 fixings per m^2. The fixings are slightly overdriven into the substrate wall in order to allow the fixing plate to partially penetrate through onto the face of the insulation slabs.

Figure 7 60-years' durability fixing pattern



A.2.27 While the basecoat is still wet, 200 by 200 mm stress patches of reinforcing mesh are applied over the head of the fixings and fully embedded within the basecoat. For systems other than the weberwall brick system, a further layer of basecoat is then applied to maintain an approximate thickness of 6 mm when measured from the top of the fixing head. For synthetic finish applications, the basecoat must be finished with a sponge float as the basecoat starts to 'take up', working in a figure-of-eight motion. Where a topcoat (weberend PTC) is to be applied, the surface of the basecoat must be comb scratched. The basecoat must be allowed to dry/cure (minimum 24 h for weberend LAC rapid basecoat and a minimum of 3 days for weberend LAC basecoat) before the application of the primer/finishing coat (weberend LAC Rapid does not require a primer). For the weberwall brick system, a 3 mm thick layer of weberwall brick external adhesive is applied over the wet first layer of basecoat to give an overall minimum thickness of 6 mm, using a 10 mm square notched trowel to comb through the adhesive to prepare the wet adhesive for application of weberwall brick.

Application of finishing coats

A.2.28 When applicable, the primer coat (weber PR310) is applied by brush, roller or spray and allowed to dry prior to the application of the render finish (see Tables 1 and 2).

A.2.29 Prior to applying the finishes, the relevant seals are positioned and installed at all openings (eg windows and doors), overhanging eaves, gas and electric meter boxes, wall vents or where the render abuts any other building material or surface, unless a proprietary sealing bead has been installed prior to application of the basecoat render.

A.2.30 The finishes are then applied, using the methods described for the specific finishing coats.

weberend PTC

A.2.31 When the weberplast TF, webersil TF or webermineral TF finish is applied over the weberend PTC topcoat, the basecoat (weberend LAC and weberend LAC Rapid) is comb scratched. The weberend PTC (topcoat) is prepared and mixed to a smooth, workable consistency then trowel-applied onto the basecoat to a thickness of approximately 6 to 8 mm. The topcoat must be allowed to dry/cure (a minimum of 3 days) before the application of the primer/finishing coat.

weberplast TF and webersil TF

A.2.32 Where used, weberplast TF and webersil TF must each be mixed thoroughly before application. The chosen finish is applied with a steel trowel to a uniform thickness, and immediately worked with a thin plastic or wooden float to produce the desired texture.

webermineral TF

A.2.33 The webermineral TF is prepared and mixed to a smooth, workable consistency then trowel-applied onto the basecoat to a thickness of approximately 1.5 mm.

Dry-dash aggregate finish

A.2.34 Where a dry-dash finish is required, the basecoat is comb scratched. The weberend PTC (topcoat) is prepared and mixed to a smooth, workable consistency then trowel-applied onto the basecoat to a thickness of approximately 6 to 8 mm.

A.2.35 While the render is still soft, the dry-dash finish is applied with a dashing trowel. Narrow widths of weberend PTC are used around window and door openings and in reveals, and may be smooth-float-finished and painted. On completion, the surface must be checked to ensure an even coverage has been achieved.

weberwall brick slips with weberwall brick pointing mortar

A.2.36 The weberwall brick is immediately pressed into the wet adhesive, ensuring the mesh is fully immersed in adhesive. weberwall brick pointing mortar is then applied in joints once the adhesive has set in accordance with the Certificate holder's instructions. Excess mortar is removed with a dry brush.

General guidelines

A.2.37 Care must be taken in the detailing of the system around features such as openings, projections and at eaves (see Figures 8 to 11) to ensure adequate protection against water ingress and to limit the risk of water penetrating the system.

A.2.38 The system must be allowed to dry thoroughly before painting any of the surrounding features.

A.2.39 At the tops of walls, the system must be protected by a coping, adequate overhang or adequately sealed, purpose-made flashing.

Figure 8 Typical detail – eaves

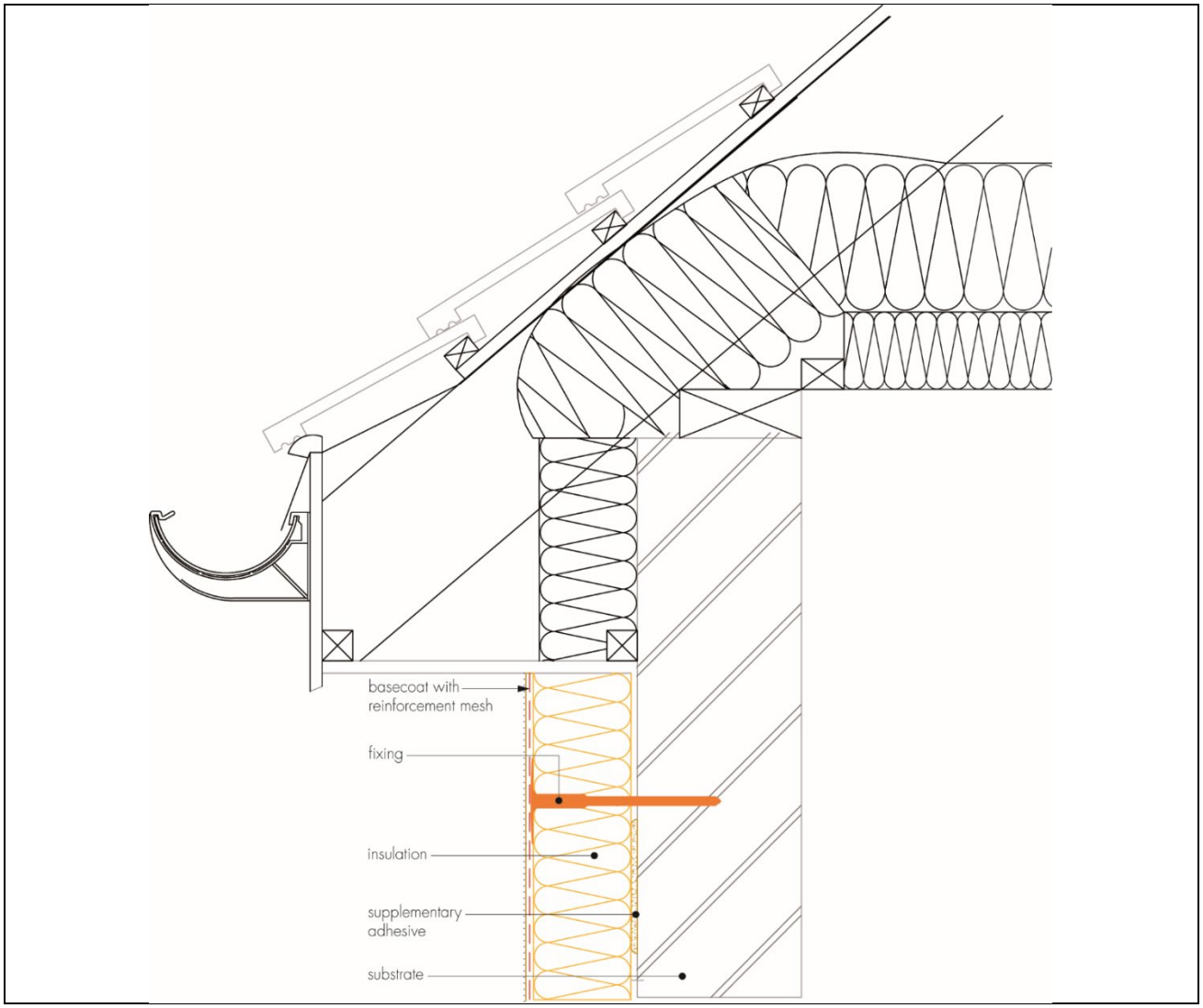


Figure 9 Insulated window reveal details

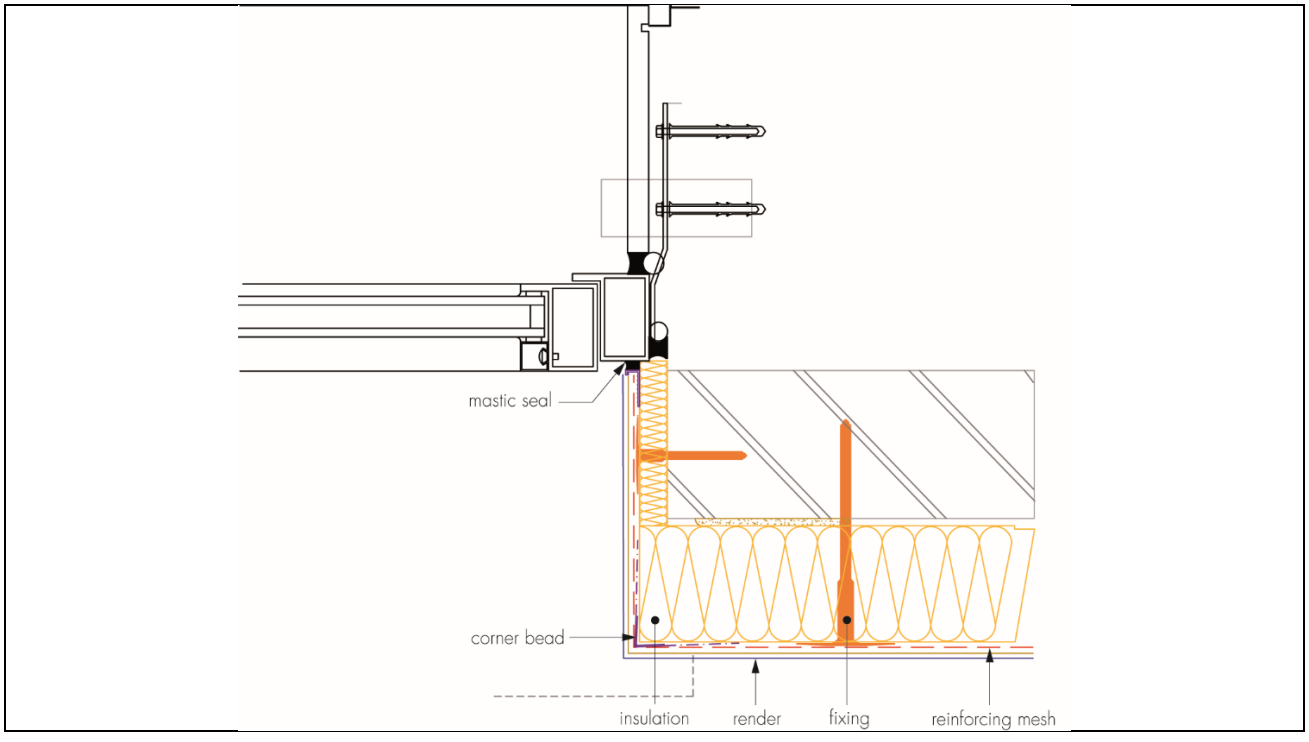


Figure 10 Typical window head detail

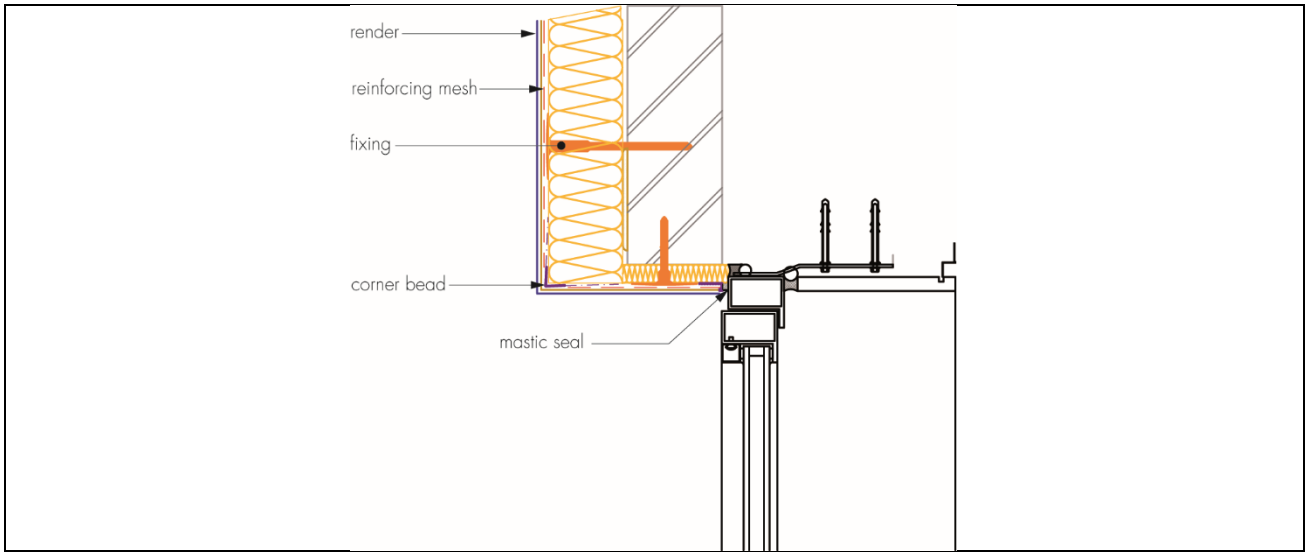
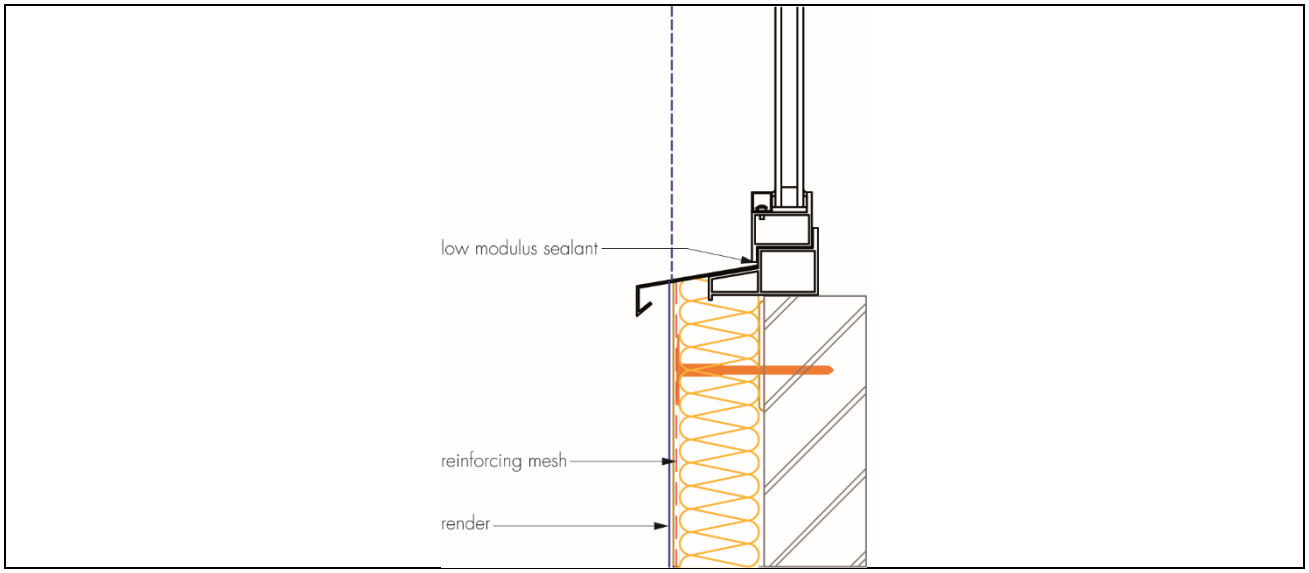


Figure 11 Window sill details



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