

## Product Data

### **Warmshell product data and installation instructions**

Cladding the outside of a building with Warmshell is an excellent way to upgrade its warmth, looks and weather protection. By putting the insulation on the outside, no room is lost inside and the risk of interstitial condensation is eliminated. Warmshell uses natural lime renders, with no cement or acrylic, for a beautiful and traditional appearance and great durability.

System Advantages:

- Good impact resistance due to wood-wool covering layer and durable lime render
- Outstanding sound protection
- Very good fire protection
- Thermal insulation
- Highly breathable
- Mechanically fixed for strength and durability



## Contents

- 1) Components
  - 1a) Boards
  - 1b) Fixings for Thermal Boards
  - 1c) Base Rail
  - 1d) Stop Profile
  - 1e) Flashing
  - 1f) Roof Ventilation Profile
  - 1g) Corner Profile
  - 1h) Other trims and flashings
  - 1i) Render
- 2) Installation
  - 2a) Fixing the base rail
  - 2b) Fixing the boards
  - 2c) Reveals
  - 2d) Eaves
- 3) Rendering
  - 3a) Expansion Joints
  - 3b) Beads
  - 3c) Scratch Coat
  - 3d) Natural Finish coat
- 4) Aftercare and Maintenance
  - 4a) Fixing downpipes etc
  - 4b) Cleaning
  - 4c) Painting
- 5) Some Typical U values
- 6) Typical Detail Diagrams

# Product Data

## 1) Components

### 1a) Boards

#### **Thermal Board**

A dual-purpose board that both insulates the wall and carries the render. Made to BS EN 13168, with a non-combustible mineral wool core and laminated with wood wool surface layers (thickness approx. 5 mm).



Thickness mm	Weight approx. kg/m <sup>2</sup>	Thermal resistance R m <sup>2</sup> K/W D	Compressive strength N/mm <sup>2</sup>	Diffusion resistance value m	Board size mm	Fire resistance EN 13501-1
35	11	0.70	0.05	3	2000 * 600	B1
50	12	1.06	0.05	3	2000 * 600	B1
75	16	1.68	0.05	3	2000 * 600	B1

#### **Woodwool Board**

A render carrying board, for areas where insulation is not required, or depth is limited.

Thickness mm	Weight approx. kg/m <sup>2</sup>	Thermal resistance R m <sup>2</sup> K/W D	Compressive strength N/mm <sup>2</sup>	Diffusion resistance value m	Board size mm	Fire resistance EN 13501-1
15	8	0.20		5	1200 * 600	B1
25	11.5	0.35		5	1200 * 600	B1

## Product Data

### **1b) Fixings for Thermal Boards**

The special fixings are designed to conduct less heat than normal screws, keeping the wall warmer. Various types are available for different backgrounds; please consult us for further details.

#### **Screw fixing**

Structural screw for fixing the Thermal Board into wooden backgrounds.



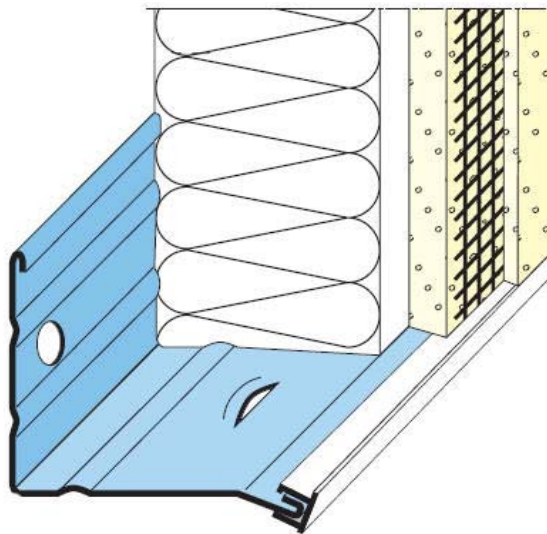
#### **Hammer fixing**

Structural fixing for brick, stone and block backgrounds.



### **1c) Base Rail**

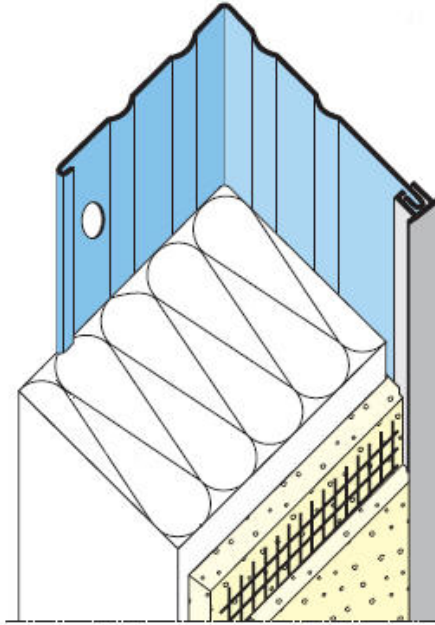
Stainless steel or aluminium profile specially designed for carrying thermal insulation boards and protecting them at the bottom of a wall.



## Product Data

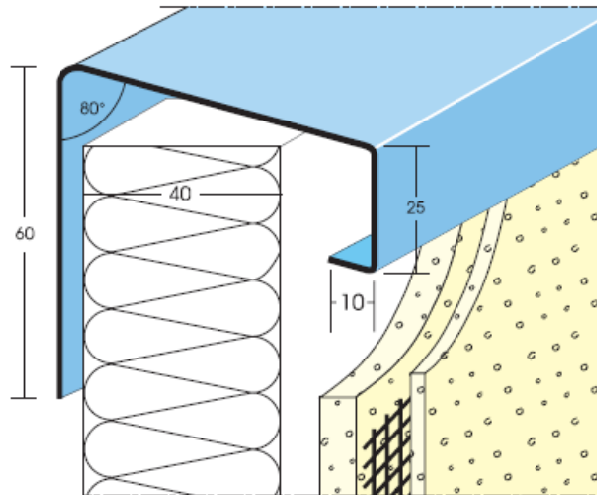
### **1d) Stop Profile**

Stainless steel profile used to form a neat, durable stop where the Thermal Board does not continue around a corner or finish against a natural break. Available with steel edge or PVC



### **1e) Flashing**

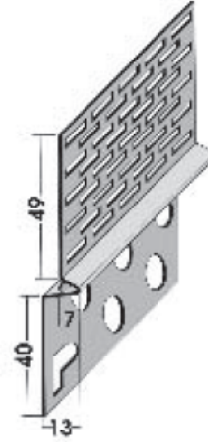
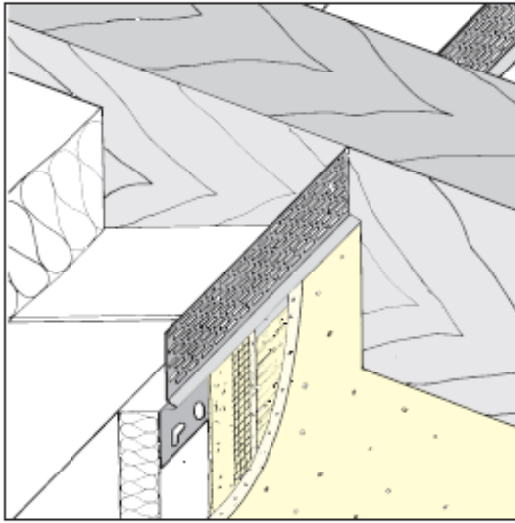
An aluminium flashing for gables, which prevents rain penetration.



## Product Data

### **1f) Roof Ventilation Profile**

An aluminum profile that ensures adequate ventilation to the roof space



### **1g) Corner Profile**

Corners are normally formed using the render to give a traditional appearance. Alternatively, colour coded PVC corner beads are available.

### **1h) Other trims and flashings**

Various other trims and flashings may be necessary, including enlarged window cills, expansion beads, copings, base profiles for corners etc. These often have to be made to a bespoke design for existing buildings, or may not be required at all on new build. Please consult us for further details.

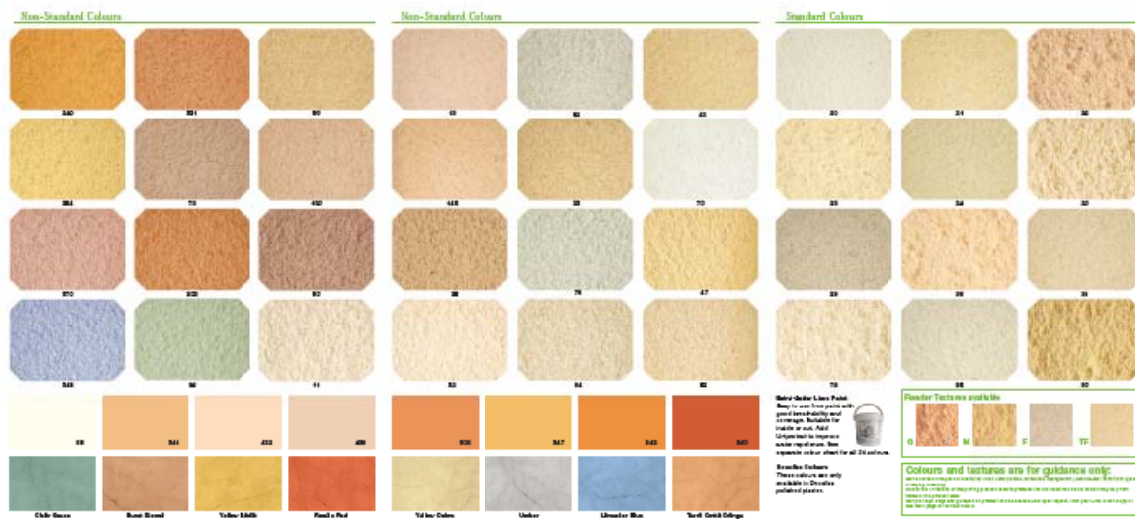
# Product Data

## 1i) Render

All the renders are made with Natural Hydraulic Lime, for excellent levels of breathability, durability and elasticity. Lime Green Duro and Natural finish do not contain acrylics or latex, and so they give a beautiful traditional look, avoiding the synthetic, plastic appearance of many other renders.

Lime Green Natural Finish is available in a choice of colours and textures, reducing the cost of regular painting and the possibility of inappropriate coatings being used in the future.

*We only recommend light colours* for use with the thermal board; strong colours will heat up more quickly in direct sunlight causing greater thermal movement.



Please ask for a copy of the colour chart to see the range of colours and textures.

## **2) Installation**

**Important!** Preparation and correct fixing of the Thermal Board and profiles is vital. Time spent getting this right will help avoid problems later. The render should not be considered as a way to hide errors or defects in the application of the boards.

### **2a) Fixing the base rail**

- Start by fixing the base profile to the masonry with a hammer fixing such as Fischer WS 8N. Alternatively, a brick plinth may be built if the thicker boards are being used. Either way, the bottom board should be 150mm above ground level, or above DPC (if present), whichever is the higher.

Hammer Fixing length for base rail:

Length	For board thickness
mm	mm
125	50
145	75

- Holes for fixings should be drilled with a rotary drill (do not use hammer setting on soft or weak materials – e.g. lightweight blocks or perforated bricks)
- Holes should be cleaned of dust by blowing out or vacuum.

### **2b) Fixing the boards**

- Only fix dry boards.
- The first thermal board is placed on the base profile and fastened with the appropriate fixing for the background in the middle of the board.
- Cut the Thermal Boards by hand or with a circular saw. Always cut out small pieces from a whole board.
- The number of fixings is dependent on the type of masonry, the height of the building and the wind load. Typically 6 fixings per m<sup>2</sup> are required.
- Thermal boards are placed in a lattice horizontally and pushed tight together. They should alternate down the corner. Vertical joints must be staggered.
- Cut pieces must be at least 200 mm wide.
- Additional gluing of the boards to the subsurface is not necessary. However on uneven masonry the background should be leveled to  $\pm 5$ mm per linear meter. This can be carried out with Lime Green Ultra, a thermally insulating render. Please consult us for further details.

## Product Data

### **2c) Reveals**

Window and door reveals should also be insulated to prevent cold spots. However, frequently there is insufficient space to use the Thermal Board, in which case 2 options can be used:

- i) A 15 or 25mm woodwool board is mechanically fixed and / or pushed in to a coat of Prepbond. Render as with the Thermal Board
- ii) A 5mm coat of Prepbond, followed by a coat of LG Ultra insulating render (5 to 20mm depending on depth available), followed by a 5mm coat of Natural Finish.

### **2d) Eaves**

The exact detail around the eaves will vary depending on the roof and overhang etc. The roof ventilation detail is often useful (see section 1f). Sometimes it may be necessary to move the gutter and extend the tiles/slates if there is limited overhang.

### **3) Rendering**

Before rendering, inspect the boards. Check they have been fixed according to section 2b. Steps in the boards must be dubbed out with Lime Green Duro before rendering. Gaps greater than 10mm between the board connections must be filled or foam packed out. Consult product datasheets for the render before starting.

#### **3a) Expansion Joints**

- Any expansion joints in the background must be replicated in the board and the render.
- Neither the board nor the render must bridge existing expansion joints in the background.
- Changes in background (e.g. from blockwork to brickwork) should also have an expansion joint.
- On most walls, expansion joints would normally be fitted every 40m<sup>2</sup>; this is a conservative figure for lime renders and larger areas should be achievable.

#### **3b) Beads**

- On older buildings corners may be formed traditionally, with temporary wooden battens.
- Alternatively, fix PVC beads to the board before starting with some of the render.
- Leave a gap between the Thermal boards and window or door frames, to be filled with mastic after rendering.

#### **3c) Scratch Coat**

- Apply Lime Green Duro in 2 passes the same day to a combined thickness of 15mm.
- The first pass is applied approx 8 to 10mm thick – the Glass Fibre reinforcement mesh is pushed in to the render immediately, while it is still tacky. Overlap joins in the mesh by 10%
- Glass fibre mesh is doubled up around windows and doors, with a diagonal layer applied. The diagonal piece should be at least 200mm x 400mm.
- The second pass is applied over the top within 6 hours to give a total thickness of 15mm.
- The coat of Duro is given a light key with a devil float.
- Allow at least 1 weeks drying time, during which time it should be protected from sun, wind and frost.
- See the Lime Green Duro datasheet for more information

## Product Data

### **3d) Natural Finish coat**

- Thoroughly damp the background down the day before, and again 30mins before starting to apply the Natural Finish.
- Lime Green Natural Finish is applied at a maximum of 6mm thick for a sponge or floated finish. Other Finishes are possible – please consult your supplier.
- Do not over work the surface, or this may lead to fire cracking.
- Protect from direct sunlight, strong winds and frosts. Apply in temperatures of 8°C and rising, or 30°C and falling.
- See the Lime Green Natural Finish datasheet for more details.

### **4) Aftercare and Maintenance**

#### **4a) Fixing downpipes etc.**

The board is a lightweight material and not structural. Fixings can be made through the board into the background masonry where necessary (down spouts, hanging baskets etc.) using special insulated frame fixing that will not bridge the insulation. *Please consult your supplier for appropriate fixings.*



#### **4b) Cleaning**

The renders are designed for low maintenance, and are unlikely to need painting for decades. Dirt and lichen can be removed with gentle scrubbing, using a mixture of 1 part sodium hypochlorite diluted in 19 parts cold water. Downspouts and gutters should be checked on a regular basis to ensure water is not leaking on to the render.

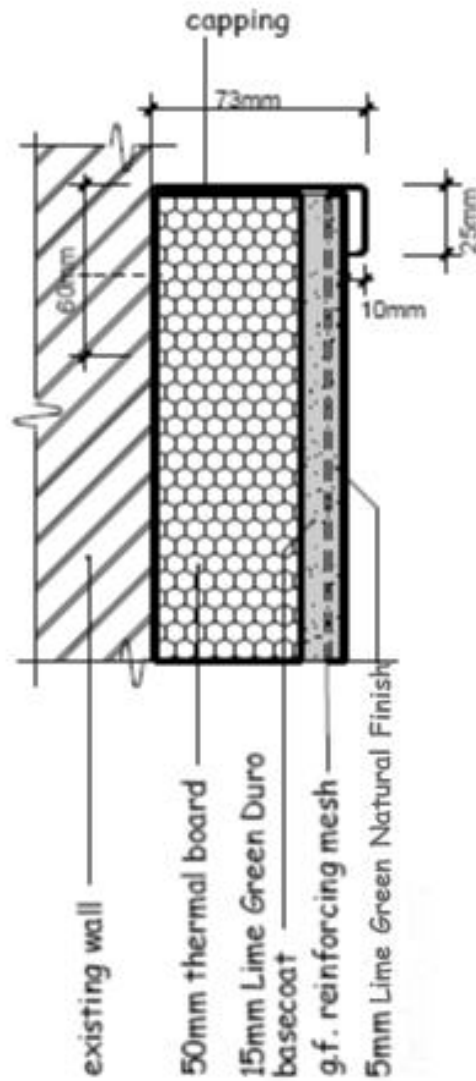
#### **4c) Painting**

If at some point the owner wishes to change the colour of the render, it is possible to paint it. Only highly breathable paints should be used, to prevent the build up of moisture underneath which will reduce the effectiveness of the insulation. We recommend Beecks mineral silicate paint.

## 5) Some Typical U values

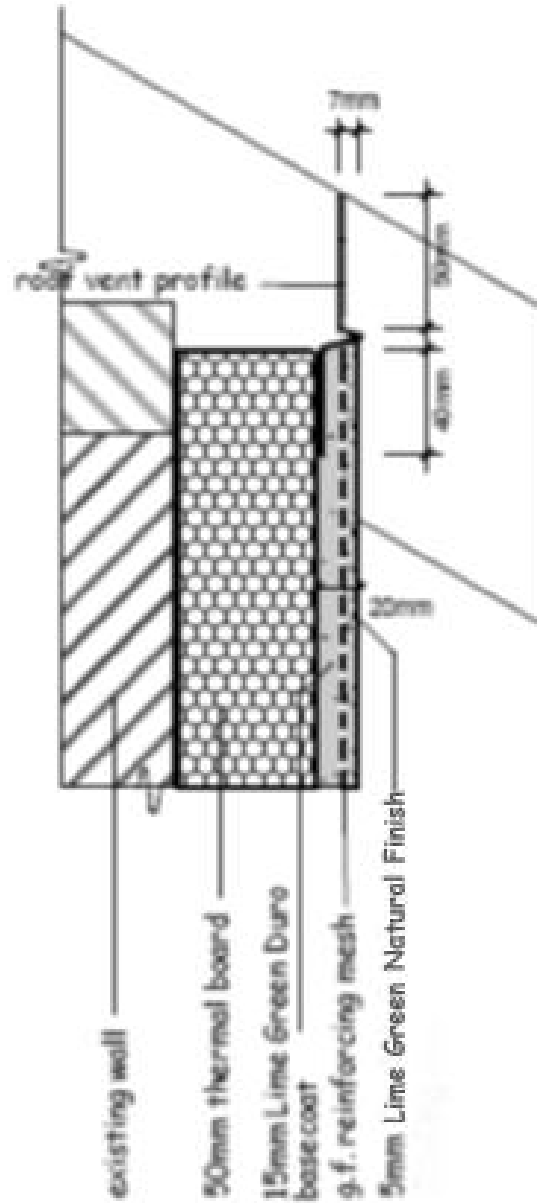
Type	Build Up	Thermal Board Thickness (mm)	U value W/(m <sup>2</sup> K)
The Super Insulated New Masonry House	Plaster Biobric 300 Thermal board Duro/Ecomortar (20mm)	0	0.37
		50	0.27
		100	0.21
		150	0.17
The Old Solid Brick Wall	Lime Plaster (20mm) Solid brick wall (225mm) Thermal Board Duro/Ecomortar (20mm)	0	2.02
		50	0.65
		100	0.38
		150	0.26
Un-insulated cavity block wall	Plasterboard Concrete Block Air gap (50mm) + wall ties Concrete Block Thermal Board Duro/Ecomortar (20mm)	0	1.40
		50	0.58
		100	0.35
		150	0.25
The Old Solid Stone Wall	Lime Plaster (30mm) Limestone wall (400mm) Ultra dubbing coat (20mm) Thermal Board Duro/Ecomortar (25mm)	0	1.89
		50	0.59
		100	0.36
		150	0.25

## 6) Typical Detail Diagrams



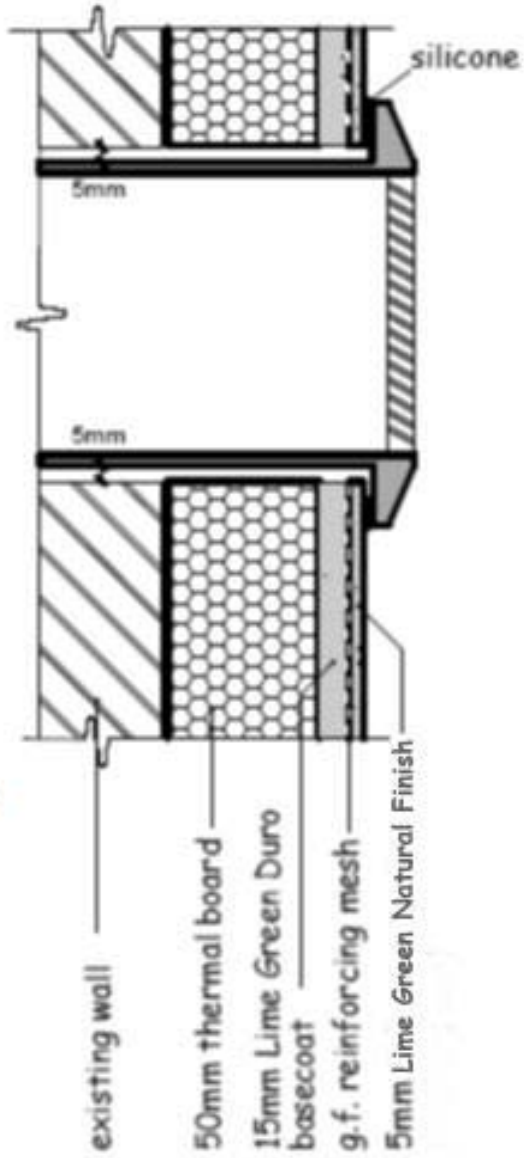
SECTION - TOP OF WALL

# Product Data



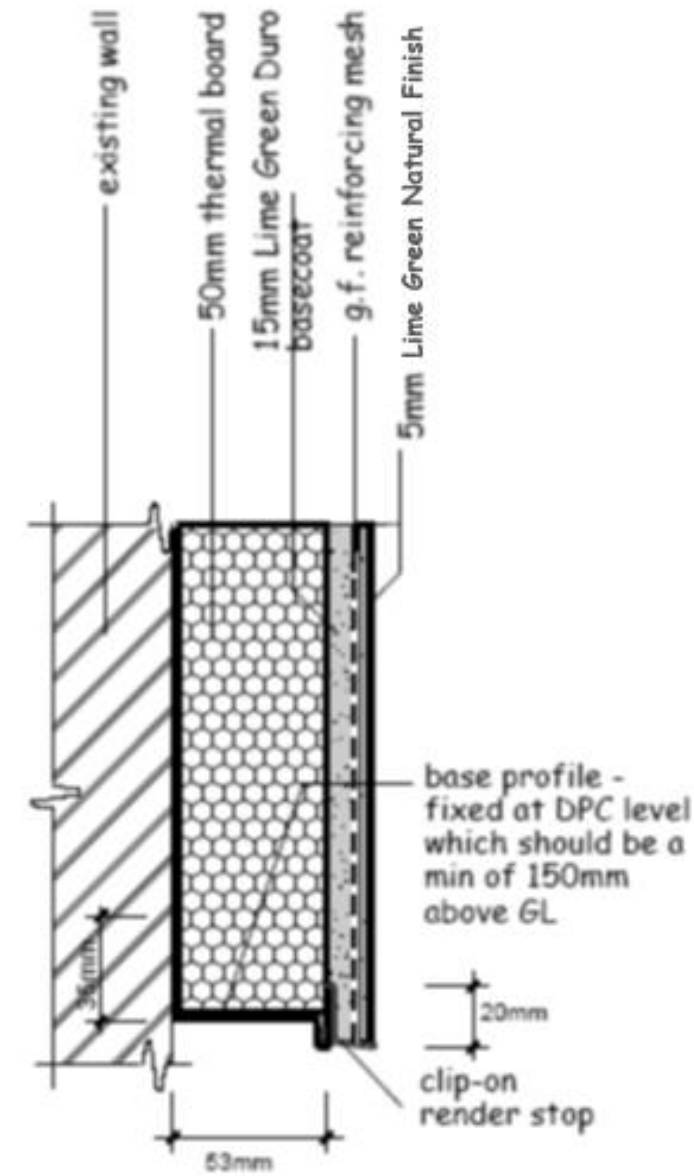
SECTION - EAVES

# Product Data



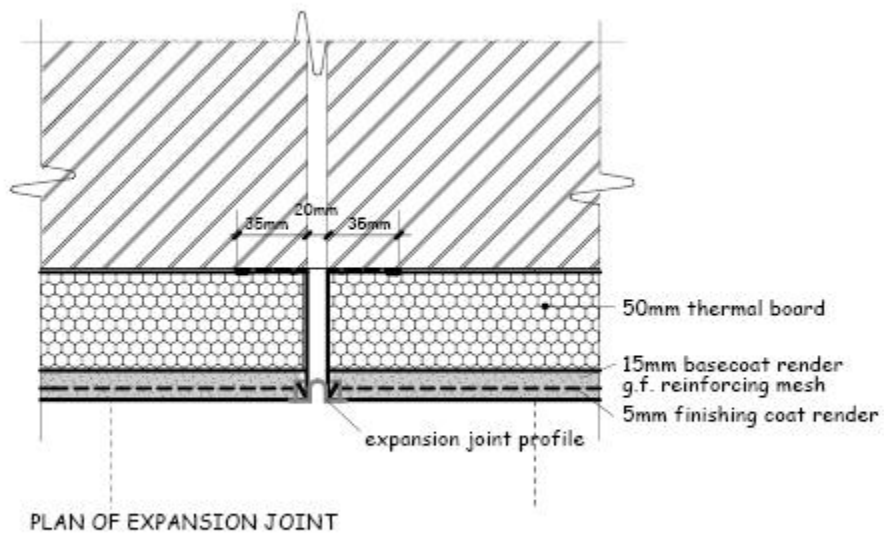
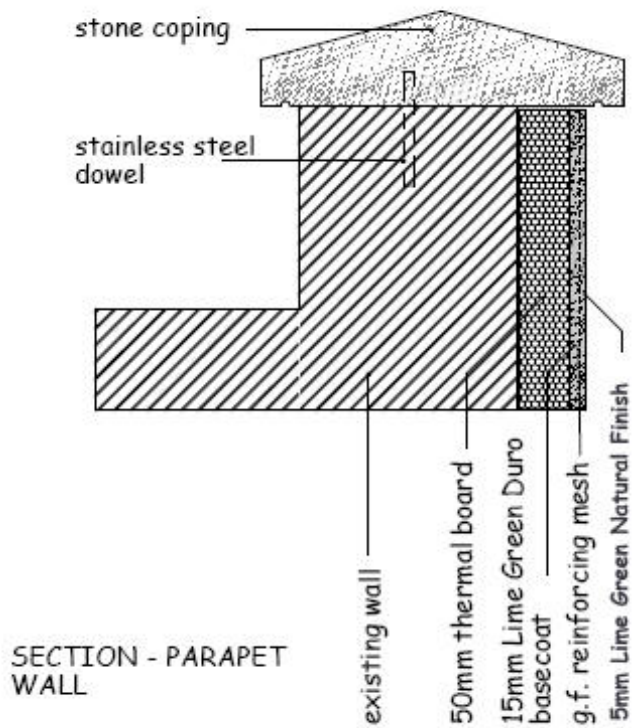
SECTION - VENT THRO WALL

## Product Data

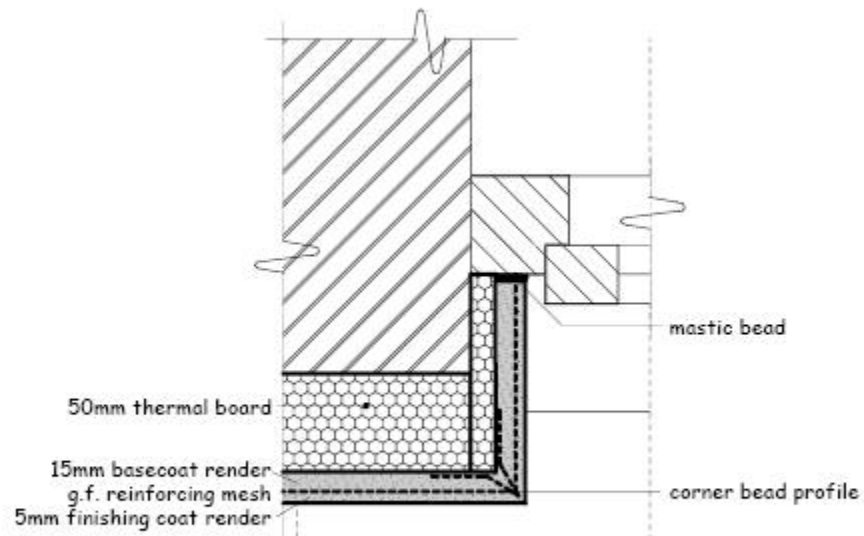


SECTION - BASE OF WALL

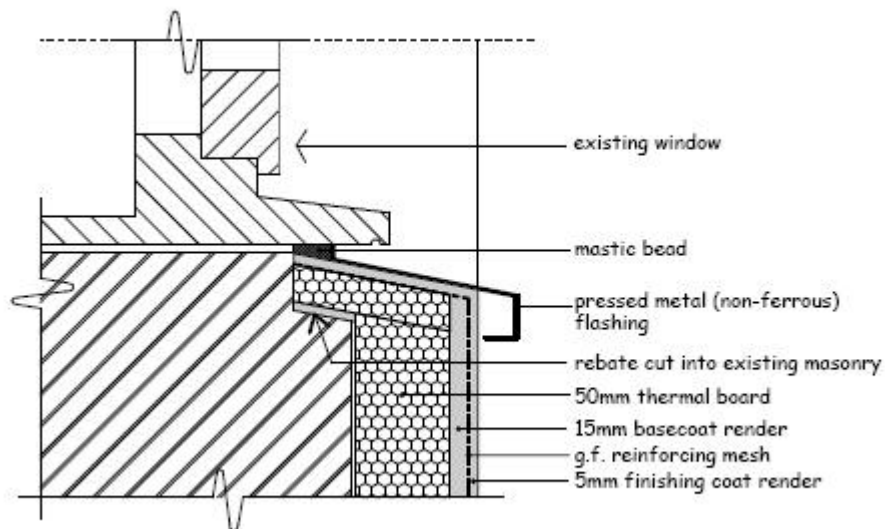
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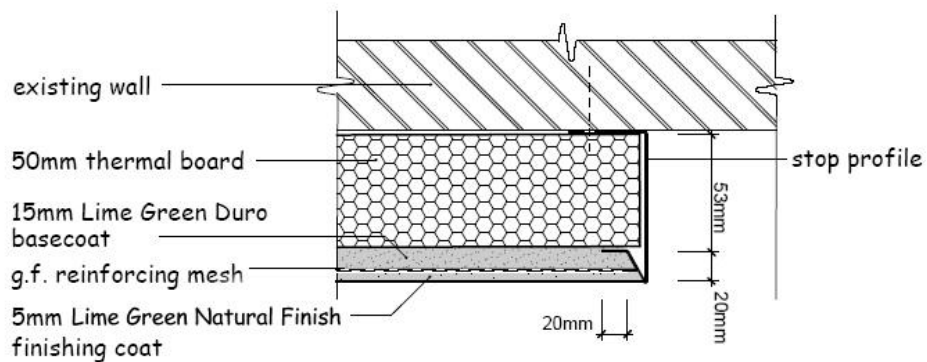
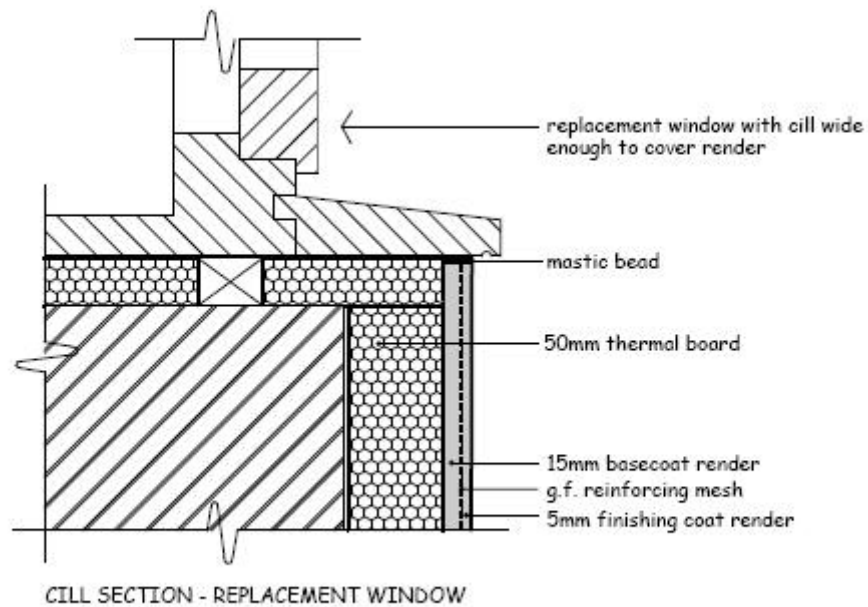


PLAN OF WINDOW REVEAL



CILL SECTION - EXISTING WINDOW

# Product Data



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