

## EWI Pro Insulation Systems Ltd

Unit 1&2 King Georges Trading Estate  
Davis Road  
Chessington  
KT9 1TT

Tel: 0800 1337072 Fax: 0203 637 3381

e-mail: [info@ewipro.com](mailto:info@ewipro.com)

website: [www.ewipro.com](http://www.ewipro.com)



### Agrément Certificate

22/6324

Product Sheet 1

## EWI PRO RENDER SYSTEMS

### EWI PRO RENDER SYSTEMS APPLIED TO KNAUF AQUAPANEL EXTERIOR CEMENT BOARD

This Agrément Certificate Product Sheet<sup>(1)</sup> relates to EWI Pro Render Systems applied to Knauf Aquapanel Exterior Cement Board, comprising thin coat external renders with a range of finishes, for use as ventilated and drained exterior wall cladding systems on timber- and steel-frame 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 systems can adequately resist the wind loads and impact damage likely to be met in service (see section 6).

**Behaviour in relation to fire** — the systems have an A2-s1, d0 reaction to fire classification depending on the finish coat chosen and may be restricted (see section 8).

**Weather resistance** — the systems tend to shed water and will considerably reduce the amount of water penetrating through the substrate (see section 9).

**Durability** — under normal service conditions, the systems will have a service life in excess of 30 years (see section 12).

The BBA has awarded this Certificate to the company named above for the systems described herein. These systems have been assessed by the BBA as being fit for their intended use provided they are installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

Date of First issue: 2 September 2022



Hardy Giesler  
Chief Executive Officer

*The BBA is a UKAS accredited certification body – Number 113.*

*The schedule of the current scope of accreditation for product certification is available in pdf format via the UKAS link on the BBA website at [www.bbacerts.co.uk](http://www.bbacerts.co.uk)  
Readers MUST check the validity and latest issue number of this Agrément Certificate by either referring to the BBA website or contacting the BBA directly.*

*Any photographs are for illustrative purposes only, do not constitute advice and should not be relied upon.*

#### British Board of Agrément

1<sup>st</sup> Floor, Building 3  
Hatters Lane, Croxley Park  
Watford WD18 8YG

tel: 01923 665300  
[clientservices@bbacerts.co.uk](mailto:clientservices@bbacerts.co.uk)  
[www.bbacerts.co.uk](http://www.bbacerts.co.uk)

©2022

## Regulations

In the opinion of the BBA, EWI Pro Render Systems applied to Knauf Aquapanel Exterior Cement Board, 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)

<b>Requirement:</b>	<b>A1(1)</b>	<b>Loading</b>
Comment:		The systems are acceptable. See section 6 of this Certificate.
<b>Requirement:</b>	<b>B3(4)</b>	<b>Internal fire spread - Structure</b>
Comment:		The systems can contribute to satisfying this Requirement. See section 8.1 of this Certificate.
<b>Requirement:</b>	<b>B4(1)</b>	<b>External fire spread</b>
Comment:		The systems may be restricted by this Requirement. See sections 8.2 to 8.4 of this Certificate.
<b>Requirement:</b>	<b>C2(b)(c)</b>	<b>Resistance to moisture</b>
Comment:		Walls rendered with the systems can satisfy this Requirement. See section 9.1 of this Certificate.
<b>Requirement:</b>	<b>7(1)</b>	<b>Materials and workmanship</b>
Comment:		The systems are acceptable. See sections 12.1 and 12.2 and the <i>Installation</i> part of this Certificate.
<b>Requirement:</b>	<b>7(2)</b>	<b>Materials and workmanship</b>
Comment:		The systems may be restricted by this Regulation. See sections 8.1 to 8.4 of this Certificate.



### The Building (Scotland) Regulations 2004 (as amended)

<b>Regulation:</b>	<b>8(1)(2)</b>	<b>Durability, workmanship and fitness of materials</b>
Comment:		Use of the systems satisfy the requirements of this Regulation. See sections 11, 12.1 and 12.2 and the <i>Installation</i> part of this Certificate.
<b>Regulation:</b>	<b>8(3)</b>	<b>Durability, workmanship and fitness of materials</b>
Comment:		The systems may be restricted by this Regulation. See sections 8.1 to 8.4 of this Certificate.
<b>Regulation:</b>	<b>9</b>	<b>Building standards applicable to construction</b>
Standard:	1.1(a)(b)	Structure
Comment:		The systems are acceptable, with reference to clause 1.1.1 <sup>(1)(2)</sup> of this Standard. See section 6 of this Certificate.
Standard:	2.4	Cavities
Comment:		The systems can contribute to satisfying this Standard, with reference to clause 2.4.2 <sup>(1)(2)</sup> . See section 8.1 of this Certificate.
Standard:	2.6	Spread to neighbouring buildings
Standard:	2.7	Spread on external walls
Comment:		The systems may be restricted by these Standards, with reference to clauses 2.6.4 <sup>(1)(2)</sup> , 2.6.5 <sup>(1)</sup> , 2.6.6 <sup>(2)</sup> and 2.7.1 <sup>(1)(2)</sup> . See sections 8.1 to 8.4 of this Certificate.

Standard: Comment:	3.10	Precipitation Walls rendered with the systems can satisfy the requirements of this Standard, with reference to clauses 3.10.1 <sup>(1)(2)</sup> , 3.10.2 <sup>(1)(2)</sup> , 3.10.3 <sup>(1)(2)</sup> and 3.10.5 <sup>(1)(2)</sup> . See section 9.1 of this Certificate.
Standard: Comment:	7.1 (a)	Statement of sustainability The systems 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: Comment:	12	<b>Building standards applicable to conversions</b> Comments in relation to the systems under Regulation 9, Standards 1 to 6 also apply to this Regulation, with reference to clause 0.12.1 <sup>(1)(2)</sup> and Schedule 6 <sup>(1)(2)</sup> .
<small>(1) Technical Handbook (Domestic). (2) Technical Handbook (Non-Domestic).</small>		



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

Regulation: Comment:	<b>23(a)(i) (b)(i)</b>	<b>Fitness of materials and workmanship</b> The systems are acceptable. See sections 12.1 and 12.2 and the <i>Installation</i> part of this Certificate.
Regulation: Comment:	<b>23(2)</b>	<b>Fitness of materials and workmanship</b> The systems may be restricted by this Regulation. See sections 8.1 to 8.4 of this Certificate.
Regulation: Comment:	<b>28(b)</b>	<b>Resistance to moisture and weather</b> Walls rendered with the systems can satisfy this Regulation. See section 9.1 of this Certificate.
Regulation: Comment:	<b>30</b>	<b>Stability</b> The systems are acceptable as set out in section 6 of this Certificate.
Regulation: Comment:	<b>35(4)</b>	<b>Internal fire spread – Structure</b> The system can contribute to satisfying this Regulation. See section 8.1 of this Certificate.
Regulation: Comment:	<b>36(a)</b>	<b>External fire spread</b> The systems are unrestricted by this Regulation. See sections 8.1 to 8.4 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: *1 Description (1.2), 3 Delivery and site handling (3.2), 11 Maintenance and Procedure (15.4)* of this Certificate.

## Additional Information

### NHBC Standards 2022

In the opinion of the BBA, EWI Pro Render Systems applied to Knauf Aquapanel Exterior Cement Board, 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*

framed walls, 6.9 Curtain walling and cladding, 6.10 Light steel framed walls and floors, 6.11 Render, Clause 6.11.8 Weather Resistance, and 9.1 A consistent approach to finishes.

## CE marking

The Certificate holder has taken the responsibility of CE marking EWI-075 Silicone Render and EWI-225 Premium Basecoat, in accordance with harmonised European Standard BS EN 15824 : 2017. The Certificate holder has taken the responsibility of CE marking EWI-076 Premium Bio Silicone Render, in accordance with ETA 15/0576 : 2018.

## Technical Specification

### 1 Description

1.1 EWI Pro Render Systems applied to Knauf Aquapanel Exterior Cement Board are thin coat renders for use as ventilated and drained exterior wall panel systems on timber- and steel-frame buildings. The systems comprise:

- EWI-225 Premium Basecoat — white Portland cement, mineral fillers, synthetic fibres, polymers and modifying admixtures
- EWI-66645 Fibreglass Mesh — a 1 m wide, woven glass fibre reinforcing mesh with a polymer coating, with a nominal weight of 160 g·m<sup>-2</sup>
- EWI-333 Topcoat Primer — a water-based primer, containing silicone resin, quartz aggregate, pigments and enhancers
- EWI-076 Premium Bio Silicone Render — a water dispersion of silicone polymer, mineral fillers, refining agents and pigments. Available in 1.0, 1.5, 2.0 and 3.0 mm grain sizes
- EWI-075 Silicone Render — silicone emulsions, nano-particle silicone polymer dispersion, fillers, modifying admixtures and pigments. Available in 1.0, 1.5, 2.0 and 3.0 mm grain sizes
- Knauf Aquapanel Exterior Cement Board<sup>(1)</sup> — comprising Portland cement and an aggregate core reinforced with a polymer-coated glass fibre mesh in the back and front surfaces
- Aquapanel Exterior Maxi Screws — corrosion-resistant coated screws. SN25 are for use in steel up to 0.7 mm thick with a single layer of board, SN39 are for use in steel up to 0.7 mm thick with a double layer of board, or in timber-frame construction with a single layer of board, and SB25 are for use in steel from 0.8 mm thick to 2 mm thick with a single layer of board Knauf Aquapanel Fixings
- Aquapanel Rustproof Screws — stainless steel screws, SN 40 (length 40 mm, diameter 4.0 mm), for use in timber battens for a single layer of boards.

(1) The board is supplied by Knauf UK GmbH and is the subject of BBA Certificate 09/4633.

1.2 Knauf Aquapanel Exterior Cement Board has the characteristics of:

Width (mm)	900 <sup>(1)</sup> , 1200 <sup>(2)</sup>
Thickness (mm)	12.5
Approximate mass per unit area (kg·m <sup>-2</sup> )	14.3
Approximate dry density (kg·m <sup>-3</sup> )	1150
Modulus of rupture (MPa)	9.6.

(1) Available in lengths of 1200, 2000, 2400, 2500 and 2800 mm.

(2) Available in lengths of 900, 2000, 2400, 2500, 2800 and 3000 mm.

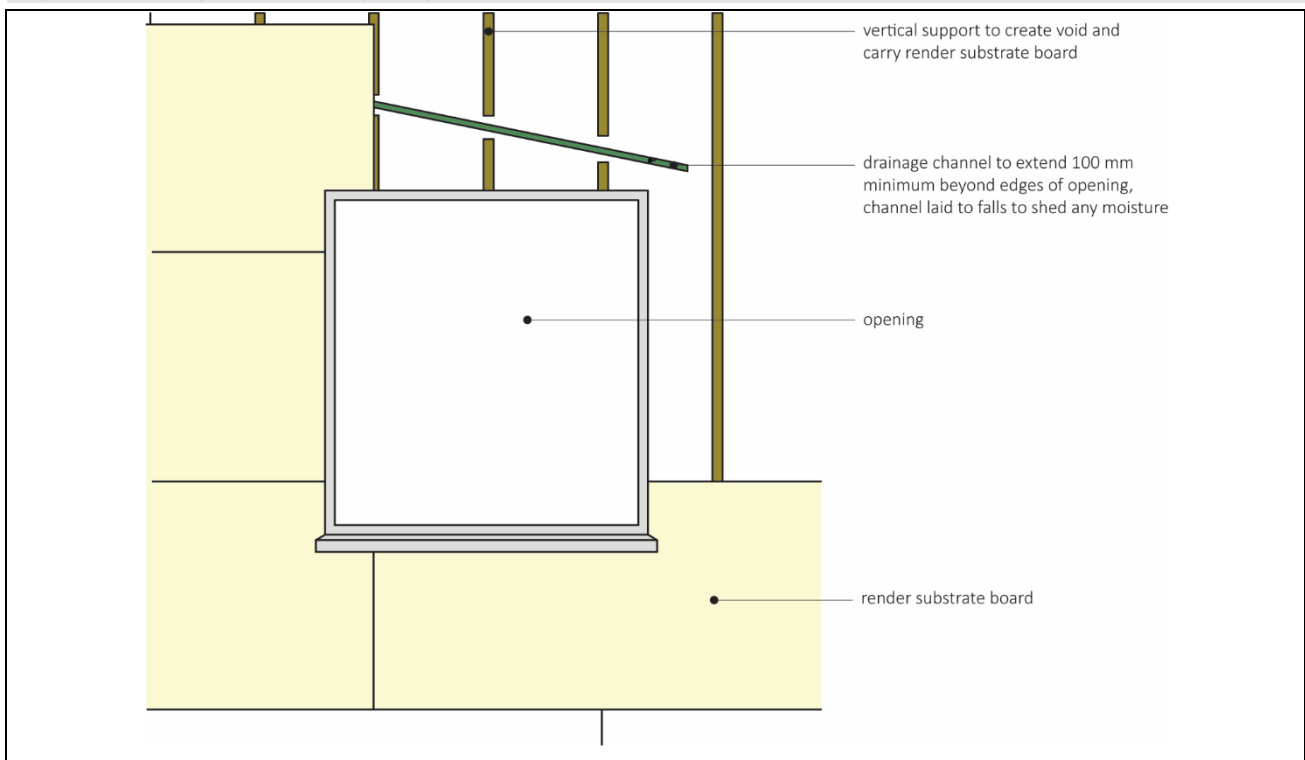
1.3 The Certificate holder recommends the following ancillary items for use with the systems, but these materials have not been assessed by the BBA and are outside the scope of this Certificate:

- mesh wing corner, base, stop, corner, horizontal drip and movement beads
- timber sub-frame — for example, minimum 40 mm wide timber treated battens
- metal sub-frame — up to 2 mm thick steel
- supporting rails
- EWI Pro Exterior Joint Filler Grey — a grey, cement-bound filler for application to gaps between boards and for bonding tape or reinforcing tape to board
- EWI Pro Exterior Tape (50 m by 100 mm) — glass fibre, alkali-resistant tape for reinforcing exterior joints by

embedding in Aquapanel Exterior Joint Filler Grey. For use with rendered and alternative finishes

- EWI Pro Exterior Reinforcing Tape (50 m by 200 mm) — glass fibre, alkali-resistant tape for reinforcing exterior joints by embedding in the Aquapanel Exterior Joint Filler Grey. For use when the basecoat is left unfinished or painted only.

Figure 1 Drainage channel at opening



## 2 Manufacture

2.1 The render components are manufactured in a batch-blending process. The system components are manufactured by the Certificate holder or bought in from suppliers, to an agreed specification. The board is manufactured from a cement mixture, lightweight core material and water, and is reinforced on both sides with an alkali-resistant glass fibre fabric.

2.2 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.

## 3 Delivery and site handling

3.1 The render components are delivered on pallets in moisture-resistant bags/containers and plastic pails. The boards are delivered to site shrink-wrapped in polythene packs.

3.2 All other components are delivered to site in the quantities and packages as listed in Table 1. Each package carries the manufacturer's and product's identification, batch number, and the BBA logo incorporating the number of this Certificate.

*Table 1 Component supply details*

Component	Quantity and package
EWI-225 Premium Basecoat	25 kg bags
EWI-076 Premium Bio Silicone Render	25 kg containers
EWI-075 Silicone Render	25 kg containers

3.3 EWI-66645 Fibreglass Mesh is 1 m wide and supplied in rolls of 50 m length.

3.4 Powder mortars should be stored in dry conditions, off the ground and protected from frost at all times.

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

## Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on EWI Pro Render Systems applied to Knauf Aquapanel Exterior Cement Board.

## Design Considerations

### 4 Use

4.1 EWI Pro Render Systems applied to Knauf Aquapanel Exterior Cement Board are satisfactory for use as ventilated and drained exterior wall cladding systems on timber- and steel-frame buildings.

4.2 New buildings subject to national Building Regulations should be constructed in accordance with the relevant recommendations of:

- BS EN 13914-1 : 2016
- BS 8000-0 : 2014
- BS EN 1995-1-2 : 2004 and its UK National Annex
- BS EN 338 : 2016
- BS EN 14081-1 : 2016
- BS EN 1993-1-1 : 2005 and its UK National Annex.

4.3 Timber stud walls and timber support work must be structurally sound, designed and constructed in accordance with BS EN 1995-1-1 : 2004 and its UK National Annex, and preservative treated in accordance with BS EN 351-1 : 2007 and BS 8417 : 2011.

4.4 Galvanized steel framework, light steel framed backing walls and steel sub-frame support systems must be structurally sound, designed and constructed in accordance with BS EN 1993-1-3 : 2006 and its UK National Annex.

4.5 It is essential that all new walls are designed and constructed to prevent moisture penetration and the formation of condensation. A breather membrane should be provided to the backing wall.

4.6 The design should include:

- a ventilated and drained cavity in accordance with BS 5250 : 2021, to ensure that the timber-frame structure is protected from moisture from wind-driven rain in the event of unexpected failure of the cladding envelope, and the inclusion of insect guards to all ventilation openings
- effective detailing around all openings to ensure weathertightness of the structure
- an effective breather membrane on the internal face of the cavity to ensure that the frame structure is protected.

4.7 Ventilation and drainage must be provided behind the cladding panels. The clear cavity behind the back of the panel and substrate wall or thermal insulation must be at least 25 mm wide and ensure that a minimum ventilation area of 5000 mm<sup>2</sup> per metre run is provided at the building base point and at the roof edge. All ventilation openings around the periphery of a cladding system incorporating the panels should be suitably protected with a mesh or a perforated sheet or similar, to prevent the ingress of birds, vermin and insects.

## 5 Practicability of installation

The systems should be installed only by approved contractors who have successfully undergone training and registration by the Certificate holder (see section 13).

## 6 Strength and stability



6.1 The systems have adequate strength and can be incorporated in an external cladding system suitably designed to resist the wind loads normally experienced in the UK.

6.2 A suitably competent and experienced individual must check the design and installation of the systems.

6.3 The designer must ensure that:

- the sub-frame and the support rails should be designed to limit mid-span deflections to  $L/200$ , and cantilever deflections to  $L/150$ . Board mid-span deflections should be limited to  $L/500$ . Where  $L$  is the clear span
- the systems attachment to the substrate has adequate fixing pull-out capacity for the calculated loads. An appropriate number of site-specific pull-out tests is conducted on the substrate to determine the minimum pull-out resistance to failure of the fixings. The characteristic pull-out resistance should be determined in accordance with the guidance given in EOTA TR 055 : 2018, using 50% of the mean value of the five smallest measured values at the ultimate load
- the fixings attaching the board to the subframe have adequate pull-out strength from the subframe used
- the maximum centres between the studs supporting the wall is 600 mm
- the spacing of the fixings attaching the board to the sub-frame is to the manufacturer's instructions. This is typically into the batten at 600 mm centre to centre horizontally and 250 mm centre to centre vertically
- the battens are treated timber minimum 40 mm wide with a thickness to suit the required cavity width. Cavity may be formed by timber battens or steel Z sections.

6.4 The supporting wall must be able to take the full wind actions as well as any racking loads. The systems cannot be assumed to contribute in this respect.

6.5 Design wind actions must be calculated in accordance with BS EN 1991-1-4 : 2005 and its UK National Annex. Consideration should be given to higher pressure coefficients applicable to corners of buildings as recommended in this Standard. In accordance with BS EN 1990 : 2002, it is recommended that a partial load factor of 1.5 is used to determine the design wind load to be resisted by the systems.

6.6 The maximum allowable pull-through values (kN) for the stainless steel screws are:

centre	0.42
edge (25 mm min)	0.19
corner (25 mm min)	0.14.

6.7 For design purposes, the board may be assumed to have the following mechanical properties:

allowable flexural stress	$2.4 \text{ N}\cdot\text{mm}^{-2}$
flexural modulus	$4000 \text{ N}\cdot\text{mm}^{-2}$ .

6.8 The board, when incorporated in a cladding system comprising support members (eg timber battens, see Figure 1) at 400 mm centres, and specified screws at maximum 250 mm centres with a minimum embedment of 25 mm in structural grade timber and a minimum of 10 mm thread through the back of the steel flange, should adequately resist all wind pressures likely to be experienced in the UK. For other member spacing, fixing arrangements and design wind pressures, the structural adequacy of the board should be checked by a suitably competent and experienced individual.



## Impact resistance

6.9 The systems have adequate resistance to impact and cracking in all normal circumstances. Where the systems may be exposed to severe impact (eg on some industrial sites), or are to be applied over existing background cracks, precautions may be required to reduce the risk of damage.

6.10 It is essential that the surface of the boards to be covered is clean and has a sound mechanical key to ensure a satisfactory bond between the backing board and the render.

## 7 Water vapour resistance

The equivalent air layer thickness (sd) (for the render systems) are shown in Table 4.

Table 4 Equivalent air layer thickness

	(sd) (m)
EWI Pro Premium Basecoat EWI-225, EWI Pro Premium Bio Silicone Render EWI-076	0.27
EWI Pro Premium Basecoat EWI-225, EWI Pro Silicone Render EWI-075	0.29

## 8 Behaviour in relation to fire



8.1 Knauf Aquapanel Exterior Cement Board has a reaction to fire classification of A1 in accordance with BS EN 13501-1 : 2018.

8.2 The render systems with a topcoat weight per unit area of  $2.4 \text{ kg}\cdot\text{m}^{-2}$ , primer weight per unit area of  $0.2 - 0.3 \text{ kg}\cdot\text{m}^{-2}$ , basecoat weight per unit area of  $7.95 - 9.54 \text{ kg}\cdot\text{m}^{-2}$ , applied over Knauf Aquapanel Exterior Cement Board have a fire classification<sup>(1)</sup> of A2-s1, d0 in accordance with BS EN 13501-1 : 2018.

(1) Test report WF 512130, issued by Warringtonfire. Copies of the reports are available from the Certificate holder upon request.

8.3 The render system described in section 8.2 is not subject to any restriction on building height or proximity to boundaries.

8.4 The classification and permissible areas of use of other specifications should be established by reference to the documents supporting the national Building Regulations.

8.5 Designers should refer to the relevant national Building Regulations and guidance for detailed conditions of use, particularly in respect of requirements for substrate fire performance, cavity barriers and combustibility limitations for other materials and components used in the overall wall construction, for example, thermal insulation.

8.6 For resistance to fire, the performance of a wall incorporating the systems can only be determined by tests from a suitably accredited laboratory and is outside the scope of this Certificate.

## 9 Weather resistance



9.1 The systems are suitable for use in exposure zones up to and including the 'severe' wind-driven rain index category in accordance with PD 6697 : 2019.

9.2 Knauf Aquapanel Exterior Cement Board to which the render is applied must be designed and constructed in relation to local exposure conditions to minimise the incidence of rain penetration.

9.3 The renders will tend to shed water and will considerably reduce the amount of water absorbed during rain.



## 10 Proximity of flues

Detailed guidance can be found in the documents supporting the national Building Regulations for the provisions that are applicable when the systems are installed in close proximity to certain flue pipes and/or heat-producing appliances.

## 11 Maintenance



11.1 Regular maintenance checks should be carried out on architectural details and on external plumbing and fittings, to ensure that they are functioning correctly and to prevent water damage to the render.

11.2 Damaged render must be repaired as soon as is practicable (see section 14).

## 12 Durability



12.1 The durability and service life of the systems will depend upon the building location, the immediate environment and the intended use of the building.

12.2 Under normal service conditions, provided regular maintenance is carried out, as described in section 11 and in accordance with the Certificate holder's instructions, the systems will have a service life in excess of 30 years.

12.3 The systems may become discoloured with time, the rate depending on the local environment. Appearance can normally be restored by cleaning with water and mild detergent. In industrial atmospheres light colours should be avoided.

## Installation

## 13 Approved contractors

Application of the systems, within the context of this Certificate, must be carried out by contractors recommended or recognised by the Certificate holder. Such a contractor is a company:

- which operate in the specialist field of activity and have been audited
- which have achieved required installation standards consistently to comply with the Certificate holder's application procedure
- 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.

## 14 General

14.1 Application of EWI Pro Render Systems applied to Knauf Aquapanel Exterior Cement Board should be carried out strictly in accordance with the Certificate holder's instructions and specifications, the relevant recommendations of BS EN 13914-1 : 2016 and this Certificate.

14.2 Advice concerning site survey and preliminary work is available to the designer or rendering contractor from the Certificate holder.

14.3 A pre-application survey of the property must be carried out to determine the suitability of the substrate to receive the systems, and whether repairs to the building structure are necessary before application. A specification is prepared by the designer or rendering contractor for each elevation indicating:

- preliminary treatment of the background
- position of beads
- detailing around windows, doors and at eaves
- areas where flexible sealants must be used.

14.4 The sub-frame to which the cladding is fixed must be structurally sound and constructed in accordance with the requirements of the relevant national Building Regulations and Standards (see sections 4.6 and 4.7).

14.5 The systems are capable of transmitting their self-weight and wind load to the structure. The adequacy of fixing of the sub-frame to the structural frame for specific installations is outside the scope of this Certificate and must be verified by a suitably competent and experienced individual. Particular care is required around window and door openings to ensure that the structure is capable of sustaining the additional weight of Knauf Aquapanel Exterior Cement Board.

14.6 Horizontal movement joints 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 should be made to the Structural Engineer's details for deflection at floor level and movement joints in the substructure.

14.7 Vertical movement joints should be provided at the required 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.

14.8 The breather membrane must be installed and properly overlapped in accordance with the instructions of the membrane manufacturer and the building designer.

14.9 All window and door openings are sealed strictly in accordance with the Certificate holder's installation instructions to ensure that they are weathertight before application of the systems.

14.10 The renders should not be applied in rain or mist, at temperatures above 25°C or below 5°C, or if exposure to frost is likely to occur during curing.

14.11 In sunny weather, work should commence on the shady side of the building, following the sun round to prevent the rendering drying out too rapidly.

14.12 To minimise colour shade variations and to 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 reveals or lines of doors and windows, help mask cold joints. Where long, uninterrupted runs are planned, product from the same batch should be used. Different batch numbers should be checked for colour consistency.

## **15 Procedure**

15.1 Knauf Aquapanel Exterior Cement Board should be securely fixed to the framework at maximum 600 mm spacings using the specified fixings (see section 1.1) at maximum 600 mm centre to centre horizontally and maximum 250 mm centre to centre vertically to provide a rigid in-plane surface without deflection or edge protrusions.

15.2 The board is supported on a minimum of three members, the centres of which should be a maximum spacing of 600 mm.

15.3 Screws should be fixed at a minimum of 15 mm from board edges. The spacing for the screws should be no more than 250 mm and they should not be over-tightened.

15.4 If it is necessary to cut board, it should be scored and snapped with a kraft-type knife. Alternatively, a hand-held circular saw with a dust extractor or a pendulum jig saw can be used. The use of a carbide- or diamond-tipped saw blade is recommended.

15.5 It is essential that the board is rested directly on the framework during installation.

15.6 The board is fixed horizontally over supports with gaps between 3 and 5 mm. Successive rows of boards should be installed with vertical joints offset by a minimum of one stud cavity.

15.7 The board is cut to fit up to the head and down to the sill of windows, ensuring that no continuous vertical joint is formed to avoid leakage and cracks.

15.8 Render beads and expansion beads are fixed in accordance with the Certificate holder's instructions.

15.9 EWI-225 Premium Basecoat is mixed using clean water (6.5 litres of water per 25 kg bag of render) to achieve a thick creamy consistency, and a 3 mm thick layer is applied onto the board.

15.10 EWI-66645 Fibreglass Mesh is laid in the first pass of EWI-225 Premium Basecoat and left to dry for approximately 30 minutes to 4 hours (depending on climate conditions) before application of a second pass of 2 - 3 mm minimum, to achieve a minimum total thickness of 6 mm. If on the other hand the 6 mm of product was applied with a notched trowel, the mesh is then pushed through this layer and fully covered so that it sits in the final third of this build-up. Depending upon the rendering technique, the basecoat layer should be fully flat and this can be achieved with either a trowel, float, rule or by sponging the surface. The basecoat render is allowed to dry for 2 to 5 days.

15.11 A coat of EWI-333 Topcoat Primer (coverage rate 0.2 - 0.3 kg per m<sup>2</sup>) is applied by roller and the surface left to dry for 24 hours prior to application of the finishing coats.

### Render finishes

15.12 A finishing coat of either EWI-076 Premium Bio Silicone Render at a coverage rate 2.4 kg·m<sup>-2</sup> or EWI-075 Premium Bio Silicone Render at a coverage rate 2.4 kg·m<sup>-2</sup> is applied to a thickness of 1.5 mm using a steel float and hawk. A thin plastic float is used to smooth the surface, ensuring evenness of cover and aesthetic consistency. Note coverage rates vary to the final grain size to be used.

15.13 Care should be taken in the detailing of the system around features such as openings, projections and at eaves to ensure adequate protection against water ingress and to limit the risk of water penetrating the system.

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

15.15 A typical wall build up is shown in Figures 2 to 12.

Figure 2 Reinforcing mesh at opening

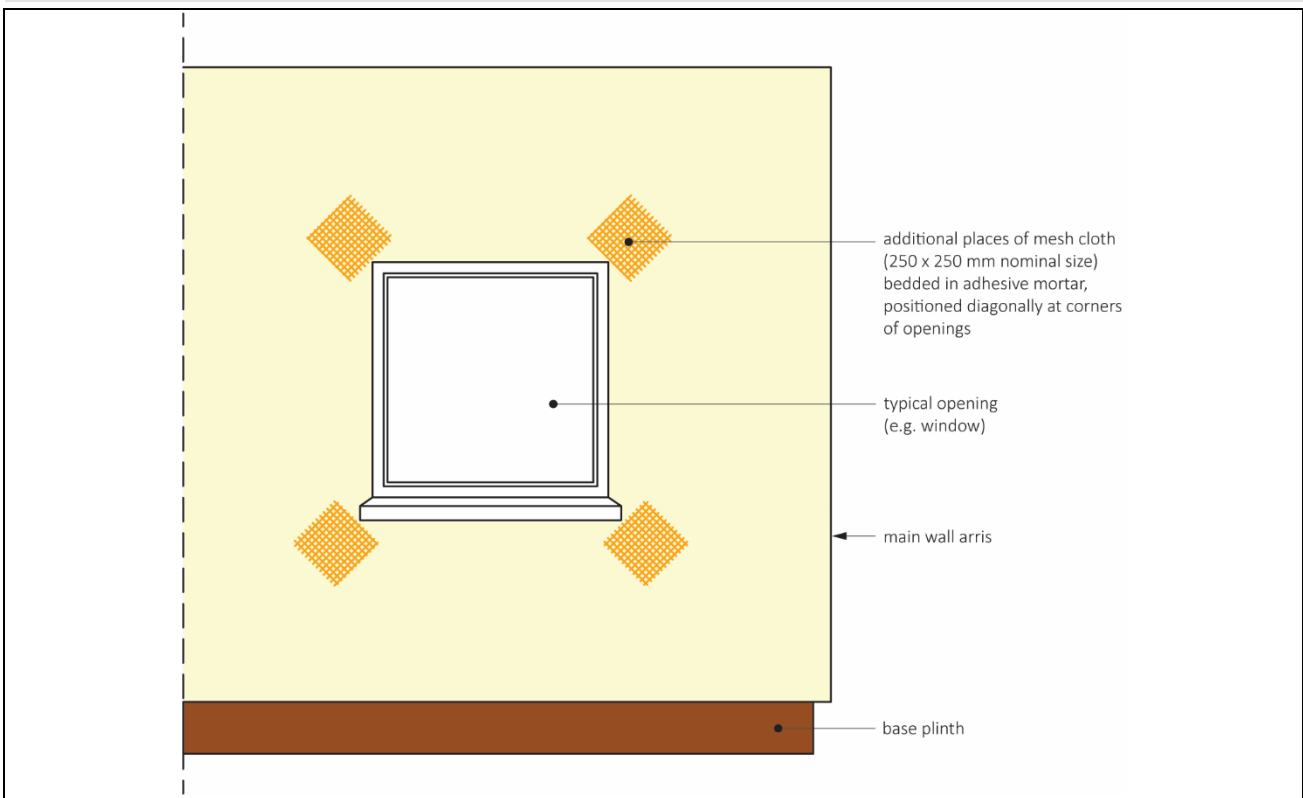


Figure 3 Detail section – main wall

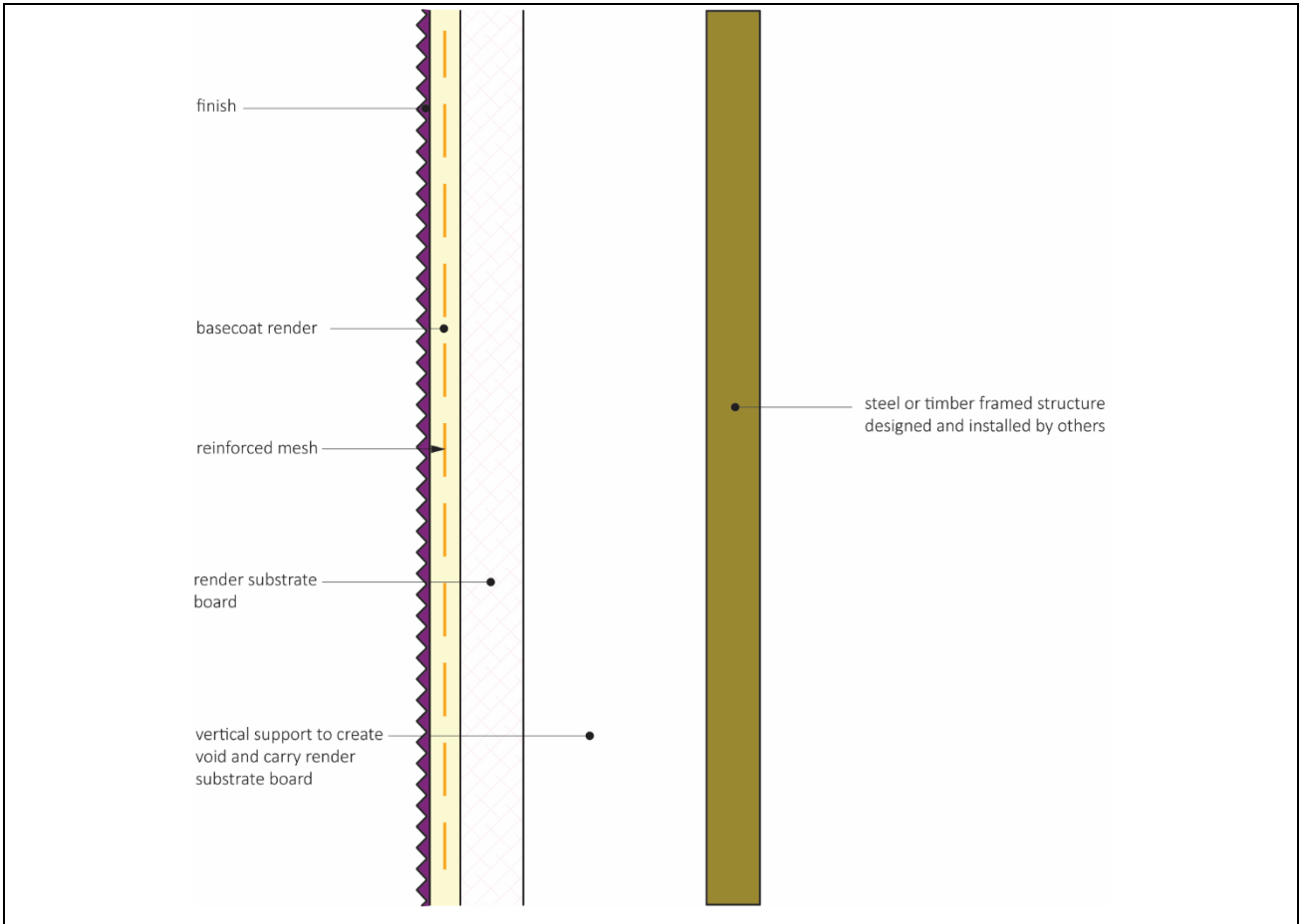


Figure 4 Detail section – base (Z flashing)

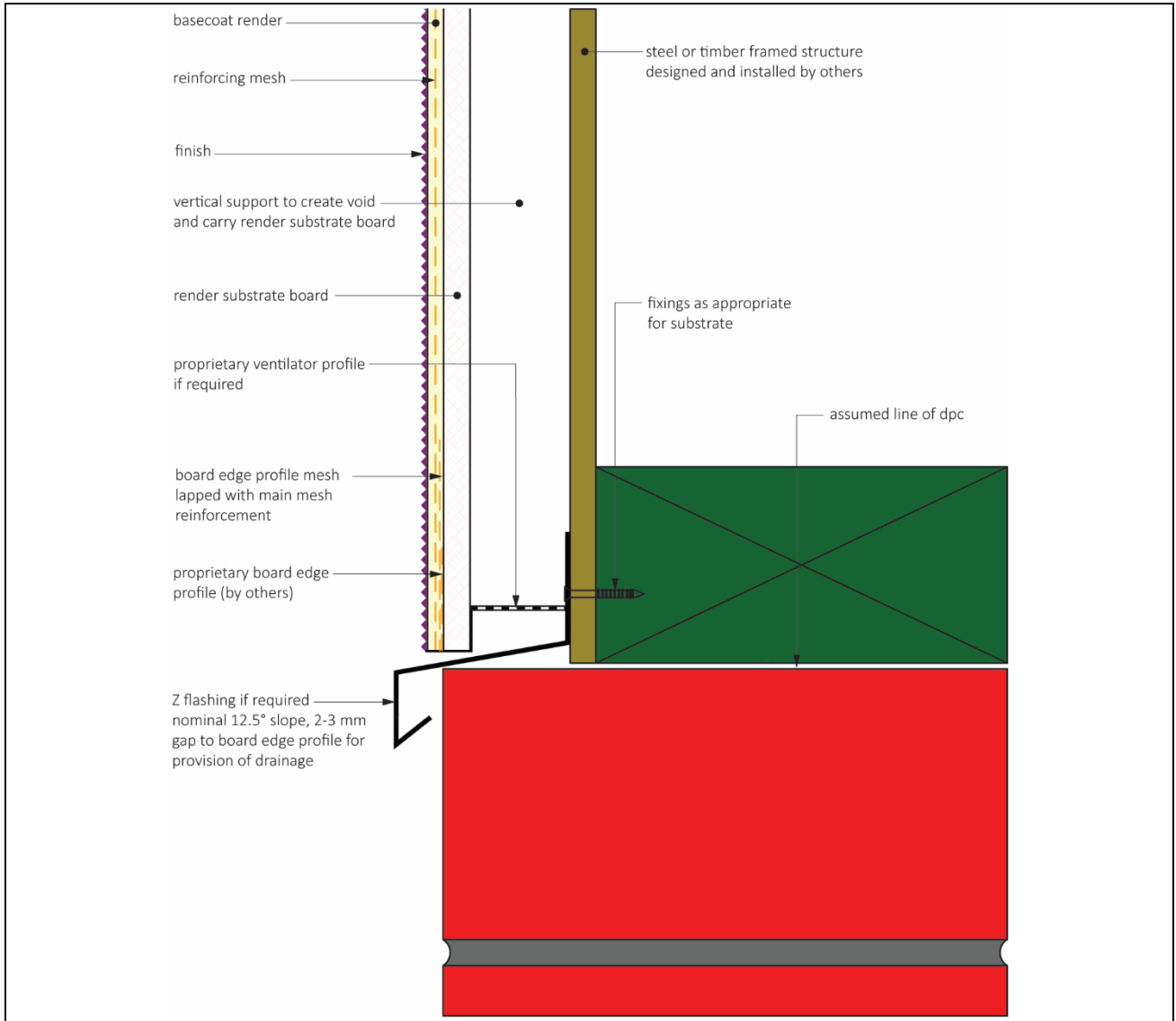


Figure 5 Detail plan – external corner

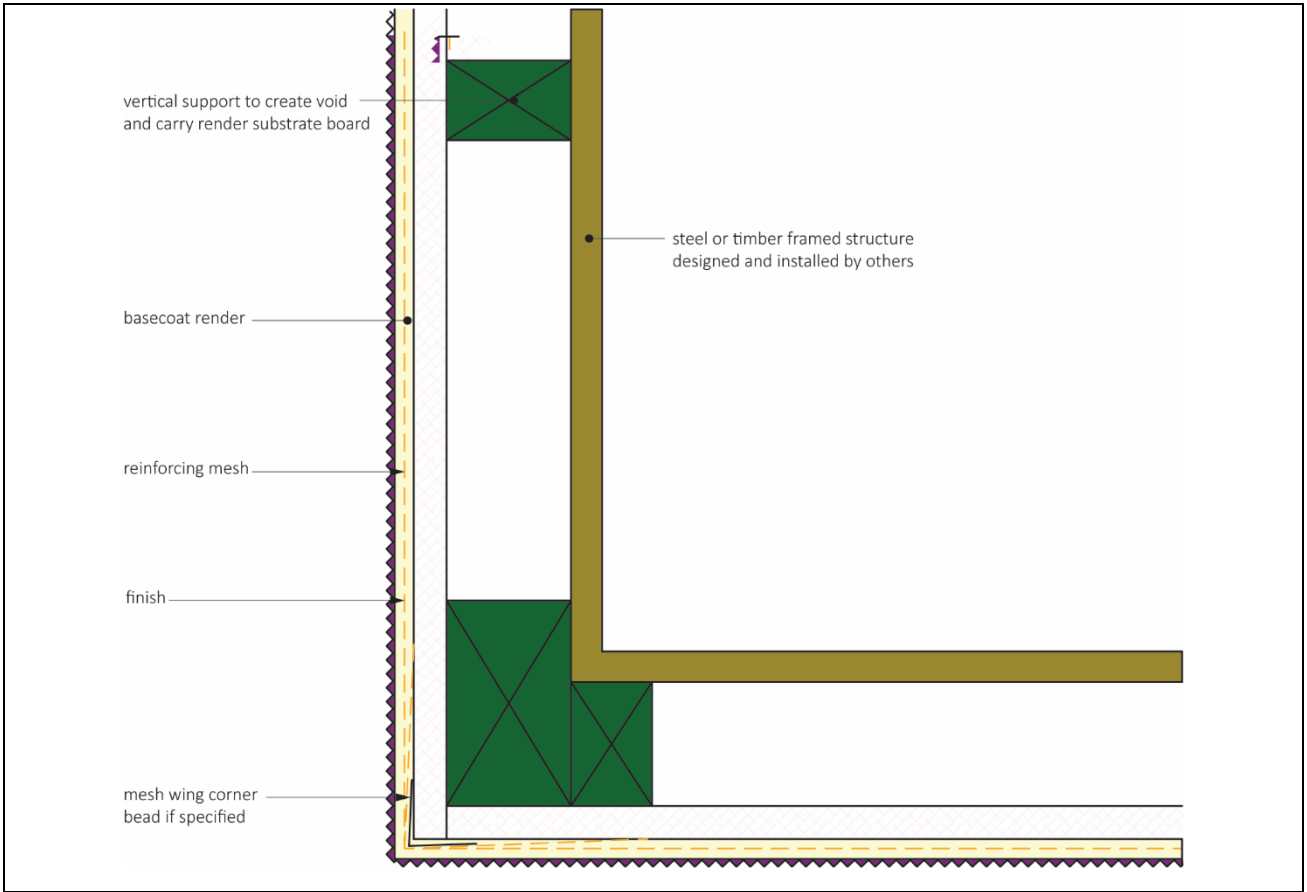


Figure 6 Detail plan – internal corner

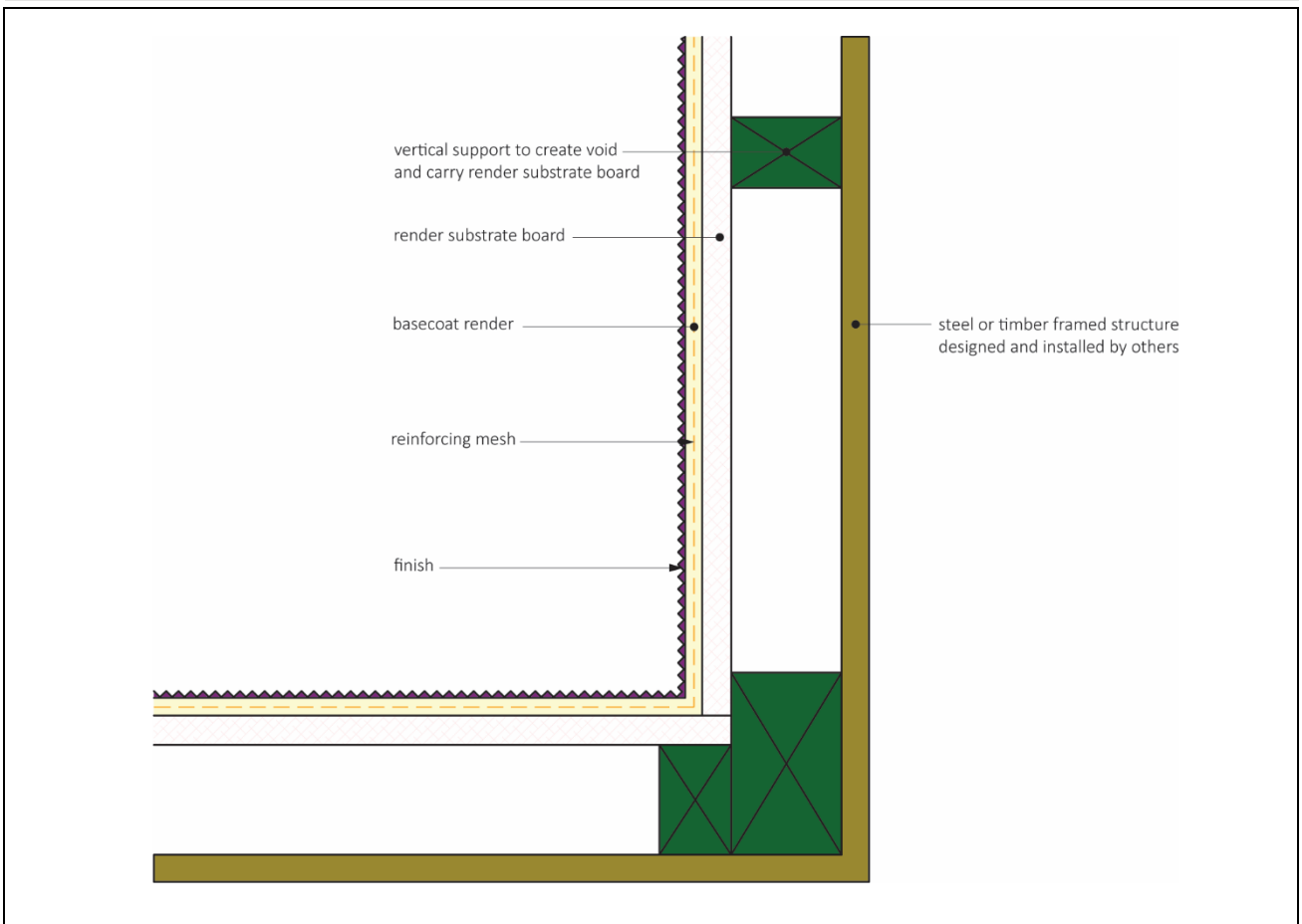


Figure 7 Detail section – UPVC cill

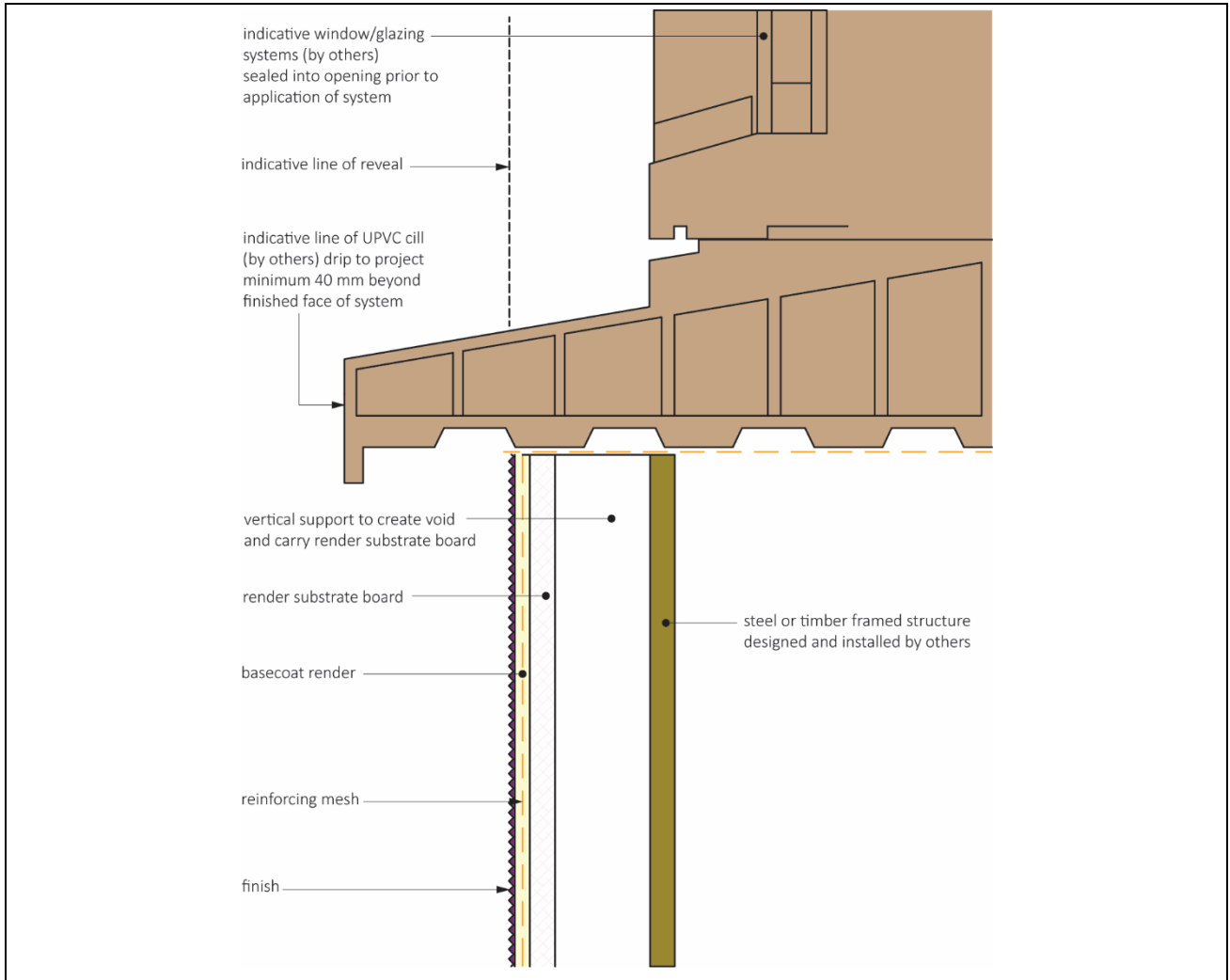


Figure 8 Detail plan – reveal (bead + mastic)

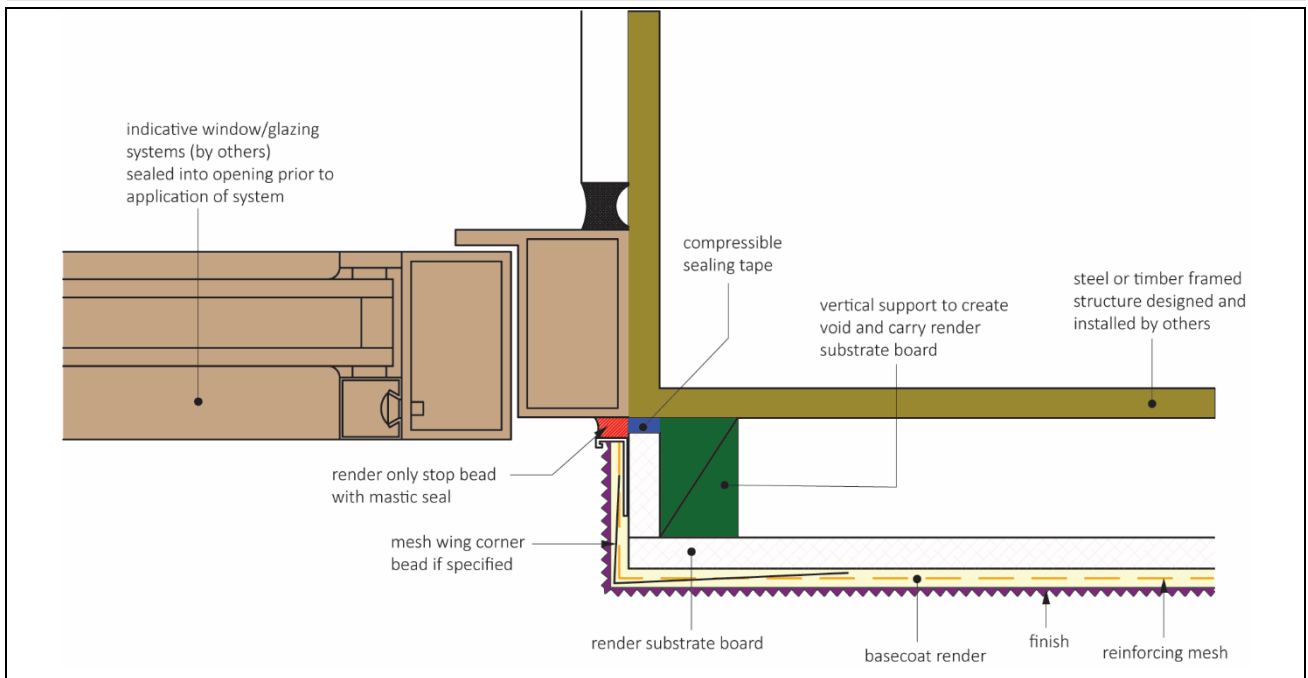




Figure 9 Detail section – head (bead + mastic)

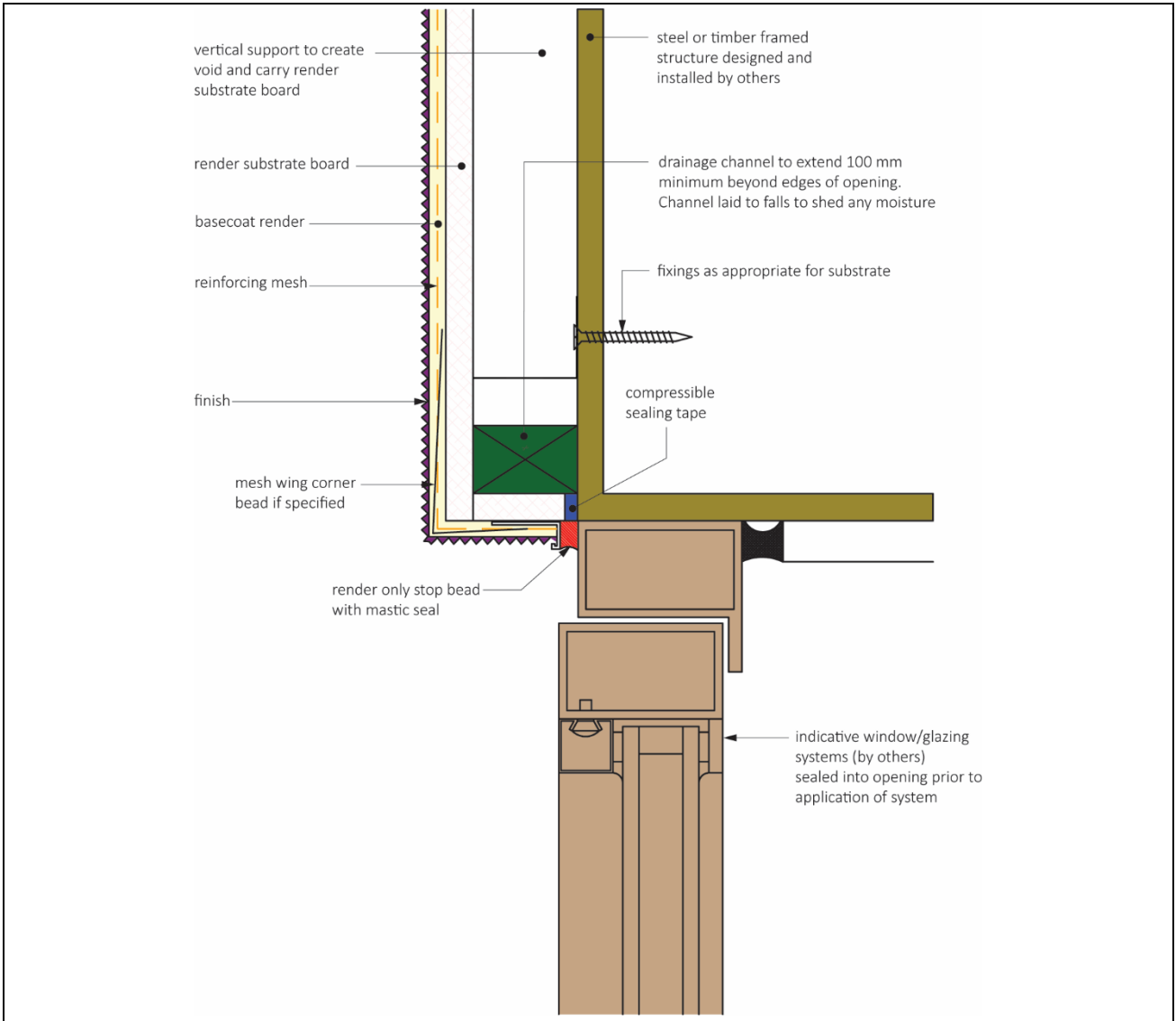


Figure 10 Detail section – compression joint

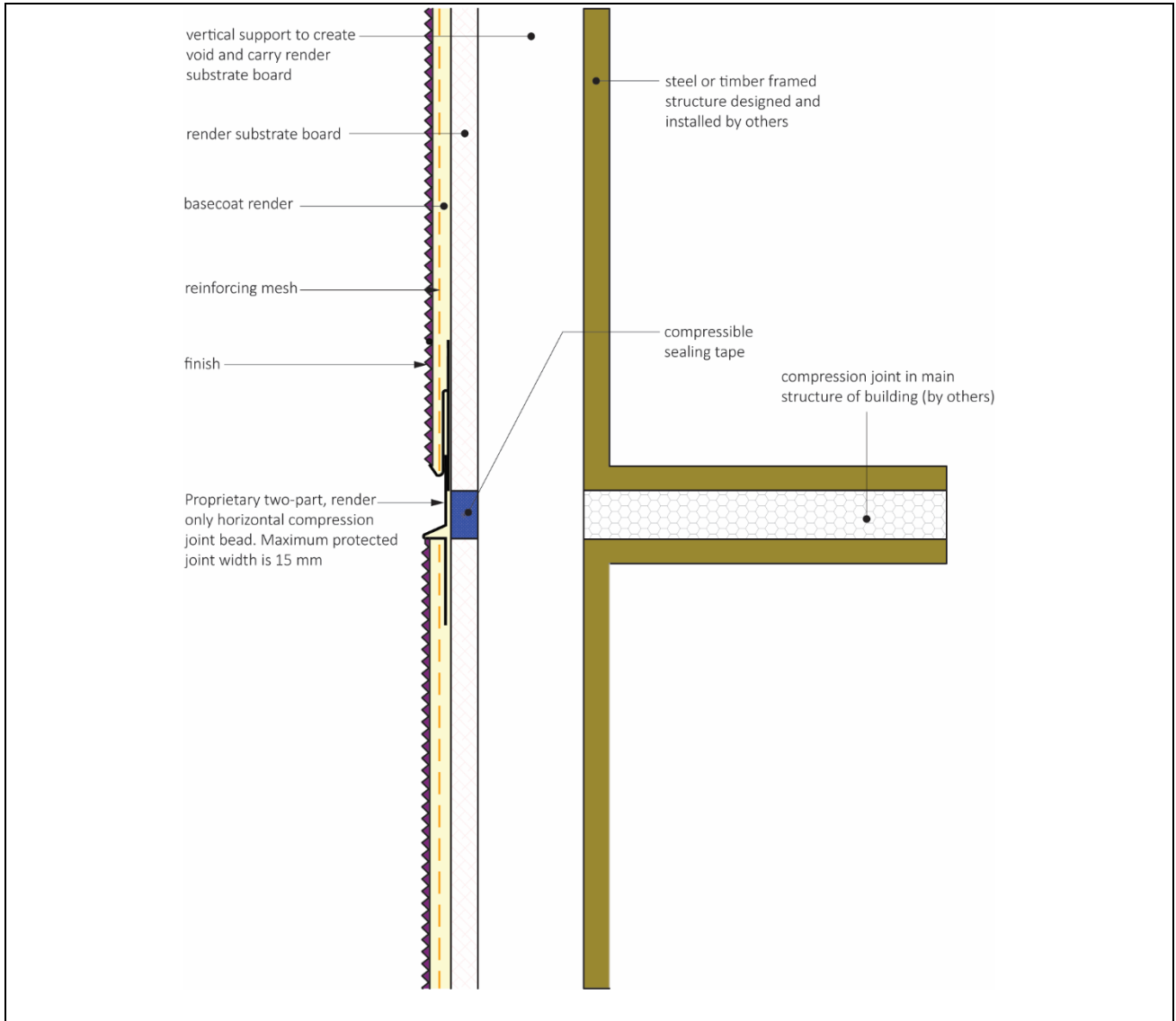


Figure 11 Detail plan – vertical movement joint (bead)

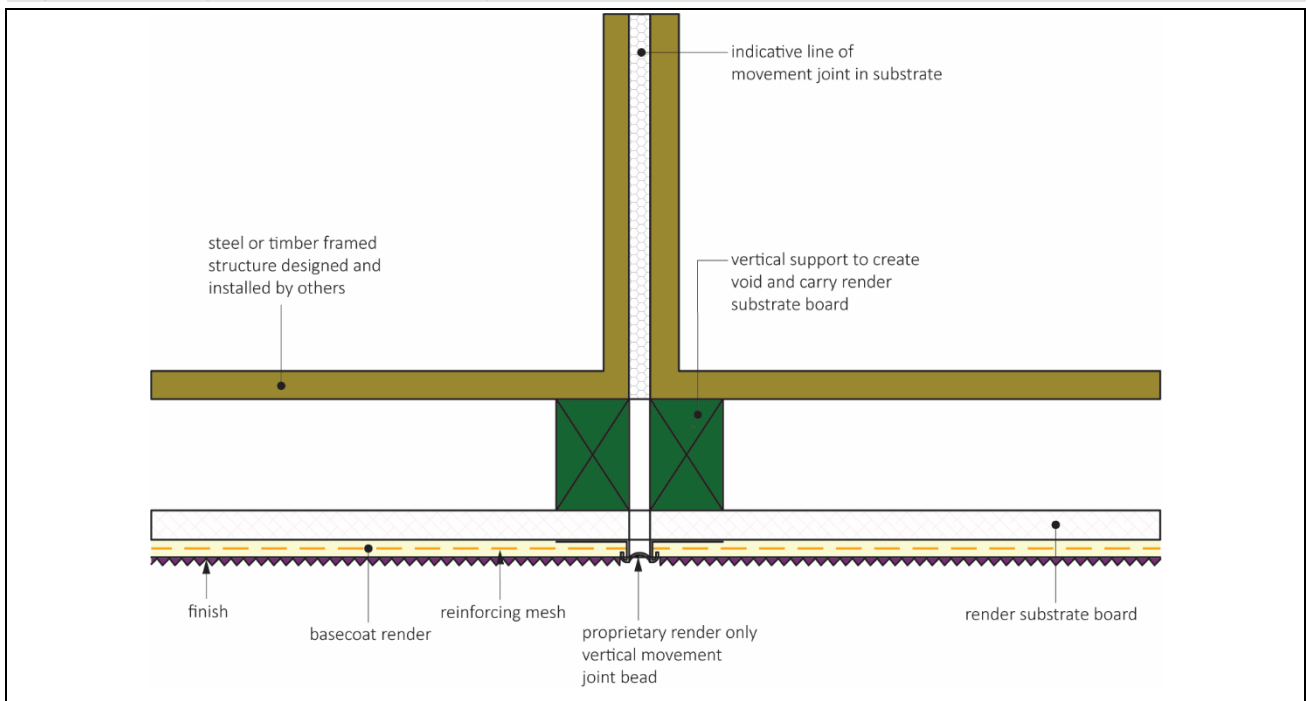
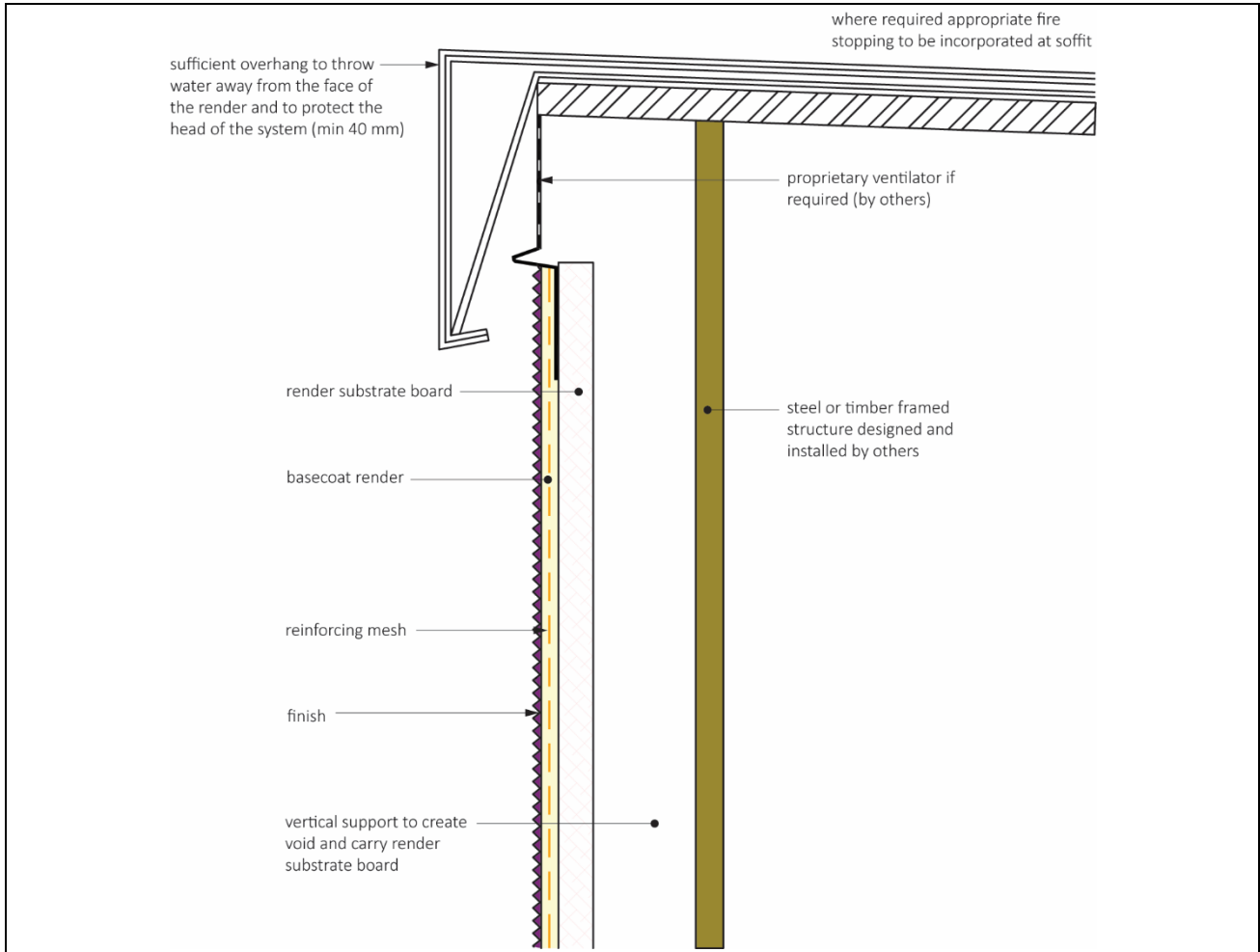


Figure 12 Detail plan – coping trim



## Technical Investigations

### 16 Tests

16.1 Tests were carried out on EWI Pro Render Systems applied to Knauf Aquapanel Exterior Cement Board and the results assessed to determine:

- effect of thermal cycling
- effect of freeze/thaw
- effect of accelerated ageing on impact resistance
- effect of accelerated ageing on bond strength
- water absorption
- water vapour permeability

16.2 An assessment was made of data relating to reaction to fire

### 17 Investigations

17.1 Installations were witnessed to assess the practicability of the render application to Knauf Aquapanel Exterior Cement Board.

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

## Bibliography

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

BS 8000-0 : 2014 *Workmanship on construction sites. Introduction and general principles*

BS 8417 : 2011 + A1 : 2014 *Preservation of wood — Code of practice*

BS EN 338 : 2016 *Structural timber — Strength classes*

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

BS EN 1990 : 2002 + A1 : 2005 *Eurocode — Basis of structural design*

NA to BS EN 1990 : 2002 + A1 : 2005 *UK National Annex to Eurocode — Basis of structural design*

BS EN 1991-1-4 : 2005 + A1 : 2010 *Eurocode 1: Actions on structures — General actions — Wind actions*

NA to BS EN 1991-1-4 : 2005 + A1 : 2010 *UK National Annex to Eurocode 1 — Actions on structures — General actions — Wind actions*

BS EN 1993-1-1 : 2005 *Eurocode 3: Design of steel structures — General rules and rules for buildings*

NA to BS EN 1993-1-1 : 2005 *UK National Annex to Eurocode 3: Design of steel structures — General rules and rules for buildings*

BS EN 1993-1-3 : 2006 *Eurocode 3: Design of steel structures — General rules — Supplementary rules for cold-formed members and sheeting*

NA to EN 1993-1-3 *UK National Annex to Eurocode 3. Design of steel structures. General rules. Supplementary rules for cold-formed members and sheeting*

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

NA to BS EN 1995-1-1 : 2004 + A1 : 2008 *UK National Annex to Eurocode 5: Design of timber structures — General — Common rules and rules for buildings*

BS EN 1995-1-2 : 2004 + A2 : 2014 *Eurocode 5: Design of timber structures — General — Common rules and rules for buildings*

NA to BS EN 1995-1-2 : 2004 + A2 : 2014 *UK National Annex to Eurocode 5: Design of timber structures — General — Common rules and rules for buildings*

BS EN 13501-1 : 2018 *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 14081-1 : 2016 + A1 : 2019 *Timber structures — Strength graded structural timber with rectangular cross section. General requirements*

BS EN 15824 : 2017 *Specifications for external renders and internal plasters based on organic binders*

EOTA TR 055 : 2018 *Design of fastenings based on EAD 330232-00-0601, EAD 330499-00-0601 and EAD 330747-00-06-01*

PD 6697 : 2019 *Recommendations for the design of masonry structures to BS EN 1996-1-1 and BS EN 1996-2*

### 18 Conditions

18.1 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 or 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.

18.2 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.

18.3 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.

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

18.5 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.

18.6 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.