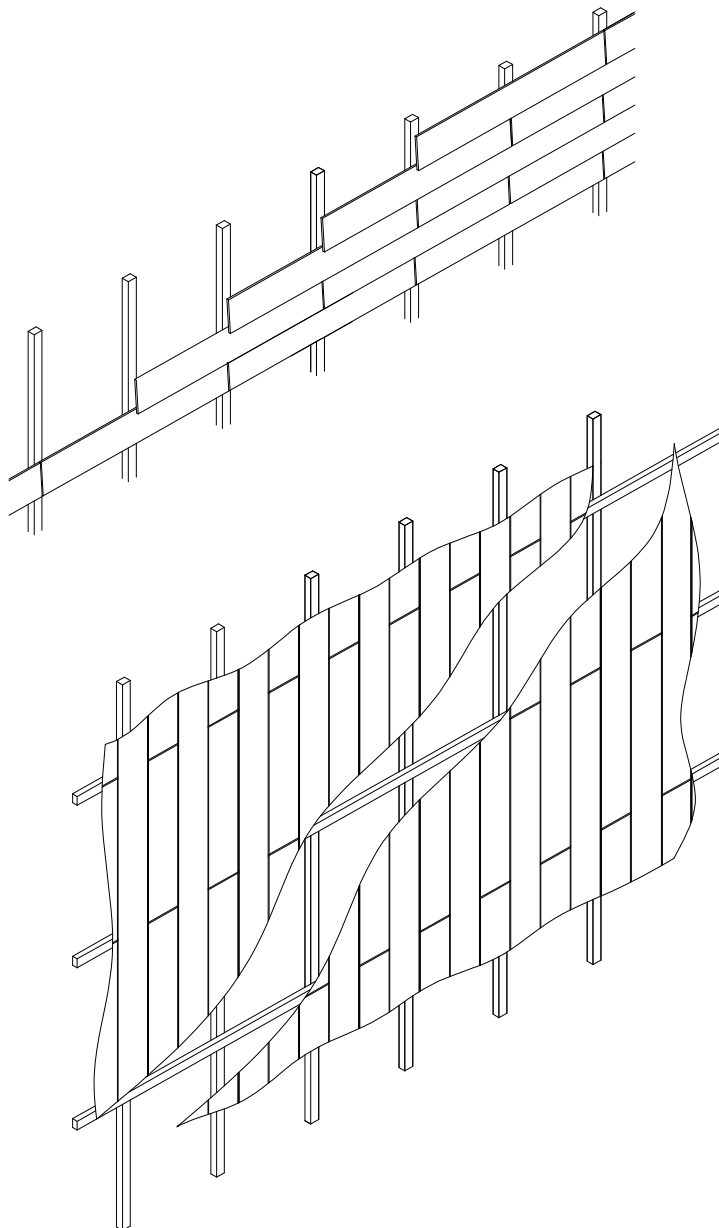


Cedral Weatherboard APPLICATION INSTRUCTIONS¹



Various Configuration Methods

¹ These application instructions replace all previous editions. MARLEY ETERNIT LTD reserves the right to change these instructions without prior notice. The reader must always ensure that he/she is in possession of the most recent version of this documentation. The instructions in this document are non-exhaustive.

1.0 PRODUCT MAKEUP AND DESCRIPTION

Weatherboard consists of the following:

- Portland Cement
- Mineral Fillers
- Man made reinforcing fibres
- Additives

Marley Eternit Weatherboard is a semi-compressed, autoclaved, fibre cement plank. Weatherboard is as easy to work as wood but with the durability of cement based products. It also has good resistance to fire and good dimensional stability. Weatherboard can be mounted rigidly with no requirement for expansion joints.

2.0 PRODUCTION METHOD

Weatherboard sheets are manufactured on a Hatschek machine and are autoclaved.

3.0 DIMENSION AND TOLERANCES

Dimension	3600mm x 190mm
Thickness	10mm +/- 10%
Length and width	+/-1.5mm and +/- 1.0mm if L x B < 1 x 1m
Squareness	1.0mm/m
Weight (air dried) per board	11.2kg (maximum)
Installed weight	19.3kg/m ²

4.0 TECHNICAL PROPERTIES (average values)²

A. Testing according to ISO quality management system				
Density	Dry	EN 12467	1300	Kg/m ³
Building strength	Wet	EN 12467	11	N/mm ²
Modulus of elasticity	Ambient, mean	EN 12467	5000	N/mm ²
Hygrical movement	0-100% mean		0.03	%
B. Classification				
Durability classification		EN 12467	Category B	
Strength classification		EN 12467	Class 3	
Fire reaction classification		EN 13501-1	A2-s1-d0	
C. Type test or best estimate				
Impermeability test		EN 12467	Ok	
Warm water test		EN 12467	Ok	
Soak dry test		EN 12467	Ok	
Freeze thaw test		EN 12467	Ok	
Thermal expansion coefficient			15x10 ⁻⁶	m/mK
Thermal conductivity coefficient			0.18	W/mK

² The technical properties of the sheet meet or exceed the EN 12467 European standard for fibre cement board.



5.0 ADVANTAGES

Providing the application guidelines are followed, Weatherboard has the following overall properties:

- Good fire resistance properties.
- Sound insulating.
- Temperature resistant.
- Water resistant (painted boards).
- Resistant to many living organisms (fungi, bacteria, insects, vermin etc).
- Resistant to many chemicals.
- Environmentally friendly, no harmful gas emissions.

In addition, Weatherboard has the following specific properties:

- Can be worked with carpentry tools.
- Screw and nail without pre-drilling.
- Frost Resistant.
- Good dimensional stability.

6.0 APPLICATIONS

Sawing/Cutting:

The method of cutting is dependent on the amount there is to be done. It is possible to cut the board with a handsaw, an electric jigsaw or a circular saw (hand held – commonly called a skill saw).

The Handsaw:

This method requires a hardened point saw and is recommended for small amounts of cutting.

Guillotine:

The weatherboard can be cut with a specially manufactured guillotine.

The Hand Held Circular Saw:

Used with a tungsten tipped blade of 36 teeth on a 180mm diameter blade is recommended for moderate amounts of cutting. Also with this method, cutting from the back of the board is advisable as the saw guide leaves marks across the board surface. A trial cut is suggested.

A Diamond Dusted Blade

Used in a hand held circular saw gives the best results and is the recommended method of cutting large quantities. The grade of dust is 36-44 grit. These blades are available from local suppliers.

Scoring and Breaking

Weatherboard can also be scored on both sides with a Stanley knife and then broken over a hard edge. This process is only used for edges which are butting up to corner profiles or brickwork, it is not recommended for mitre corners as the break is not as clean as a saw cut.

NB: Cutting and drilling must take place in a dry environment.

Screwing

Screw fixing to the support structure can be achieved without pre-drilling where fixings are at least 50mm from the end of the board (screw gun required). Where screws are to be within 50mm of the end of the board then a pre-drilled hole and countersink is required to suit the screw size. Screws should preferably be stainless steel, minimum size 4.0 x 50mm. Where the boards are used without an overlap (both vertically and horizontally) the screw length will need to be reduced to 40mm.

The following collated screws and screw guns have been proven with weatherboard.

Simpson Strong-tie – Tel: 01827 255600

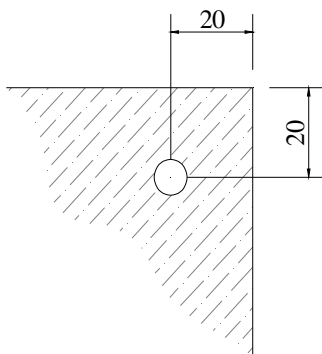
- Best screw gun is the Makita 6823 2500 rpm.
- Then you will need AMAE-RC adaptor for Makita screw gun
- QDPRO 51E Quick Drive Professional 51mm attachment
- Screws are SSWSC B51 E – 51mm stainless steel, type 17 point screw.

Popper Senco UK Ltd Tel 01925 445566

- Gun is a Durispin DS275 – 18V or 110V equivalent. (2500 – 3000 RPM)
- Screws are 42L50MS Decking Screw Stainless steel Type 17 point.

The Operal range of cladding boards has an identical colour range to Cedral. For vertical installation, it is possible to use the colour matched Operal screws to improve aesthetics.

The following minimum edge distances to the screw and nail must be adhered to.



Hand Nailing

The board can be hand nailed without pre-drilling when the nails are at least 50mm from the end of the board. For nails closer than 50mm to the end, nail positions need pre-drilling with a 3mm drill. Normal HSS drill bits can be used but they will need regular sharpening. Nails should be stainless steel ring shank, minimum size 2.8 x 45mm with a 7-10mm head (overlapped application). Should the boards be configured in a butt jointed arrangement (no overlap) then the nail length should be reduced to 40mm.

Pneumatic Nailing

Weatherboard can be pneumatically nailed. There is a large selection of guns on the market. Stainless steel fixing is preferable, as they last as long as the board. The Nail length should be 50mm and be 2.8mm diameter. A ring shank nail is preferred and has a full round head of 7mm diameter. The type of gun nail which has a narrow head (the nail looks more like a “T” section) is not acceptable. Nails with a “C” shaped head are acceptable but should have a minimum diameter head of 7mm.

Trial nailing should be conducted to set the depth of the fixing, and how close to the edge of the board the nails can be placed. Any pneumatic gun which is being considered must be adjustable otherwise the nails could be fired right through the board or left proud of the face of the board (check with manufacturer).

Health and Safety Aspects

Dust can be released while the sheets are being processed which can irritate airways and eyes. It is recommended that a dusk mask and safety goggles be worn. Appropriate dust extraction or proper ventilation is to be provided depending on the room in which the work is being carried out or the equipment being used. Long term exposure to dust can be harmful to health.

High Wind Loading or Exceptional Impact Requirements

Should wind loading exceed 1.0kN/m² please consult the Technical Department (01283 722588). Where exceptional impact loads to cladding panels can be anticipated (i.e. low level applications near pedestrian access, schools, leisure facilities etc.) additional timber battens can be incorporated, between the fixing battens, to increase the panels resistance.

Surface Mounted Features

Where other building features (I.e. signs, gutters, canopies etc.) are to be fixed then additional batten work should be included and clearance holes must be provided through the cladding. Under no circumstances should cladding panels receive additional structural loads.

Condensation

To avoid interstitial condensation in accordance with BS 8200:1985, a minimum 10mm free flow cavity should be provided behind the weatherboard with a minimum 5000mm²/m run of ventilation at the top and bottom of the installation. The use of 38mm deep battens will provide the necessary cavity and will be of minimum sufficiency to resist the pull-out loads generated by the boards.

6.0 INSTALLATION

Horizontal Application – Ship Lapped

Each plank must be fixed at least once to every support. The end of every plank must also coincide with a support. Where specified, install vapour barrier or breather membrane if required over the wall or framework behind the timber studs. Installation begins at the bottom of the façade, where an aluminium start profile is fixed first. A tilting fillet of 10mm thick and 30mm wide can also be used. This is overlapped by the first plank, which starts the layering of the planks. Allow at least 150mm between the bottom edge of weatherboard and the ground. Fixing is done through the upper edges. There is no side overlap, the boards being loosely butted against one another, and the joint must coincide with the timber support. A strip of black polyethylene soaker should be applied under the vertical joints to protect the batten (Marley Eternits EFPS strips).

Horizontal Application – Butt Jointed

Each plank must be fixed at least twice to every support. The end of every plank must also coincide with a support. Where specified, install vapour barrier or breather membrane over the wall or framework behind the timber studs. Installation begins at the bottom of the façade with the boards being loosely butt jointed in both the horizontal and vertical plane. A strip of black polyethylene soaker should be applied under the vertical joints to protect the batten (Marley Eternit EFPS strips).

Vertical Application – Ship Lapped

The installation of Cedral Weatherboard vertically, requires the use of counter battens to allow for the required clear vertical airflow. Vertical battens of min 30mm depth and 50mm width should be installed on the main structure at 600mm centres (up to 1kN/m² windload). Horizontal counter battens of 38mm depth and 50mm width should be installed on the vertical battens at 600mm centres (up to 1kN/m² windload). The horizontal battens should be of a trapezoidal shape to allow for water run-off. For the shiplap, a tilting fillet or aluminium start profile should be used vertically. Insulation should be between the vertical battens with the batten depth increased to allow for a 30mm unobstructed vertical cavity. The fixing should be through both the head AND the overlap to reduce water ingress through the lap.

Vertical Application – Butt Jointed

The installation of Cedral Weatherboard vertically, requires the use of counter battens to allow for the required clear vertical airflow. Vertical battens of min 30mm depth and 50mm width should be installed on the main structure at 600mm centres (up to 1kN/m² windload). Horizontal counter battens of 38mm depth and 50mm width should be installed on the vertical battens at 600mm centres (up to 1kN/m² windload). The horizontal battens should be of a trapezoidal shape to allow for water run-off. The boards are installed loosely butt jointed.

Special Lap/Join

It is entirely possible to use a variety of configurations and laps. Please contact the Technical Department in the first instance to discuss the proposal.

Battens for Weatherboard

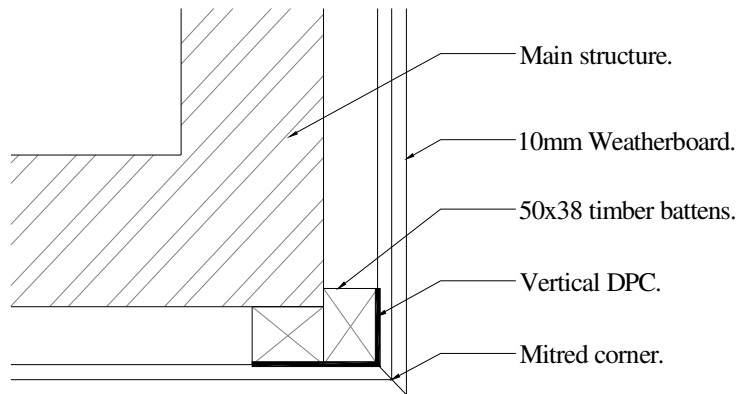
The battens for weatherboard should be preservative treated and planed on two sides. They should be 38mm x 50mm wide spaced at a maximum of 600mm centres across the elevation. The weatherboard should be fixed to at least three battens; if it is only fixed to two, the batten spacing should be reduced to 400mm. Wider battens will be required (min 75mm wide) on panel joints.

Mitred Corners

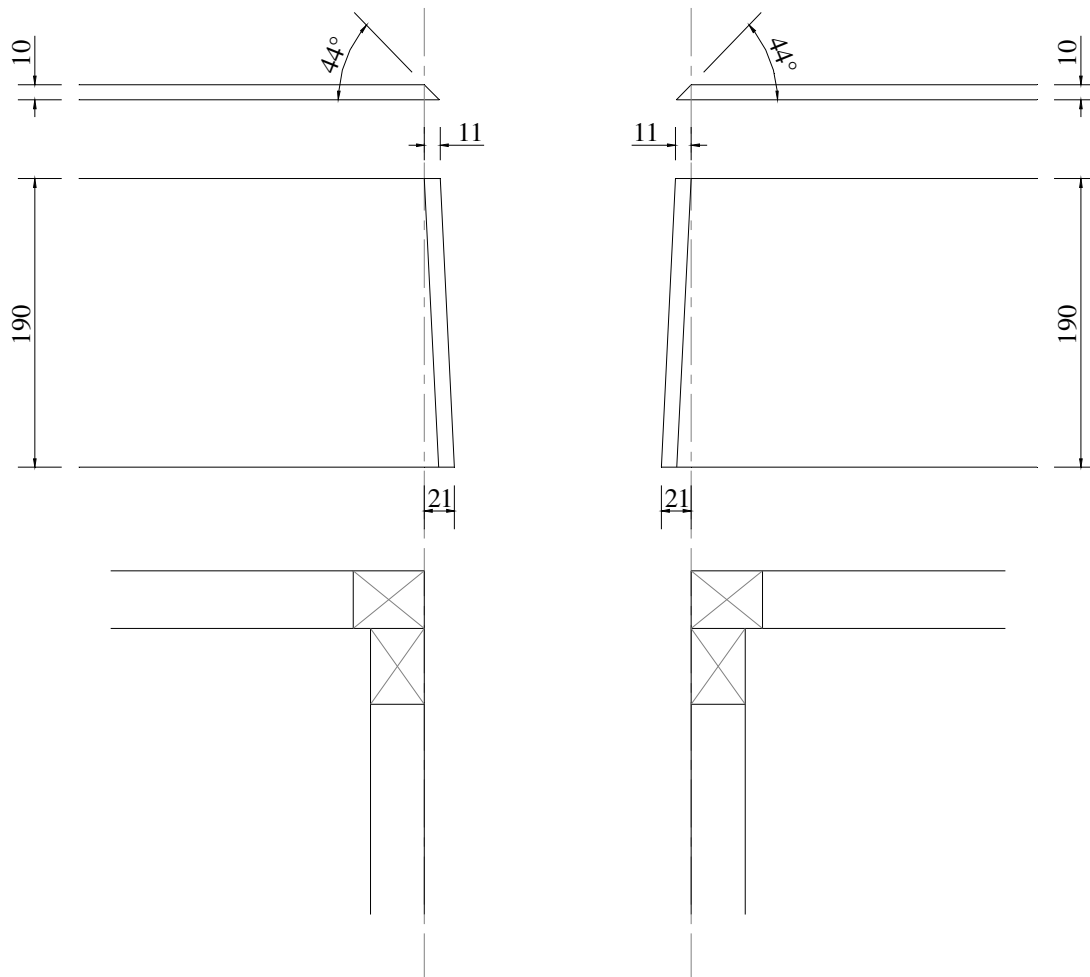
To form the mitre the boards have to be cut 23mm longer on the bottom edge and 13mm longer on the top edge than the dimension to the corner of the support battens. This cut is also at an angle of 44° through the thickness of the board (suggest to mark board at 45° and under-cut). The above only works on a true 90° corner, other degrees of corners will be by trial and error (see page 7 for mitre corner details)

Aluminium Profiles

A range of aluminium profiles are available, colour matched, to complete various junctions (window reveals, corners etc). Examples of their usage and details at various junctions are shown from page 11.



MITRED CORNER DETAIL



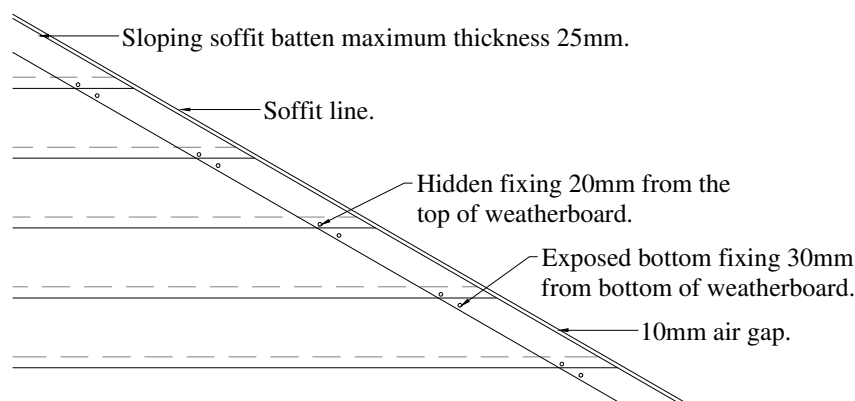
Overlapping Corner

This is when one side overlaps the end of the board on the other side. There will always be one end of board showing with this method. These ends need to be decorated to match the finish on the weatherboard. The transverse cuts of the board at the corner positions will not be perpendicular with the sides of the boards.

Abutments and Gables

Where the weatherboard abuts another material and when no end trims are required, the end of the weatherboard must not be more than 100mm past the last fixing point.

On the gable ends with the triangular end, the weatherboard needs to be fixed top and bottom to the batten that is parallel to the roof slope. If the bottom edge is not secured, curling can occur in certain conditions. See details at the end of these instructions titled "Sloping Soffit" for the fixing of the batten parallel to the roof slope.



8.0 FINISHES

The weatherboard is available factory finished in a range of 22 standard colours and will last for approximately ten years before repainting may be required. The natural weatherboard is to be finished on site. The natural board is a self-coloured beige, with shading resulting from natural properties of the constituents. Natural weatherboard must be decorated or sealed with a clear water repellent sealer. It can be painted or stained to almost any colour, the restriction being on the paints and stains available. Solvent based paints and stains should not be used, as there is a reaction between the cement board and the stain. The recommended paint/ stain is an acrylic water based product. The following are recommended;

Sadolin Superdec
Sikkens Cetol B21plus or BL21opaque
Dulux Weathershield masonry paint
Ronseal Trade Excel 20 primer with Excel 40 topcoat.

Obtain paint manufacturers recommendations before commencing work.

Sadolin Superdec

A solid colour giving an opaque matt finish. This is a two-coat system and typically requires a top-up coat every 5-7 years.

Sikkens Cetol B21 plus

A translucent finish and gives a stained effect. The product is recommended to be used as three coats of B21 plus, which is a matt finish. A top-up coat is required typically every 5-7 years.

Sikkens Cetol BL21 opaque

A solid colour and a two-coat system. Typically requires a top up coat every 5-7 years.

Dulux Weathershield masonry

This is a two to three coat system, which gives a semi-gloss finish similar to paint. Repainting is as and when required.

Ronseal Trade

This is a three-coat system, which gives a semi-gloss finish. It is used with one coat of “Excel 20” primer then two coats of “Excel 40” of the colour required or using “Excel 30” with “Excel 60” a timber stain finish can be obtained. Typically a top-up coat is required every five to eight years.

9.0 MAINTENANCE

For minor soiling, washing with a mild household detergent or soft soap solution followed by rinsing with clear water is sufficient to maintain its appearance and colour.

10.0 HANDLING AND STORAGE

Care should be taken at all times when handling weatherboard. Never carry Weatherboard on the flat, as it could break. While Weatherboard is stored on the flat it should be fully supported along its full length on purpose designed pallets. Manual handling is best carried out with the boards carried on their sides. When a single person needs to carry a board the board needs turning onto its side before being lifted off the stack and then the handler needs to keep their hands as far apart as possible to provide maximum support to the board.

Marley Eternit Weatherboard should be stored on the pallets that they are supplied on and preferable inside. The temporary transportation hoods need to be removed to release any trapped moisture and packs recovered with a coloured tarpaulin.

The boards need to be protected from mud staining especially on building sites as staining is not easy to remove.

If the boards get wet due to sudden showers the boards can become more flexible and difficult to handle. Leave these boards to dry before fixing. If the boards do get wet permanent discoloration / staining could occur.

Lifting of pallets of Weatherboard must not be at the centre only. A forklift with as wide as possible sets of forks or by a pair of slings at approximate one-third point is the advised lifting methods. Transporting pallets of Weatherboard around construction sites should be on a trailer, which will provide full support to the pallets.

11.0 EFFLORESCENCE

Efflorescence or 'lime bloom' is an occasional phenomenon that affects all cement-based products. It is temporary and is in no way detrimental to the performance of the product. Water dissolves salts within the product, this salt solution migrates to the substrate's surface, and a salt deposit remains after the water evaporates. Efflorescence is not normally due to faulty materials.

Cement contains an amount of free lime. When water is added, a series of chemical reactions commence which result in the setting and hardening of the cement, which is accompanied by the release of more lime in the form of Calcium Hydroxide. This salt is sparingly soluble in water and the supersaturated solution deposits crystals on the surface of the Weatherboard.

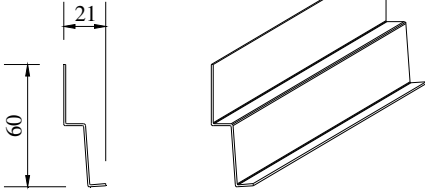
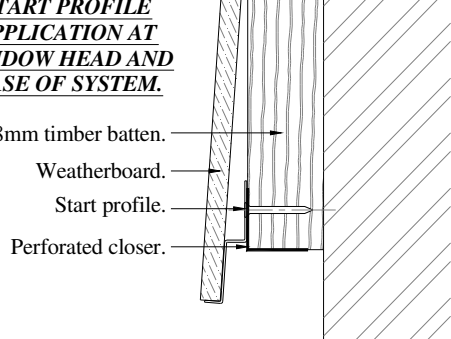
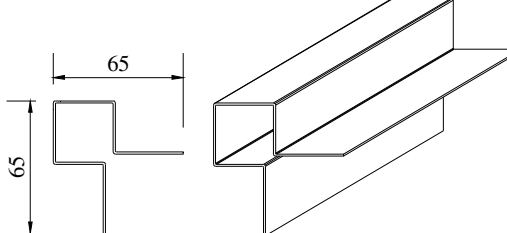
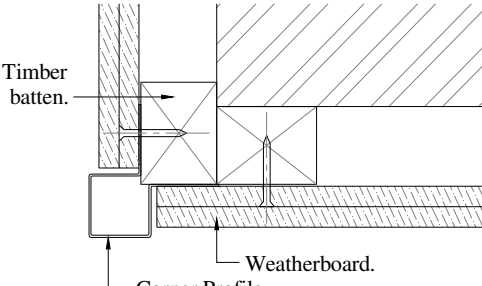
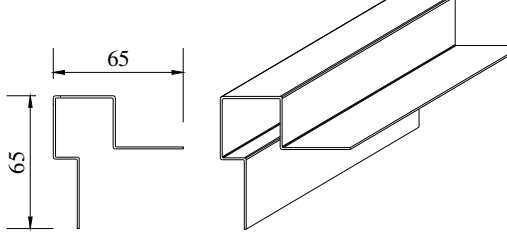
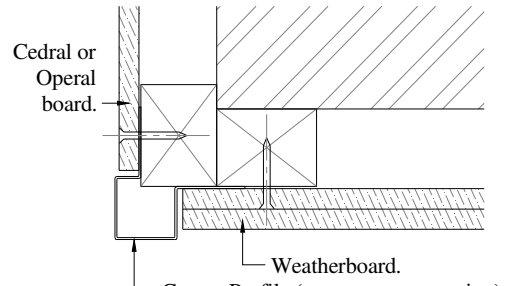
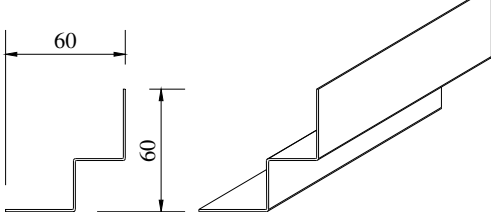
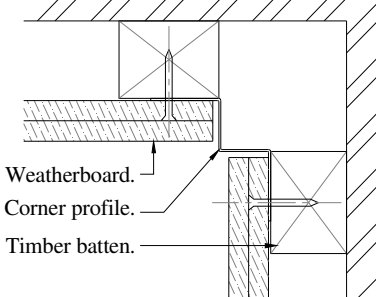
The prime cause for the onset of efflorescence is the retention of water between the Weatherboard planks whilst retained in the pack or its installation in very wet conditions. It is recommended that Weatherboard is stored under cover and clear of the ground prior to being used on site. The polythene wrapper should not be relied on for protection in the open. Care should be taken to prevent excessive moisture running down the rear face of the Weatherboard during installation. A ventilated cavity behind the Weatherboard will help to prevent moisture becoming trapped.

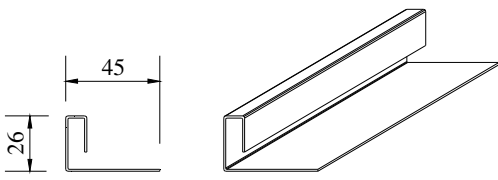
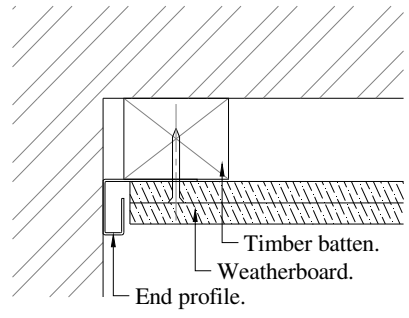
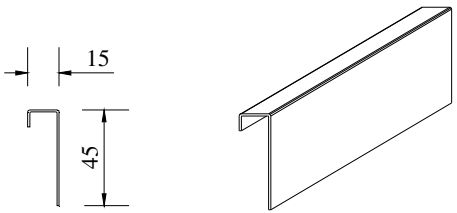
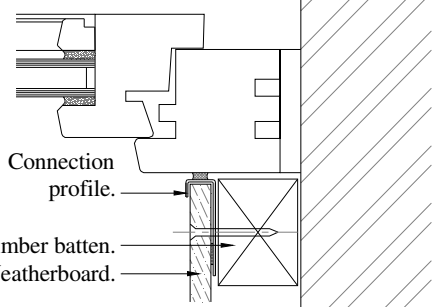
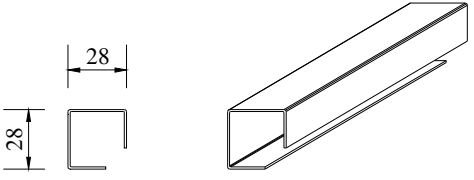
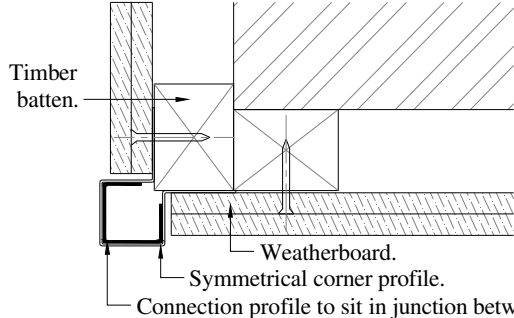
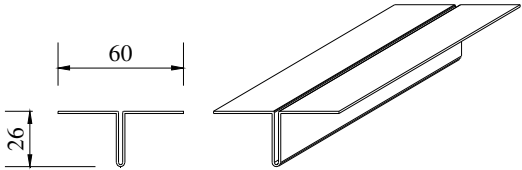
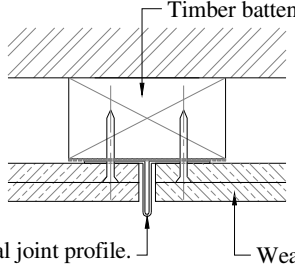
The duration of efflorescence is dependent on the quality and type of deposit and upon prevailing conditions. Water, the element that is initially responsible for its appearance, is also largely responsible for its disappearance.

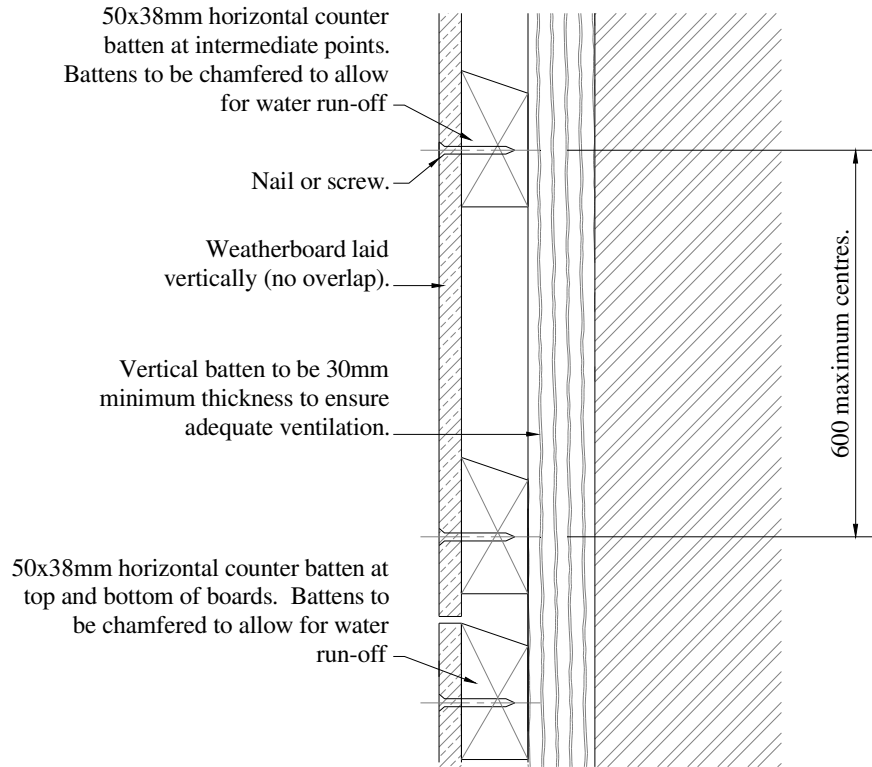
Rainwater being slightly acidic not only dissolves the deposit, but also mechanically removes it by movement down the Weatherboard. Although it is impossible to state categorically how long efflorescence will take to be removed by wind and rain; a period of suitably bad weather is usually sufficient to restore the Weatherboard to an even appearance.

Washing with warm water and a soft brush can accelerate its removal, however care should be taken to avoid damaging the painted surface. More stubborn deposits can be removed with 9.5% acetic acid. Allow to react for a few minutes but do not allow to dry out, then wash with plenty of cold water. Repeat procedure if required. Try on a small area first to avoid damage.

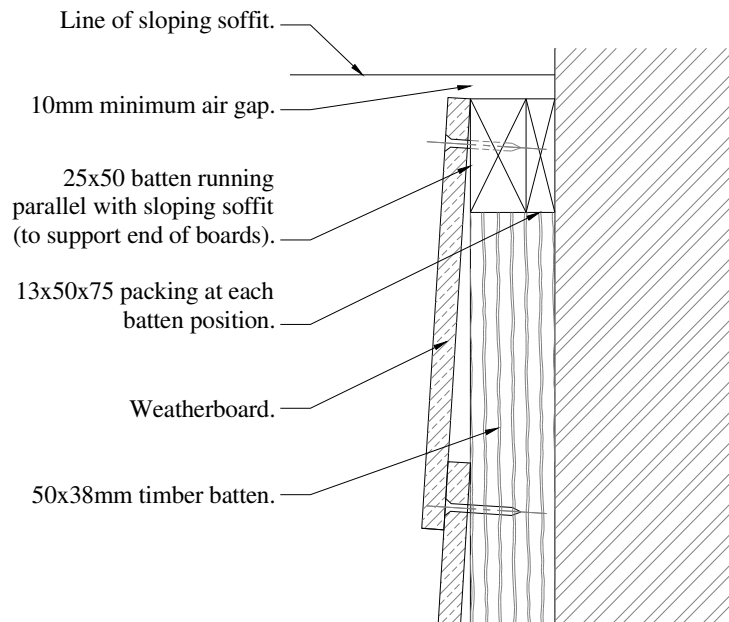
12.0 GENERAL DETAILS

<p><u>START PROFILE.</u></p>  <p><i>Plan and Isometric Detail.</i></p>	<p><u>START PROFILE APPLICATION AT WINDOW HEAD AND BASE OF SYSTEM.</u></p>  <p>50x38mm timber batten. Weatherboard. Start profile. Perforated closer.</p>
<p><u>SYMMETRICAL EXTERNAL CORNER PROFILE.</u></p>  <p><i>Plan and Isometric Detail.</i></p>	<p><u>SYMMETRICAL EXTERNAL CORNER PROFILE APPLICATION.</u></p>  <p>Timber batten. Weatherboard. Corner Profile.</p>
<p><u>SYMMETRICAL EXTERNAL CORNER PROFILE.</u></p>  <p><i>Plan and Isometric Detail.</i></p>	<p><u>ASYMMETRICAL EXTERNAL CORNER PROFILE WINDOW/DOOR REVEAL.</u></p>  <p>Cedral or Operal board. Weatherboard. Corner Profile (see corner connection).</p>
<p><u>INTERNAL CORNER PROFILE.</u></p>  <p><i>Plan and Isometric Detail.</i></p>	<p><u>INTERNAL CORNER APPLICATION.</u></p>  <p>Weatherboard. Corner profile. Timber batten.</p>

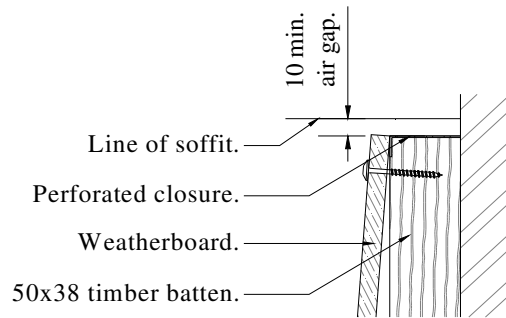
<p><u>END PROFILE.</u></p>  <p><i>Plan and Isometric Detail.</i></p>	<p><u>END PROFILE APPLICATION.</u></p>  <p>Timber batten. Weatherboard. End profile.</p>
<p><u>CONNECTION PROFILE.</u></p>  <p><i>Plan and Isometric Detail.</i></p>	<p><u>CONNECTION PROFILE APPLICATION AT REVEAL.</u></p>  <p>Connection profile. Timber batten. Weatherboard.</p>
<p><u>EXTERNAL CORNER CONNECTION PROFILE.</u></p>  <p><i>Plan and Isometric Detail.</i></p>	<p><u>CORNER CONNECTION PROFILE APPLICATION.</u></p>  <p>Timber batten. Weatherboard. Symmetrical corner profile. Connection profile to sit in junction between lengths of external corner profiles.</p>
<p><u>VERTICAL JOINT PROFILE.</u></p>  <p><i>Plan and Isometric Detail.</i></p>	<p><u>VERTICAL JOINT PROFILE APPLICATION.</u></p>  <p>Timber batten. Weatherboard. Vertical joint profile.</p>



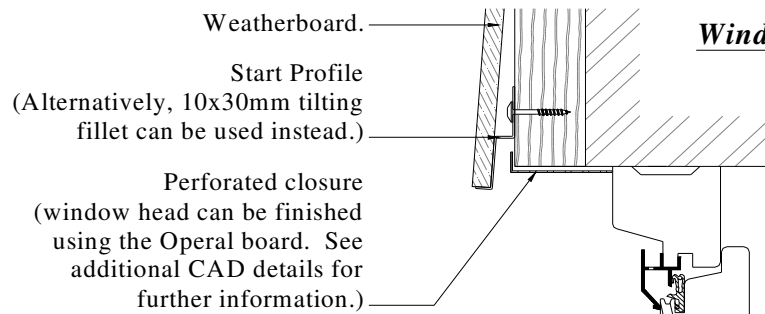
Vertical Weatherboard (Vertical Section).



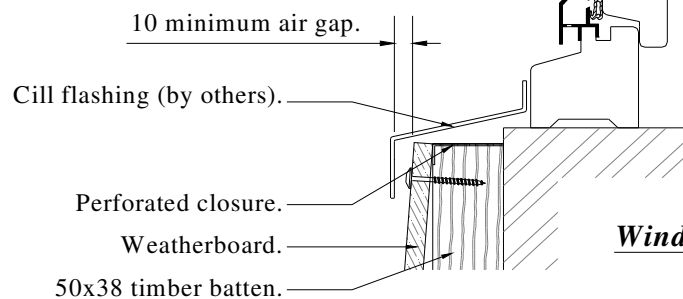
Sloping Soffit Detail.



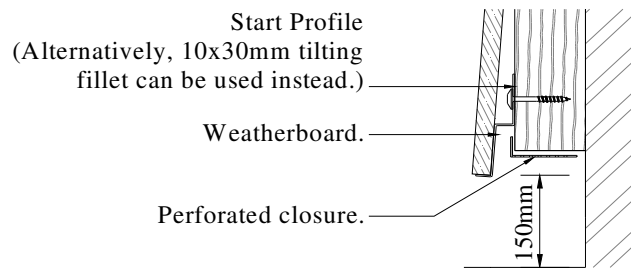
Soffit Detail



Window Head Detail



Window Cill Detail



Base Detail



For CAD details and further information, contact:

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Website: www.marleyeternit.co.uk