# VISTACLAD INSTALLATION GUIDE

www.eva-last.com

0722 - VD

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INSPIRED BY NATURE, DESIGNED FOR LIFE.

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# 1. Scope

## A. Intended use

This document is intended to assist the user in installing the Eva-Last cladding system. Guidelines are provided with respect to fixing the clip strips to various substrates, installing the cladding boards onto the clip strips and utilising the various ancillary components.

All work must comply with the applicable standards and codes for that region, regardless of what is captured herein.
An appropriately qualified professional must be consulted whenever necessary to ensure the product, this document and the intended application complies with all applicable legislation for that region.

## B. Performance

This document is intended for the installation of the VistaClad system in residential and light commercial uses. The system can be modified for other applications. Consult an appropriately qualified professional for applications outside of this scope or whenever it is deemed necessary.

## C. Life span

Refer to the appropriate warranty document(s).

## D. Maintenance requirements

Refer to the cleaning and care guide.

# 2. Standards

Legislation may differ between jurisdictions. Before installing any Eva-Last product, ensure that the application is rational and complies with the local regulations and building codes. Wherever necessary, consult a suitably qualified professional. Be sure to comply with material manufacturer specifications. Where manufacturers and building codes differ, revert to the building code requirements. Check that your choice of product is suitable for its intended application. For further product specification and information visit www.eva-last.com.

## 3. Regional standards

| Country | Standard administrators | Applicable standards | Website |
|---|---|---|---|
| Australia<br>ACT, NSW, NT, Qld, SA, Tas, Vic, WA | ABCB – Australian Building Codes Board (Refer to each territory for further information). | ABCB NCC<br>AS 1562, AS/NZS 1170, AS 1720, AS 1684, AS 3623, AS 4100, AS/NZS 4600, AS 3700, AS 4773, AS/NZS 1163, AS/NZS 1397, AS/NZS 3678, AS/NZS 3679, AS/NZS 3679, AS/NZS 232, AS/NZS 1664, | https://www.abcb.gov.au/ ABCB/State-and-Territory- Building-Administrations |
| Europe / EU EFTA Countries:<br>Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and the United Kingdom*, Iceland, Liechtenstein, Norway, Switzerland.<br>Other:<br>Turkey, the Balkans, Albania, Ukraine, Russia | European Commission<br>See national standardisation bodies for region specific codes. | EN 1990 EN 1991 EN 1992 EN 1993 EN 1994 EN 1995 EN 1996 EN 1998 EN 1999<br>EN 15534 – 5 | www.eurocodes.jrc.ec.europa.eu |
| New Zealand | MBIE - Ministry of Business Innovation & Employment | NZBC B1, B2, E1, E2/AS1, E3, F2<br>AS/NZS 1562, NZS 3604, AS/NZS 1170, NZS HB 4236 , AS/NZS 5131, AS/NZS 4600, AS/NZS 1163, AS/NZS 1397, AS/NZS 3678, AS/NZS 3679.1, AS/NZS 3679, AS/NZS 232, AS/NZS 1664, NZS 4230 | www.building.govt.nz |
| United Kingdom (UK)<br>(in addition to applicable EN standards) | Ministry of Housing, Communities and Local Government | BS 8414 | www.gov.uk/government/collections/approve d-documents |
| United States (USA)<br>All 50 states, District of Columbia, Guam, Northern Marianas Islands, US Virgin Islands, Puerto Rico, Caribbean Community, Jamaica | ICC – International Code Council | ISO/TC 98, ISO/TC 165<br>IBC 2600, IBC 2612, IBC 2603, IBC 1400, IBC 1600, IBC 2300, IBC 2000, IBC 2102, IBC 2200, IBC 1901 | www.iccsafe.org |

Codes and standards pertaining but not limited to occupancy classifications, structure, durability, sustainability, external moisture, hazardous building materials, fire risks, accessibility, corrosion resistance, building classifications, public safety, occupational safety, drainage, ventilation, acoustic management, wind resistance, light conditions, and earthquake resistance should all be considered.

Standards are amended regularly. This list is not exhaustive. Consult a suitably qualified professional to ensure that the intended application is suitable for all applicable standards and the latest promulgations thereof.

## 4. Safety

### Safety standards

Refer to the applicable Material Safety Data Sheet (MSDS).
Always wear appropriate Personal Protective Equipment (PPE) for the various activities involved in installing a cladding system. This includes, but is not limited to, general equipment such as safety glasses, helmets, gloves and boots, dust masks when cutting or similar, and harness systems when working at heights or similar. Ensure your compliance with local occupational health and safety legislation.

## 5. Storage and handling

Cladding boards are long and heavy. Take care when lifting, placing or removing them from raised pallets. More than one person may be required for lifting depending on the length of the boards and the number of boards within a bundle. When handling lengths of boards greater than 4 m, ensure both ends are lifted simultaneously and evenly. Lift the boards 1 m from each end to provide better control. Handle the boards carefully. Dropping the boards (and all high impact loads in general) can result in damage to the edges or feet of the profiles. Trim profiles are long and consist of relatively sharp edges. Apply care when handling the trim profiles to avoid inflicting harm on yourself or those around you. Keep trim profiles wrapped until they are ready to be installed. Handle the trim profiles with care to avoid scratching or damaging the profiles and/or their coating.

Adhere to the following storage guidelines:

- All components should be stored under cover.
- When storing boards on site, a pallet or flat surface should be used to support the full length of each component.
- All components should be securely stored.
- No component should sit in water or similar.
- Avoid over-stacking and/or eccentric stacking.

## 6. Site preparation

### A. Levels

The Eva-Last cladding system provides flexibility both with the manner in which it is fastened and the substructure to which it is fastened. The system can tolerate minor fluctuations in surfaces. Timber and/or plastic spacers can be employed to cater for slightly larger deformations. When dealing with large deformations that cannot be filled or levelled, steel, aluminium or timber frames can be utilised. It is important to provide continuous contact between the clip strip and the substructure where possible. Where not, regular contact must be maintained and the influence of the reduced surface support on the system must be determined by an appropriately qualified professional.

Various regional standards pertaining to acceptable level tolerances are available and should be adhered to.

### B. External moisture

The Eva-Last cladding system provides a robust, durable outer membrane. However, the standard system is not designed to completely prevent water ingress. While the composite boards are highly water resistant, metal and timber components of the different installation options may be more susceptible to the aesthetic and/or structural deterioration as a result of the presence of moisture. Care should be taken during both design and installation to always prevent pooling and/or condensation. Appropriate materials should be specified with respect to the environment of the intended application. Additional ancillary items, such as gaskets, are available with the cladding system to further prevent water ingress. Where water ingress is necessary and allowable, permit egress. Ensure that appropriate sublayers, such as vapour barriers and underlays, are installed correctly. Various regional standards pertaining to vapour barriers and wall underlays are available and should be adhered to.

In accordance with certain building codes, cavities are required for ventilation and to avoid capillary action. Specified ground clearances to the first board and/or trim may also be required to allow water to discharge. Refer to the applicable regional standards for further guidance.

Maintenance is important. It is advisable to regularly inspect and conduct proactive maintenance. Before the final steps of installing boards and trim, conduct a detailed inspection of areas that will have limited accessibility once boards and/or trim are installed and ensure there are no areas of concern. Pay particular attention to areas at risk of corrosion and ensure that all metal surfaces are appropriately coated. Regular cleaning of the cladding and/or surrounding roofing system is advised. Refer to the cleaning and care guide. Corrosion in an unwashed environment can be up to 3x more than that of well cleaned areas.

The Eva-Last VistaClad boards are protected by warranty. It would be prudent to utilise supporting and ancillary components with similar design lifespans as outlined in the VistaClad warranty.

# 7. Material properties

## Thermal expansion & contraction

### Composite:

Our cellulose-polymer composite is primarily a blend of recycled HDPE and upcycled bamboo fibres. The HDPE component of the material make-up has a higher thermal expansion coefficient than traditional timber. Due to the extrusion approach, the Eva-Last Infinity composite used in the Infinity VistaClad boards is also typically denser than timber. The HDPE presence, and the limited compressibility as a result of the high density, results in an overall thermal expansion coefficient of the composite that is slightly higher than that of timber. However, the movement of composite is uniform and, as a result, easily accounted for. Timber is more susceptible to irregular activity, such as twisting, and larger deformation due to moisture absorption. Eva-Last products have an average absorption rate of less than 0.2 %.

The expansion coefficient of the Eva-Last Infinity cellulose-polymer composite is approximately 40 x 106 mm $^{\circ}C^{-1}$. This means that for every °C change in temperature for a 1 000 mm long profile, the length of the profile will increase or decrease by 0.04 mm. The total change in length will depend on the total change in temperature (of the board) and the length of the profile. The total change in length of a 5 000 mm profile over a temperature change of 30°C will be (on average) approximately 6 mm. The temperature change of the board will also depend on the colour of the board. Darker boards will absorb more energy and, as a result, expand more relative to lighter boards.

The difference between the longest (hottest) and shortest (coldest) positions of the board dictates the required size of the expansion gaps. When leaving an expansion gap between boards, compare the current installation board temperature to what is the expected maximum and minimum board temperatures for that site. Expansion and contraction are uniform and can typically be shared at both ends of the profile. If, however, one end of the board is fixed or abuts an obstruction, the expansion or contraction of the entire board length will be translated to the only free end. Installation can heavily influence the performance of your composite cladding system.

Care must be taken in areas susceptible to large changes in temperature or energy. Typical examples include areas in the path of large reflective surfaces (such as roofs, facades, windows, and doors). Such scenarios will influence the temperature range of boards and the required expansion gaps of the system.

Allowing the boards to acclimatise before installation assists in uniform movement across the system and allows for easier expansion gap design. This also applies to the daily fluctuation of temperature during installation and should be incorporated where possible. The use of shorter board lengths can also be utilised to reduce the size of the expansion gap required.

Refer to the composite installation guide for further information regarding the allowance of expansion and contraction gaps during installation.

### Other materials:

All materials expand and contract as a result of the change in temperature of the material. The rate of expansion or contraction depends on the thermal expansion coefficient of each material. Typical rates of most materials are readily available online. When designing and installing a system that consists of several materials, cognisance of the difference in thermal expansion coefficients between the materials and how they interact can be important.

Timber substructures are also susceptible to expansion and shrinkage as a result of moisture. Ensure appropriately treated and/or coated timber is utilised at all times. Ensure that the system is designed and implemented so that the collection or pooling of water does not occur.

Movement of materials can degrade connections with time, and it is prudent that this is avoided or reduced to an acceptable means where possible.

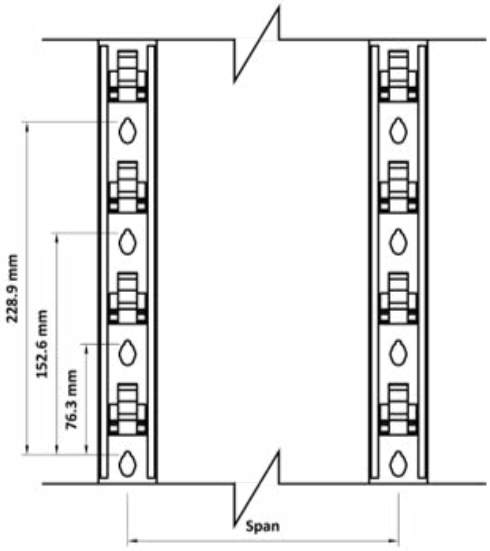
## Flexural

### Cladding board dead load:

The mass per square meter of the composite surface will differ slightly relative to the profile shape that has been utilised. Typical masses will range between 13.5 kg/m$^2$ and 16.0 kg/m$^2$. Refer to the profile list for specific mass distribution information. The system is designed to be flexible in application. Fastening points are provided every 76.3 mm along the clip strips. Depending on the span employed, the mass per fastening point will vary. Depending on the number of fastening points used, the mass per fastening point will vary. The table below provides a summary of the board mass per fastening point as a function of the fastening point frequency and span. The selection of an appropriate fastener will depend on the information provided herein, the expected live loads for the application and the substrate available. Consult an appropriately qualified professional to ensure the correct fastening method with an adequate factor of safety is utilised for the application and the project location. Clip strips are available in lengths of approximately 1 830 mm and can be cut to length. A minimum of 3 fastening points should always be implemented. Clip strips must be installed plumb to ensure an even distribution of the dead load across all the clip strip interactions with the boards.

**Mass (kg) per fastening point Apex® and Infinity Combined**

| Cliping strips fastening point (mm) | Span between clips Strip (mm) | | | | |
|---|---|---|---|---|---|
| | 300 | 600 | 900 | 1200 | 1500 |
| 76.3 | 0.4 | 0.7 | 1.1 | 1.4 | 1.8 |
| 152.6 | 0.7 | 1.4 | 2.2 | 2.9 | 3.6 |
| 228.9 | 1.1 | 2.2 | 3.2 | 4.3 | 5.4 |
| 305.2 | 1.4 | 2.9 | 4.3 | 5.8 | 7.2 |
| 381.5 | 1.8 | 3.6 | 5.4 | 7.2 | 9.0 |
| 457.8 | 2.2 | 4.3 | 6.5 | 8.6 | 10.8 |
| 534.1 | 2.5 | 5.0 | 7.6 | 10.1 | 12.6 |
| 610.4 | 2.9 | 5.8 | 8.6 | 11.5 | 14.4 |
| 686.7 | 3.2 | 6.5 | 9.7 | 13.0 | 16.2 |




Utilise spans appropriate for the substrate available and in accordance with the local building codes. Spans of 900 mm are suitable for the composite boards under typical applications, dependent on the live loads of the scenario.

### System dead lo ad:

The clip strip is Z275 zinc galvanised. The additional mass of the clip strip is approximately 0.1 kg per m. This should be incorporated with the applicable board dead loads (provided in the previous table) to determine the overall dead load of the system. An appropriately qualified professional must ensure the fasteners used and the substructure against which the cladding system will be installed are adequate for the various load cases and conditions of the application and site.

Additional screws can be fastened through the boards into the substructure for areas prone to high live loads, such as wind. A cavity between the board and around the fastener must be allowed to accommodate the expansion and contraction of the composite board. The size of the cavity between the fastener and the board will depend on the length of the profile and can be estimated based on the thermal expansion coefficient (provided under the applicable chapter) and the expected temperature range of the site. Shorter boards will require smaller cavities. The cavity can be pre-drilled, or an appropriate self-reaming fastener can be utilised. Adequate uplift resistance must be provided by a fastener with an appropriate head. Fastening points must be placed centrally relative to the flat face of the board profile and must not interact with the 'feet' of the board profiles or the tongue and groove joints between profiles.

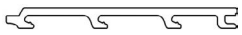
## 8. Components and installation

Cladding boards

Clip strips

Fasteners

### Cladding boards profile information

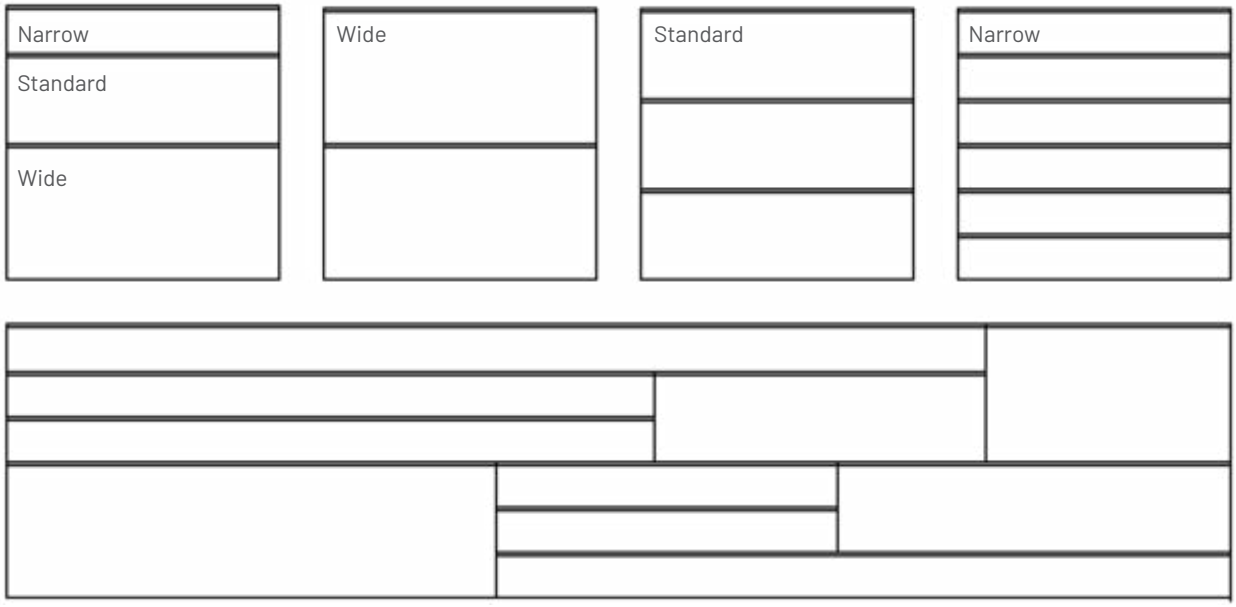
| Profile description | Technology | Profile width (mm) | Visible width (mm) | Depth (mm) | Maximum length (mm) | Length per $m^2$ ($m/m^2$) | Mass per m (kg/m) |
|---|---|---|---|---|---|---|---|
|  | Infinity | 240 | 228 | 20.5 | 5 800 | 4.4 | 3.1 |
| | Infinity | 163 | 151 | 20.5 | 5 800 | 6.6 | 2.2 |
| | Infinity | 87 | 76 | 20.5 | 5 800 | 11.5 | 1.2 |
| | Infinity | 163 | 151 | 24.5 | 5 800 | 6.6 | |
| | Apex | 163 | 151 | 24.5 | 5 800 | 6.6 | |
| | Apex | 163 | 151 | 24.5 | 5 800 | 6.6 | |
| | Apex | 163 | 151 | 24.5 | 5 800 | 6.6 | |
| | Apex | 87 | 76 | 34.5 | 5 800 | 11.5 | |

The profile width is the complete width of a profile whereas the visible width refers to the width of each profile that remains visible once the profile has been installed between two other boards. The visible width should be utlised to determine coverage areas of the intended application.

The average depth of the profile as it protrudes from the substructure is the depth presented above (20.5 mm) and that of the clip strip (4.0 mm) combined (24.5 mm). Additional depth provided by various substructure or frame systems must be added to this to obtain a total depth. This total depth should be utilised for design purposes.

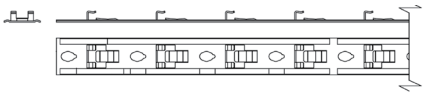
Refer to the composite installation guide for further information regarding the cutting, ripping and fastening of composite in general.

## Laying patterns



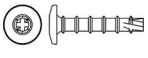

## Clip strip

### Clip strip specification

| Profile | Description | Width (mm) | Height (mm) | Length (mm) | Depth (mm) | Mass per strip (kg) |
|---|---|---|---|---|---|---|
| Clip strip |  | 40 | 11 | 1830 | 4 | 1.8 |

Spans are dependant on board and fastener loads.

### Typical fastener specification

| Fastener type | Typical example | Standard size | Length (mm) | Note |
|---|---|---|---|---|
| Masonry fastener |  | M6 | >40 | Substrate must have a minimum strength of 30 MPa. Fastener head height may not exceed 8 mm. |
| Metal fastener | | M5.5 | >16 | Tek screws with wafer heads or hex heads are suitable. Fastener head height may not exceed 8 mm. |
| Timber fastener | | M5.5 | >40 | Substrate must have a minimum strength of 30 MPa. Fastener head height may not exceed 8 mm. |
| Composite fastener | | M5.5 | >=40 | Fastener length may not exceed depth of composite batten. Typical batten depth is 35 to 40 mm. Fastener head height may not exceed 8mm. |

Appropriate fasteners must be employed depending on the expected worst-case loads and loading conditions, the intended application and the conditions present. Particular attention should be paid to the substrate conditions available and the environmental conditions of the site. All applications should adhere to the applicable regional standards. All metal surfaces should be coated appropriately. All timber profiles should be treated appropriately. Regular and proactive maintenance should be employed.

## A. Timber & composite frame applications

### Installation principles

### Primary components

All elements of the cladding system should be specified in accordance with the required design life and loading conditions of the application.
All applications should adhere to the applicable regional standards.

### Timber treatment

Timber should be treated in accordance with atmospheric conditions of the site. Ensure all applicable regional standards with respect to the type of timber and treatment that may be employed are satisfied.

### Coating and priming

Priming and additional paint treatment can extend the design life of timber elements where required. Cut faces of timber elements (including those that have been treated) are to be coated, and exposure to moisture minimised.

Cut edges of other elements, including trim profiles and clip strips, are also to be coated with an appropriate protective layer, particularly in severe atmospheric environments.

### Pull-out & shear resistance

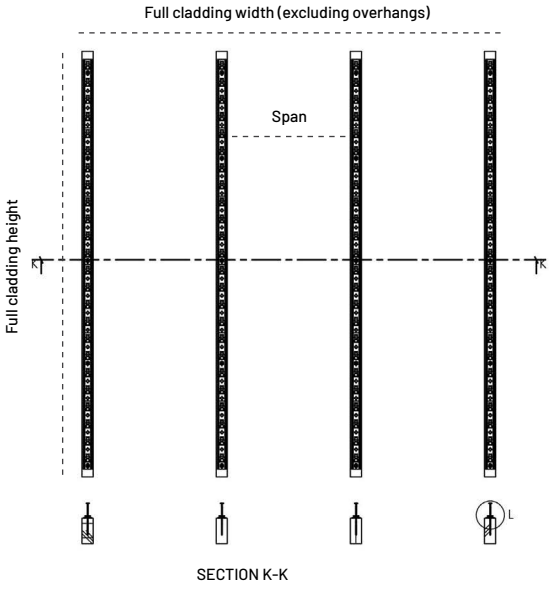
The pull-out and shear resistance of a fastener is dependent on the substrate material and the fastener used. Ensure appropriate materials and fasteners are employed for both the clip strip and substructure connections. Ensure the selected fastener for the clip strip is not longer than the depth of the selected substructure.

### Composite battens

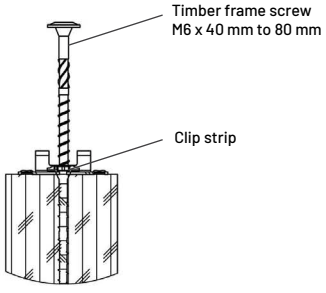
Composite and/or plastic battens can be used instead of timber as support members to be fastened directly to a wall or similar. The alternative provides improved water resistance to the system, but appropriate expansion gaps must be allowed for. These joists have the added bonus of being highly durable, as they are made of foamed composite.

### Underlays and insulation

Insulation and wall underlays should be implemented where required and be applied in accordance with the manufacturer's guidelines as well as any applicable regional standards. Be cautious when considering fastening in the proximity of any membrane so as to avoid impacting the intended performance of the system.




SECTION K-K




DETAIL L

### Potentially relevant standards

| | |
|---|---|
| Europe | EN 1990 |
| | EN 1995 |
| USA | ISO/TC 165 |
| | IBC – 2300 |
| | IBC – 2603 |
| New Zealand | NZS 3604 |
| | NZBC (Acceptable Solution E2/AS1, Table 18.8.2 & Paragraph 9.1.) |
| Australia | AS 1720 |
| | AS 1684 |

## B. Steel frame applications

### Installation principles

All elements of the cladding system should be specified in accordance with the required design life and loading conditions of the application. All applications should adhere to the applicable regional standards.

### Corrosion

Corrosion rates are dependent on the atmospheric conditions of the site and should be assessed to ensure an appropriate substructure material and coating are selected. An adequate maintenance program should be developed and implemented to ensure the longevity of the cladding system.

### Coating and priming

Cut edges of metal-based substructures, trim profiles and clip strips are to be coated with an appropriate protective layer, particularly in severe atmospheric environments.

### Pull-out & shear resistance

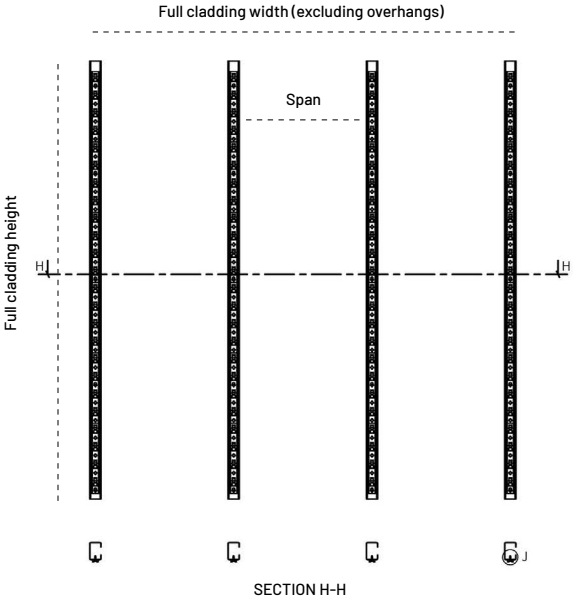
The pull-out and shear resistance of a fastener is dependent on the substrate material and the fastener used. Ensure appropriate materials and fasteners are employed for both the clip strip and substructure connections. Ensure the selected fastener is an appropriate length for the application.

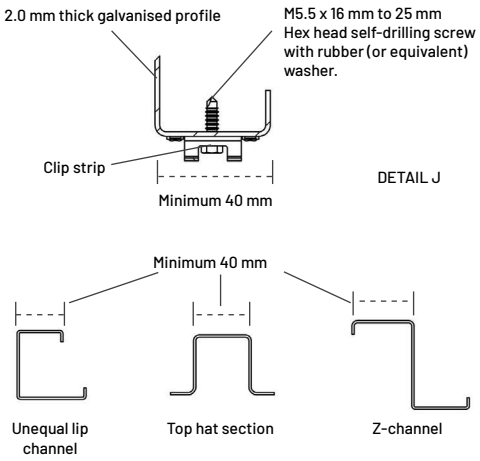
### Thermal breaks

When fastening steel profiles atop building membranes, use a plastic packer or similar thermal break product to prevent unwanted heat transfer. Ensure the products and systems utilised comply with the required applicable regional standards.

### Underlays and insulation

Insulation and wall underlays should be implemented where required and be applied in accordance with the manufacturer's guidelines as well as any applicable regional standards. Be cautious when considering fastening in the proximity of any membrane so as to avoid impacting the intended performance of the system.



## Potentially relevant standards

| | |
|---|---|
| Europe | EN 1993 |
| | EN 1994 |
| | EN 1999 |
| | EN 1090 |
| USA | IBC 2000 |
| | IBC 2200 |
| | IBC 2603 |
| New Zealand | AS/NZS 5131 |
| | AS/NZS 4600 |
| | AS/NZS 1163, AS/NZS 1397, AS/NZS 3678, AS/NZS 3679 and AS/NZS 3679 |
| | AS/NZS 232 |
| | AS/NZS 1664 |
| Australia | AS/NZS 5131 |
| | AS 3623 |
| | AS 4100 |
| | AS/NZS 4600 |
| | AS/NZS 1163, AS/NZS 1397, AS/NZS 3678, AS/NZS 3679 and AS/NZS 3679 |
| | AS/NZS 232 |
| | AS/NZS 1664 |

## C. Masonry and concrete applications

### Installation principles

There is inherent variability in the nature of masonry and concrete constructions that must be considered. Certain minimum substrate strengths are required for fastening or anchoring systems. Certain minimum edge distances are also required. These constraints are dependent on the intended fastener. Consult the fastener technical data sheet to establish the minimum requirements and provide for this in the design of the system. In scenarios where the strength of the substrate is unknown or questionable, in situ tests may be required. Ensure all applicable regional standards are satisfied.

### Plaster and paint

Accumulated layers of plaster and/or paint can be misleading with regards to both the strength and the level of the substrate. Assess such scenarios during the planning phase and design accordingly to ensure an adequate support for the cladding system is provided.

### Pull-out & shear resistance

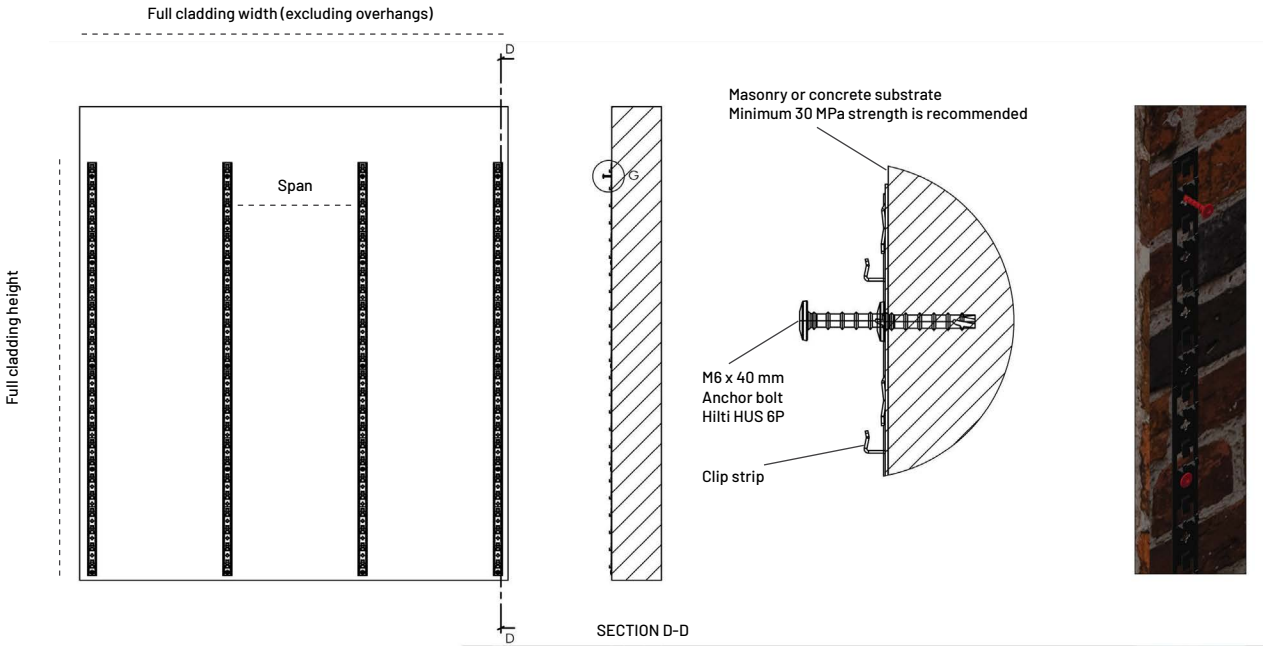
The pull-out and shear resistance of a fastener is dependent on the substrate material and the fastener used. Ensure appropriate material is present and select appropriate fasteners for both the clip strip and substrate connections. Ensure the selected fastener is an appropriate length and size for the application and environment.

### Cavities

The clip strip can be installed directly against a wall if the surface level is within acceptable tolerances. Spacers, plaster or grinding localised protrusions can be used to remedy minor unevenness. However, several regional standards require a minimum cavity size behind the cladding system for ventilation and moisture control. In these instances, the above mentioned frame systems can be utilised.

### Underlays and insulation

Insulation and wall underlays should be implemented where required and be applied in accordance with the manufacturer's guidelines as well as any applicable regional standards. Be cautious when considering fastening in the proximity of any membrane so as to avoid impacting the intended performance of the system.



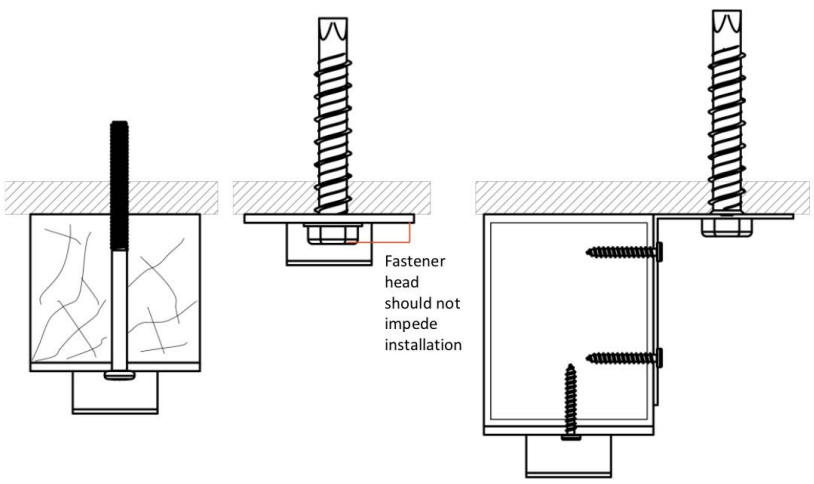
| Potentially relevant standards | |
|---|---|
| Europe | EN 1993 |
| | EN 1994 |
| | EN 1999 |
| | EN 1090 |
| USA | IBC 1402 |
| | IBC 2603 |
| | IBC 1901 |
| | IBC 2102 |
| | IBC 2200 |
| New Zealand | NZS 4230 |
| | NZS HB 4236 |
| Australia | AS 3700 |
| | AS 4773 |

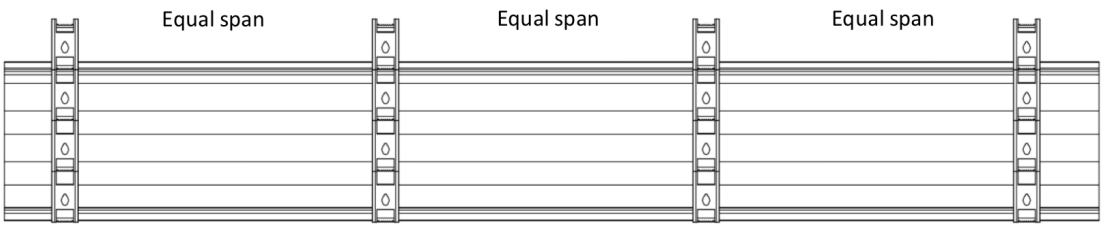
## D. Clip installation

### Installation principles

### General

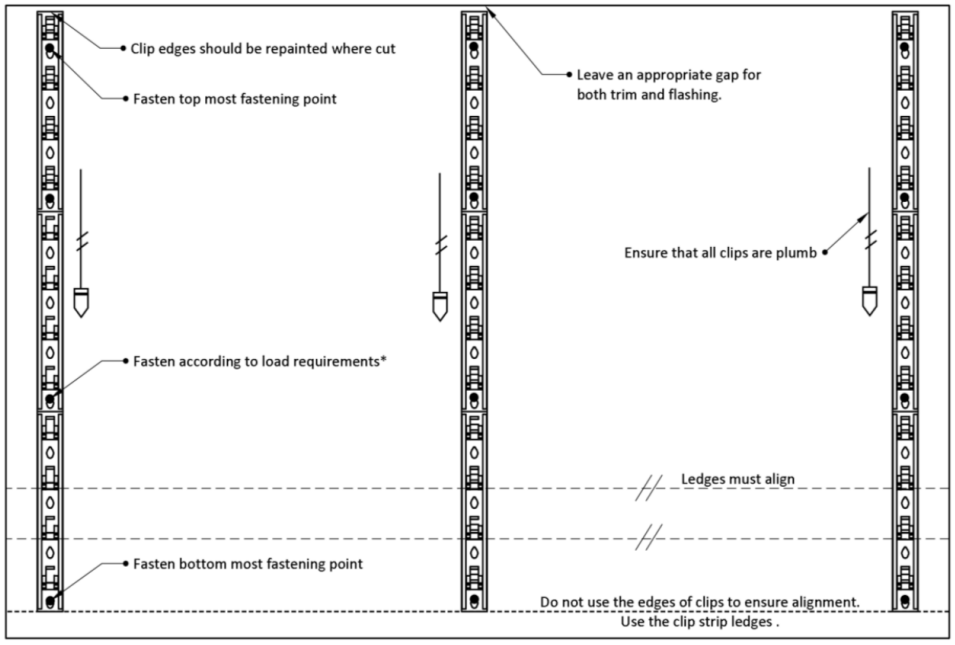
- Clip strips should be installed parallel to one another to ensure an even distribution of the board dead loads.
- The clip ledges provide the interaction point with the boards. The alignment of these elements is, therefore, critical. The manufacturing tolerance of the dimensions between consecutive ledges are, as result, more precise. Use this element for all measurements.
- Ensure all ledges align so that the board dead loads are evenly distributed to each clip strip.
- Space clip strips equally so that the dead loads are transferred to the substructure evenly.
- Fasteners should be selected and installed so that the heads of the fasteners do not impede the installation of the boards. Ensure the fasteners securely fix the clip strip to the available substrate. A minimum of three fastening points is required per clip strip.
- All substrates and substructure systems must be able to support the load of the system and any anticipated loading scenarios for the application.
- Once the clip strips are installed, the adaptors for the trim (if required) are positioned and fastened to the available substructure. Boards are installed following this, after which the trim may be clicked into place.

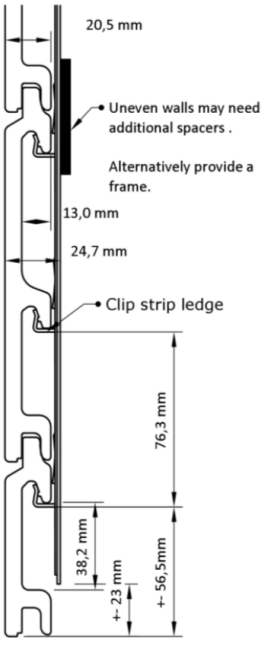





## Horizontal board orientation

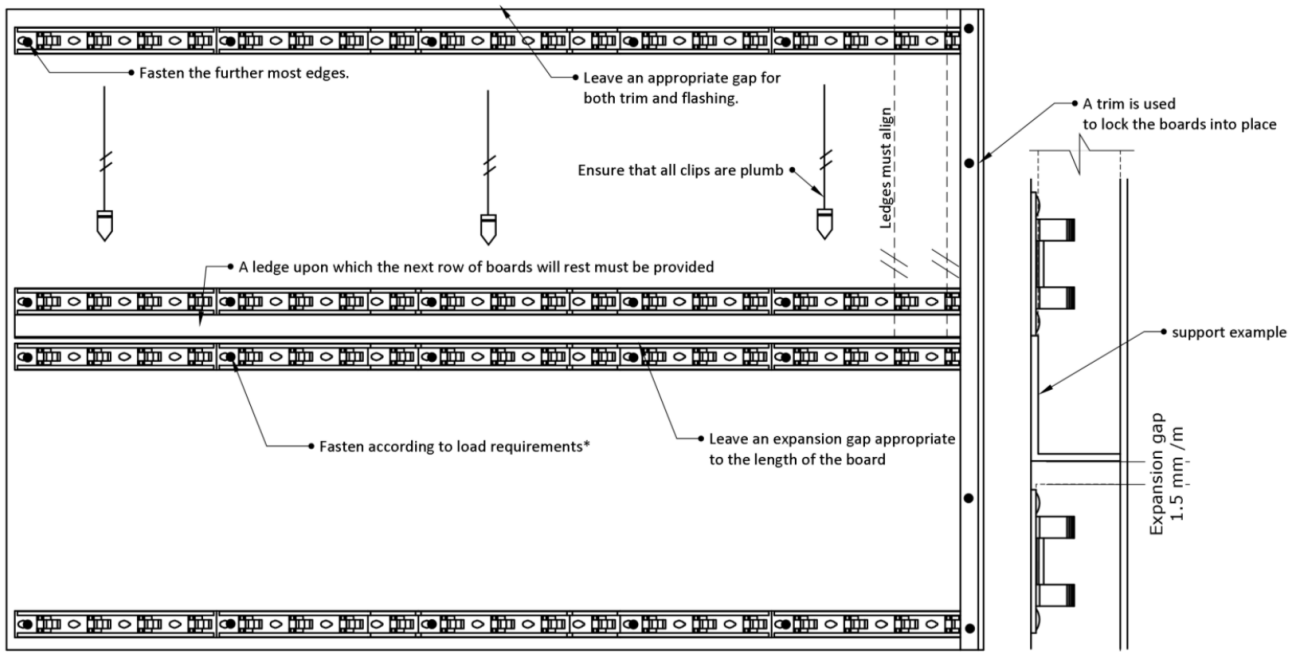
- Ensure the clip strips are fastened plumb for horizontal board orientations so that the distribution of the board dead loads is uniform.
- The bottom board should hang off the bottom clip ledge. This provides fastening space for trim and flashing. The bottom of the board is approximately 56.5 mm from the bottom ledge and provides approximately 23 mm of space for trim and flashing fixings.
- Provide adequate space for trim, flashing, ground clearance, drainage and other aspects of the system when determining the starting and ending points of the clip strips.
- Planning is essential. Project the intended laying pattern over the space available. Pay particular attention to the last (top) board; depending on the available space, this board may need to be ripped. Always allow for two points of contact (feet) between the profile and clip strip for each board. If this is not available for the top board, move the system up or down so that this can be achieved whilst still maintaining compliance with all regulatory requirements.
- Once the clip strips have been aligned, install the first fastener through the bottom fastener cavity and the second through the top fastener cavity of the clip strip. At these two points ensure that the fasteners are positioned within the fastener cavity so as to put the clip strip into tension and prevent any movement or settlement of the clip strip off of the fasteners. All subsequent fasteners are to be distributed evenly along the clip strip according to what has been designed.



## Vertical board orientation

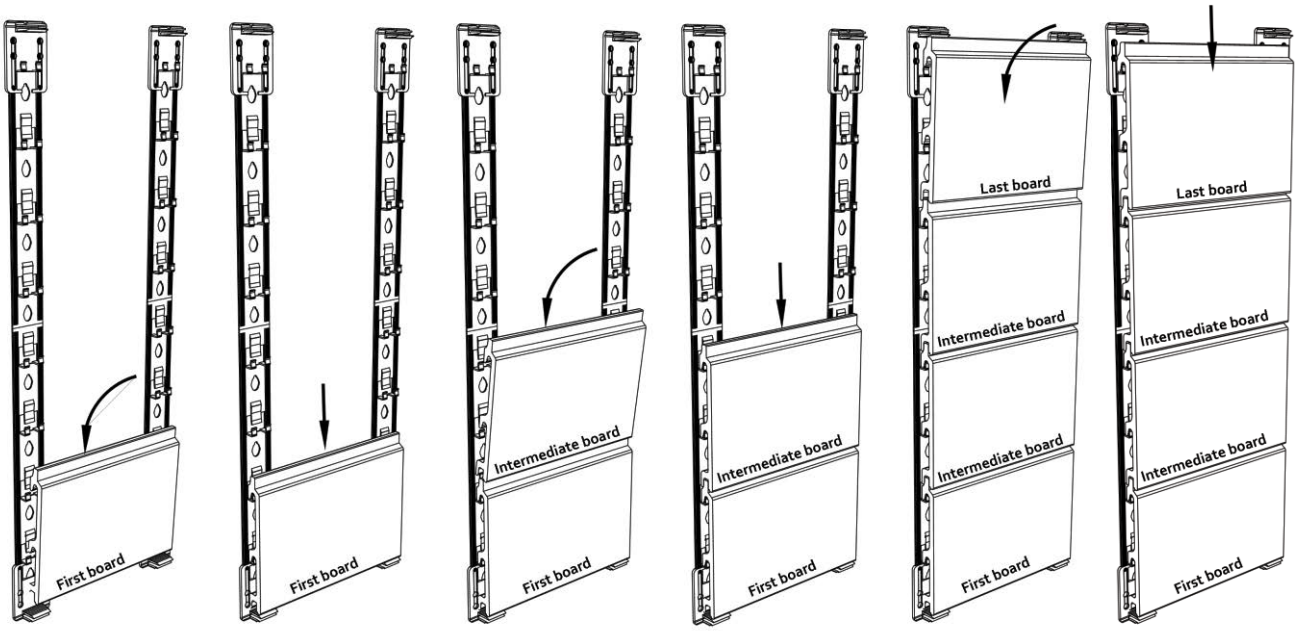
- For vertical board orientations, ensure the ledges of the clip strips are fastened plumb and the clip strips are level.
- The boards should be installed so that a clip strip connection is within 50 mm of the end of any board. This provides adequate space for trim and flashing fixings.
- Additional space for trim, flashing, ground clearance, drainage and other aspects of the system must be provided for when planning the location of the starting and finishing boards.
- Planning is essential. Project the intended laying pattern over the space available. Pay particular attention to the last board; depending on the available space this board may need to be ripped. Always allow for two points of contact (feet) between the profile and clip strip for each board. If this is not available for the last board, move the system left or right so that this can be achieved whilst still maintaining compliance with all regulatory requirements.
- Once the clip strips have been aligned, install the first and second fasteners through the fastener cavities at either end of the clip strip. At these two points ensure that the fasteners are positioned within the top of the fastener cavity so that the full weight of the clip strip rests on these fasteners evenly and further movement or settlement of the clip strip off of the fasteners will not occur. The third fastener should be placed in the center fastener cavity, at the bottom of the fastener cavity, placing the clip strip in tension and preventing any other movement. All subsequent fasteners are to be distributed evenly along the clip strip according to what has been designed.
- In the vertical orientation, the clip system will not prevent the boards from slipping down under their own weight over time. An appropriate structural member is required to support the boards in this scenario.
- As a result of the board resting directly upon an obstruction, expansion is prevented in this direction. All movement of the board will therefore be translated to the opposite end (top) and should be catered for at this location.
- A trim and/or fastener is required to lock the final board into place once installed. Additional fasteners are often required to lock intermediate boards into place periodically throughout the installation. The board has not been designed to have individual fasteners fixed through the boards. As a result, when using fasteners to lock boards into place, install the fasteners so that they fit snugly against the board but do not interfere with the installation of a subsequent board or trim. This is usually easiest done just above the groove or intermediate support of the board, rather than near the tongue of the board.



## Installation process

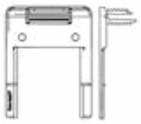
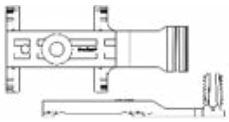
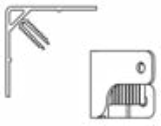
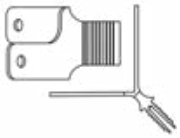
### Installing boards onto clip strips

- Tilt the board slightly and insert the 'feet' of the board onto corresponding ledges of the clip strip and (for all boards other than the first) the groove of the board over the tongue of the previous board. Once the board is correctly positioned, push down on the board, clipping the board into place.
- A groove offcut and a soft mallet can assist in effectively seating the boards on to the clip ledges.
- Ensure each layer of boards remains parallel to the starting layer. Clipping a board into place simultaneously across the profile length helps to maintain this.
- Repeat the installation process from the first board to the last board.
- Depending on the available space, the final board may need to be ripped. Ensure that a minimum of two feet per board profile are clipped into place.

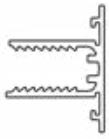
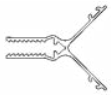


## E. Ancillary components

### Adaptors

| Description | Material | Associated trim | Width (mm) | Height (mm) | Length (mm) | Mass (g) |
|---|---|---|---|---|---|---|
|  Top and bottom adaptor | Reinforced nylon composite | Top and bottom profile | 50 | 70 | 23 | 9 |
|  Side adaptor | Reinforced nylon composite | T – profile (butt joins)<br>U – profile (butt joins)<br>Edge profile | 50 | 95 | 23 | 15 |
|  Internal corner adaptor | Reinforced nylon composite | Internal corner profile | 54 | 54 | 40 | 10 |
|  External corner adaptor | Reinforced nylon composite | External corner profile | 71 | 71 | 40 | 8 |

### Trim

| Description | Material | Associated trim | Width (mm) | Height (mm) | Length (mm) | Mass (g) |
|---|---|---|---|---|---|---|
| Universal trim profile | Aluminium | Top and bottom adaptor | 25 | 45 | 3000 | 0.34 |
| Edge trim profile | Aluminium | Side adaptor | 27 | 28 | 3000 | 0.34 |
| U trim profile | Aluminium | Side adaptor | 13 | 21 | 3000 | 0.17 |
|  T trim profile | Aluminium | Side adaptor | 25 | 28 | 3000 | 0.65 |
|  Internal corner trim profile | Aluminium | Internal corner adaptor | 50 | 50 | 3000 | 0.48 |
| External corner trim profile | Aluminium | External corner adaptor | 30 | 30 | 3000 | 0.41 |

## Installation principles ( Ancillary components)

### Planning

### Clip strip length

Determine the length of the clip strip before installation. As previously mentioned in the clip installation section, it is necessary to provide adequate space for:

- Trim and adaptors
- Board overhangs
- Flashing
- Ground clearance
- Drainage

The clip should be cut long enough to support all cladding board feet and treated before installation and after determining the structure is suitable.

### Adaptor support

- Provide structural support behind adaptors and trim, and do not allow them to hang unsupported. Adaptors should be installed before the boards are inserted.
- Use the provided measurement guidelines to leave enough space for fasteners, adaptors and trim.
- If a fastener is too close to the edge of a structure it may cause cracking and, ultimately, structural failure. Depending on the fastener used, additional clearance may be needed to prevent this from happening.
- Where boards join (as with internal corners), leave enough of a space between boards for the trim to be inserted.

### General

- A clip strip must be used for support on both edges of boards, including butt joins.
    - Clips can be cut to support single boards, as is needed where boards might stagger or join.
    - Clips must be supported by at least 2 fasteners.
    - Care should be taken to ensure that clip ledges align, or the board will not be properly supported.
- Aluminium trim profiles can be mitred and cut as needed.
- Leave expansion gaps in both the composite as well as the aluminium trim profiles.
    - Vertical trim profiles have an expansion lip to hide horizontal trim edges.

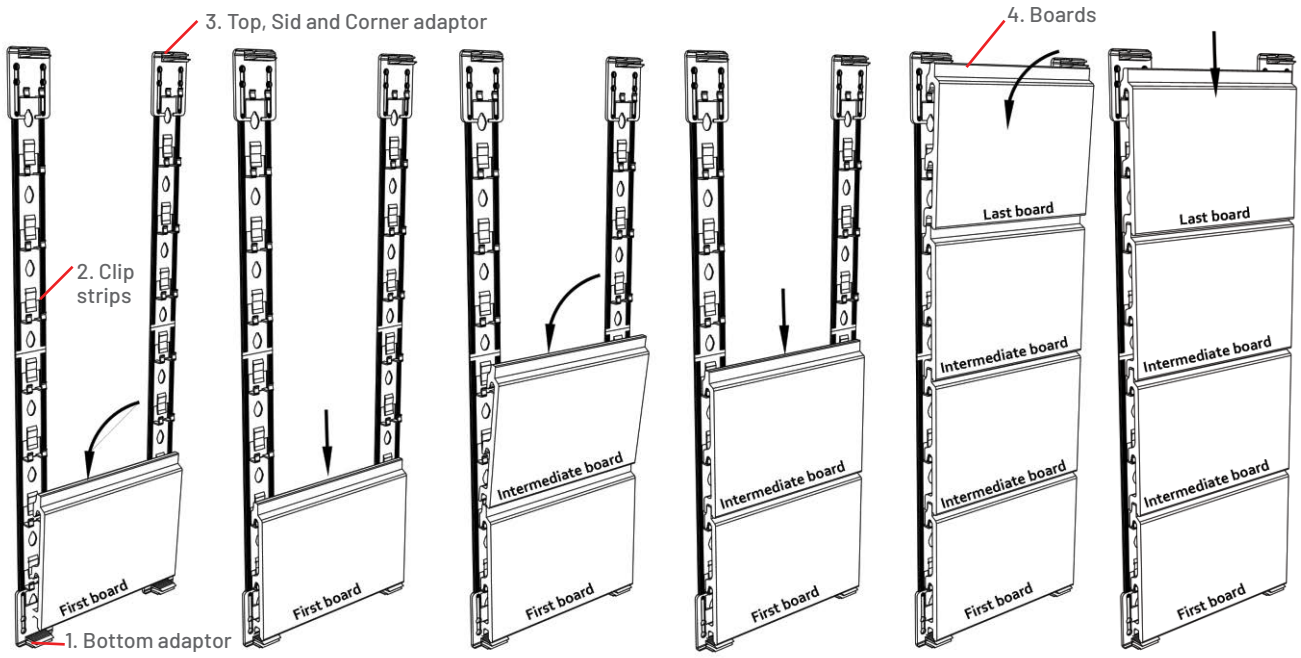
**Tip –** Adaptors such as the top and bottom, and side adaptor can be used with or without the clip where additional trim support may be needed.

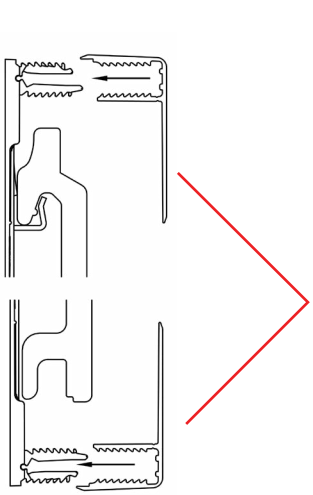
## Process

1. Install the top and bottom adaptor (bottom applications).
2. Insert the clip strips into the top and bottom adaptor, aligning the clip with the adaptor markers.
    - Fasten the clip strips to the structure while leaving enough space for other trim parts.
    - Depending on the fastener and structure used, it may be necessary to mark hole positions and pre-drill.

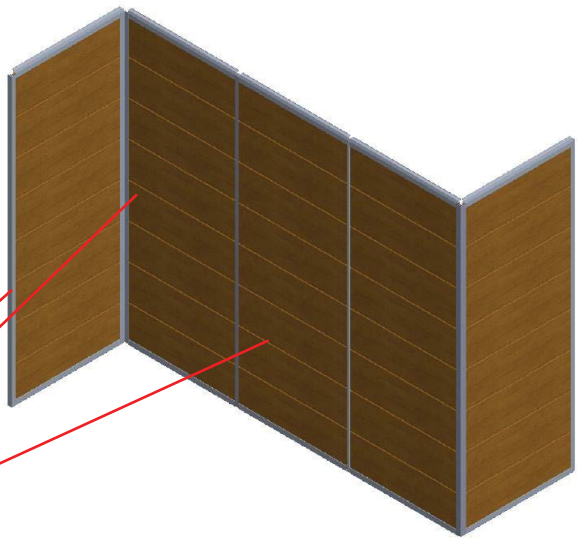
**Note -** Clip strips will need to be trimmed to required lengths before installation.

3. Install all required adaptors.
    - Top and bottom adaptors (top applications).
    - Side adaptors for both edges as well as butt joins.
    - Internal corner adaptors.
    - External corner adaptors.
4. Insert boards into clips as per the standard process.
    - Trim the tops of boards if needed.
5. Install the top and bottom trim profiles first.
6. Install all vertical parts in next, pushing the trim profiles ledges over the finished top and bottom adaptors. Use vertical trims for edges, corners and butt joins.
7. Add additional finishes like flashing.



5. Universal trim profiles

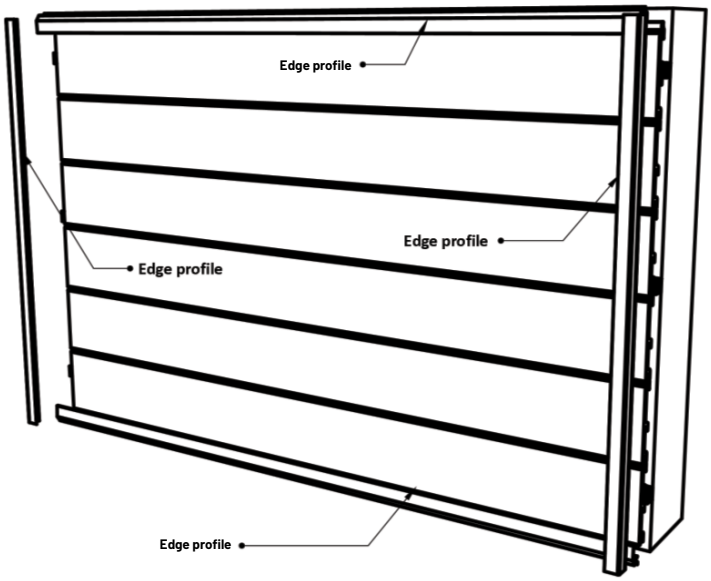


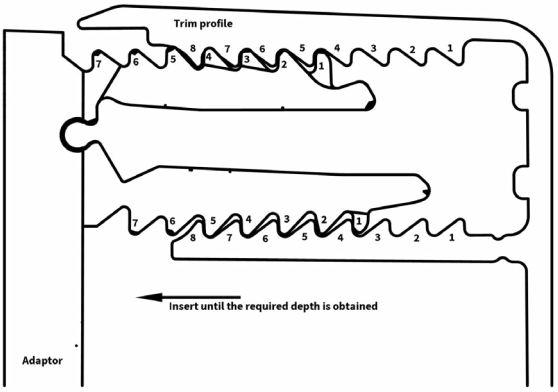
6. Vertical trims
    - Edge
    - Corners
    - Butt joins

## Adaptor and trim interaction

### General

- Once the cladding boards are in place, the trim can be inserted.
- Push the trim onto the adaptor, engaging the teeth.
- As you push forward, the teeth between the adaptor and trim will ratchet together and will make several clicking noises as they engage.
- Push the trim forward until it is no longer able to move and is pressed firmly against the cladding boards.
- Top and bottom horizontal trims should be inserted first and clicked into place.
- Any vertical trim, such as internal and external corner trim, edge, T and U trim, should be inserted after the top and bottom trim.




## Bottom application

### Planning

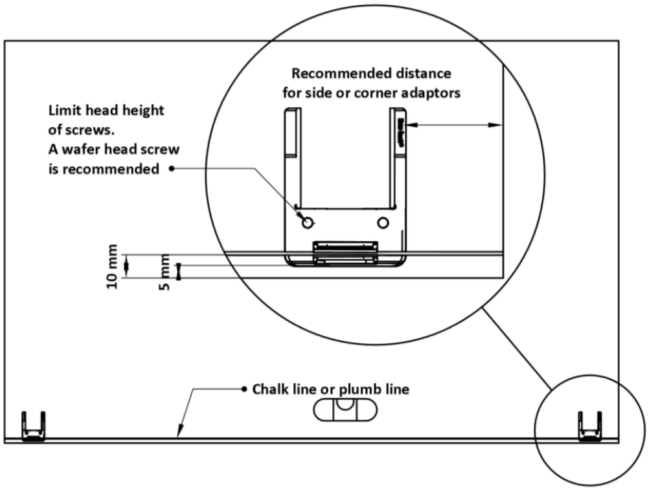
- When using clip adaptors, the top and bottom adaptors can be aligned using a chalk line.
- Install each adaptor at the required clip span.
- Ground clearances must be in line with building codes.

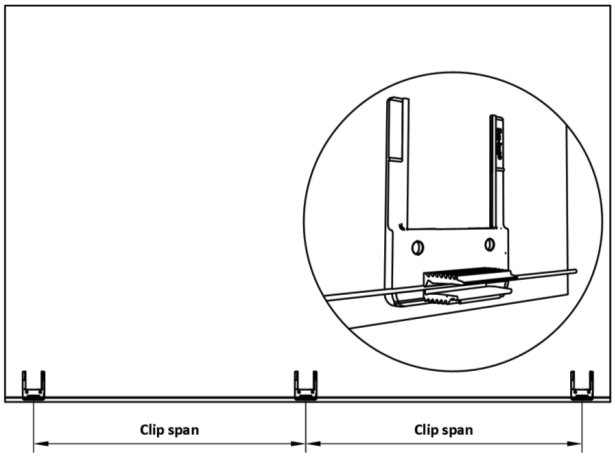
### Fasteners

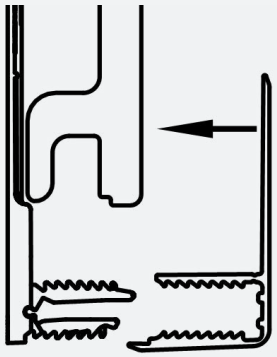
- Use an appropriate fastener (M4.2- M4.5 size) with a reduced head height to allow for easy insertion of the cladding board.
- A wafer head, flat head, counter sinking head, or recessed head screw should be adequate.
- If a larger head is required, the adaptor can be positioned with Marker 1 (see next page) in line with the top of the first fastening point of the clip strips. This will move the head of the screw out of the way of the board.

Wafer head

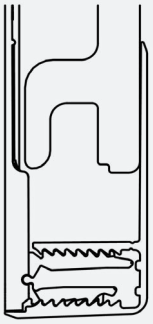
Note: Over tightening of the screw may cause the adaptor to deform.



Inserting trim after the board are in place



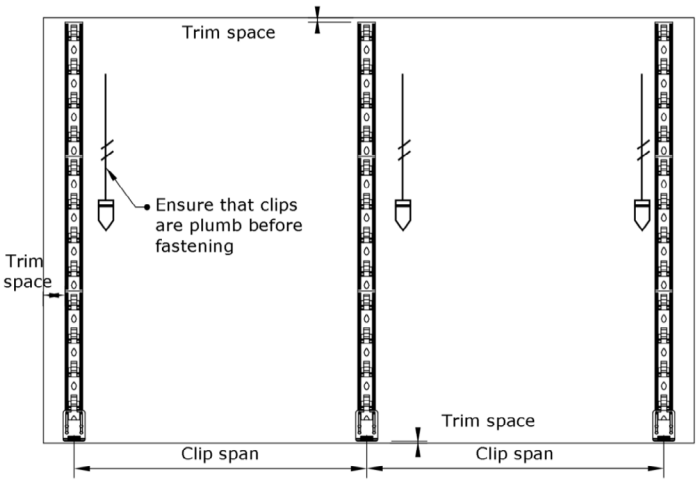
Final position of trim

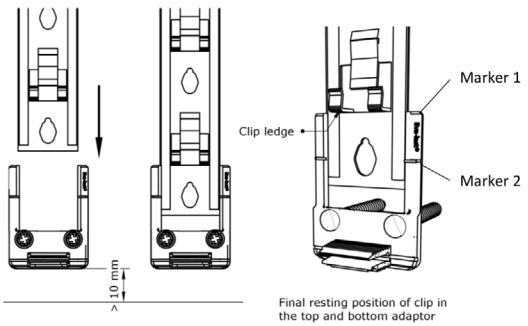
## Bottom application

## Clip strip interaction

- After cutting the clips to the required length, insert the clips into the already-fastened adaptor.
- Align Marker 1 of the top and bottom adaptor with the ledge for best distance.
- Fasten the clips down, ensuring that they are plumb and parallel to one another.
- Leave a space at the top and sides of the clips for the required trims and flashings.

**Tip –** The top of the fastener hole on the clip can be aligned with Marker 1 to create space, if larger screws need to be used.



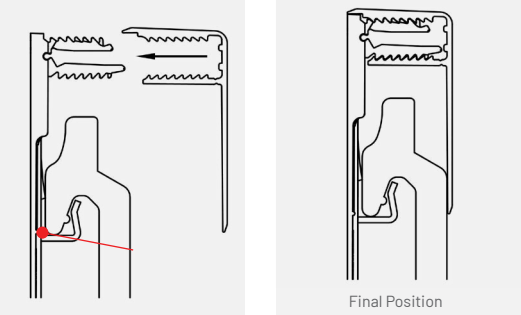




Final resting position of clip in the top and bottom adaptor

## Top application

### The last board

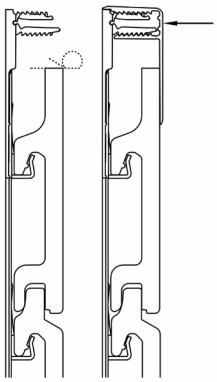
As with the installation of the previous intermediate boards, the last board should be slotted into place. The clip should be trimmed with the foot of the last cladding board supported by a hanger.




Inserting trim after the boards are in place

Any material above the last (and topmost) hanger can be trimmed as needed.

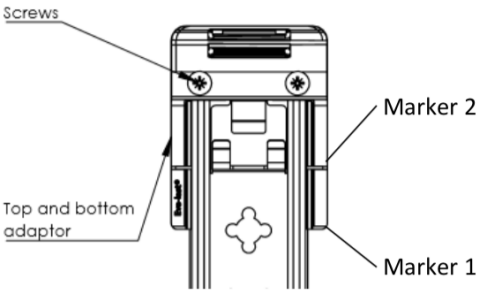
- The last board may need to be trimmed dependent on the height of the cladding surface.
- To engage with both the clip and the second-to-last board, leave a minimum width of 80 mm should be left.
- It is recommended that all unused clip ledges and springs be removed.
- The clip strip and last board should be trimmed before installation.



## Top adaptor

The top and bottom adaptor has markers that can be used to align the clip into the best position for an uncut board. Marker 2 should align with the side of the clip ledge in order to leave enough space for the board to be inserted.

- The top and bottom trim should be inserted before the vertical trim.
- The final position of the top and bottom trim allows for a small drainage gap above it. This can be covered with flashing to prevent ingress of water if needed. See drainage section for more information.




**Note :** In areas with high wind loads, the topmost board may need additional fastening.

## Side application(s)

### Side adaptors

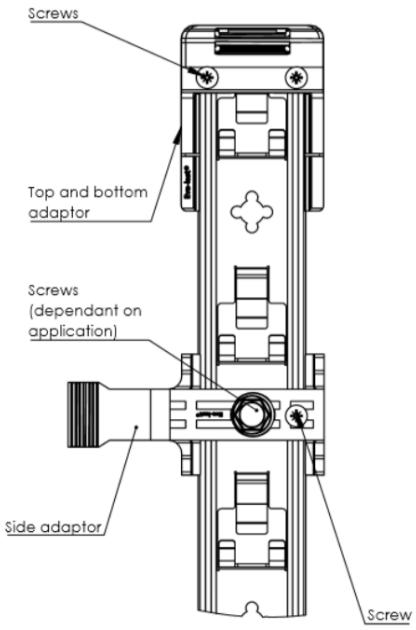
The side adaptor can perform multiple functions, such as:

- Edge applications, where the cladding might finish mid-wall, or not wrap around a building.
- Butt join applications, where boards butt against one another and join to either obtain the required length, or to create patterns within the cladding face.

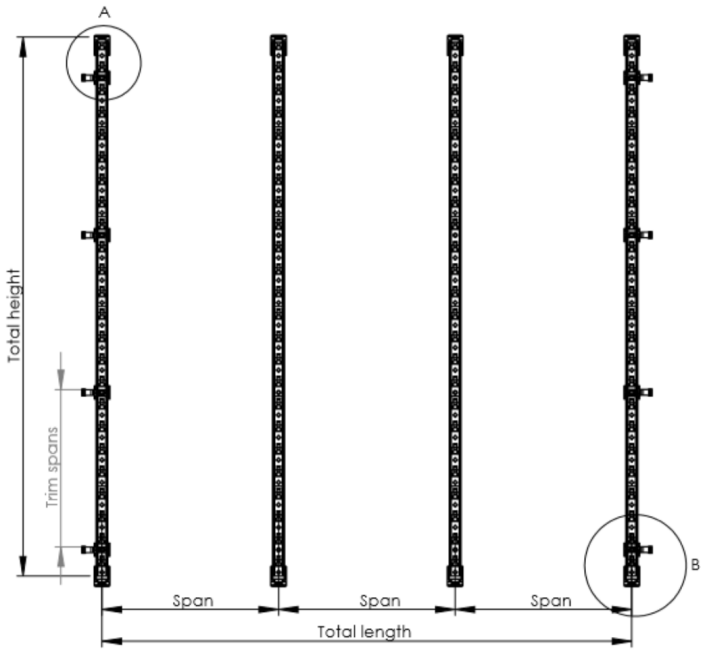
### Fastening points

The use of the adaptor in either application is fundamentally the same.

- The fastening point of the side adaptor aligns with existing clip strip holes. Therefore, the fastener can support both the adaptor and the clip.
- A secondary fastening point has been provided to prevent the adaptor from pivoting, and a smaller screw may be used.



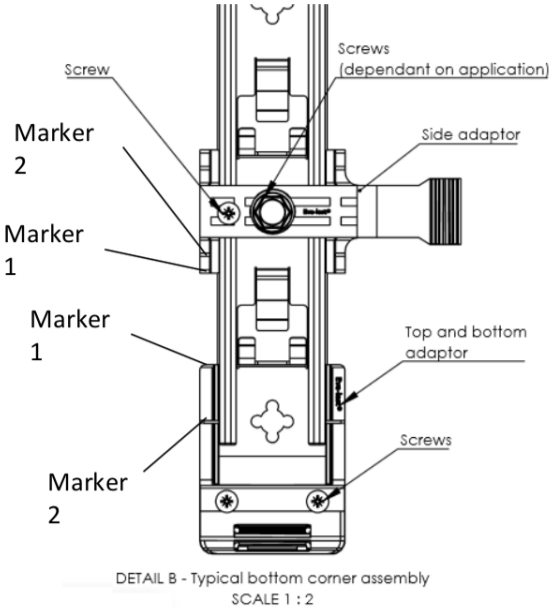

DETAIL A - Typical top corner assembly
SCALE 1 : 2



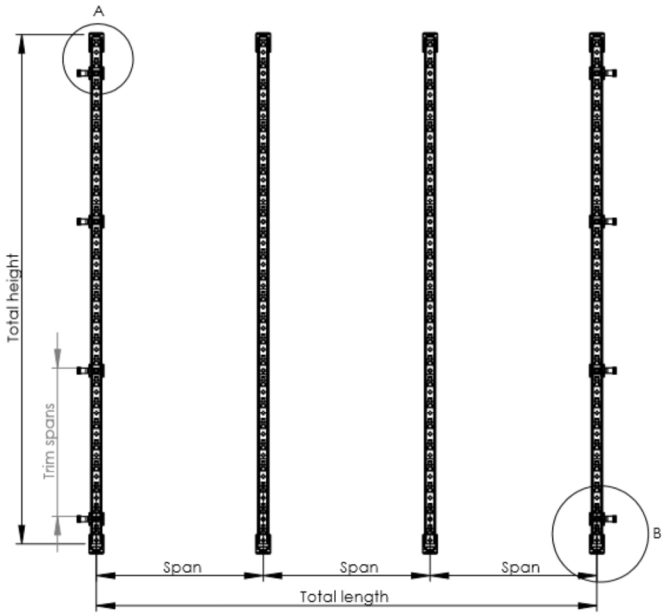
## Side application(s)

### Application

- Fasten the top adaptor into place, aligning Marker 2 with the top ledge of the clip.
- Insert side adaptors at required spans, aligning them with the clip hole.
- Align Markers 1 or 2 of the side adaptor with the clip ledge, dependent on screw size.
- Once all the adaptors are in place, insert the cladding boards.
- A secondary fastening point has been provided to prevent the adaptor from pivoting, and a smaller screw may be used.



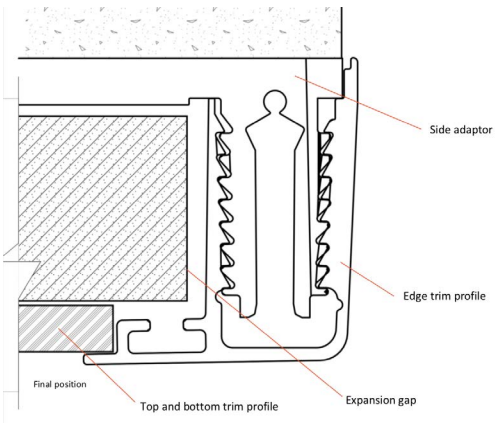

DETAIL B - Typical bottom corner assembly
SCALE 1 : 2




## Side application(s)

### Edge application

- A side adaptor is used to finish or frame the ends of cladding face.
- The adaptor can be placed in line with the edge of a wall, or slightly offset dependent on the preferred aesthetic.
- Not all surface edges are perfectly straight. However, in a proper installation, the clip strip and trim should be perpendicular to one another to create a neat finish.
- Use the measurement guidelines to determine how far away the clip strip needs to be in order to create the desired edge. If further distance is required, the adaptor can be installed on its own, rather than on top of the clip.
- The edge trim will be installed over the top and bottom trim. Align the expansion lip over the top of the trim.
- The edge trim can be mitered and cut to finish trim joins.




Final position of edge application

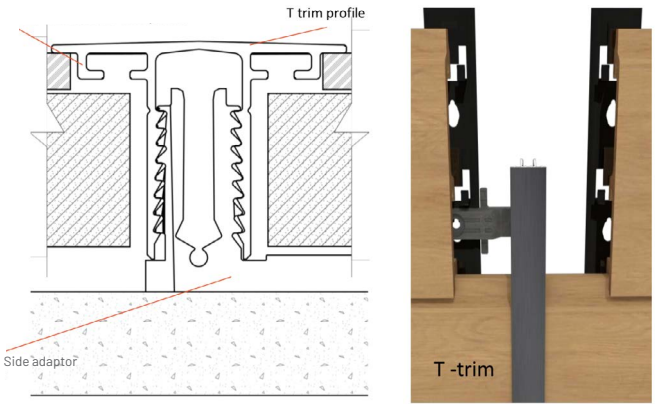
## Doors and windows

- The edge trim is one of the more diverse trims and can be used for door and window finishing.
    - It can be used horizontally in these applications, to frame doors and windows.
    - The side adaptor will need to be turned vertically and fastened directly to the substrate.
    - Care should be taken to draw water away from windows and door ways, and gaskets should be used.
- See doors, windows, ports and signage section for more details.

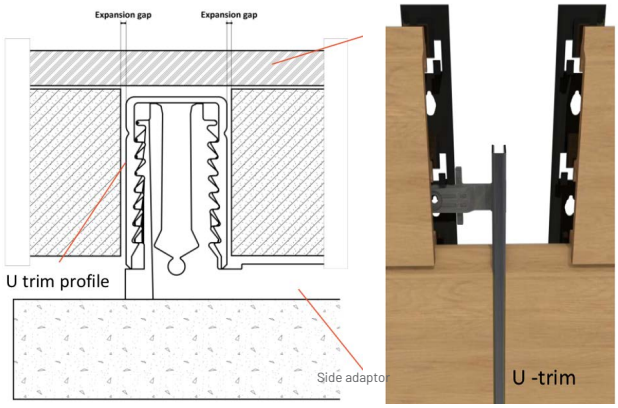
**Tip –** The U-profile can be used in place of an edge trim.

## Butt join applications

- Two trim profiles have been provided for the butt join application, including a:
    - T profile which covers the boards
    - U profile which covers the gap
- Both are suitable for butt joins. The U profile can be used for edges as well.
- An expansion gap should be left between the trim and the boards.
- All vertical profiles have cover ledges that hide the edges of horizontal trim and mark the best position for horizontal trim to rest.




Final position of T trim profile




Final position of U trim profile

## Staggered joins

- Where boards are individually staggered, short strips of U and T-trim profiles can be cut and used to cover the gaps between butt joins.
- Trim profiles can be cut around board profiles for a flush finish. Ensure that the top cladding profile is not supported by the top of the trim profiles, and that the top board is hanging on the appropriate clip ledge.
- Where short strips of trim are used, two anchor points should be provided to prevent pivoting.
    - Two adaptors should be used where possible.
    - Where this is not possible, a single adaptor can be used, provided that the trim is supported by the top and bottom board. Additional fasteners may be needed.
    - Alternatively, the gaps can be left exposed, providing this does not conflict with water proofing requirements.

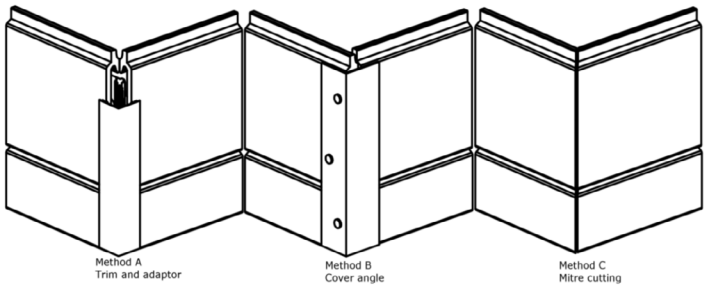
## External corner application

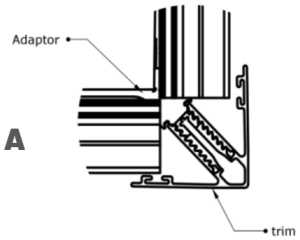
### General

Corner applications are often more involved than normal edges.

- Expansion and contraction take place in two directions.
- Uneven expansion and contraction is more likely to take place in external corner applications, as one surface may have more exposure to different temperaturesduring the day than the other.
- As this is the case, additional thought to fastening with conventional methods should be used, should an adaptor and trim profile not be used.

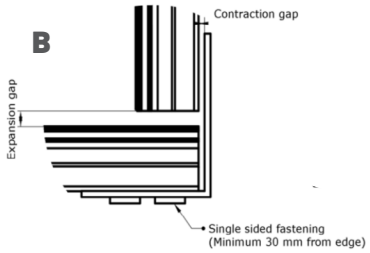
Method A: External corner trim



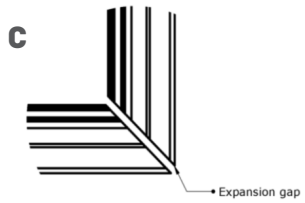

### Method A – Trim and adaptor

- Fasten the adaptor to the wall before inserting boards.
- Once boards have been installed, insert trim to the adaptor.




### Method B – Cover angle

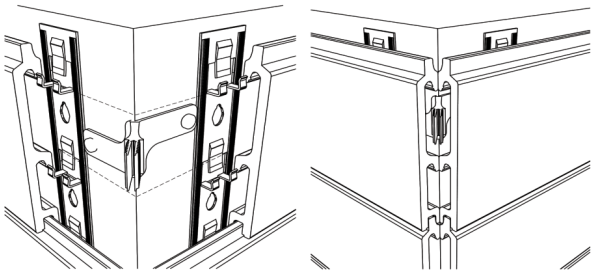
- Using a cover angle, directly fasten the angle to the face of a board.
- In order to allow for expansion and contraction, it is recommended that only one side of board be fastened to directly, letting the other side to expand and contract freely.
- Two screw lines should be used to avoid pivoting. They can be staggered.
- Expansion gaps should be left between: the two abutting boards,the edge of the board, and the cover angle, as well as the face of the perpendicular board and the cover angle.




### Method C – Mitre cut

- Mitre cut the boards using a sharp blade.
- Install, leaving enough of a gap for expansion and contraction.

**Tip –** Align the top of the adaptor with the bottom of a clip ledge

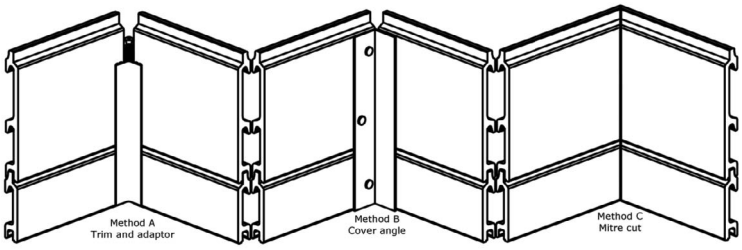


## External corner application

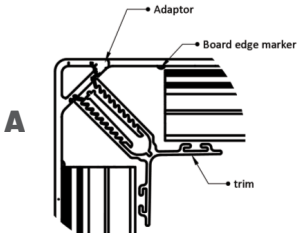
### General

Corner applications are often more involved than normal edges.

- Expansion and contraction takes place in 2 directions.
- Uneven expansion and contraction is more likely to take place in external corner applications, as one surface may have more exposure to different temperatures during the day than the other.
- As this is the case, additional thought to fastening with conventional methods should be used , should an adaptor and trim profile not be used.

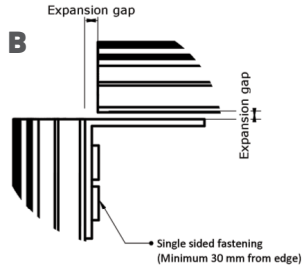


Method A: Internal corner trim



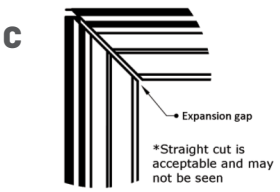

### Method A – Trim and adaptor

- Fasten the adaptor to the wall before inserting boards.
- Once boards have been installed, insert trim to the adaptor.




### Method B – Cover angle

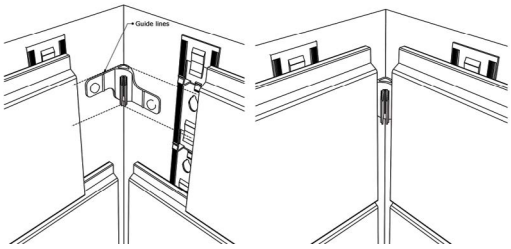
- Using a cover angle, directly fasten the angle to the face of a board.
- In order to allow for expansion and contraction it is recommended the only one side of boards be fastened to directly , allowing the other side to expand and contract freely.
- Two screw lines should be used to avoid pivoting and can be staggered.
- Expansion gaps should be left between
    - the two abutting boards,
    - the edge of the board,
    - and the cover angle as well as the face of the perpendicular board and the cover angle.




### Method C – Mitre cut

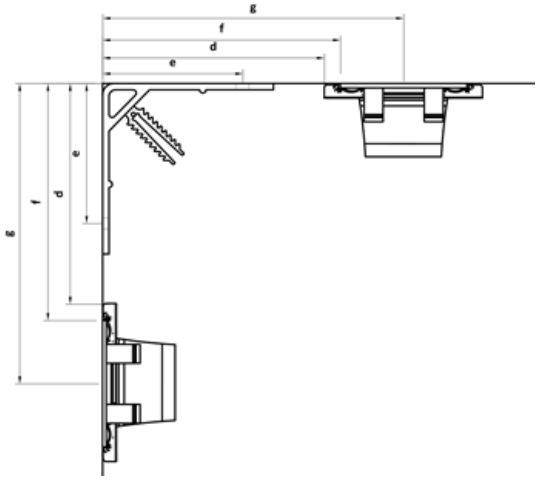
- Mitre cut the boards using a sharp blade.
- Install, leaving enough of a gap for expansion and contraction.

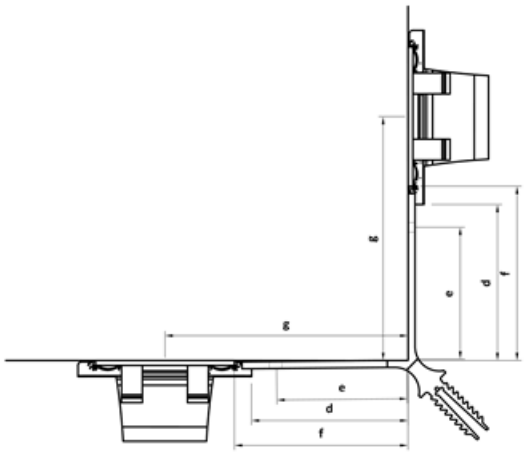
Align the top of the adaptor with the bottom of a clip ledge.

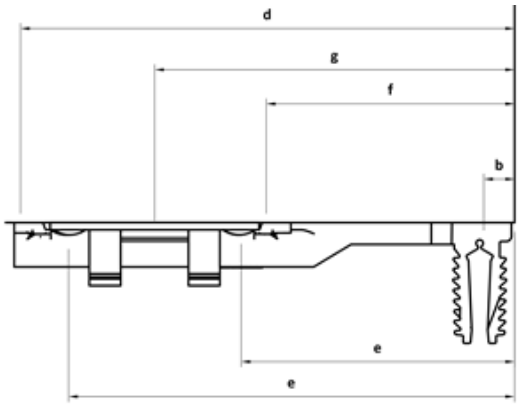


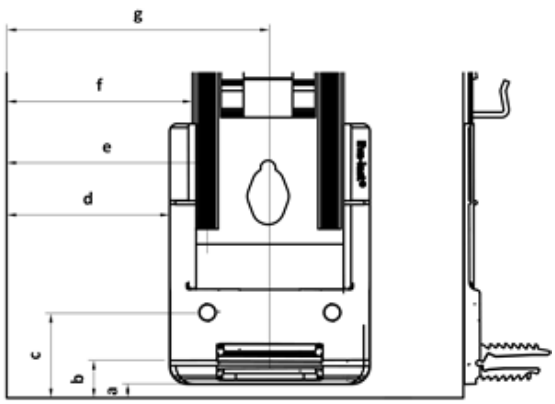
| Distance Descriptors | | Top and bottom | Side adaptor (Edge) | Internal corner | External corner |
|---|---|---|---|---|---|
| a. | Distance from the edge of the adaptor to the horizontal edge of a wall | 5 mm | 38 mm | N/A | N/A |
| b. | Distance from the plumb line to the horizontal edge of a wall | 10 mm | N/A | N/A | N/A |
| c. | Distance from the horizontal edge of a wall to the primary fastening point | 23 mm | 38 mm | 38 mm | 38 mm |
| d. | Distance from the edge of the adaptor to the vertical edge of a wall | 43 mm | 95 mm | 68 mm | 43 mm |
| e. | Distance from the vertical edge of a wall to the primary fastening point | 53 mm | 53/85 mm | 45 mm | 38 mm |
| f. | Distance from the edge of the clip strip to the vertical edge of the wall | 50 mm | 48 mm | 75 mm | 50 mm |
| g. | Distance from the centre of the clip strip to the vertical edge of the wall | 70 mm | 95 mm | 95 mm | 70 mm |
| Recommended span | | Clip strip span | 600 mm | 600 mm | 600 mm |

Fastening points provided herein are only a guideline. Modifications may need to be made depending on the structure and fasteners employed or available.

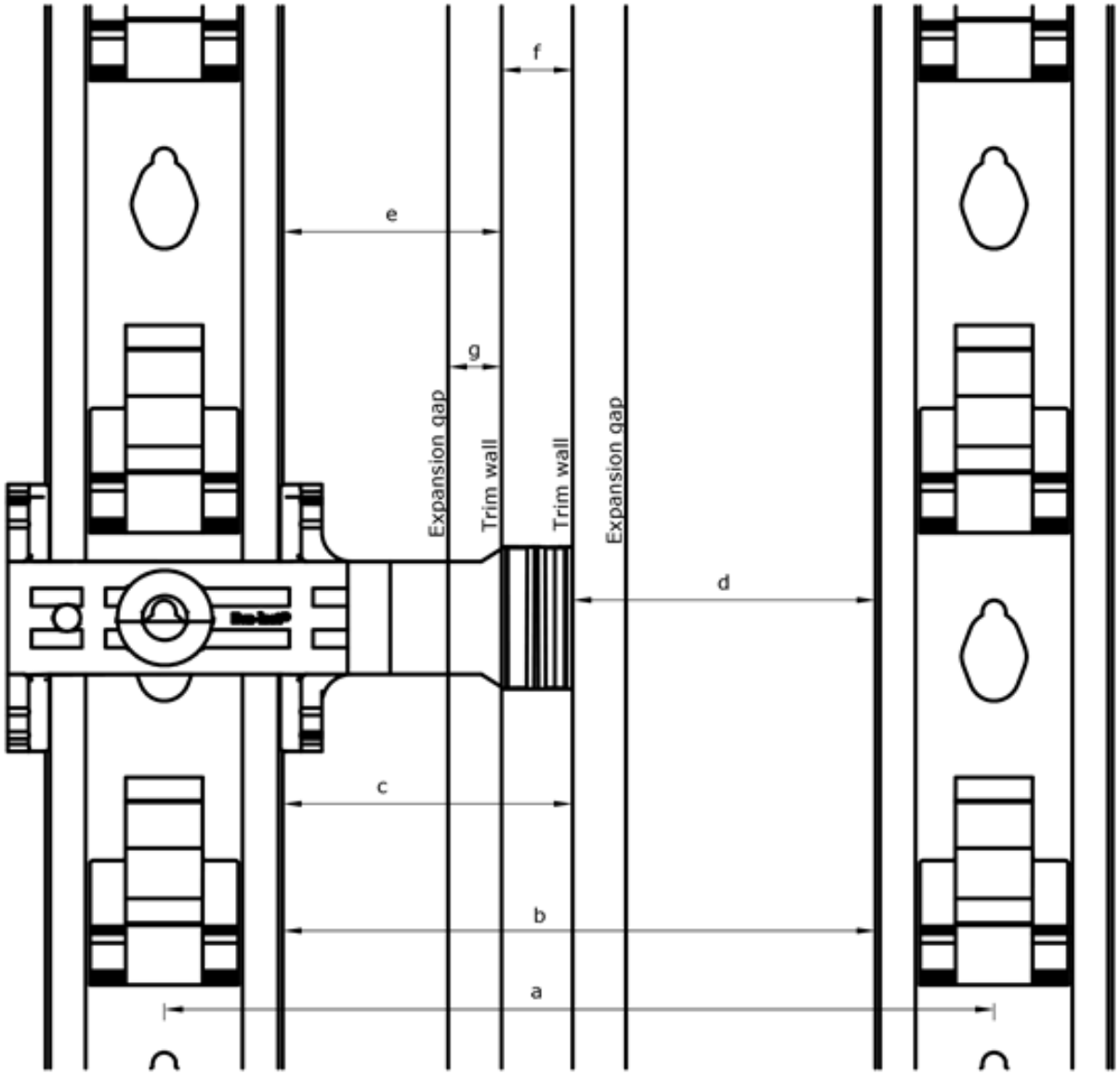


| Distance Descriptors | | Measurement |
|---|---|---|
| a. | Distance between clips (centre to centre) | 140 mm |
| b. | Distance between clips (edge to edge) | 100 mm |
| c. | Distance from edge of clip to end of adaptor | 49 mm |
| d. | Distance from end of adaptor to next clip | 51 mm |
| e. | Distance from edge of clip to trim wall | 37 mm |
| f. | Typical trim wall size | 10 - 12 mm |
| f. | Typical trim wall size | 1.5 mm per meter (divided by two sides) |

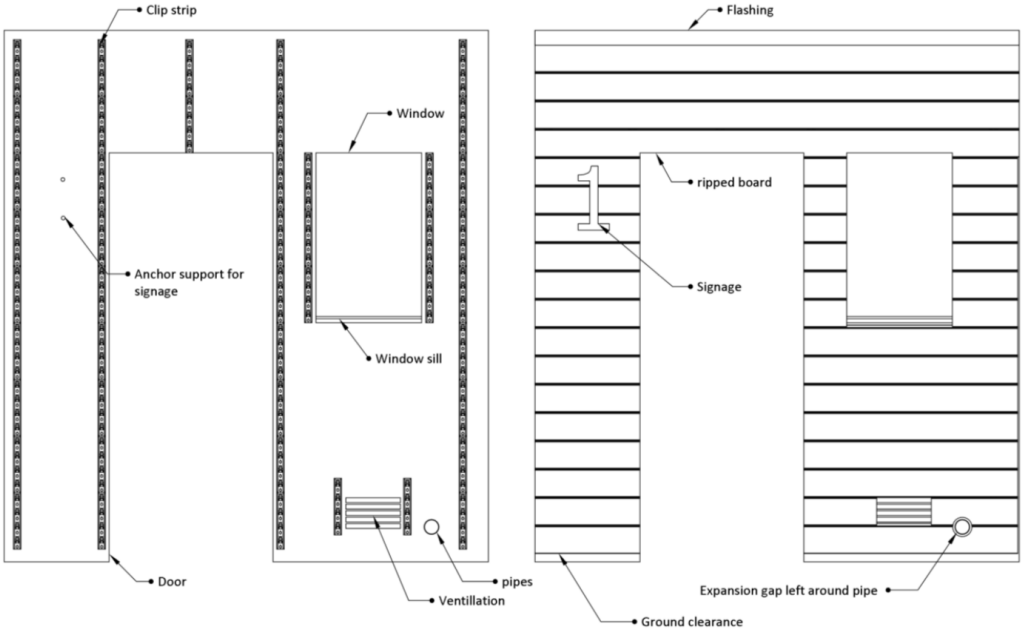


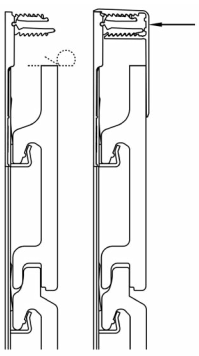
## 9. Important points

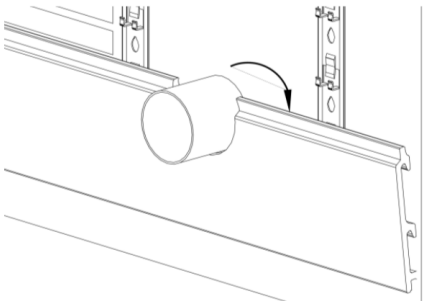
### A. Doors, windows, ports & signage

#### General

- Leave adequate space for trims, flashing and accessories. Refer to the measurement guidelines provided herein.
- Trim and flashing should be used to direct water away from all cavities (doors, windows, ports and signage) within the cladding system.
- Clip strips are to be cut and positioned around all cavities. The ends of all boards should be supported by a clip. The distance of a clip from the end of the board should not be greater than 50 mm.
- When cutting around odd shapes, cut the cavity large enough that the desired object can be simply slotted into place and expansion and contraction will not be impeded.
- Boards can be cut to fit around shapes using conventional cutting methods.
- Allow for expansion and contraction around all cavities.
- Ventilation and/or drainage should not be obstructed.
- Where ripping boards is required, ensure that a minimum width of 80 mm and two points of contact (two profile supports)
- between the board and clip strip are available.
- Unless additional uplift resistance is required, avoid fastening directly through the cladding boards.
- Boards can be further fixed (in addition to the hidden clip system) to provide additional uplift resistance where necessary.
- Consult an appropriately qualified professional for this. When fastening through the boards, use appropriate fasteners and allow for expansion and contraction of the boards around the fasteners.
- The allowable size of an anchor or pipe cavity through an individual board depends on the size of profile available. Smaller cavities (less than50 mm in diameter) should be situated in the center of a profile between the profile supports ('feet'). Removing and removing material from the supports should be avoided. For larger cavities, where this is not possible, ensure that there is a minimum of two supports interacting with the clip strip, and that the boards are supported on either side of the cavity. If the cavity is greater than would allow for this, then cut the board in two and place clip supports on either side of the cavity.



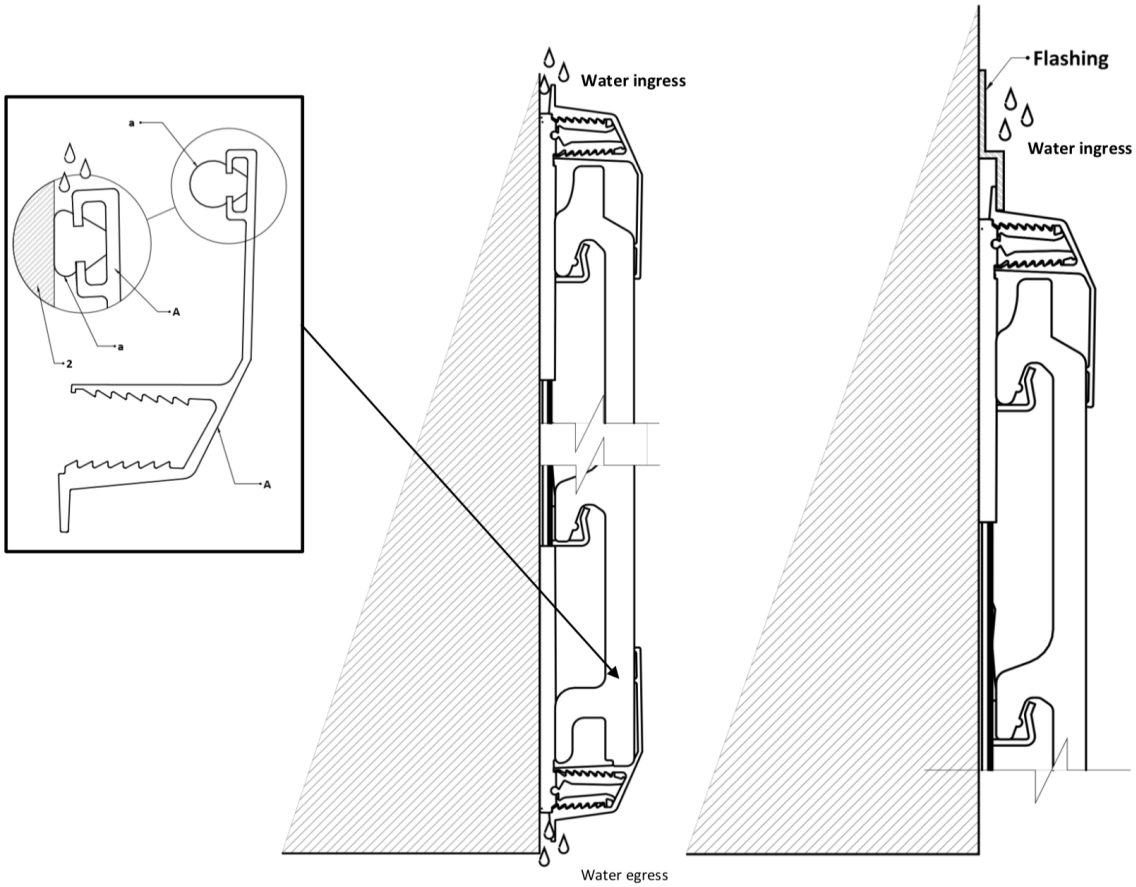





## B. Drainage

### General

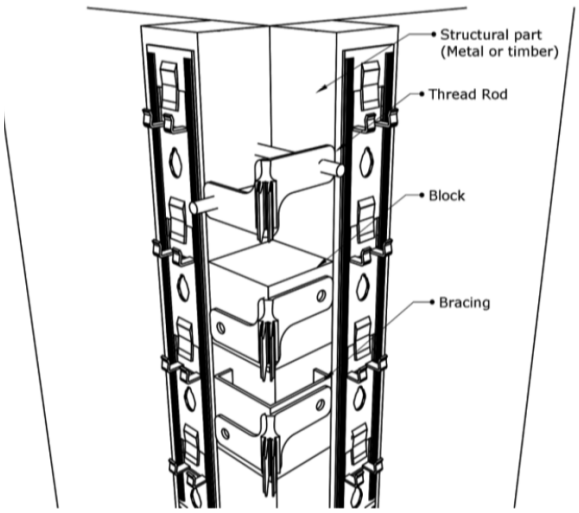
- The trim system is designed as an aesthetic finish to match the board and clip system. Additional flashing and/or
- waterproofing is recommended for the prevention of water ingress and pest access. Standard flashings are compatible with the system.
- Adhere to all applicable regional standards in the design and installation of any trim and/or flashing system.
- Where water ingress is necessary and allowable, permit egress. Allow adequate drainage at the base of the cladding to prevent damming behind the system or pooling in the vicinity of the structure. The bottom trim profile maintains an internal profile gradient to shed all water that enters the system to the rear of the profile, where a 3 mm deep cavity along the full profile length is situated there to allow the water to drain and exit the system.
- Cavities are provided within the trim structure to allow installation of gasket strips and/or an appropriate flexible polymer sealant.
- The additional gasket and/or sealant elements further prevent ingress of water.

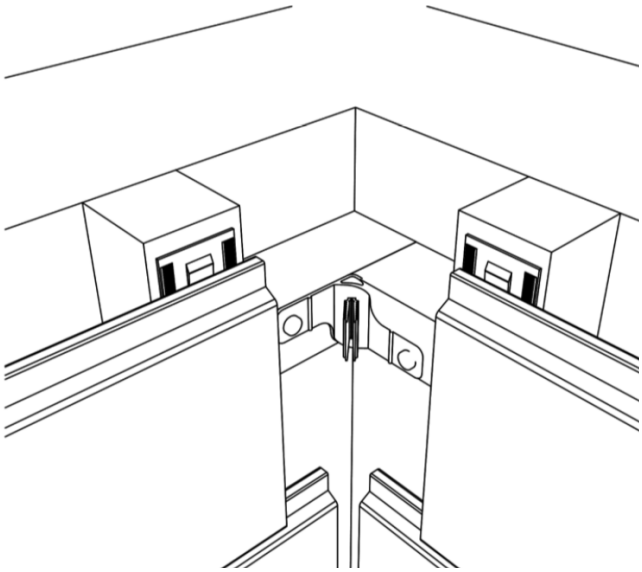


## Blocking and bracing

### C. Adaptor support

- Additional blocks, frames or bracing may be required to provide larger cavities for services, ventilation, insulation, etc.
- Additional or larger flashing components may be required to cater for these scenarios. The flashing system employed must adequately prevent water ingress of water, allow water egress and prevent pest access. Standard flashings are generally compatible with the system.
- Position and install blocks, frames or bracing as illustrated herein to provide support to the adaptors for installation of the trim. Ensure appropriate fasteners are utilised for the substrate available. Ensure the supports are correctly leveled and aligned before installing the adaptors.



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