CEDRAL

- ✓ maintenance free
- ✓ free from painting
- ✓ easy to install

Design & Installation Guide

Cedral Lap

New Zealand

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Introduction

General information

With the visual appeal of natural timber, simplicity of installation and resistance to rot, Cedral is an attractive, low maintenance alternative to all types of weatherboard, and can be used internally or externally for residential and commercial buildings.

This Design and Installation Guide serves only as a general guide providing basic design considerations and information in relation to application and installation of Cedral Horizontal and Vertical façade systems for common external applications.

The information in this guide is comprehensive but not exhaustive, and the reader will need to satisfy themselves that the contents of this guide are suitable for their intended application. It is the responsibility of the project consultants (designer, architect, and engineers) to ensure that the information and details provided in this document are appropriate for the project.

Disclaimer

The information in this document is correct at the time of issuing. However, due to our committed program of continuous material and system development we reserve the right to amend or alter the information contained in this document without prior notice. Please contact your local Cedral sales organisation or visit *www.cedral.world* to ensure you have the most current version. This document is supplied in good faith and no liability can be accepted for any loss or damage resulting from its use. Images and construction details contained in this document are not to a specific scale, and are indicative and for illustration purposes only.

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Product

For more technical information including Cedral Lap manufacturing tolerances, profile dimensions and physical properties refer to Cedral Lap Material Information Sheet

Cedral Lap

Cedral Lap is a fibre cement cladding plank installed in a traditional lapped style, giving your façade beautiful, deep shadow lines. Cedral Lap is an attractive, low maintenance alternative to all types of weatherboarding, and is available in a wood effect or a smooth, contemporary finish.

Length	3600 mm
Width	190 mm
Thickness	10 mm
Weight	11.2 kg per plank

Cedral Lap Wood

Cedral Lap Smooth

Product features

- Easy to install
- Low maintenance
- Resistant to rot and immune to attack by pests and insects
- Water resistant
- A2-s1, d0 (EN13501)
  Type A for external cladding & Group 1-S for internal lining (NZBC)
- UV resistant
- Pre-finished with factory applied colour

Colour range

Cedral Lap is supplied in a range of 22 factory applied colours, providing an aesthetic option to suit most project requirements. Bespoke colours are subject to minimum order quantities and extended lead times.

This colour chart shows the broad range of available colours. However, a 100% accurate representation of the colours is not technically feasible in this overview. The final choice of colours needs to be based on samples. Request a sample from your local Cedral distributor.

Mineral Colours

C 01 Everest White
RAL: 9003 - NCS: S 0500 - N

C 05 Shark Grey
RAL: 7047 - NCS: S 3000 - N

C 52 Pearl
RAL: 7030 - NCS: S 4502 - Y

C 56 Metal Grey
RAL: / - NCS: S 5502 - Y

C 53 Lead
RAL: 7039 - NCS: S 6502 - Y

C 54 Mouse
RAL: 7037 - NCS: S 6500 N

C 50 Black
RAL: 9011 - NCS: S 9000 N

Forest Colours

C 07 Cream White
RAL: 9001 - NCS: S 1005 - Y 10 R

C 02 Vanilla
RAL: 1015 - NCS: S 1010 - Y 20 R

C 57 Vintage Beige
RAL: / - NCS: S 4010 - G 90 Y

C 58 Olive Green
RAL: 7002 - NCS: /

C 59 Quartz Grey
RAL: / - NCS: S 6005 - G 80 Y

C 60 Anthracite
RAL: / - NCS: S 7502 - Y

C 04 Dark Brown
RAL: 8019 - NCS: S 8005 - Y 80 R

Earth Colours

C 11 Cappuccino
RAL: 1001 - NCS: S 3020 - Y 20 R

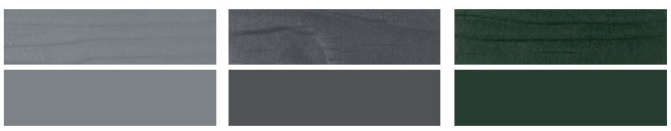
C 03 Clay
RAL: 1019 - NCS: S 3005 - Y 20 R

C 14 Atlas Brown
RAL: / - NCS: S 4005 - Y 50 R

C 55 Mol
RAL: 7006 - NCS: S 6005 - Y 50 R

C 61 Swedish Red
RAL: / - NCS: S 5040 - Y 80 R

Ocean Colours

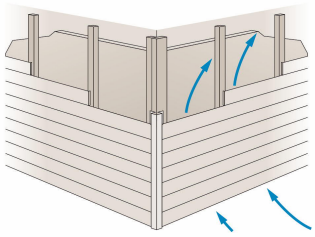


C 15 Ash Grey
RAL: / - NCS: S 6005 - R 80 B

C 18 Slate Grey
RAL: 7024 - NCS: S 7502 - B

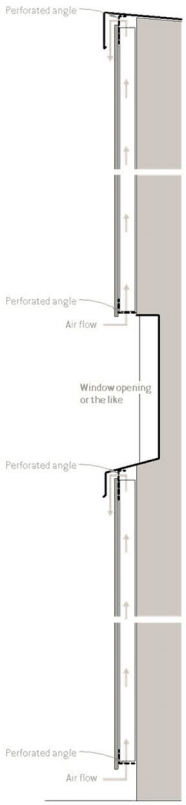
C 31 English Green
RAL: 6009 - NCS: S 8010 - G 10 Y

Cedral Lap Facade



Ventilated facade

Cedral Lap has been designed for a ventilated façade system. A ventilated façade is a kind of two stage construction, an inner structure with a protective outer skin, and the cladding panel or rainscreen. A ventilated façade consists of an insulated and weathertight structure, a ventilated cavity formed with a cladding support frame and the cladding panel.



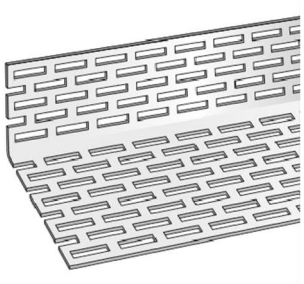
Allowance for adequate ventilation is paramount in ensuring a successful Cedral façade. Ventilated façade provides a number of added benefits to the building and its occupants. These may include but are not limited to the following:

- Positive contribution to energy savings
- Assists with condensation management
- Minimises thermal bridges by providing an opportunity for applying external insulation
- Reduces thermal movement of the structure and cladding support frame
- Dissipates radiant heat
- Increases acoustic performance of the external wall
- Provides an effective drainage path for any moisture passing the cladding skin
- Eliminates the need for exposed caulking and sealant, therefore reducing maintenance requirements
- Assists with keeping the weather barrier dry and healthy
- Provides opportunities for concealing external services such as downpipes within the cavity
- Proven to be a more sustainable and healthier façade construction
- Architectural design flexibility

Air must be allowed to enter the cavity from bottom of the façade, window head, soffit, slab junctions, and the like, and exit from top of the façade, capping, window sill, slab and soffit interfaces, and the like. The size of air inlets and outlets depends on the height of the façade and the vertical distance between them. Generally, where the vertical distance between air inlet and outlet does not exceed 4 metres a bare minimum 10mm gap is sufficient for ventilation.

All air inlets and outlets shall be protected against entry of birds and vermin into the cavity with a corrosion resistant perforated profile (angle).

The perforated angle should be of maximum 0.9 mm in thickness, where placed between the cladding panel and support frame, and be of a recommended minimum 50% open area with aperture size of maximum 3 mm to 5 mm. The bare minimum allowable open area percentage for the perforated profile is 35% in which case the specified minimum 10 mm gaps for ventilation need to increase to minimum 20 mm.



The perforations must be kept open and unobstructed to maintain drainage and ventilation of the cavity. The perforated angle shall be positioned to allow an adequate drip edge to the cladding panel.

Cedral Lap Facade

Cedral Lap Horizontal

Cedral Lap may be installed horizontally on vertical timber or metal support frame forming a cavity behind the cladding for drainage and ventilation.

Cedral Lap Vertical

For vertical installation of Cedral Lap, the planks are installed to a layer of horizontal timber or metal support frame fixed to vertical timber or metal profiles, providing a cavity between the horizontal support frame and weather barrier or external insulation for drainage and ventilation.

Cedral Lap Undulated

Cedral Lap may also be installed vertically in an undulated pattern. Like Cedral Lap Vertical, the planks are fixed to a layer of horizontal timber or metal support frame which are then fixed to a layer of vertical timber or metal support frame, providing a drained and ventilated cavity.

General components

Cedral Lap fixings

Cedral Lap is fixed to timber or metal support frame with Cedral Lap nail or screw fixings.

Cedral Lap nail
For nail fixing Cedral Lap to timber batten
(Flat head, ribbed shaft, stainless steel 304)

Cedral Lap Horizontal ✓
Cedral Lap Vertical ✓
Cedral Lap Undulated x

Cedral Lap countersunk timber screw
For screw fixing Cedral Lap to timber batten
(TORX T20, stainless steel 304)

Cedral Lap Horizontal ✓
Cedral Lap Vertical ✓
Cedral Lap Undulated ✓

Cedral metal screw
For fixing Cedral Lap to metal support frame
(Phillips n°2, stainless steel 304)

Cedral Lap Horizontal ✓
Cedral Lap Vertical ✓
Cedral Lap Undulated ✓

Where exposed fixings are requried Cedral screws are used.

Cedral Lap colour matched mushroom head screw
For fixing Cedral Lap to timber batten where face fixing is required
(TORX T20, stainless steel 304)

Cedral Lap Horizontal ✓
Cedral Lap Vertical x
Cedral Lap Undulated x

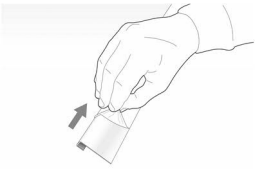
Cedral dome head colour matched screw
For screw fixing Cedral Lap to timber batten
(TORX T20, stainless steel 304)

Cedral Lap Horizontal x
Cedral Lap Vertical ✓
Cedral Lap Undulated ✓

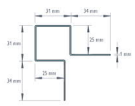
Cedral Lap flashings (profiles)

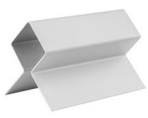
Unless stated otherwise, all Cedral Lap profiles are colour coded aluminium profiles to match and complement the Cedral range, and are supplied in 3m lengths. The profiles are embossed on the rear with the Cedral brand.

All Cedral profiles are supplied with a protective film which needs to be removed before installation. Disregard the printed arrows on the protective film when installing Cedral cladding.



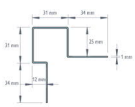
Cedral Lap *symmetric* external corner profile





Cedral Lap Horizontal ✓
Cedral Lap Vertical ✓
Cedral Lap Undulated ✓

Cedral Lap *asymmetric* external corner profile



Cedral Lap Horizontal ✓
Cedral Lap Vertical ✓
Cedral Lap Undulated ✓

General components

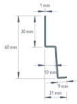
External corner junction (connector) profile
Used for connecting external corner pieces where required (colour black, length 300 mm)

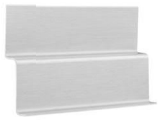
Cedral Lap Horizontal ✓
Cedral Lap Vertical ✓
Cedral Lap Undulated ✓

Cedral Lap internal corner profile

Cedral Lap Horizontal ✓
Cedral Lap Vertical ✓
Cedral Lap Undulated ✓

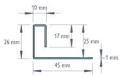
Cedral Lap starter profile





Cedral Lap Horizontal ✓
Cedral Lap Vertical ✓
Cedral Lap Undulated x

Cedral Lap end profile



Cedral Lap Horizontal ✓
Cedral Lap Vertical ✓
Cedral Lap Undulated ✓

Note: Cedral Click end (connection) profile may also be used with Cedral Lap at junctions interfacing a single layer of planks (not lapped).

Other cladding components

0,75 mm flat EPDM strip 100 mm wide.

Applied on timber cavity battens for moisture protection as specified on the construction details

Cedral Lap Horizontal ✓
Cedral Lap Vertical ✓
Cedral Lap Undulated ✓

EPDM compressible gasket
Tesa® 61102

A compressible closed-cell EPDM gasket used for sealing interfaces with flashings and the like (Minimum width: 9 mm)

Cedral Lap Horizontal ✓
Cedral Lap Vertical ✓
Cedral Lap Undulated ✓

Expanding foam gasket
pro clima CONTEGA® FIDEN EXO

A pre-compressed sealing tape used to seal interfaces with window joineries and the like as specified on the construction details.

The required tape size depends on the gap which needs to be sealed. Refer to pro clima CONTEGA® FIDEN EXO datasheet to determine the required tape size.

Cedral Lap Horizontal ✓
Cedral Lap Vertical ✓
Cedral Lap Undulated ✓

Spacing gasket
Tesa® 4773 gasket

A compressible closed-cell PVC gasket used between horizontal metal support frame and Cedral Lap Undulated
(Minimum width: 9 mm)

Cedral Lap Horizontal ✓
Cedral Lap Vertical ✓
Cedral Lap Undulated ✓

Cedral touch up paint
Touch up paint is available in all colours of Cedral. This should be applied sparingly with a small brush, only where there is damage to paint or on visible cut edges where required.

General components

For information about technical properties and correct application of pro clima products refer to pro clima technical documents, and SOLITEX EXTASANA® (ADHERO) Application and Fixing Guides.

Recommended Weather (resistive) barrier options

Weather barrier option 1

pro clima SOLITEX EXTASANA®

Cedral façade systems have been assessed with pro clima SOLITEX EXTASANA® to E2/VM1 for the purpose of compliance with Clause E2 of the NZBC for the following scope:

- Serviceability wind pressure: Up to ±1515Pa
- Ultimate wind pressure: Up to ±2500Pa
- Building height: Up to 10m

pro clima SOLITEX EXTASANA® shall be applied in accordance with pro clima SOLITEX EXTASANA® installation guidelines and relevant standards.

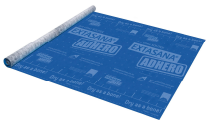
Cedral Lap Horizontal ✓
Cedral Lap Vertical ✓
Cedral Lap Undulated ✓

Weather barrier option 2

pro clima SOLITEX EXTASANA® AHERO

Where a rigid air barrier is required the ADHERO version of pro clima SOLITEX EXTASANA® may be used with 6 mm Kalsi (RigidBacker) fibre cement sheeting.

pro clima SOLITEX EXTASANA® AHERO and Kalsi shall be applied in accordance with their respective installation guidelines and recommendations. Same wind pressure and building height limits as those of Option 1 apply unless otherwise specified by project engineer.



Cedral Lap Horizontal ✓
Cedral Lap Vertical ✓
Cedral Lap Undulated ✓

Weather barrier components

Flashing tape
pro clima TESCON EXTORA®

A pressure sensitive adhesive tape for overlaps, end laps and taping on to flashings and the like. Used with both weather resistive barrier options.

Cedral Lap Horizontal ✓
Cedral Lap Vertical ✓
Cedral Lap Undulated ✓

Sill tape
pro clima TESCON EXTOSEAL®

A flexible tape for use around window and door openings, used with both weather resistive barrier options.

Cedral Lap Horizontal ✓
Cedral Lap Vertical ✓
Cedral Lap Undulated ✓

Sealing tape
pro clima TESCON® NAIDECK mono patch

A single-sided adhesive nail or screw sealing adhesive used with both weather resistive barrier options.

Cedral Lap Horizontal ✓
Cedral Lap Vertical ✓
Cedral Lap Undulated ✓

Foil tape
pro clima TESCON® ADHISO WS

A pure aluminium tape for wet seal connections to TESCON EXTOSEAL® and EXTORA® and SOLITEX EXTASANA®.

Cedral Lap Horizontal ✓
Cedral Lap Vertical ✓
Cedral Lap Undulated ✓

Grommet
pro clima ROFLEX and KALFEX

pro clima ROFLEX is used to seal pipe and pro clima KAFLEX for cable penetrations. pro clima ROFLEX and KALFEX are used with both weather resistive barrier options.

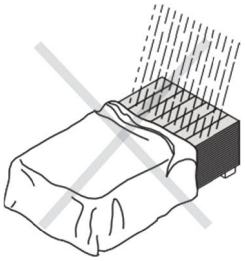
Cedral Lap Horizontal ✓
Cedral Lap Vertical ✓
Cedral Lap Undulated ✓

PRESSFIX
A malleable plastic tool for applying pressure to pro clima Adhesive TESCON® Tapes to ensure long term durable bonding.

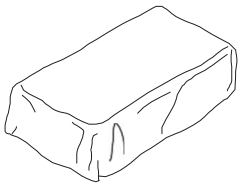
Storage & handling

Storage

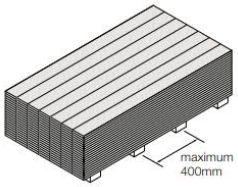
Cedral should be stored under cover on the pallets on which they are supplied. Any temporary transportation cover should be removed to release any trapped moisture and the pack re-covered with an opaque tarpaulin. The planks should be protected from mud staining. For best practice store Cedral in a covered area.



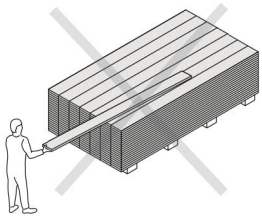
Must be protected from weather



Store under cover, ideally inside



Ensure sufficient bearers, stack on a level surface and never stack against a wall

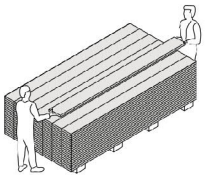


DO NOT drag planks off the stack

Handling

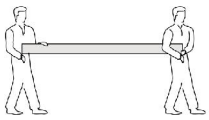
Care should be taken at all times when handling Cedral horizontally on the flat, as it can break. While Cedral is stored on the flat, it should be fully supported along its full length on purpose designed pallets.

Manual handling is best carried out with the planks carried on their sides. When a single person is carrying a plank, it should be turned on to its side before being lifted off the stack, and then the handler must keep their hands as far apart as possible to provide maximum support for the board.



Planks must be lifted off the stack

DO NOT carry planks on the flat



Carry on edge but DO NOT store on edge

Health & safety

As with all products containing quartz, e.g. concrete and clay, when Cedral planks are machined mechanically (cutting, sanding, drilling) the released dust may contain quartz particles. Inhalation of high concentrations of dust may irritate the airways, and dust may also cause irritation of eyes and/or skin. Inhalation of dust containing quartz, especially fine (respirable size) particulate matter, in high concentrations over prolonged periods of time, can lead to lung disease (silicosis) and an increased risk of lung cancer.

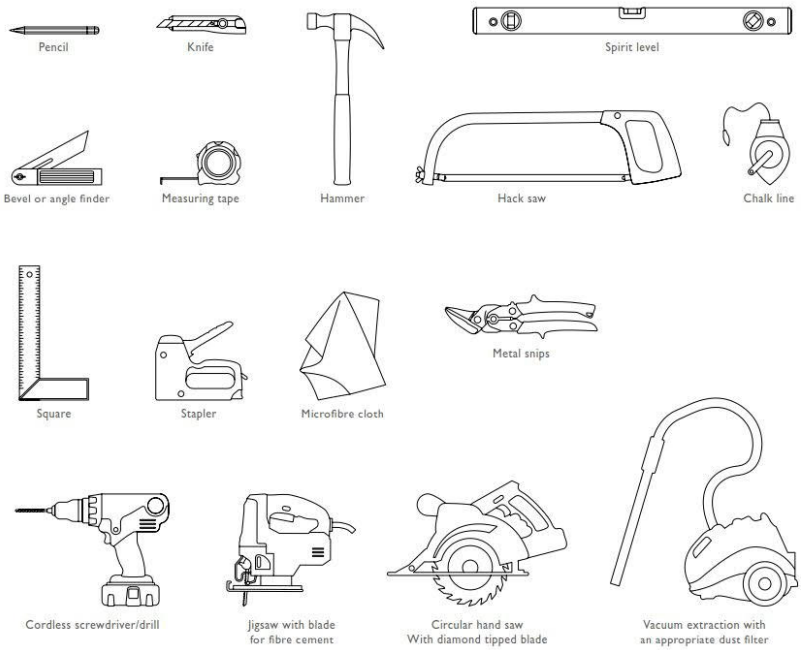
- Avoid dust inhalation with the use of cutting/sanding equipment fitted with dust extraction/suppression accessories wherever practical.
- Ensure adequate ventilation of all work sites.
- Avoid contact with eyes and skin by wearing an approved respirator (a dust mask compliant with AS/NZS 1715 and AS/NZS 1716) together with appropriate personal protective equipment (safety glasses, hard hat, boots and protective clothing).

Refer to Cedral Lap and Click Material Safety Data Sheet (MSDS) for more information about health and safety, including common hazards associated with working with Cedral, and measures to minimise risk.

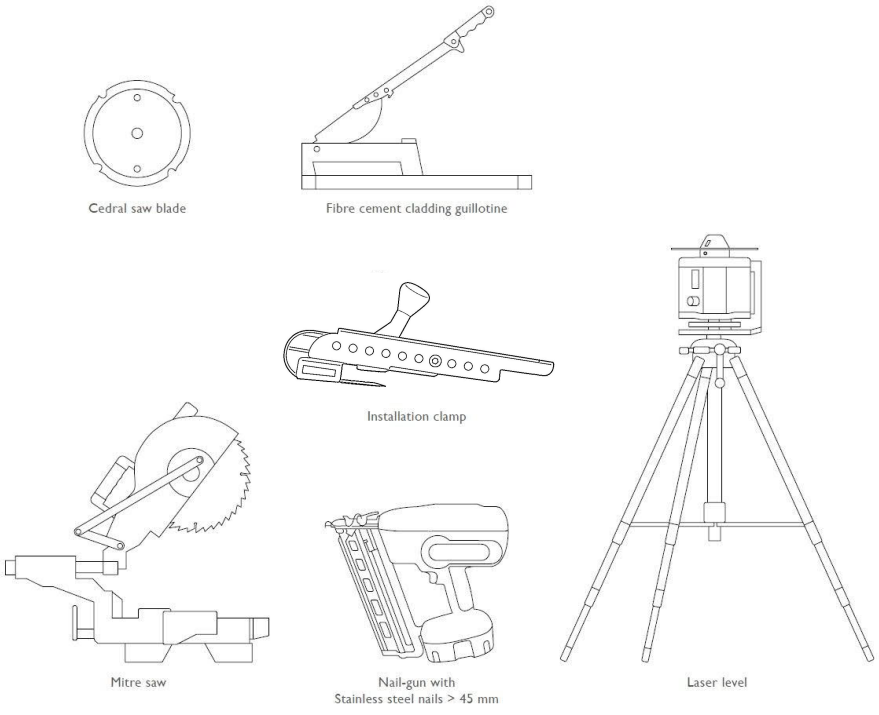
Work with Cedral

General tools & materials

For the installation of Cedral planks the following basic tools and materials are recommended.



For large size projects, the following tools may be also found useful.



Work with Cedral

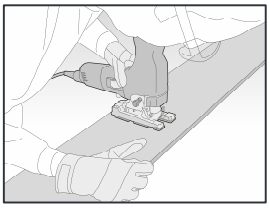
Cutting Cedral

The method of cutting is dependent on the amount of the required cutting. It is possible to cut the planks with a handsaw, guillotine, electric Jigsaw or circular saw.

Cutting using Jigsaw
Cedral can be cut with a specially manufactured fibre cement guillotine. This provides a dust free cutting; however, it may not be as accurate as Jigsaw, circular or mitre saw.

Cutting using Jigsaw

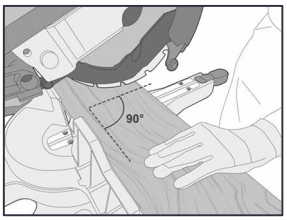
Turning Cedral over and cutting on the reverse will ensure a clean finish on the front of the plank. Jigsaws are useful for detailing Cedral, for example, around openings. It is not recommended to solely use Jigsaw for cutting Cedral on a project.

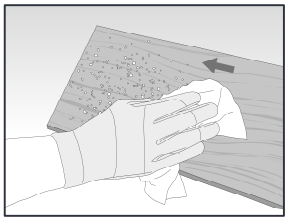


To ensure a neat cut use fibre cement Jigsaw blades. Available from Cedral suppliers.

Cutting using handheld circular saw
A handheld circular saw with fibre cement blades is ideal for cutting large quantities.

Diamond tipped blade (recommended)
A tungsten tipped blade of 36 teeth on a 180 mm diameter blade is recommended for cutting Cedral planks. With this method, cutting from the back of the board is advisable as the saw guide may leave marks across the board surface. Test cutting is recommended.

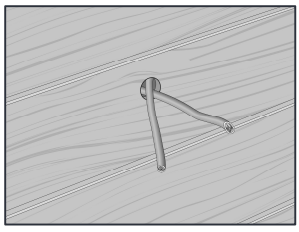




Drilling or cutting penetrations and cut-outs

Depending on the shape and size of the required cut-out, Jigsaw, standard masonry or fibre cement bit or core hole saw may be used.

Always leave a minimum 5-10 mm clearance around any penetrations for movement allowance. Seal the gap with appropriate sealant.



Cutting and drilling must take place in a dry and well-ventilated environment.

Remove dust immediately with a dry micro-fibre cloth.

Permanent staining can result from cement dust if subjected to moisture.

Installation

For a step-by-step guide and information on the application of pro clima weather barrier and its components refer to SOLITEX EXTASANA® (ADHERO) Application and Fixing Guides.

For further information regarding weather barrier refer to Design Consideration section.

Check the quality of Cedral planks and components for any visual defects or damage prior to installation. Contact your local Cedral organisation for any issues. DO NOT install any planks or components which are either damaged or not aligned with the project requirements and specifications.

Prior to installation of Cedral Lap

Checking the following items is recommended before starting the installation of Cedral cladding. The following list is by no means exhaustive.

Before installing weather barrier

- Ensure substructure has been designed serviceable for Cedral cladding (refer to the Design Considerations for further information).
- Ensure substructure can adequately accommodate the required cladding framing; for instance, where substrate is timber or metal frame it must have adequate and correctly located structural noggins to accommodate the cladding framing for Cedral Lap Horizontal.
- Ensure substructure is straight and plumb.
- Check for and remove all sharp edges and burrs from substrate prior to application of a pliable membrane/sarking (weather barrier). Where a rigid weather barrier is intended to be used, check for any additional studs and noggins that may be required for fixing the rigid weather barrier.

Before installing Cedral cladding

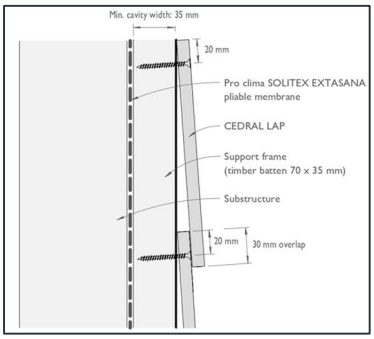
- Ensure the weather barrier and its associated components have been installed free of any defect and in accordance with their manufacturers' recommendations, project requirements and applicable standards and regulations.
- Ensure all the windows/doors (or the like) and their associated components, including any sill tray and flashing, and head and jamb flashing, have been installed as per applicable standards and regulations, project requirements and Cedral Lap Construction Details.
- Ensure adequate ground clearance as per Cedral Construction Details and regulatory requirements. Determine and mark bottom of the cladding.
- Ensure the cladding support frame has been installed correctly, straight and plumb, and in accordance with project engineering design and relevant standards, and spaced as per engineering requirements and Cedral span tables.
- Ensure all the required flashings have been installed correctly and in accordance with applicable standards and regulations, project requirements and Cedral Lap Construction Details.
- Confirm the need for any additional structural support required for accommodating any external fixtures or surface mounted features. Under no circumstances should Cedral planks receive any additional structural loads. Any applied additional supports must not block the air flow and drainage within the cavity.
- Confirm all the interfaces with Cedral, review architectural drawings as well as Cedral Construction Details and prepare accordingly.

Cladding support frame (timber)

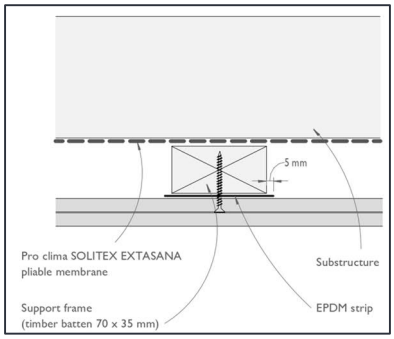
Cedral Lap Horizontal on timber battens

Cedral Lap may be fixed to vertical timber battens with minimum depth of 35 mm and width of 70 mm (35 x 70 mm).

An EPDM strip should be applied, e.g. with staples, to the face of all battens for further moisture protection. The EPDM strip should overhang at least 5 mm from the sides of the batten.



Cedral Lap Horizontal – Section view



Cedral Lap Horizontal - Plan view

Cover all battens with EPDM strip

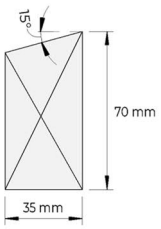
Ensure the cladding support frame is installed correctly, straight and plumb, and in accordance with project engineering design and relevant standards, and spaced as per engineering requirements and Cedral span tables.

Timber battens shall be of minimum preservative treatment of H3.1, and of minimum structural grade of SG6 as per the relevant standards.

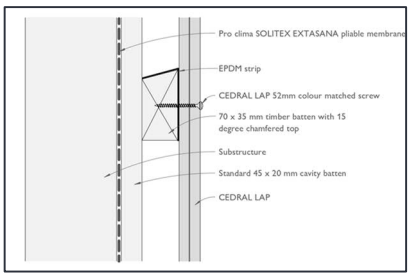
Cedral Lap Vertical & Undulated on timber battens

Cedral Lap may be fixed vertically lapped or undulated to horizontal timber battens with minimum depth of 35 mm and width of 70 mm (35 x 70 mm) chamfered at the top with 15-degree slope. Suitable vertical 45x20 mm cavity battens are used behind the horizontal chamfered battens to form a 20 mm gap between weather barrier and the horizontal battens for ventilation and drainage purposes.

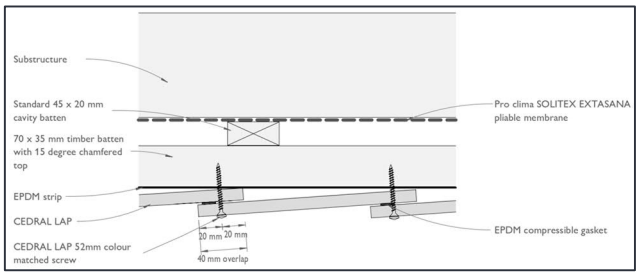
An EPDM strip should be applied to all the horizontal battens for further moisture protection. The EPDM strip in this case should cover both the top and front face of the batten as shown in the following image.



Chamfered batten section



Cedral Lap Vertical - Vertical section view



Cedral Lap Vertical – Plan view

Installation

Ensure the cladding support frame is installed correctly, straight and plumb, and in accordance with project engineering design and relevant standards, and spaced as per engineering requirements and Cedral span tables.

Metal support frame shall be of adequate corrosion resistance required for the project.

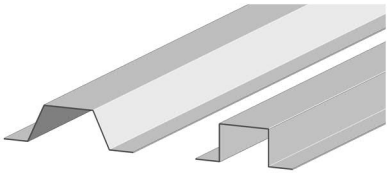
It is recommended that for best practice and to prevent any risk of bimetal corrosion a suitable EPDM or PVC isolation strip/tape is applied to the face of the steel (galvanised or zincalume) support frame profiles to form a separation between the profiles and stainless steel or aluminium Cedral components.

Metal support frame profiles should be compliant with AS/NZS 4600 – Cold-formed steel structures and other applicable standards.

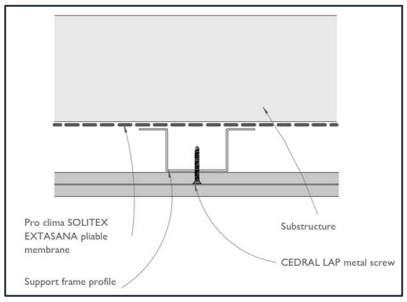
Cladding support frame (metal)

Cedral Lap Horizontal on metal support frame

Cedral Lap may be fixed to vertical metal top hat profiles with minimum gauge (thickness) of 1.1 mm BMT, minimum depth of *35 mm*, and minimum width of 40 & 70 mm for intermediate and joint profiles, respectively.



Examples of standard top hat sections



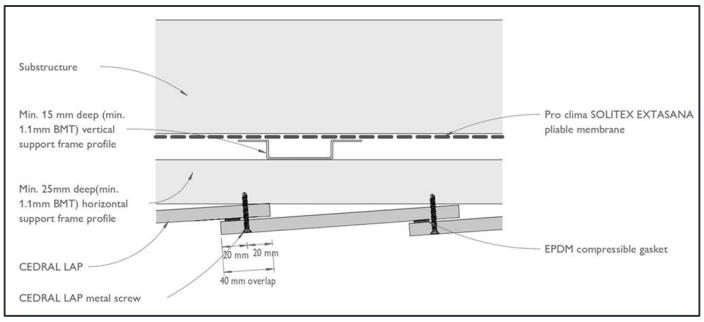
Cedral Lap Horizontal - Plan view

Intermediate top hat's minimum size

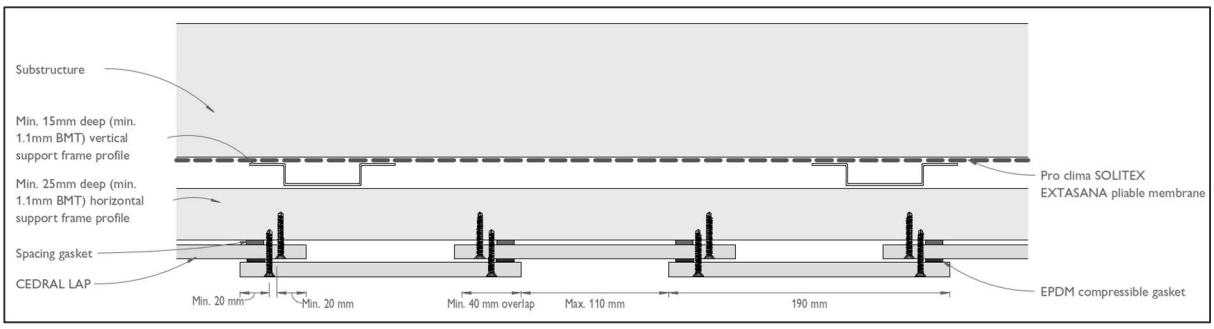
Joint top hat's minimum size

Cedral Lap Vertical & Undulated on metal support frame

For vertical lapped and undulated installation of Cedral Lap, the planks are fixed to horizontal metal top hat profiles with minimum gauge (thickness) of 1.1 mm BMT, minimum depth of *25 mm*, and minimum width of 40 mm and 70 mm for intermediate and joint profiles, respectively. A layer of minimum 15 mm deep (minimum 1.1 mm BMT) vertical top hats are used between the horizontal top hats and weather barrier to form a minimum 15 mm gap behind the horizontal top hats for ventilation and drainage purposes.



Cedral Lap Vertical – Plan view

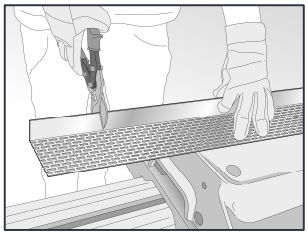


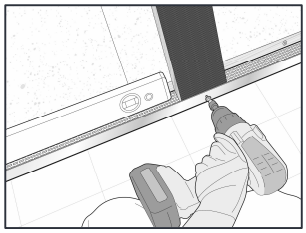
Cedral Lap Undulated – Plan view

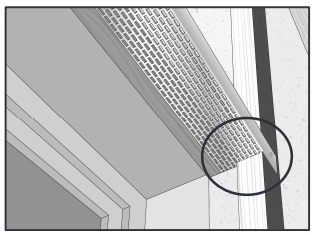
Cedral Lap Horizontal installation

Step 1 – Install perforated profiles or angles

The perforated profiles are for protecting the cavity against birds, rodents and some insects while allowing drainage and air to flow through the system. It may be fixed to support frame using nail or low profile wafer head screw. The profile may need to be notched in some places, e.g. above openings, for fixing to support frame. The locations where a perforated profile may be required may include bottom/top of the façade, window/door head, window sill, and above/below inter storey flashings and the like.







All Cedral profiles and flashings may be cut using a hack saw or metal snips.

For ease of installation and to allow fitting the cladding planks in place all Cedral profiles should be installed with a flat or low profile head stainless steel screw. For fixing to timber batten, Cedral clip screws may be used for fixing the profile. Ensure the screw head sits flat on the profile surface.

Step 2 – Install vertical profiles

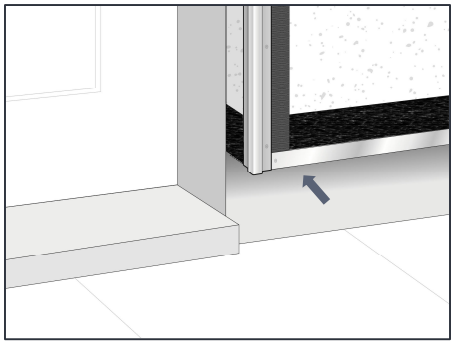
These profiles include:

- External and internal corner profiles
- Jamb profiles of windows/doors (or the like)
- End profiles

External corner profiles

Internal corner profile

End profile



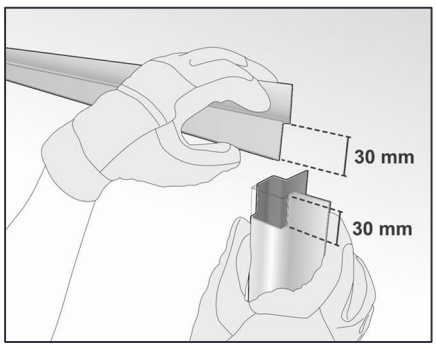
Ensure the bottom of the external and internal corner and end profiles are flash with the installed ventilated profile which indicates bottom of the cladding.

Ensure vertical profiles are installed straight and plumb

For typical construction details and interfaces as well as better understanding of the common location and application of Cedral profiles refer to Cedral Construction Details which are available as separate documents.

Depending on the project detailing and requirements, external corner profile may be used as a jamb profile at openings (doors/windows). In this or similar case, where the profile meets a starter profile above an opening it may be notched accordingly for a neat finish.

Corner profile meeting a starter profile above an opening



Notch the corner profile where meeting a starter profile. The lintel profile may need to be cut longer on the flange located on the opening reveal; refer to Cedral Construction Details fro further details.

Remember safety

Profile edges can be sharp. Wear gloves!

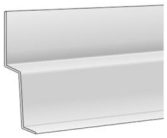
Installation

The typical minimum ground clearance (distance from bottom of the cladding to finished floor) is 150 mm, or greater to the regulatory requirements, for Cedral cladding. Determine and mark the required ground clearance for the correct position of the starter profile. Refer to Cedral Construction Details document for common details.

Step 3 – Install Cedral starter profile

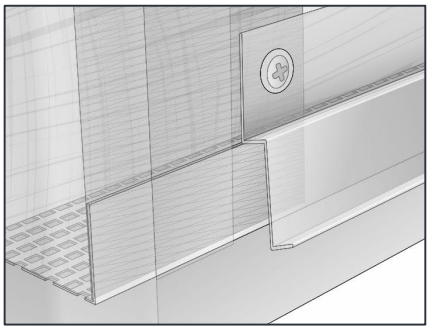
Now that all vertical profiles are in place it is easy to measure the distance between the profiles to determine the required length of the Cedral Lap starter profile.

Starter profile is installed to support the first row of planks e.g. across the bottom of the façade and above an inter storey flashing. It is important that the starter profile is installed perfectly level.

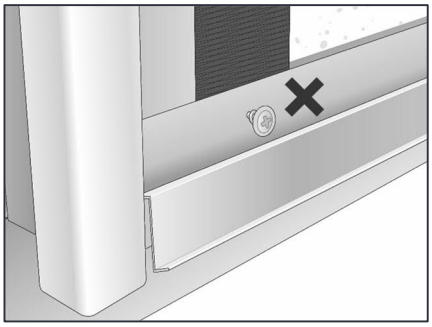


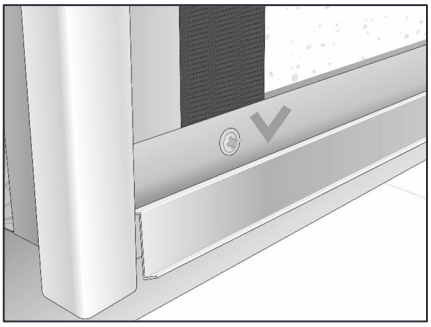
Cedral Lap starter profile

Ensure the starter profile is installed true level and next to the corner/end profiles



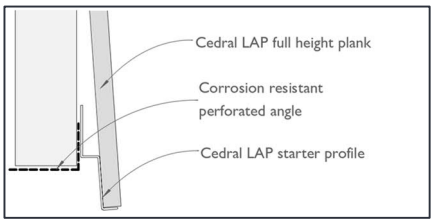
The starter profile is installed over the ventilated profile, and next to the vertical profile.



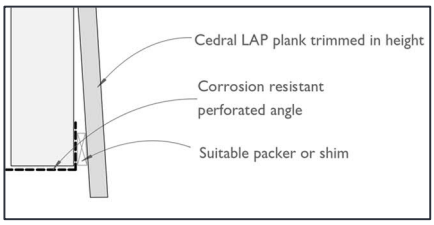


Use stainless steel low profile wafer head screws for fixing Cedral flashings and starter profiles to support frame. Ensure screws sit flush with the profile surface.

The need for starter profile above openings or the like depends whether the interfacing plank is full or trimmed in height. Starter profile can only be used with full height plank.



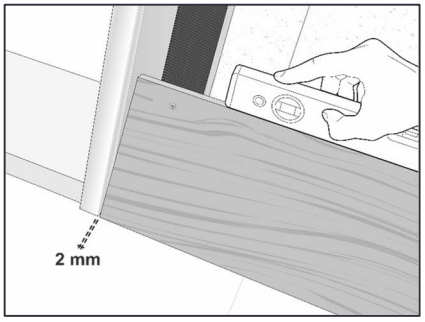
Cedral Lap starter profile is only used with full height plank



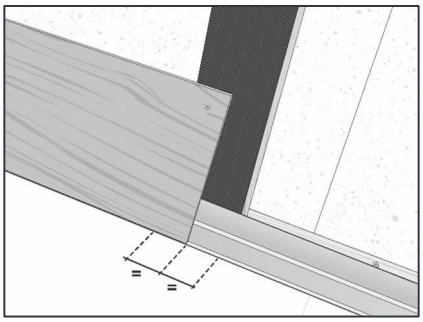
Planks trimmed in height should be packed out appropriately

Step 4 – Install Cedral Lap

Now it is time to finish the cladding. Start the installation at a lower corner of the building and install the first plank, fastening it to each batten using the Cedral Lap nail or screw.

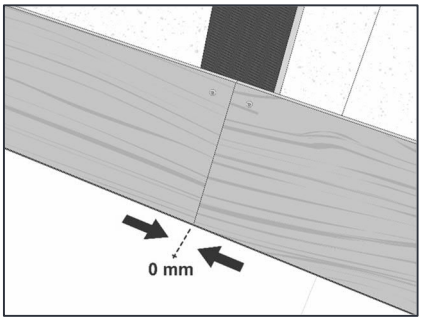


Position the first plank on the starter profile, keeping a 2 mm gap. Fit the bottom of the strip into the profile.

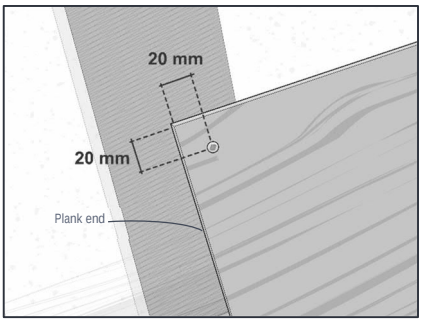


Make sure that the plank end aligns with the middle of the vertical batten (support frame).

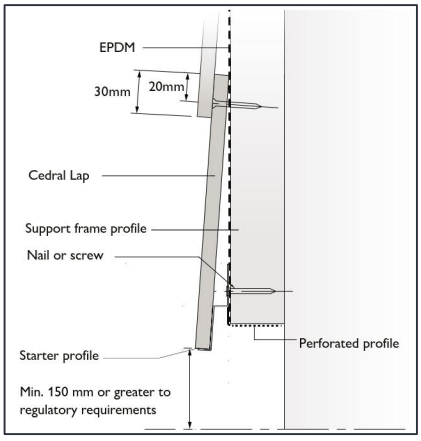
Insert the next Cedral plank next to the first one, until the first row is completed. The cut-off piece of the first row can then become the starting piece of the next row, as long as butt joints meet at the middle of a vertical batten. Then work your way up and continue successive rows, following a staggered pattern, until doors or windows interrupt the build-up.



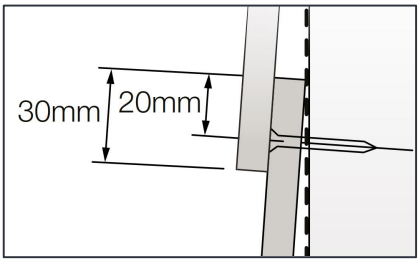
Mount the next plank. Place abutting planks in such a way that the ends touch (no gap) and they always meet at the centre of a support frame profile. Planks should be loosely butted (no force).



Keep fixings minimum 20 mm away from plank top and side



Schematic base detail (Refer to Cedral Construction Details documents for further information)



Next row of planks should always overlap the bottom row by minimum 30 mm. The overlap should not be more than 45 mm.

Before installing the Cedral planks, double check that the starter profile is level and that it starts at the same height everywhere. Also double-check to ensure that the vertical airflow remains unobstructed.

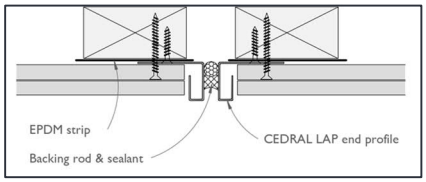
Each time a plank is fitted it is best to do a quick visual check to ensure that the plank is fixed to all battens with clips and that no clip or fixings is missing. Ensure clips are level and the plank is inserted correctly.

For information about maximum spacings of Cedral Lap clips with respect to wind loading (fixings span tables) refer to Span Table section of this document.

For typical construction details, including generic detailing around windows/doors, refer to Cedral Construction Details documents.

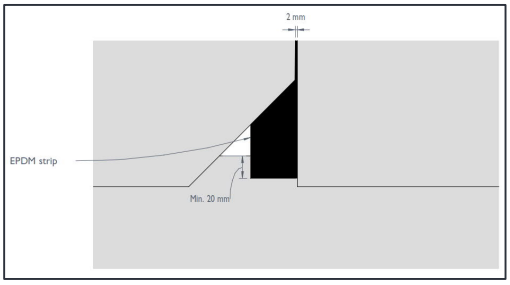
Installation

Where planks are butt joined, a minimum 10 mm control joint is required maximum at every 20 metres in a continuous run of cladding. The control joint is not required if a 2 mm gap is applied between the planks at every joint. Refer to Design Consideration section of this document for further details on movement and control joints.

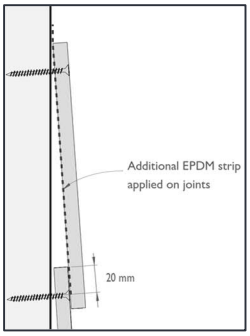


A minimum 10 mm control joint will be required at every 20 m if butt joining the planks at every joint

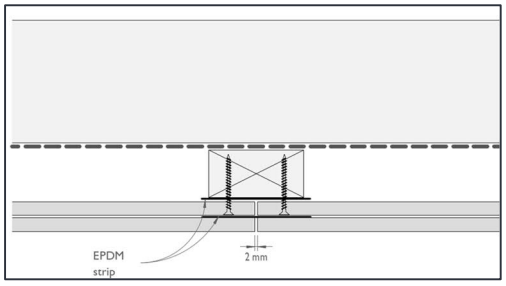
A minimum 200 mm long piece of the recommended EPDM strip should be applied at the joints such that the strip is fixed to the support frame profile at the top and overlaps the bottom planks by 20 mm.



Cedral Lap joint - Elevation



Cedral Lap joint – Vertical section

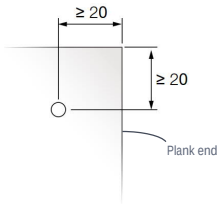


Cedral Lap joint – Plan view

Cedral Lap fixings edge distance

Cedral Lap fixings must be located at least 20 mm away from the side and top edges of the plank.

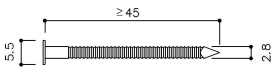
- Minimum fixings edge distance: 20 mm
- Maximum fixings edge distance: 150 mm



Min. fixings edge distance

Nail fixing of Cedral Lap

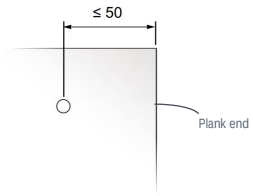
Cedral Lap may be nail fixed to timber batten using Cedral stainless steel, flat head, ribbed shank nails.



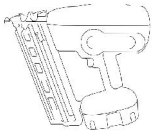
Installation

The plank may be hand nailed without pre-drilling when the nails are at least 50 mm away from the end of the plank.

For nails closer than 50 mm to the end, nail positions need pre-drilling with a 3 mm masonry or fibre cement drill bit.



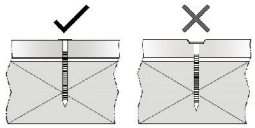
Predrilling required where Cedral fixings fall within 50 mm from plank end



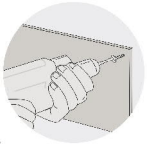
Nail-gun with Stainless steel nails > 45 mm

Cedral can be pneumatically nailed. There is a large selection of guns on the market, which may be used. Minimum 45 x 2.8 mm ribbed shank stainless steel nails with a minimum 5.5 mm flat head must be used. The requirement for predrilling of Cedral Lap with 3 mm drill bit also applies to pneumatic nailing where fixings fall within 50 mm of the plank ends.

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



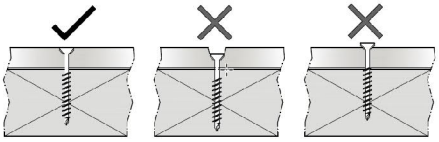
Ensure fixings sits flush with Cedral face and does *not* penetrate in the plank



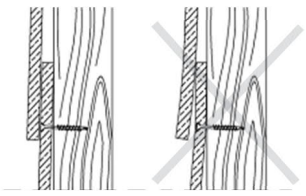
Screw fixing of Cedral Lap (recommended)

For a more reliable and consistent fixing, screw fixing is recommended. Cedral Lap may be fixed to timber or metal support profile with Cedral Lap screws without requiring pre-drilling where fixings are at least 50 mm from the plank end. Where screws are to be within 50 mm of the plank end pre-drilling with 4 mm masonry or fibre cement bit is required.

The screws must be inserted perpendicular to the panel surface using an electric drill with a high quality bit suitable for the type of screw head. The screw must sit flush with plank face. Do *not* overtighten the screws.



Ensure screw sit flush with plank face



Ensure screwing perpendicular to plank face. Do not overtighten the screw.

Do NOT pre-drill Cedral Lap once it is placed on wall. Pre-drilling must be done prior to positioning the plank on the façade.

Pneumatic nailing might the quickest fixing method but not necessarily the most reliable one as it requires regular adjustments and checks to ensure correct fixation. The pressure needs to be set so that nail sits flush with the plank face. Nail must NOT penetrate in the plank.

The recommended fixing method is screw fixing using Cedral Lap screws.

Installation

If the clamp is inserted too close to a batten (support frame) the lower plank cannot be pushed in. This makes inserting of the clamp more difficult, and may also scratch and damage the coating.

Cedral installation clamp

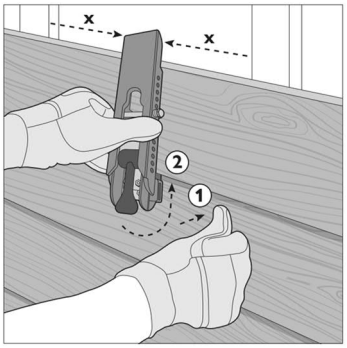
Cedral clamp may be used for installation of Cedral Lap. It allows for one person installation of the planks.

Cedral installation clamp

- ✓ Works as a second pair of hands
- ✓ Easy to use

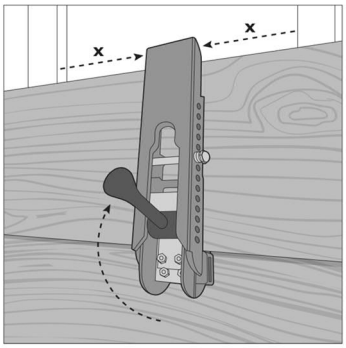
The following is a step by step guide for the installation of Cedral Lap, using Cedral installation clamps.

1

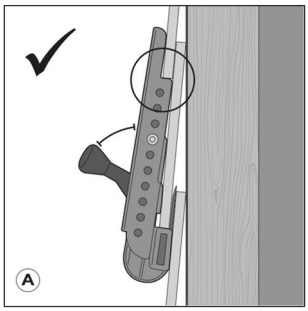


Insert the clamp as close as possible to the midspan between the battens. Push the lower plank slightly in by hand to make it easier to slide the clamp underneath.

2



Tighten the clamp by pulling the lever up. Do not overtighten as the top of the clamp will be pushed away. See also figure A and B.

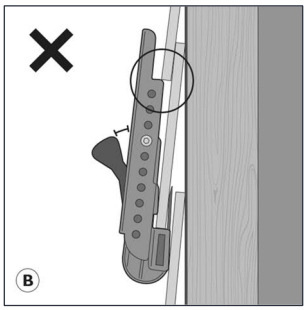


3

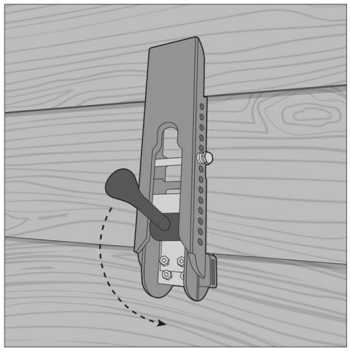
Place the next plank on the clamps.

4

Apply the fixings.

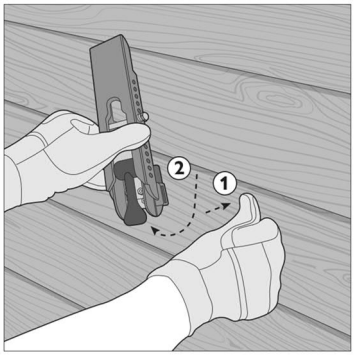


5



To remove the clamp, first pull the lever down.

6

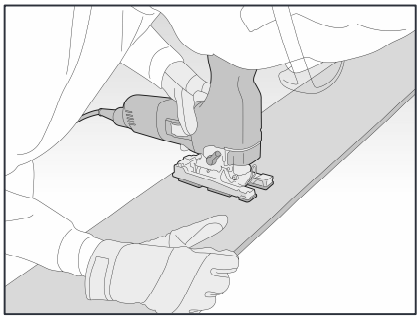


Slightly push the lower plank in to allow easy removal of the clamp.

Interface with window sill flashing

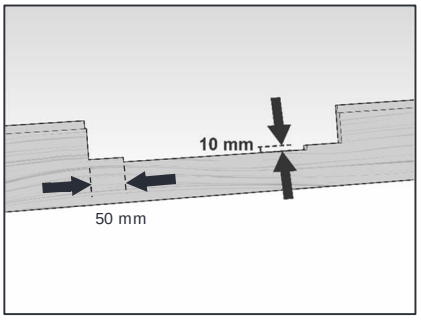
To trim the last plank under the window sill flashing, first mark the location of the sill on the plank. For this, turn the strip over and trace the outline of the sill on the back of the plank. Provide a 10 mm gap between the sill flashing and the plank for ventilation.

Mark the location of the plank.

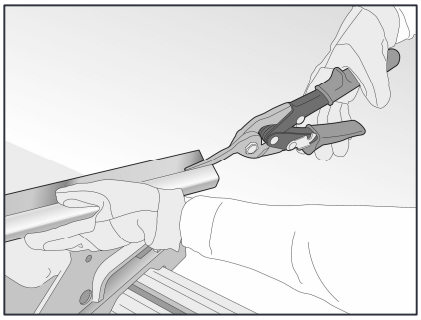


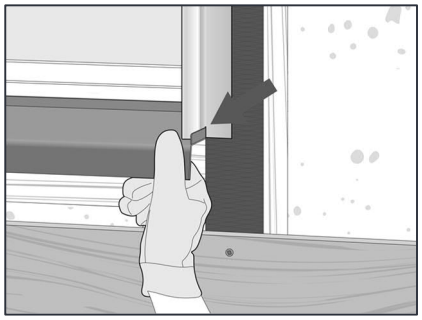
Use a jigsaw to cut out the space you marked on the back of the plank to accommodate the window sill flashing and ventilation.

Install the trimmed plank, which now matches the window and sill. Take extra care not to break the plank where the edges have been cut out.



Mark 50 mm from each end and trim the plank by 10 mm as shown in the image for a 10 mm ventilation gap under the sill flashing.





Cut the jamb profile or flashing and adequately notch it at the bottom to accommodate the window sill upstand. It is recommended that the sill flashing has a minimum 15 mm upstand at each end.

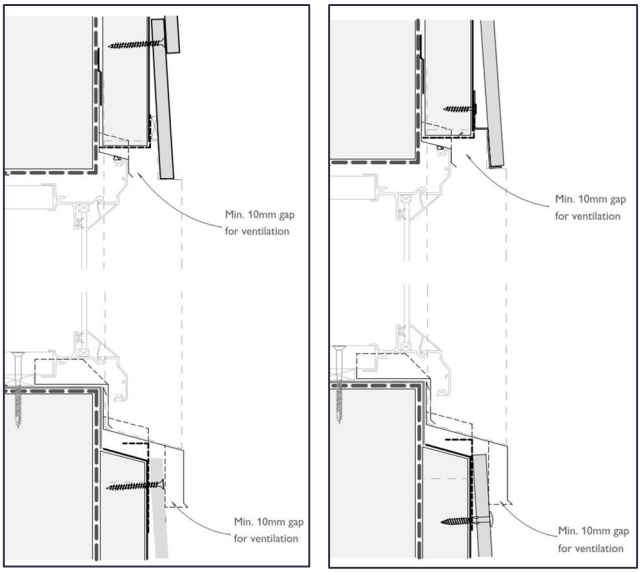
Installation

Interface with window head

Planks above windows and doors may need to be trimmed. To do so, position the plank in place and ensure on the full width side it is fully engaged with the clips of the below row, and then mark and trace the outline of the top of the window on the back of the plank. Cut the plank using a Jigsaw.

Depending on whether the plank interfacing window head is full or trimmed in height, a starter profile may be required. Cedral Lap starter profile is only used with full height plank. A trimmed plank located above an opening or the like requires appropriate packing.

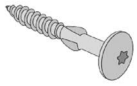
Allow minimum 10 mm gap at window/door head and sill interface for ventilation.



Ensure ventilation gaps are allowed at window/door heads and the like. For full details refer to Cedral Construction Details documents.

Colour coded Cedral Lap screws

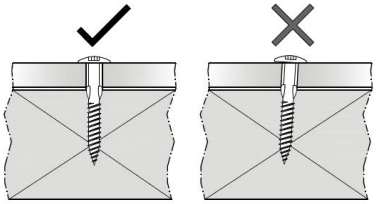
Where fixings are visible, colour coded mushroom head Cedral screws may be used for fixing Cedral Lap to timber support frame.



Cedral Lap colour matched mushroom head screw

Instances where fixings may be visible may include the following:

- For the top last row of planks
- For the planks located just under the window sill flashing, capping, inter storey flashing or the like
- For Cedral Lap located on some window/door reveals

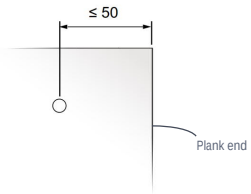


Ensure the screw is applied perpendicular and flush with panel face

Face fixing the last row of Cedral Lap using Cedral face fixings

Installation

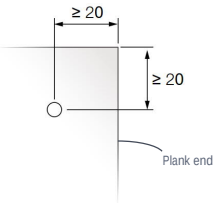
For the application of the Cedral mushroom head screw to timber batten, no pre-drilling of plank is required. However, for fixing Cedral metal screw to metal support frame pre-drilling is required where the screw is to be within 50 mm from the end of the plank.



Predrilling required where Cedral metal screw falls within 50 mm from plank end

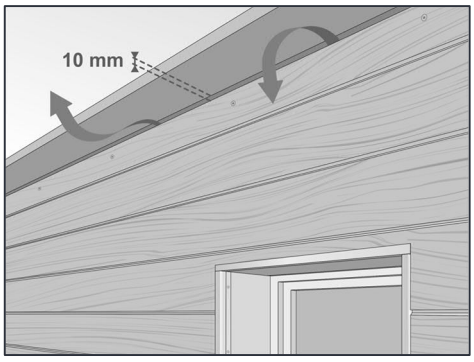
The screws must be inserted perpendicular to the panel surface using an electric drill with a high quality bit suitable for the type of screw head. Do not overtighten the screws.

Minimum fixings edge distance: 20 mm
Maximum fixings edge distance: 150 mm



Min. fixings edge distance

The top row planks may require cutting or trimming in height to ensure allowance for a minimum 10 mm ventilation gap at the top of the façade. In multistorey buildings or where Cedral meets underside of a slab or floor level, a larger gap may be required depending on the required movement allowance of the slab or floor level, which needs to be confirmed by the project engineer.

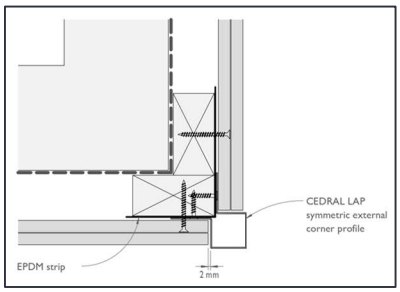


Min. 10 mm gap is required at the top of the façade for ventilation.

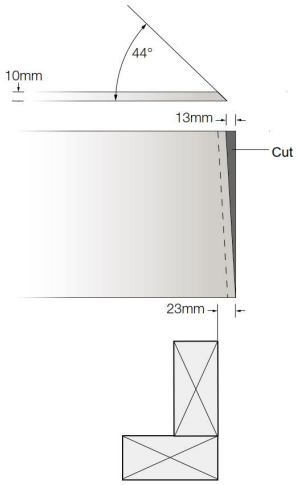
Mitred corner

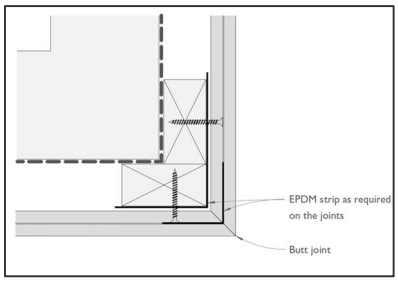
The most common corner detailing is with Cedral external corner profile. However, where a mitred corner is required it may be achieved with the following cutting procedure.

- The planks are cut 23 mm longer on the bottom edge and approximately 10 mm longer on the top edge than the dimension to the corner of the support frame.
- The cut is done at 44º angle through the thickness of the plank.



Standard corner





Mitred corner

Installation

All Cedral profiles and flashings may be cut using a hack saw or metal snips.

For ease of installation and to allow fitting the cladding planks in place all Cedral profiles should be installed with a flat or low profile head stainless steel screw. Ensure the screw head sits flat on the profile surface.

For typical construction details and interfaces as well as better understanding of the common location and application of Cedral profiles refer to Cedral Construction Details documents.

Cedral Lap Vertical & Undulated installation

Cedral Lap may be vertically installed in a lapped or undulated pattern to horizontal support frame. The installation of both Cedral Lap Vertical and Cedral Lap Undulated involves similar installation principles as those of Cedral Lap Horizontal. The following is a brief outline of the installation procedure and recommendations, which must be read in conjunction with the installation requirements outlined for Cedral Lap Horizontal.

Step 1 – Install perforated profiles or angle

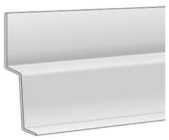
To protect the cavity from entry of vermin, apply the perforated profiles where required as shown in Cedral Construction Details documents.

Step 2 – Install vertical profiles

Vertical profiles include Cedral external and internal corner profiles, jamb profiles of windows/doors (or the like) and end profiles.

External corner profiles | Internal corner profile | End profile

For Cedral Lap *Vertical*, in addition to the above profiles, Cedral Lap starter profile should be applied vertically where the first plank of a continuous row of cladding is going to be installed. It is important that the starter profile is installed level and plumb. The starter profile is only used with a full height plank.



Cedral Lap starter profile

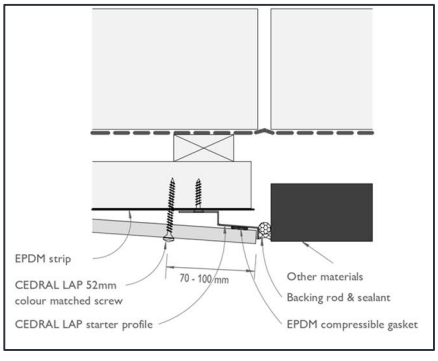
Use stainless steel low profile wafer head screws for fixing Cedral flashings and starter profiles to support frame. Ensure screws sit flush with the profile surface.

Step 3 – Install Cedral Lap

Cedral Lap Vertical

To install Cedral Lap Vertical, position the first plank on the installed vertical Cedral starter profile and fix it to the support frame, using Cedral Lap Cedral face fixing screws. Ensure the plank is level and plumb.

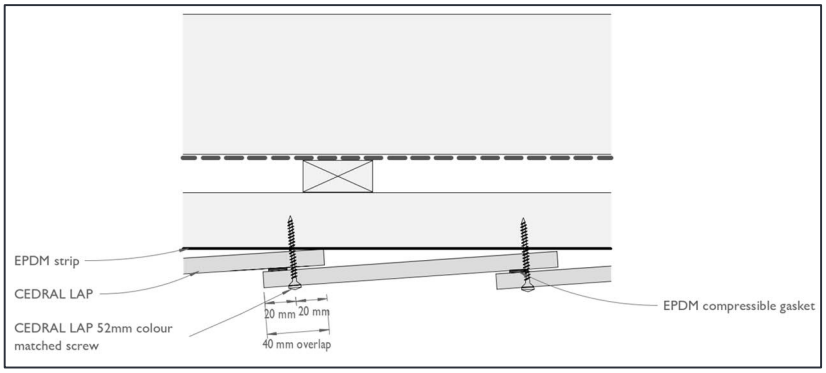
Before placing the first plank in position, a continuous strip of the recommended EPDM gasket is required, for weathertightness, on the starter profile over which the cladding is to be installed.



Cedral Lap Vertical – first plank – plan view

Installation

The subsequent plank is installed with minimum 40 mm overlap and fixed to the support frame with Cedral face fixings with adequate edge distance as shown below.

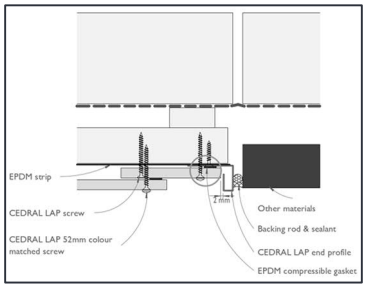


Cedral Lap Vertical – plan view

For more and detailed information about typical construction details and interfaces refer to Cedral Construction Details documents.

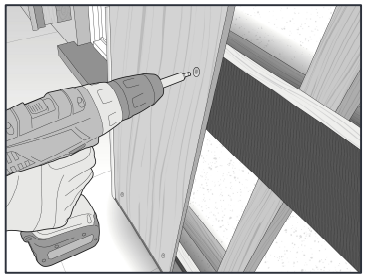
Cedral Lap Undulated

For installation of Cedral Lap Undulated, first apply a continuous strip of the recommended EPDM gasket as shown below on the vertical profile over which the cladding is to be installed, for weathertightness.

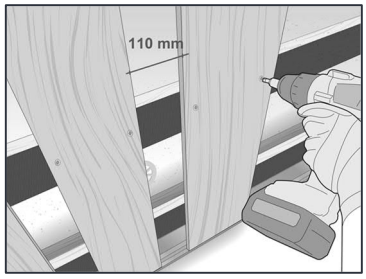


Cedral Lap Undulated – first plank – plan view

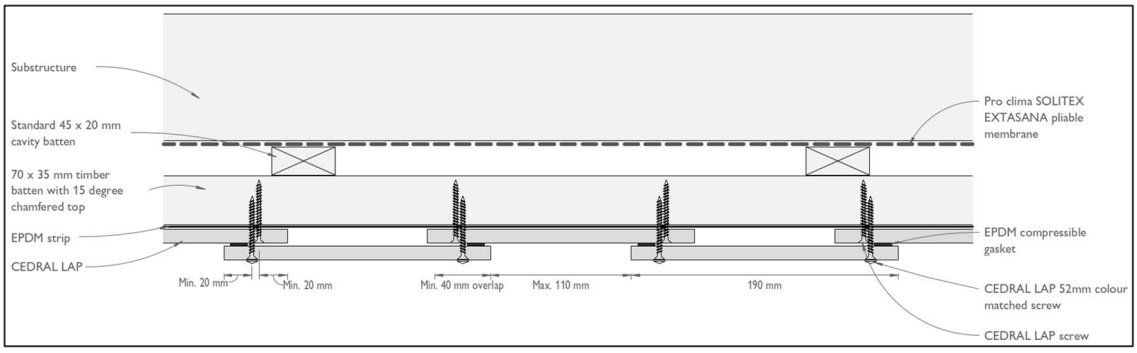
The planks of the first layer of Cedral Undulated are installed with Cedral countersunk screws, with adequate edge distances. Cedral face fixings may be used where fixings will not be covered with the second layer planks. The distance between the planks of the first layer should not exceed 110 mm.



Install the planks of the first layer of Cedral Undulated using Cedral countersunk screw. Where screws are visible Cedral face fixings may be used.



Ensure the spacing between the planks of the first layer does not exceed 110 mm.



Cedral Lap Undulated – plan view

Installation

For fixings located within 50 mm from the plank ends predrilling is required. Never predrill a plank on the façade; predrilling must be done before placing planks on the wall.

The screws must be inserted perpendicular to the panel surface using an electric drill with a high quality bit suitable for the type of screw head. Do not overtighten the screws.

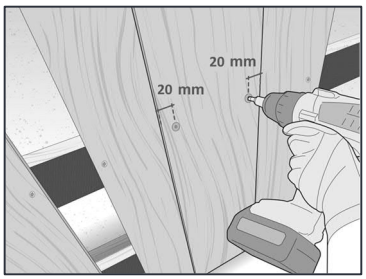
Maximum panel fixings edge distance is 150 mm.

Ensure to allow for adequate ventilation gaps where required, e.g. at the bottom/top of the façade, interface with window/door head and window sill flashings and the like, as per Cedral Construction Details.

Once the first layer of planks is in place and before fixing the second layer, apply a strip of the recommended EPDM gasket on both sides of the planks. Ensure the tapes are placed where they will be covered with the subsequent layer of planks.

Apply the recommended EPDM gasket on both sides of the plank. Ensure the gaskets are covered with the front planks.

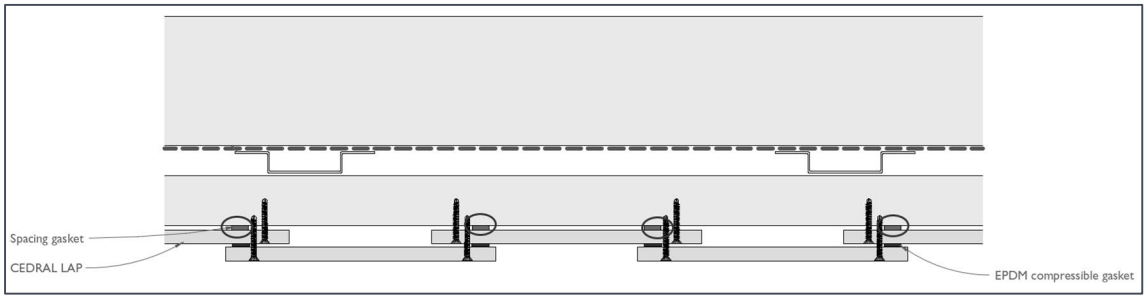
The planks of the second layer can now be installed with minimum 40 mm overlap with the installed planks, using 52 mm Cedral face fixing timber screw or Cedral metal screw for fixing to metal support frame.



Minimum distance from the side edges of the plank is 20 mm.

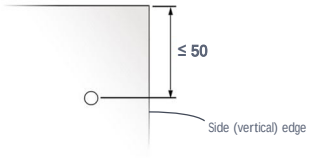
Addition note for Cedral Lap Undulated on metal support frame

Before installing Cedral Lap Undulated on metal support frame, the recommended spacing gasket should be applied between the first layer planks and horizontal metal support profiles. This may be done by applying the recommended spacing gasket either in vertical pieces to the face of the horizontal support frame profiles or in continuous pieces on the rear side of the planks, as shown below.

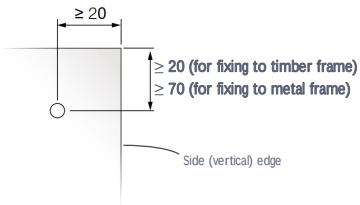


Cedral Lap Undulated on metal support frame – application of the spacing gasket

Fixings edge distances for Cedral Lap Vertical & Undulated



Predrilling required where Cedral metal screw falls within 50 mm from plank ends



Min. fixings edge distance

Span tables

General information

The information provided in this section (Span tables) is based on the information received from an independent consultant who has been engaged to provide their opinion, engineering design and report based on independently conducted laboratory testing, technical data sheets of Cedral materials and components, relevant standards, and/or their experience.

It is the responsibility of project consultants and engineers to ensure the provided information in this document is appropriate to the project and intended application. The overall performance of an installed Cedral façade or wall assembly is the responsibility of the project designer, architect, engineers and consults, builder and/or certifier. The project wind category and maximum wind pressure applied to the cladding or façade shall be determined by the project engineer.

The information in this document is comprehensive but not exhaustive, and the reader must satisfy themselves that the contents of this guide, including but not limited to all engineering information, are correct, current and suitable for the intended application, thereby accepting responsibility for their use.

It is the responsibility of the project designer, architect, engineers and consultants to ensure that the information provided in this document is appropriate for their project.

Cedral Lap span tables

The following spans tables may be used for Cedral Lap Horizontal, Vertical or Undulated.

Table 1 – Maximum fixings/batten spacing
For buildings within the scope of NZS 3604

NZS 3604 wind category	Max. Cedral fixings spacing & Max. batten spacing (mm)			
	Multiple span*		Single span**	
	General zones	Corner zones	General zones	Corner zones
Low	600	600	600	600
Medium	600	600	600	600
High	600	600	600	600
Very high	600	500	600	500
Extra high	600	450	600	400

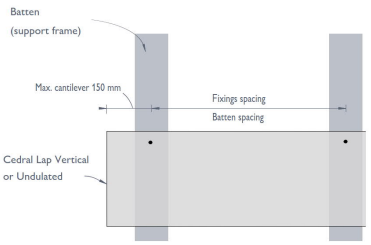


Table 2 – Maximum fixings spacing with respect to ultimate pressure applied to Cedral Lap

Ultimate wind pressure in kPa (AS/NZS 1170.2)	Max. Cedral fixings spacing (mm) & Max. batten spacing	
	Multiple span	Single span
1	600	600
1.5	600	600
2	500	450
2.5	400	350
3	350	300
3.5	300	250
4	250	200

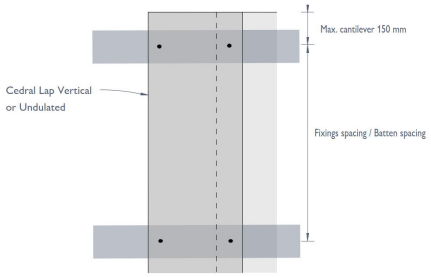


Table 3 – Maximum ultimate pressure applied to Cedral Lap with respect to Cedral fixings/batten spacing

Max. Cedral fixings spacing & Max. batten spacing	Max. ultimate wind pressure in kPa (AS/NZS 1170.2)	
	Multiple span	Single span
600	1.79	1.66
550	1.95	1.81
500	2.14	1.99
450	2.38	2.21
400	2.68	2.49
350	3.06	2.84
300	3.57	3.32

* Multiple span: Plank spanned over and fixed to three or more battens (support frame profiles)
** Single span: Plank spanned over and fixed only to two battens (support frame profiles)

Notes for Table 1, 2 & 3

a) Wind loads have been determined for external pressures only; it is assumed that internal pressures are resisted by appropriately designed internal linings.
b) Wind loads have been determined in accordance with AS/NZS 1170.2.
c) General zone: Areas greater than 1200 mm from an external building corner. Corner zone: Areas less than 1200 mm from an external building corner.
d) Maximum panel cantilever must not exceed 150 mm.
e) Support frame, if timber, is to be 35x70 H3.1 with minimum SG6 grade timber batten (timber group J4), and, if metal frame, to be of minimum 1.1 mm BMT and G250.
f) Framing deflection is limited to Span/250 with the serviceability wind load equal to 68% of the ULS wind load.
g) The values apply only to proprietary Cedral screw and nail fixings.

Span tables

The design of cladding support frame is the responsibility of the project façade or structural engineer.

The connection of the support frame to substructure should be designed by the project façade or structural engineer.

Support frame span tables general information

This section serves only as a general guide providing information in relation to the design of cladding support frame, and is provided based on an engineering report received from an independent consultant. It is the responsibility of the project designer or engineer to ensure the provided information in this section is correct and appropriate to their intended application. The information is intentionally limited to timber support frame, and does not extend to metal support frame design due to the different varieties of metal frame types and profiles that could be used for cladding framing; refer to 'Cladding support frame (metal)' part of 'Installation' section of this document for the minimum requirements (sizes) for metal support frame.

Cedral may be fixed to timber or metal support frame fixed to an appropriately designed substructure which could be a timber or metal stud frame (or the like), masonry, or concrete. Both support frame and substructure should be designed in accordance with the New Zealand Building Code and applicable standards including but not limited to the following: NZS 3604 – Timber framed buildings

- AS/NZS 4600 – Cold-formed steel structures
- NZS 3404 – Steel structures

In this section, general guidance has been provided on the span of timber support frame (batten) fixed to timber / metal framed substructure. The fixings of the support frame to substructure should be determined by the project engineer.

Support frame span tables for Cedral Lap Horizontal

Timber support frame (batten) fixed to *timber* framed substructure

Cedral Lap may be fixed horizontally to vertical timber support frame fixed to an appropriately designed timber framed substructure.

The following provides information in relation to the maximum span of timber battens (maximum spacing between timber batten fixings connecting the batten to a timber stud frame, substructure) with respect to wind loading.

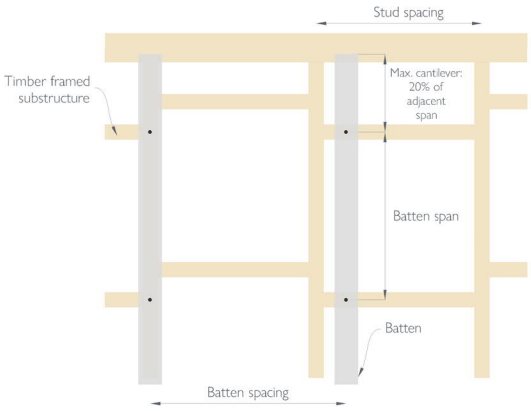


Table 4 – Timber batten span with respect to wind category – Cedral Lap Horizontal
For buildings within the scope of NZS 3604

NZS 3604 wind category	General zones							Corner zones						
	Batten spacing (mm)							Batten spacing (mm)						
	600	550	500	450	400	350	300	600	550	500	450	400	350	300
	Max batten span (mm)							Max batten span (mm)						
Low	1450	1500	1550	1600	1700	1750	1850	1200	1200	1250	1300	1350	1400	1500
Medium	1300	1350	1400	1450	1500	1600	1650	1050	1100	1150	1200	1250	1300	1350
High	1200	1200	1250	1300	1350	1400	1500	950	1000	1000	1050	1100	1150	1200
Very high	1100	1100	1150	1200	1250	1300	1350	850	900	950	950	1000	1050	1100
Extra high	1000	1050	1100	1100	1150	1200	1300	800	800	850	900	950	1000	1050

Span tables

Table 5 – Timber batten span with respect to wind loading – Cedral Lap Horizontal

Ultimate wind pressure in kPa (AS/NZS 1170.2)	Batten spacing (mm)						
	600	550	500	450	400	350	300
	Max batten span (mm)						
1.0	1100	1150	1150	1200	1250	1300	1400
1.5	950	1000	1000	1050	1100	1150	1200
2.0	850	900	900	950	1000	1050	1100
2.5	750	800	850	900	900	950	1000
3.0	700	700	750	800	850	900	950
3.5	650	650	700	750	800	850	900
4.0	600	600	650	700	750	800	850

Notes for Table 4 & 5

a) The values are based on 70 x 35 mm SG6 timber batten (timber group J5).
b) Refer to Cedral Lap span tables to determine the Batten spacing.
c) Wind loads have been determined in accordance with AS/NZS 1170.2.
d) General zone: Areas greater than 1200 mm from an external building corner. Corner zone: Areas less than 1200 mm from an external building corner.
e) Max cantilever of batten is 20% of span.
f) Framing deflection is limited to Span/250 with the serviceability wind load equal to 68% of the ULS wind load.

Timber support frame (batten) fixed to *metal* framed substructure

Cedral Lap may be fixed horizontally to vertical timber support frame fixed to an appropriately designed metal framed substructure.

The following provides information in relation to the maximum span of timber battens (maximum spacing between timber batten fixings connecting the batten to a steel stud frame, substructure) with respect to wind loading.

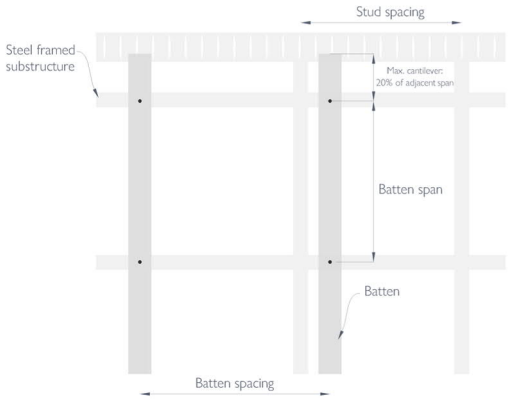


Table 6 – Timber batten span with respect to wind category – Cedral Lap Horizontal
For buildings within the scope of NZS 3604

NZS 3604 wind category	General zones							Corner zones						
	Batten spacing (mm)							Batten spacing (mm)						
	600	550	500	450	400	350	300	600	550	500	450	400	350	300
	Max batten span when fixed to 0.50BMT G550 steel stud frame (mm)													
Low	1450	1500	1550	1600	1700	1750	1850	1200	1200	1250	1300	1350	1400	1500
Medium	1300	1350	1400	1450	1500	1600	1650	1050	1100	1150	1200	1250	1300	1350
High	1200	1200	1250	1300	1350	1400	1500	950	1000	1000	1050	1100	1150	1200
Very high	950	1050	1150	1200	1250	1300	1350	850	900	950	950	1000	1050	1100
Extra high	750	850	950	1050	1150	1200	1300	700	800	850	900	950	1000	1050
Wind category	Max batten span when fixed to 0.75BMT G550 steel stud frame (mm)													
Low	1450	1500	1550	1600	1700	1750	1850	1200	1200	1250	1300	1350	1400	1500
Medium	1300	1350	1400	1450	1500	1600	1650	1050	1100	1150	1200	1250	1300	1350
High	1200	1200	1250	1300	1350	1400	1500	950	1000	1000	1050	1100	1150	1200
Very high	1100	1100	1150	1200	1250	1300	1350	850	900	950	950	1000	1050	1100
Extra high	1000	1050	1100	1100	1150	1200	1300	800	800	850	900	950	1000	1050

Span tables

Table 6 – Timber batten span with respect to wind category – Cedral Lap Horizontal (Continued)
For buildings within the scope of NZS 3604

NZS 3604 wind category	General zones							Corner zones						
	Batten spacing (mm)							Batten spacing (mm)						
	600	550	500	450	400	350	300	600	550	500	450	400	350	300
	Max batten span when fixed to 1.20BMT G2 steel stud frame (mm)													
Low	1450	1500	1550	1600	1700	1750	1850	1200	1200	1250	1300	1350	1400	1500
Medium	1300	1350	1400	1450	1500	1600	1650	1050	1100	1150	1200	1250	1300	1350
High	1200	1200	1250	1300	1350	1400	1500	950	1000	1000	1050	1100	1150	1200
Very high	1100	1100	1150	1200	1250	1300	1350	850	900	950	950	1000	1050	1100
Extra high	1000	1050	1100	1100	1150	1200	1300	800	800	850	900	950	1000	1050

Table 7 – Timber batten span with respect to wind loading – Cedral Lap Horizontal

Ultimate wind pressure in kPa (AS/NZS 1170.2)	Batten spacing (mm)						
	600	550	500	450	400	350	300
	Max batten span when fixed to 0. 50BMT G550 steel stud frame (mm)						
1.0	900	1000	1100	1200	1250	1300	1400
1.5	600	650	750	800	900	1050	1200
2.0	450	500	550	600	700	800	900
2.5	350	400	450	500	550	600	750
3.0	300	300	350	400	450	500	600
3.5	250	250	300	350	400	450	500
4.0	200	250	250	300	350	400	450
Ultimate wind pressure	Max batten span when fixed to 0.75BMT G550 steel stud frame (mm)						
1.0	1100	1150	1150	1200	1250	1300	1400
1.5	950	1000	1000	1050	1100	1150	1200
2.0	700	800	850	950	1000	1050	1100
2.5	550	600	700	750	850	950	1000
3.0	450	500	550	650	700	800	950
3.5	400	450	500	550	600	700	800
4.0	350	400	400	450	550	600	700
Ultimate wind pressure	Max batten span when fixed to 1.20BMT G2 steel stud frame (mm)						
1.0	1100	1150	1150	1200	1250	1300	1400
1.5	950	1000	1000	1050	1100	1150	1200
2.0	700	800	850	950	1000	1050	1100
2.5	550	600	700	750	850	950	1000
3.0	450	500	550	650	700	800	950
3.5	400	450	500	550	600	700	800
4.0	350	400	400	450	550	600	700

Notes for Table 6 & 7

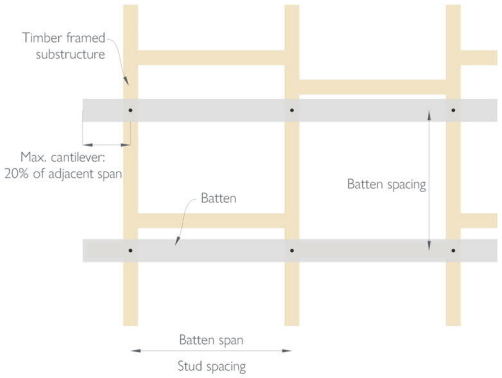
a) The values are based on 70 x 35 mm SG6 timber batten (timber group J5).
b) Refer to Cedral Lap span tables to determine the Batten spacing.
c) Wind loads have been determined in accordance with AS/NZS 1170.2.
d) General zone: Areas greater than 1200 mm from an external building corner. Corner zone: Areas less than 1200 mm from an external building corner.
e) Max cantilever of batten is 20% of span.
f) Framing deflection is limited to Span/250 with the serviceability wind load equal to 68% of the ULS wind load.
g) For fixing of vertical battens to noggins (dwangs), the noggins and their connections to studs must be structural otherwise a layer of horizontal support frame will be required to accommodate the vertical battens to which Cedral is fixed.

Span tables

Support frame span tables for Cedral Lap Vertical & Undulated

Timber support frame (batten) fixed to *timber* framed substructure

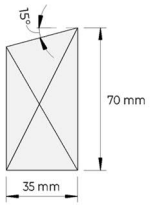
Cedral Lap may be fixed vertically to horizontal timber battens with minimum depth of 35 mm and width of 70 mm (35 x 70 mm) chamfered at the top with 15-degree slope. These battens are then fixed through a suitable vertical (min.) 45x20 mm cavity battens, placed between weather barrier and the horizontal battens, to an appropriately designed timber stud frame.



The following provides information in relation to the maximum span of the chamfered horizontal timber battens (maximum spacing between timber batten fixings connecting the batten to a timber stud frame, substructure) with respect to wind loading.

Table 8 – Timber batten span with respect to wind category – Cedral Lap Vertical
For buildings within the scope of NZS 3604

NZS 3604 wind category	General zones							Corner zones						
	Batten spacing (mm)							Batten spacing (mm)						
	600	550	500	450	400	350	300	600	550	500	450	400	350	300
	Max batten span (mm)							Max batten span (mm)						
Low	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200
Medium	1200	1200	1200	1200	1200	1200	1200	900	900	900	1200	1200	1200	1200
High	1200	1200	1200	1200	1200	1200	1200	900	900	900	900	900	900	1200
Very high	900	900	900	1200	1200	1200	1200	600	900	900	900	900	900	900
Extra high	900	900	900	900	900	1200	1200	600	600	600	900	900	900	900



Chamfered batten section

Table 9 – Timber batten span with respect to wind loading – Cedral Lap Vertical

Ultimate wind pressure in kPa (AS/NZS 1170.2)	Batten spacing (mm)						
	600	550	500	450	400	350	300
	Max batten span (mm)						
1.0	900	900	900	1200	1200	1200	1200
1.5	900	900	900	900	900	900	1200
2.0	600	600	900	900	900	900	900
2.5	600	600	600	600	900	900	900
3.0	600	600	600	600	600	900	900
3.5	600	600	600	600	600	600	900
4.0	600	600	600	600	600	600	600

Notes for Table 8 & 9

a) The values are based on 70 x 35 mm SG6 timber batten (timber group J5) with 15-degree chamfered top as per the above image.
b) Refer to Cedral Lap span tables to determine the Batten spacing.
c) Wind loads have been determined in accordance with AS/NZS 1170.2.
d) General zone: Areas greater than 1200 mm from an external building corner. Corner zone: Areas less than 1200 mm from an external building corner.
e) Max cantilever of batten is 20% of span.
f) Framing deflection is limited to Span/250 with the serviceability wind load equal to 68% of the ULS wind load.

Span tables

Timber support frame (batten) fixed to *metal* framed substructure

Cedral Lap may be fixed vertically to horizontal timber battens with minimum depth of 35 mm and width of 70 mm (35 x 70 mm) chamfered at the top with 15-degree slope. These battens are then fixed through a suitable vertical (min.) 45x20 mm cavity battens, placed between weather barrier and the horizontal battens, to an appropriately designed metal stud frame.

The following provides information in relation to the maximum span of the chamfered horizontal timber battens (maximum spacing between timber batten fixings connecting the batten to a timber stud frame, substructure) with respect to wind loading.

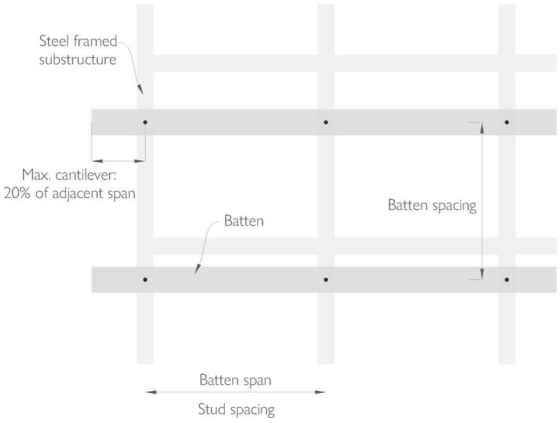


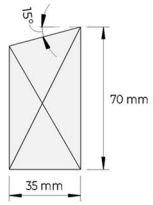
Table 10 – Timber batten span with respect to wind category – Cedral Lap Vertical
For buildings within the scope of NZS 3604

NZS 3604 wind category	General zones							Corner zones						
	Batten spacing (mm)							Batten spacing (mm)						
	600	550	500	450	400	350	300	600	550	500	450	400	350	300
	Max batten span when fixed to 0.50BMT G550 steel stud frame (mm)													
Low	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200
Medium	1200	1200	1200	1200	1200	1200	1200	900	900	900	900	1200	1200	1200
High	900	1200	1200	1200	1200	1200	1200	900	900	900	900	900	900	1200
Very high	900	900	900	1200	1200	1200	1200	600	900	900	900	900	900	900
Extra high	600	600	900	900	900	1200	1200	600	600	600	900	900	900	900
Wind category	Max batten span when fixed to 0.75BMT G550 steel stud frame (mm)													
Low	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200
Medium	1200	1200	1200	1200	1200	1200	1200	900	900	900	1200	1200	1200	1200
High	1200	1200	1200	1200	1200	1200	1200	900	900	900	900	900	900	1200
Very high	900	900	900	1200	900	900	900	600	900	900	900	900	900	900
Extra high	900	900	900	900	900	900	900	600	600	600	900	900	900	900
Wind category	Max batten span when fixed to 1.20BMT G2 steel stud frame (mm)													
Low	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200
Medium	1200	1200	1200	1200	1200	1200	1200	900	900	900	1200	1200	1200	1200
High	1200	1200	1200	1200	1200	1200	1200	900	900	900	900	900	900	1200
Very high	900	900	900	1200	1200	1200	1200	600	900	900	900	900	900	900
Extra high	900	900	900	900	900	1200	1200	600	600	600	900	900	900	900

Span tables

Table 11 – Timber batten span with respect to wind loading – Cedral Lap Vertical

Ultimate wind pressure in kPa (AS/NZS 1170.2)	Batten spacing (mm)						
	600	550	500	450	400	350	300
	Max batten span when fixed to 0. 50BMT G550 steel stud frame (mm)						
1.0	900	900	900	1200	1200	1200	1200
1.5	600	600	600	600	900	900	1200
2.0	450	450	450	600	600	600	900
2.5	300	300	450	450	450	600	600
3.0	300	300	300	300	450	450	600
3.5	-	-	300	300	300	450	450
4.0	-	-	-	300	300	300	450
Ultimate wind pressure	Max batten span when fixed to 0.75BMT G550 steel stud frame (mm)						
1.0	900	900	900	1200	1200	1200	1200
1.5	900	900	900	900	900	900	1200
2.0	600	600	600	900	900	900	900
2.5	450	600	600	600	600	900	900
3.0	450	450	450	600	600	600	900
3.5	300	450	450	450	600	600	600
4.0	300	300	300	450	450	600	600
Ultimate wind pressure	Max batten span when fixed to 1.20BMT G2 steel stud frame (mm)						
1.0	900	900	900	1200	1200	1200	1200
1.5	900	900	900	900	900	900	1200
2.0	600	600	600	900	900	900	900
2.5	450	600	600	600	600	900	900
3.0	450	450	450	600	600	600	900
3.5	300	450	450	450	600	600	600
4.0	300	300	300	450	450	600	600



Chamfered batten section

Notes for Table 10 & 11

a) The values are based on 70 x 35 mm SG6 timber batten (timber group J5) with 15-degree chamfered top as per the above image.
b) Refer to Cedral Lap span tables to determine the Batten spacing.
c) Wind loads have been determined in accordance with AS/NZS 1170.2.
d) General zone: Areas greater than 1200 mm from an external building corner. Corner zone: Areas less than 1200 mm from an external building corner.
e) Max cantilever of batten is 20% of span.
f) Framing deflection is limited to Span/250 with the serviceability wind load equal to 68% of the ULS wind load.

Design considerations

Application

Cedral Lap may be used internally or externally on all types of buildings provided that the façade is designed according to applicable loads including project wind loading, project location, general guidelines provided in this document, applicable standards and regulations, and New Zealand Building Code. For applications beyond 20 metres in height refer to Etex Exteriors ANZ technical department for further advice.

limitations

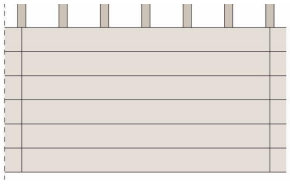
Cedral Lap is *not* suitable for the following applications:

- Non-vertical external applications e.g. window sill, parapet capping or the like where the plank face is not vertical*
- Non-ventilated external applications
- Internal applications exposed to direct moisture (wet areas)
- Contact with standing snow or ice
- Exposure to temperatures exceeding 80^{oC}

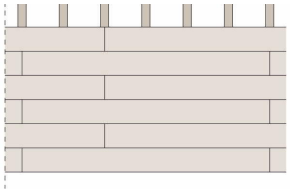
* Cedral Lap may be used as ceiling lining provided that it is applied with two rows of Cedral face fixing screws spaced at maximum 400 mm centres or less according to the project wind loading.

Façade layout

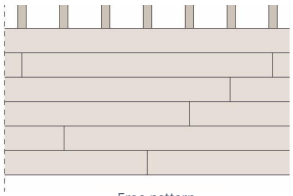
Depending on the project aesthetics requirements, Cedral Lap Horizontal and Vertical planks may be installed with straight, semi (or broken bond), or free pattern.



Straight pattern



Semi (or broken bond) pattern



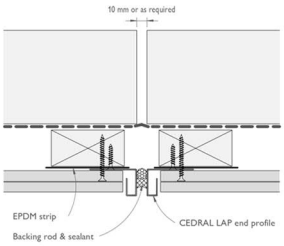
Free pattern

Movement & control joints

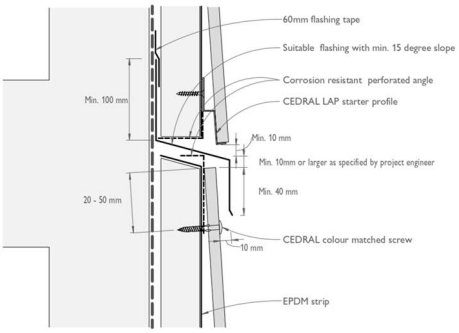
Cladding and its support framing must not bridge over a building movement or control joint while fixed to both side of the joint. Adequate separation in both cladding and its support framing is required at any movement or control joint or the like.

Usually at slab levels where differential movement of the slab and/or frame shrinkage may be a concern a horizontal control joint is considered and an inter storey flashing is incorporated as required.

The inter storey flashing also assists with effective moisture management of the façade by compartmentalisation of the cavity by floor level. The following image shows an example of horizontal control joint or inter storey detail. For full construction details in relation to both general horizontal and vertical control joints interfaces refer to Cedral Construction Details.



Example of vertical control joint detail
Cedral Lap Horizontal



Example of horizontal control joint (inter storey) detail
Cedral Lap Horizontal

Design considerations

Weatherproofing

System compliance

Cedral façade systems have been assessed to E2/VM1 for the purpose of compliance with Clause E2 of the NZBC for the following scope:

- Serviceability wind pressure: Up to ±1515Pa
- Ultimate wind pressure: Up to ±2500Pa
- Building height: Up to 10m

For higher wind pressures and building heights a project specific assessment or design by project (façade) engineer is required to ensure suitability and compliance.

Weather (resistive) barrier

The type of weather barrier plays an important role in the effective moisture and condensation management of an external wall. It is the responsibility of the project (façade) engineer or designer to specify an appropriate type of weather barrier. For residential projects located in NZS 3604:2011 Wind Zones up to Very High, pliable membrane (wall wrap or underlay) is generally used. Projects located in Extra High Wind Zone or with higher wind pressures generally require a rigid air barrier.

Cedral has been tested and assessed with pro clima SOLITEX EXTASANA® pliable membrane for the purpose of the compliance with Clause E2 of the NZBC. Where a rigid air barrier is required the ADHERO version of pro clima SOLITEX EXTASANA® may be used with 6 mm Kalsi (RigidBacker) fibre cement sheeting. Weather barrier shall be installed in accordance with their respective installation guidelines and supplier's or manufacturer's recommendations, applicable standards and regulations.

Both standard and ADHERO versions of pro clima SOLITEX EXTASANA® have a high level of vapour permeance (classified as Class 4 as per AS/NZS 4200.1) and are compliant with AS/NZS4200.1, and NZBC E2/AS1 (Table 23, NZS 2295) requirements for wall underlay. The low vapour resistance (high vapour permeance) assists with condensation management where a breather type (vapour permeable) membrane or wall wrap is required. It is recommended that a condensation risk analysis is conducted by project engineer or designer for the appropriate selection of the required weather barrier.

The drained and fully ventilated cavity of Cedral façade system does assist further with managing condensation as well as keeping the cavity components and weather barrier dry.

In ensuring an effective moisture management of an external wall, the appropriate selection and application of the required flashing / sill tapes (and the like), sealant and flashings play an important part. Pro clima offers a range of tape, weatherproofing and sealing solutions some of which have been incorporated and recommended as part of Cedral systems. Consult with your project (façade) engineer for the selection of the required flashings and sealant suitable for your project and intended application. Generally, silicone sealant tends to perform better than other standard sealant types in terms of movement flexibility and UV stability.

Thermal performance and energy efficiency

It is the responsibility of the project designer or engineer to ensure the building envelop including external walls are designed to meet the thermal and energy efficiency requirements of the project, the NZBC (Clause H1) and appliable regulations. The thermal insulation values of external wall may be determined as per the NZBC and the methods of NZS 4218 (Thermal insulation - Housing and small buildings), and the overall thermal resistance (R-values) may be verified by using NZS 4214 (Methods of determining the total thermal resistance of parts of buildings).

Reducing thermal bridging is also important in managing energy efficiency and condensation. Where substructure and support frame are metal, application of a thermal break with a minimum R-value of R0.25 may be required between

For information about technical properties and correct application of pro clima products refer to pro clima technical documents, and SOLITEX EXTASANA® (ADHERO) Application and Fixing Guides.

For general construction details and interfaces refer to Cedral Construction Details documents.

Design considerations

the substructure and support frame as per the requirements of the NZBC. Consult with your project engineer to determine the need for suitable thermal break to ensure compliance with the NZBC.

To benefit from all the advantages of a ventilated façade and to significantly reduce or even eliminate thermal bridging, appropriate external insulation may also be used. Refer to Etex Exteriors ANZ technical department for further information on this type of application.

Fire safety

Cedral façade materials are classified as Type 'A' cladding materials and fully meet the fire properties requirements of external wall cladding materials as outlined in the Verification Method C/VM2 of the NZBC, with Peak Heat Release Rate (kW/m2) of less than (<) 100 and Total Heat Released (MJ/m2) of less than (<) 25 as determined in accordance with ISO 5660.1 at an irradiance of 50 kW/ m2 for a duration of 15 minutes.

Cedral façade materials are classified as a 'Group 1-S' fire resistant material in accordance with the Verification Method C/VM2 (Appendix 'A') and ISO5660, and as such are safe and suitable for internal lining and ceiling applications.

In multistorey buildings where fire cavity barriers may be required within the façade cavity, it must be ensured that it does not block drainage and ventilation paths within the cavity. A minimum of 20 mm gap is required between the rear of the cladding and front face of the fire cavity barriers. To achieve this a fire cavity barrier suitable for ventilated façade, which are usually intumescent type, may be used. Consult with your project designer or (fire) engineer to determine the need for and the type of any fire cavity barriers appropriate to your project and intended application.

Corrosion zones

Cedral Lap planks may be used in all New Zealand corrosion categories provided that all system components, including support frame, flashings and fixings, are of adequate corrosion resistance appropriate for the project location. Based on an independent assessment, Cedral Lap and its proprietary flashings, fixings and clips may be used in all New Zealand corrosion zones of B, C, D, and E. It is the responsibility of the project designer or engineer to ensure the project is designed in accordance with NZS 3604, AS/NZS 2728 and NZBC E2/AS1, and that Cedral Lap system is appropriate for the intended application. Ensure all components of the façade including capping and flashings are designed according to project wind and corrosion category.

External fixtures

Generally, no additional structural loads should be transferred to Cedral planks. Small surface mounted features like small cameras and lights may be fixed to Cedral if they are fixed o*nly to one* plank and *not* bridged and fixed to two or more planks. Larger surface mounted features, external fixtures, gutters, and down pipes must be fixed through an oversized hole in Cedral to structure or a dedicated support frame. The hole in Cedral should be oversized by at least 5-10 mm; the hole must be fully sealed with appropriate sealant. Services, e.g. pipes, and any additional support frame applied in the cavity for the support and fixing of any external fixtures must *not* bock drainage and ventilation paths in the cavity.

Maintenance & Warranty

Maintenance

Cedral façade is low maintenance; however, it is recommended to regularly check the facade for any possible soiling and clean as required. Regular periodic inspections and maintenance are recommended to ensure long term performance of the façade and to prevent costly repairs and rectifications in time.

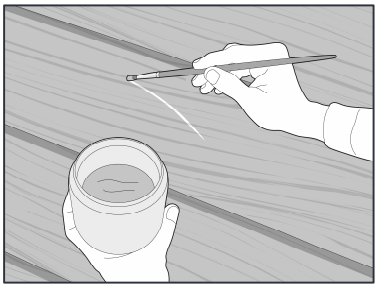
All ventilation and drainage gaps must always be kept unobstructed. All flashings and seals should be regularly inspected, and any damage should be immediately repaired.

Where the façade is protected by a soffit or the like, and hence not sufficiently exposed to rain, a more regular inspection and wash down may be required to prevent any salt and dirt build up. Coastal projects may also require more regular inspections and wash down.

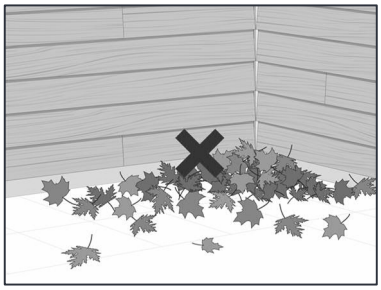
Where cleaning of the façade is required, it should be conducted in accordance with Cedral Cleaning and Maintenance Document and the manufacturer's recommendations of the applied cleaning product or system. Any cleaning product used must be ammonia free. Solvent based cleaners such as Acetone, white spirit, etc. attack the paint surface and are therefore not suitable.

For further information about cleaning and maintenance refer to Cedral General Cleaning and Maintenance document.

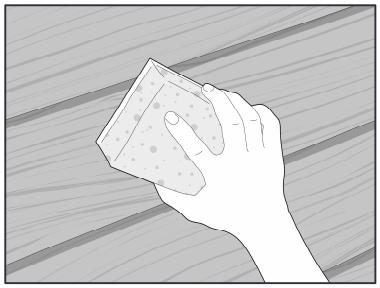
For further warranty information and conditions refer to Cedral Product Warranty document.



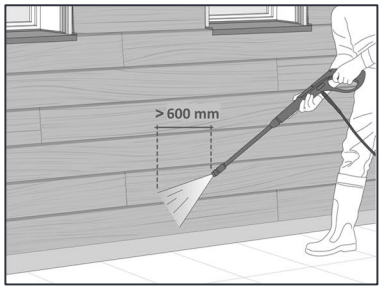
Scratches and chips may be painted with Cedral touch up paint. Gently tap and smooth out the paint for the best results.



Make sure that ventilation stays open always e.g. leaves, snow, vegetations and/or soil accumulations must be removed.



General cleaning may be done using water, a mild detergent, and a sponge.



Any pressure washing must be done by an experienced person. A pressure rating of 20-30 bar is generally advised. The nozzle must always remain at least 600 mm away from the facade. Water is to be sprayed flat and wide; rotating, dirt-cutting sprays are not suitable.

Warranty

Cedral product warranty is 15 years in New Zealand. Refer to Cedral Product Warranty document for further information.

Notes

Notes

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