INSULATED PANEL 333

Wall Installation Guide

CLADCO ROOFING

INSULATED PANEL 333

INSULATED STEEL FACED WALL PANEL: TATA STEEL, LPCB APPROVED TRISOMET®.

Cladding systems in England and Wales to be designed and installed to meet the Building Regulations 2000, Approved Document L2 2013.

Cladding systems in Scotland to be designed and installed to meet the Building Standards (Scotland) Regulations **Technical Handbook**: Section 6 Energy.

– **Support structure:** Cladding rails.

– **Bearing width (minimum)**: 60 mm.

– **Manufacturer**: Tata Steel, Shotton, Deeside, Flintshire, CH5 2NH.
Technical Department
T: +44 (0) 1244 892199.

– **Product reference**: Trisomet®.

– **Fire**: LPS1181 Grade EXT-B Certificate No. 460a/29.

Fire resistance rating of 30 minutes insulation and 4 hours integrity in accordance with BS 476 Part 22 (external stitching screws required at 300mm centres for this classification).

Class O to the Building Regulations. Class B s2 in accordance with EN 13501-1.

– **British Board of Agrément (BBA)**: Colorcoat® to BBA Certificate No. 91/2717.

– **External facing material**: Colorcoat HPS200 Ultra® or Colorcoat Prisma® pre-finished steel using Galvalloy® metallic coating, 0.5 mm nominal thickness, based on a zinc (95 %): aluminium (5 %) eutectic alloy that conforms to EN 10346:2009.

– **External profile**: 32 mm high trapezoidal profile with a 333 mm pitch.

– **Colour**: Colorcoat HPS200 Ultra® or Colorcoat Prisma® range of colours.

– **Internal facing material**: Colorcoat® High Reflect or Colorcoat® PE 15 pre-finished steel using hot-dip galvanised steel EN 10346:2009 substrate.

– **Internal profile**: Lightly planked.

– **Core insulation**: PIR closed cell foam (CFC and HCFC free, zero ODP and GW < 5) to specification used in LPCB approval.

– **Cover width**: 1,000 mm.

– **Panel thickness**: 40, 60, 80, 100, 120 or 135 mm.

– **Primary fasteners**: Austenitic stainless steel self-drilling fasteners with thread-free zone and 15 mm sealing washers from: EJOT UK Limited
T: +44 (0) 1977 687040 or
SFS intec Ltd,
T: +44 (0) 113 208 5500.

– **Fastener location**: Fix-through profile trough.

– **Number and location of fasteners**: At all support positions, locate one fastener in the centre of every trough (ie, three fasteners per support)

– **End-lap size (minimum)**: 100 mm vertical, 50 mm horizontal.

– **End-laps**: Stitching not required.

– **Side laps to be stitched at 600 mm centres**: Austenitic stainless steel self-drilling fasteners with 14 mm sealing washers from:
EJOT UK Limited,
T: +44 (0) 1977 687040 or
SFS intec Ltd,
T: +44 (0) 113 208 5500.

– **U-value**: 0.46 W/m²K for 40 mm panel; 0.33 W/m²K for 60 mm panel; 0.25 W/m²K for 80 mm panel; 0.20 W/m²K for 100 mm panel; 0.16 W/m²K for 120 mm panel or 0.15 W/m²K for 135 mm panel.

GENERAL REQUIREMENTS

Design
Wall cladding to be designed to comply with design and installation guidance in the Tata Steel literature.

Thermal bridging:
To reduce thermal bridging follow the construction details found in the Tat Steel literature.

Profile fillers:

– **Material**: EPDM.

– **Colour:** Black.

– **Thickness**: 25 mm.

– **Fixing**: Compression fix between sheets and flashings/supports. Seal into place as top and bottom with gun grade butyl mastic.

FLASHING AND TRIM DETAILS

– **System type**: Use Tata Steel construction details to reduce thermal bridging.

– **Material and finish**: To match outer sheet, 0.7mm minimum gauge.

– **Manufacturer**: Tata Steel,
T: +44 (0) 1244 892199.

Lap joint treatment: End joints to be lapped by 150 mm and sealed, unless specified otherwise. Where possible, arrange with laps away from the prevailing wind. Where butt joints are required, butt joint and seal flashings or trims on 150 mm wide butt straps made from sheet of the same material and finish.

– **Method of fixing**: Fix to cladding with sealed rivets or integral nylon colour-headed austenitic stainless steel self-drilling fasteners at 450 mm minimum centres, supplied by:
EJOT UK Limited,
T: +44 (0) 1977 687040 or
SFS intec Ltd,
T: +44 (0) 113 208 5500.

– **Design**: Maximum unstiffened leg on flashing to be 200 mm. Visible free edges to be finished with a stiffened edge or welt.

SEALING LAPS ON EXTERNAL SHEETS WHEN LAID VERTICALLY

– **Sealant tape**: 6 x 5 mm high grade butyl mastic (25 year guarantee) supplied by:
Premier Sealants (White strip),
T: +44 (0) 1724 864100

EJOT UK Limited (Blue Strip),
T: +44 (0) 1977 687040

INSULATED PANEL 333

SFS intec Ltd, (Pink Strip),
T: +44 (0) 113 208 5500.

– **Position**: Position sealant in straight, unbroken lines across the profile. Place into troughs. Do not allow to stretch or to sag into position.

– **Seal quality**: Ensure continuity and effectiveness of seal, especially at corner of sheets.

End-lap sealant-tape positions: Two lines of butyl mastic (min. 25 year guarantee) should be placed between sheets 10 mm from the sheet ends at the top and bottom of the lap.

– **Side laps**: A continuous run of 6 x 5 mm diameter high grade butyl mastic (min. 25 year guarantee) on weather side of stitching fastener.

Sealing laps on external sheets when laid horizontally

– **Sealant tape**: Gun grade silicon sealant supplied by:

Premier Sealants (White strip),
T: +44 (0) 1724 864100
EJOT UK Limited (Blue Strip),
T: +44 (0) 1977 687040
SFS intec Ltd, (Pink Strip),
T: +44 (0) 113 208 5500.

– **Position**: Position sealant in straight, unbroken lines across the profile. Place into troughs.

– **Seal quality**: Ensure continuity and effectiveness of seal, especially at corner of sheets.

– **End lap sealant-tape positions**: Two lines sealant should be placed between sheets 10 mm from the sheet ends at the top and bottom of the lap.

– **Side laps**: A continuous run of 6 x 5 mm diameter high grade butyl mastic (25 year guarantee) on weather side of stitching fastener

AIR SEALING

The panel edges at base, eaves and corners must be seated onto a 6 mm diameter bead of high grade butyl mastic (25 year guarantee) supplied by:

EJOT UK Limited,
T: +44 (0) 1977 687040 or
SFS intec Ltd,
T: +44 (0) 113 208 5500.

The metal lining layer must be reasonably air-tight so that the air permeability does not exceed 10 $m^3/h/m^2$ at an applied pressure of 50 Pa in accordance with the Building Regulations 2000, Approved Document L2 2013. Under laboratory testing sealed panels show evidence of air leakage as low as 0.46 $m^3/h/m^2$.

A reasonable practical expectation for a finished system would be 3 to 5 $m^3/h/m^2$. Ensure internal flashings are fully sealed to ensure continuity and effectiveness of seal, especially at corners of sheets such as at roof/wall junctions and at all penetrations of pipes, ducts, etc.

PLATINUM PLUS® SYSTEM GUARANTEE

A Platinum® system guarantee specification needs to be registered prior to tender package being distributed.

Obtaining a 25 year Platinum Plus® guarantee could not be simpler; simply request the guarantee from Tata Steel.

Tata Steel acts as the one point of contact from beginning to end. We will provide you with a detailed NBS specification, warranties for all specified elements and full support for the duration of the guarantee period.

Technical Department

For further information or to register your Platinum Plus® system guarantee specification please telephone the Technical Department T: +44 (0) 1244 892199.

FASTENERS, SEALANTS AND FILLERS

FASTENER SELECTION TABLE

Primary fixing for Trisomet® (3-Rib) to steel purlins

Application	Panel core thickness (mm)	SFS intec Ltd	EJOT UK
Cold rolled purlins, Roof 1.2 - 5.0 mm Wall 1.3 - 3.0 mm	40	SXC5-S19-5.5 x 75 + COLOUR	CF19 JT3-D6H 5.5/6.3 x 67 + COLOUR
	60	SXC5-S19-5.5 x 95 + COLOUR	CF19 JT3-D6H 5.5/6.3 x 107 + COLOUR
	80	SXC5-S19-5.5 x 115 + COLOUR	CF19 JT3-D6H 5.5/6.3 x 127 + COLOUR
	100	SXC5-S19-5.5 x 135 + COLOUR	CF19 JT3-D6H 5.5/6.3 x 147 + COLOUR
	120	SXC5-S19-5.5 x 160 + COLOUR	CF19 JT3-D6H 5.5/6.3 x 167 + COLOUR
	135	SXC5-S19-5.5 x 193 + COLOUR	CF19 JT3-D6H 5.5/6.3 x 197 + COLOUR
Hot-rolled purlins, 4 – 14mm	40	SXC14-S19-5.5 x 80 + COLOUR	CF19 JT3-D12H 5.5/6.3 x 75 + COLOUR
	60	SXC14-S19-5.5 x 100 + COLOUR	CF19 JT3-D12H 5.5/6.3 x 95 + COLOUR
	80	SXC14-S19-5.5 x 120 + COLOUR	CF19 JT3-D12H 5.5/6.3 x 115 + COLOUR
	100	SXC14-S19-5.5 x 140 + COLOUR	CF19 JT3-D12H 5.5/6.3 x 155 + COLOUR
	120	SXC14-S19-5.5 x 165 + COLOUR	CF19 JT3-D12H 5.5/6.3 x 175 + COLOUR
	135	SXC14-S19-5.5 x 193 + COLOUR	CF19 JT3-D12H 5.5/6.3 x 195 + COLOUR
Side-lap stitcher	All	SL2-S-S14-5.5 x 25 + COLOUR	CF15 JT3-2-6.3 x 25 + COLOUR
Metal flashings to panel	All	SL2-S-S14-5.5 x 25 + COLOUR	CF15 JT3-2-6.3 x 25 + COLOUR

When fixing to timber, fastener pullout values may limit the ability of the roof to resist wind uplift loads.
If in doubt, consult the Technical Department T: +44 (0) 1244 892199.
All fasteners can be sourced from: SFS intec Ltd, T: +44 (0) 113 2085 500 or EJOT UK Limited, T: +44 (0) 1977 687040.

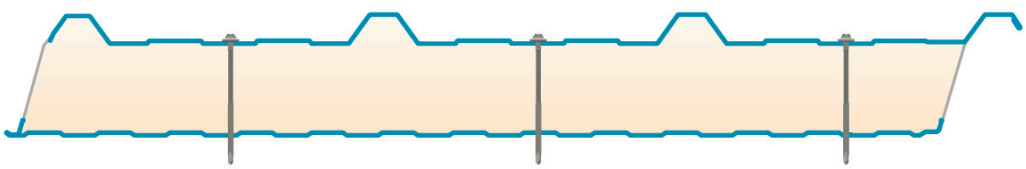
FASTENERS

The primary fasteners for securing the Trisomet® roof panel to structural steel purlins have been purpose designed to facilitate speed of fixing, give this structural security with reduced risk of over compression, and have minimal thermal bridging. Time consuming pre-drilling of the panel or purlin is not necessary, as the high-thread fastener selfdrills: the lower thread taps into the purlin and the higher thread taps into the outer skin, thereby clamping the panel securely in a single operation.

Side-lap stitching, should be at maximum of 450 mm centres. The stitcher can either be a painted sealed rivet, an integral nylon colour, or a powder coated headed austenitic stainless steel self-drilling fastener.

When a flashing needs to be secured to the panel, side lap fasteners can be used.

Standard fastener layout at all support positions



FASTENERS, SEALANTS AND FILLERS

SEALANTS AND FILLERS

The end lap of Trisomet® requires three rows of 6 x 5 mm high grade butyl mastic (min. 25 year guarantee) this generally comes in rolls of 9.6 m with 30 rolls per box. (Wall end lap specifications vary see previous construction details).

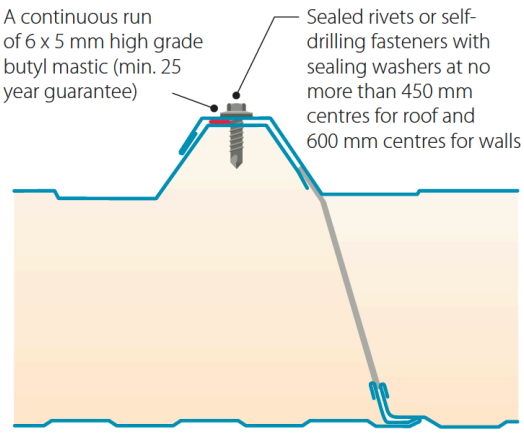
Position the sealant in straight, unbroken lines, following the profile, taking care to avoid any stretch. Ensure the continuity and the effectiveness of the seal, especially at corners of sheets. The two lines of strip sealant must be placed between the sheets before fixing: two rows 10 mm from the sheet ends at the top and bottom of the lap.

The side lap of the panel is sealed with the same 6 x 5 mm sealant run continuously to weather side of the stitching fastener.

For panel ends at ridges and hips, black EPDM large flute profile fillers should be located between the panel's external skin and the cover flashing to provide continuity of weather seal and to prevent access by insects and small birds. These fillers should be sealed to top and bottom with gun applied solvent release bedding sealant.

All sealants can be sourced from the following suppliers:

Premier Sealants (White strip),
T: +44 (0) 1724 864100EJOT UK Limited (Blue Strip).
T: +44 (0) 1977 687040
SFS intec Ltd, (Pink Strip).
T: +44 (0) 113 208 5500.

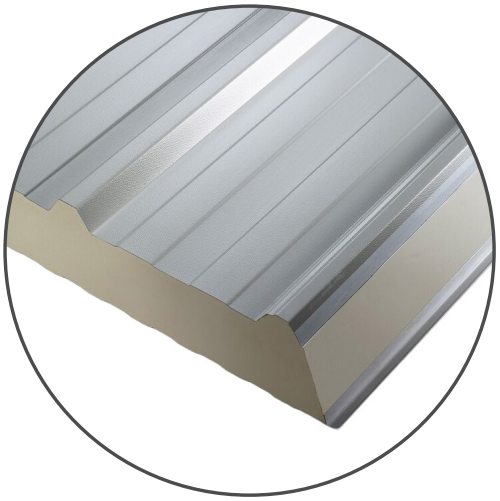


WALL INSTALLATION

INSTALLATION: WALL PANEL

The steps given below are instructions for a typical construction and should be used only as a guide. Specific technical details, method statements and site-specific risk assessments should be produced and applied for each building. An extended list of construction details is available from Tata Steel and advice can be given via our Technical Department on any bespoke details that may be required.

The following steps apply to a wall made up of multiple panels with one end lap joint. Wherever practical panels of the same length from base level to eaves should be used to avoid end laps. This provides a cleaner finish and a more economical installation.



WALL INSTALLATION

VERTICAL WALL INSTALLATION

1. Checks should be carried out to make sure that the bottom rail is adequately supported and level along its full length before commencing installation work.

2. Carry out preparation work on sill trims and the base support angle for the first panel, and ensure these are lined, levelled and sealed as specified (see page 12 of construction details).

3. Hoist the first panel and position on the support angle with the overlap edge adjacent to the corner. Before inserting the fasteners, ensure that:

a. The setting out dimensions are observed. Failure to comply with these dimensions may lead to problems later in the section.

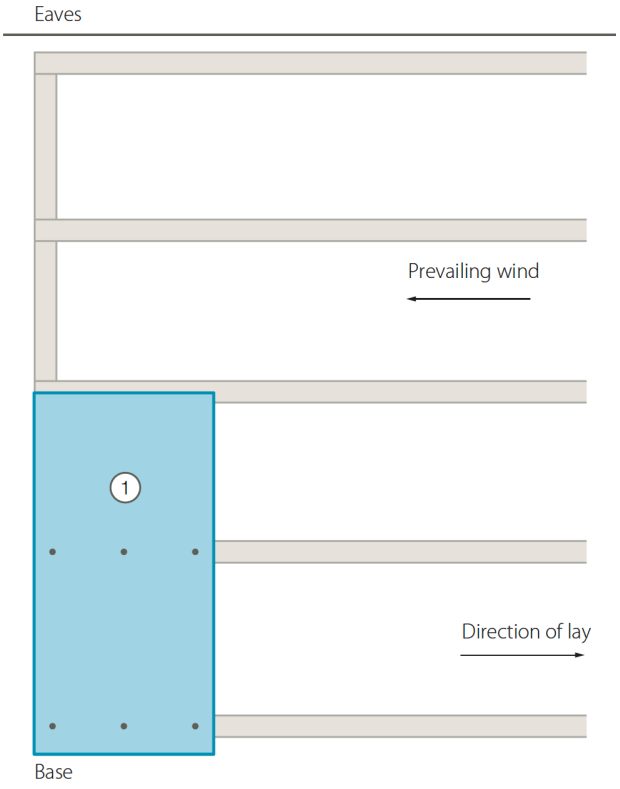
b. The panel is plumb using a plumb line.

c. The position of the panel relative to the bottom and top or intermediate rails is correct. Check this with the erection drawings.

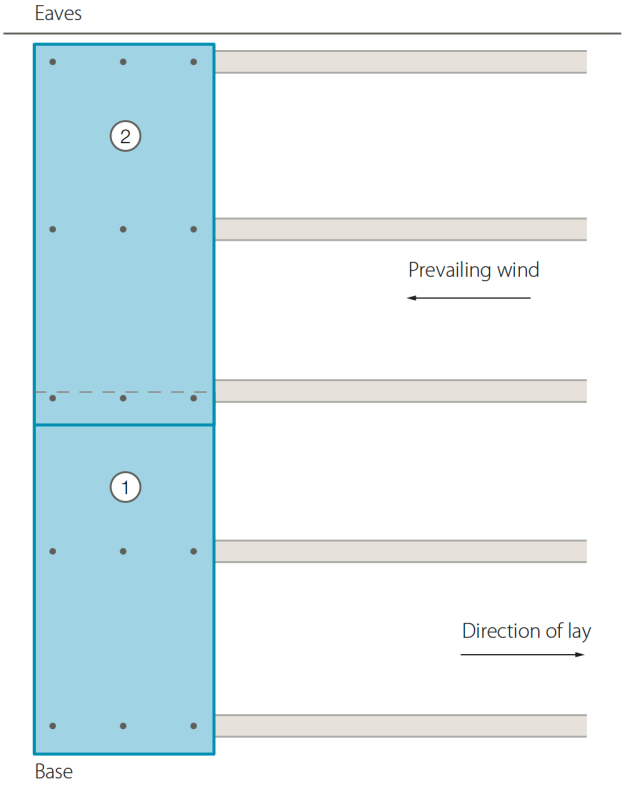
4. Fix the panel using primary fasteners as specified. Make sure the fasteners are not over tightened, and clean away drilling swarf to avoid rust marks.

5. Ensure that the top of the lower panel (ie, panel 1) is clean and dry, and then apply the two rows of sealant across the panel width in positions as shown. The first seal should be placed above the fixing line, the second between 10 mm from the end of the specified lap (75 mm recommended).The seal should be carefully applied to ensure coverage in the corners of the profile.

FIRST PANEL LAID

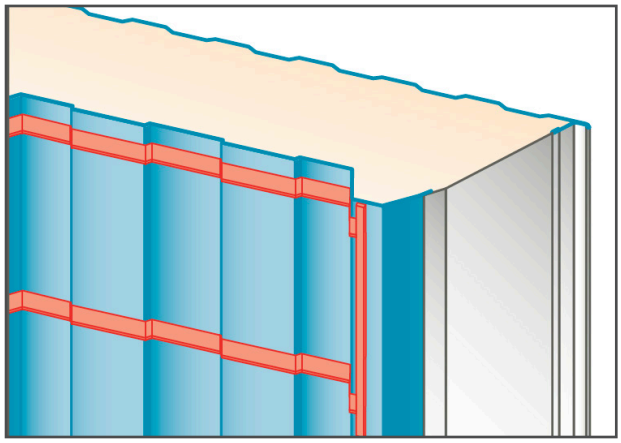


SECOND PANEL LAID

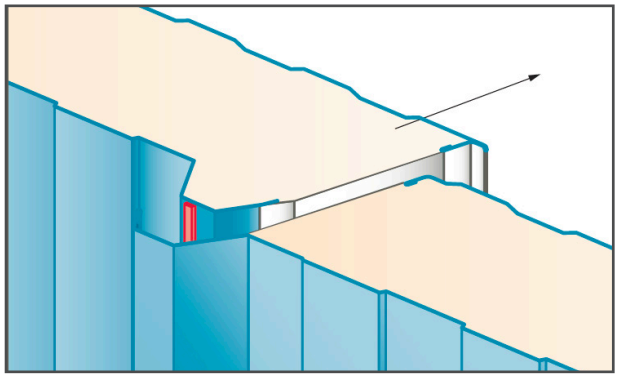


WALL INSTALLATION

END LAP WITH THREE ROWS OF SEALANT



SIDE LAP



6. Ensure the cutback of panel 2 is clean and dry before positioning the panel over panel 1, as shown. Be careful not to disturb the seals. Align the profiles of the two panels before securing.

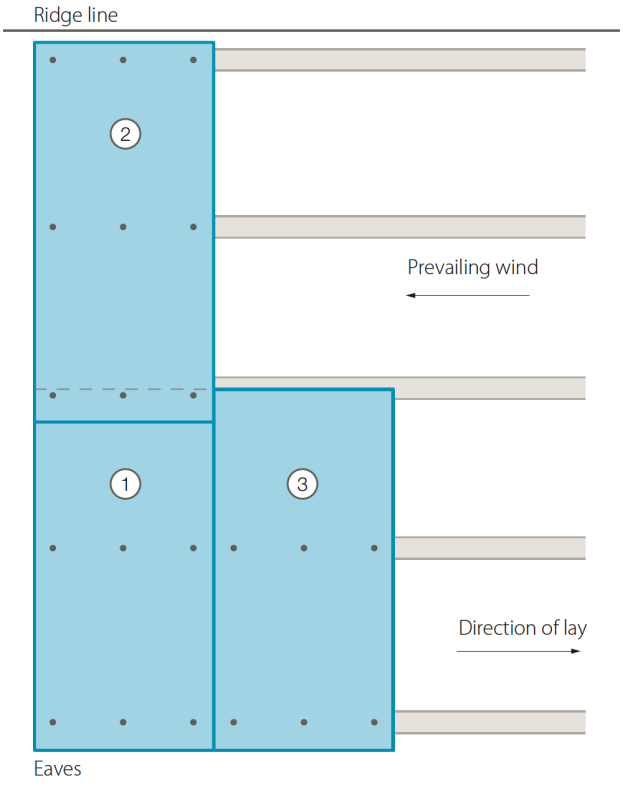
7. Run the side lap seal continuously from eaves to base ensuring this is placed to the weather side of the side lap. Side lap panel 3 and secure with specified number of fasteners.

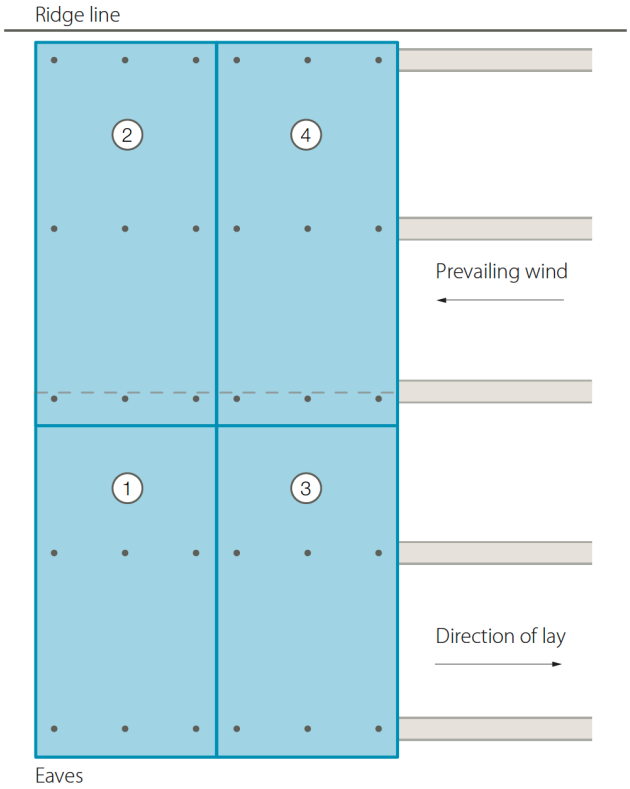
8. Apply the end-lap seals to panel 3 as shown.

9. Ensure that the cutback of panel 4 is clean and dry. Position the end of panel 4 over panel 3 and side lap as before. Ensure that the profiles of the two panels are aligned before securing into the rails. Secure the side lap using sealed rivets or stitching screws at a minimum of 600 mm centres.

10. Continue steps 5 to 9 until the elevation is complete. Fit the external flashings and ensure they are sealed as specified.

THIRD PANEL LAID





WALL INSTALLATION

HORIZONTAL WALL INSTALLATION

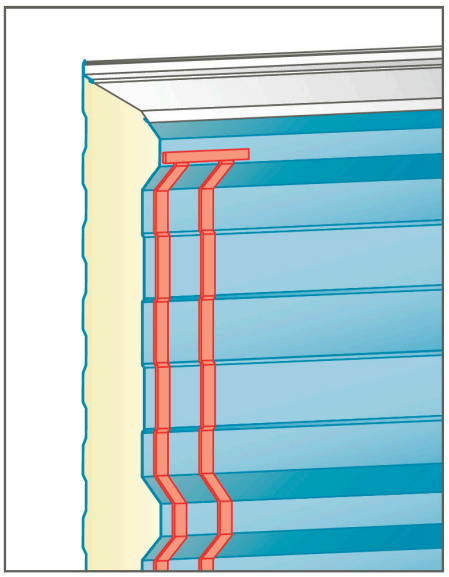
The following steps apply to a wall made up of multiple panels with one end lap joint between the corners of the elevation. For elevations containing more than one end lap ensure that each horizontal level of panels is complete before starting the row above.

When running panels horizontally on a wall elevation, care must be taken when ordering the handing of the product. The standard vertically laid left-to-right handed panels will run right-to-left when installed horizontally as shown below.

1. Carry out preparation work on sill trims. Ensure that these are lined, levelled and sealed as specified (see page 17 of construction details).

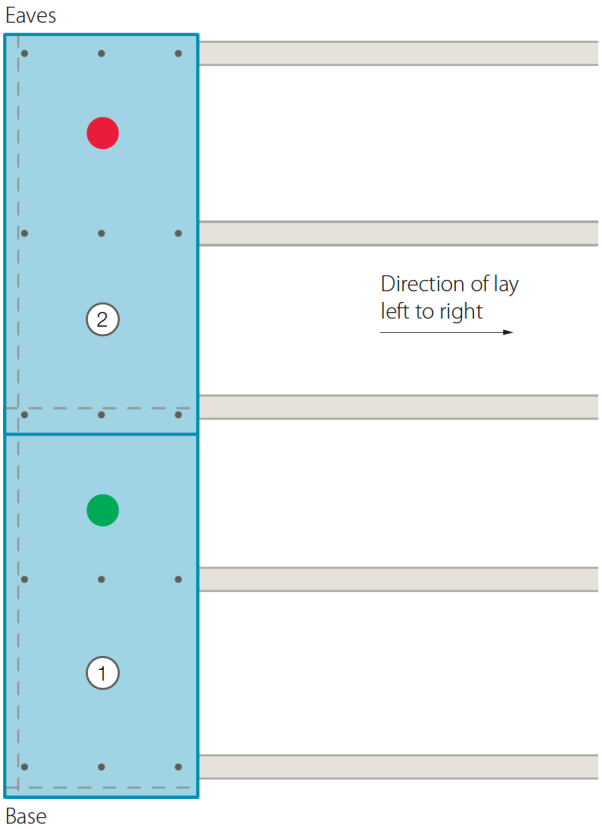
2. Temporarily support base panel and secure with one fastener. Recheck level and the bearing dimensions, on vertical supports, are correct before fully securing with specified number of fasteners. Ensure the fasteners are not over tightened, and clean drilling swarf from the rib ledge to avoid rust marks.

3. Ensuring that the end of the first panel is clean and dry, apply two rows of gun-grade silicone sealant across the full width of the panel in positions as shown. The first seal should be placed behind the fixing line, and the second 10 mm from the end of the specified lap (50 mm recommended).

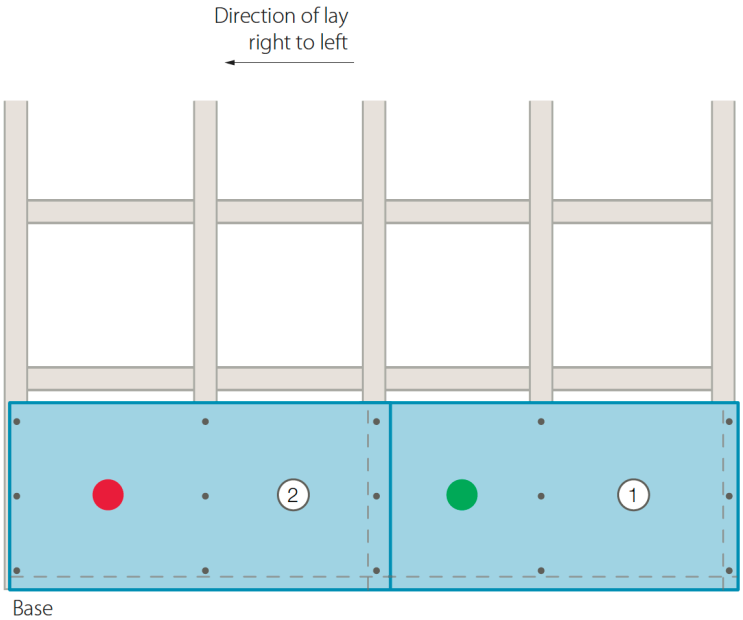


NB. Care must be taken when ordering product handing for horizontal wall installations.

FIRST AND SECOND PANEL LAID – VERTICAL WALL



FIRST AND SECOND PANEL LAID – HORIZONTAL WALL



WALL INSTALLATION

4. Ensure the cutback of panel 2 is clean and dry before positioning the panel over panel 1. Ensure that the profiles of the two panels are aligned before securing them to the vertical cladding rails using the recommended number of fasteners.

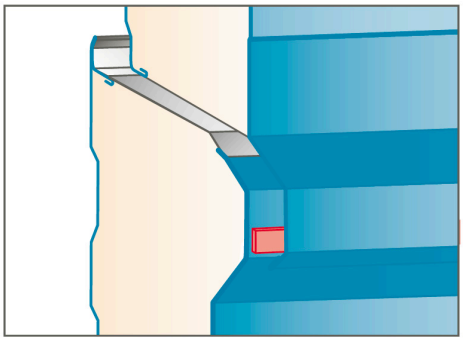
5. Run the side lap seal continuously to the bottom row of panels ensuring this is placed to the weather side of the side lap. Side lap panel 3 and secure with specified number of fasteners.

6. Apply the end-lap seals to panel 3 as shown.

7. Ensure that the cutback of panel 4 is clean and dry. Position the end of panel 4 over panel 3 and side lap as before. Ensure that the profiles of the two panels are aligned before securing into the rails. Secure the side lap using sealed rivets or stitching screws at a minimum of 600 mm centres.

8. This procedure should be continued along the full width of the elevation before starting the second row of panels. Continue row by row until the elevation is complete. Fit the external flashings, and ensure they are sealed as specified.

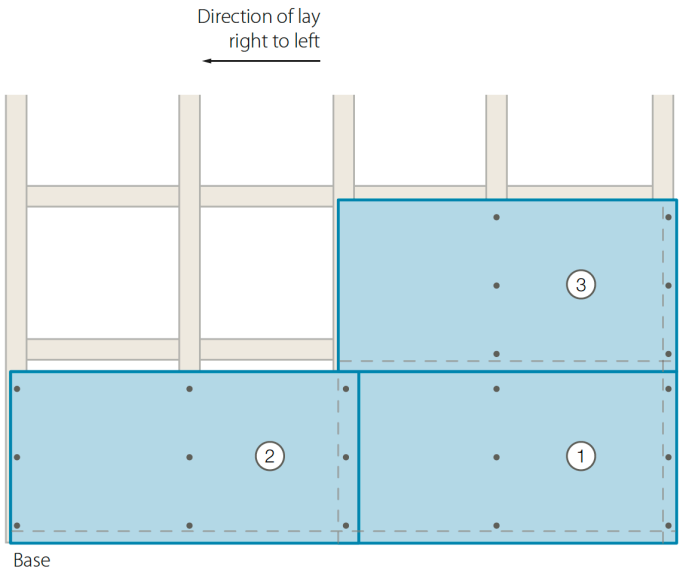
SIDE LAP



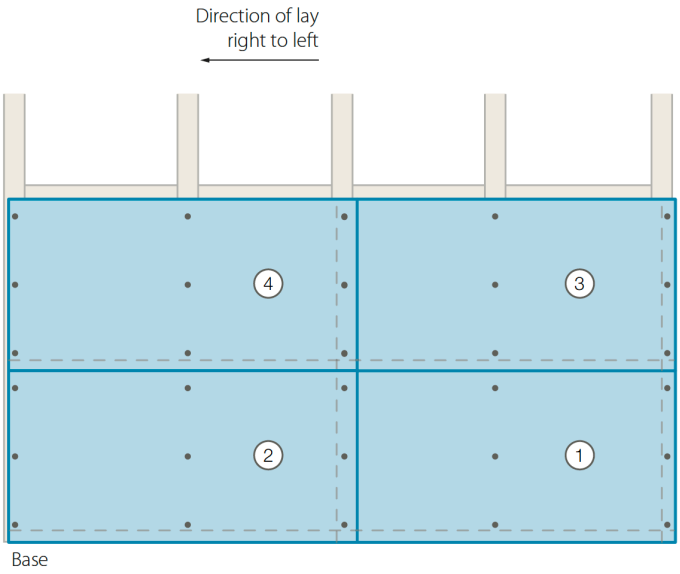
HORIZONTAL WALL INSTALLATION

Trisomet can be supplied with protective film on the external face. This is designed to provide additional protection during manual handling and site fixing. The film has a limited shelf life and must not be exposed to sunlight for long periods because it is susceptible to ultraviolet degradation. This makes the film difficult to remove and may result in adhesive residue that causes dust and dirt to adhere to the decorative finish. To ensure easy, clean removal, remove the film within one month of panel delivery to site.

THIRD PANEL LAID



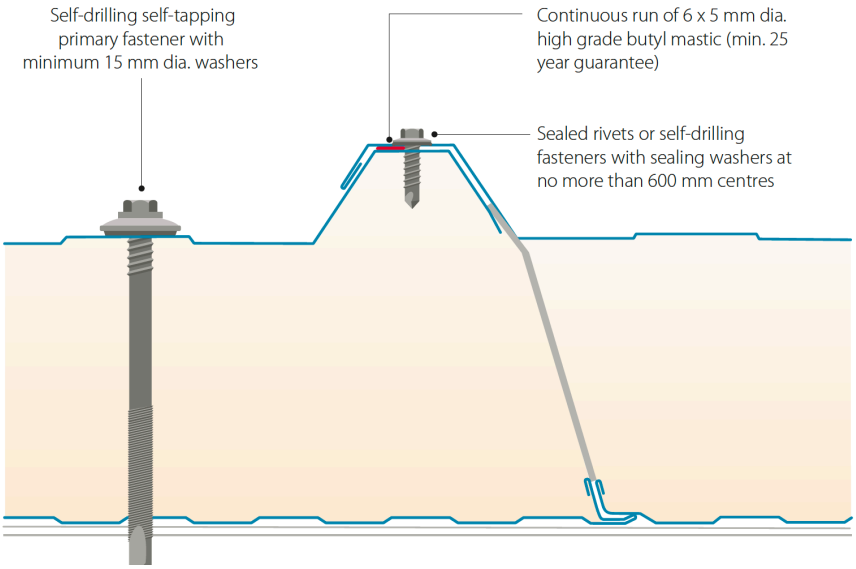
FOURTH PANEL LAID



CONSTRUCTION DETAILS – WALL

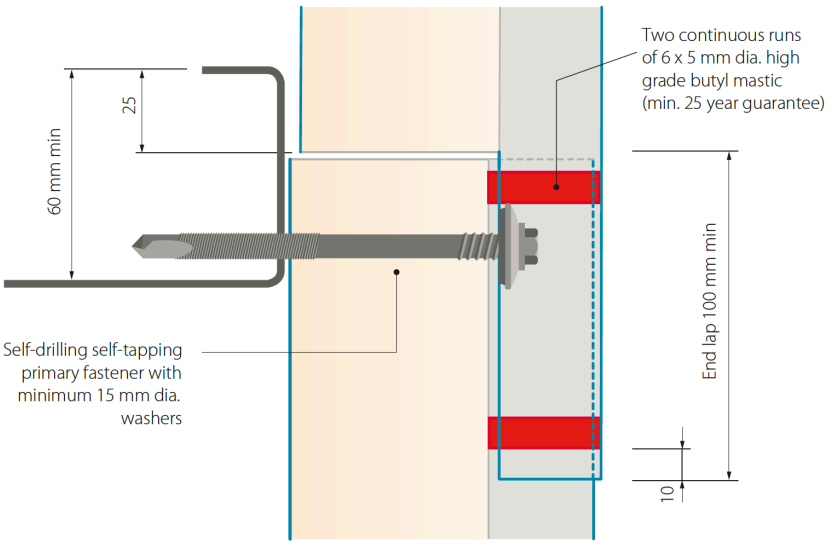
The details within this section are recommendations and have been designed to give practical solutions to minimise thermal bridging and air loss at junctions. For each junction detail, Ψ values (Psi) and f values have been calculated in accordance with BS EN ISO 10211 and recommendations within MCRMA technical paper 18.

SIDE LAP



SIDE LAP
The new side lap joint design enables panels to be lapped simply providing fast and efficient installation.

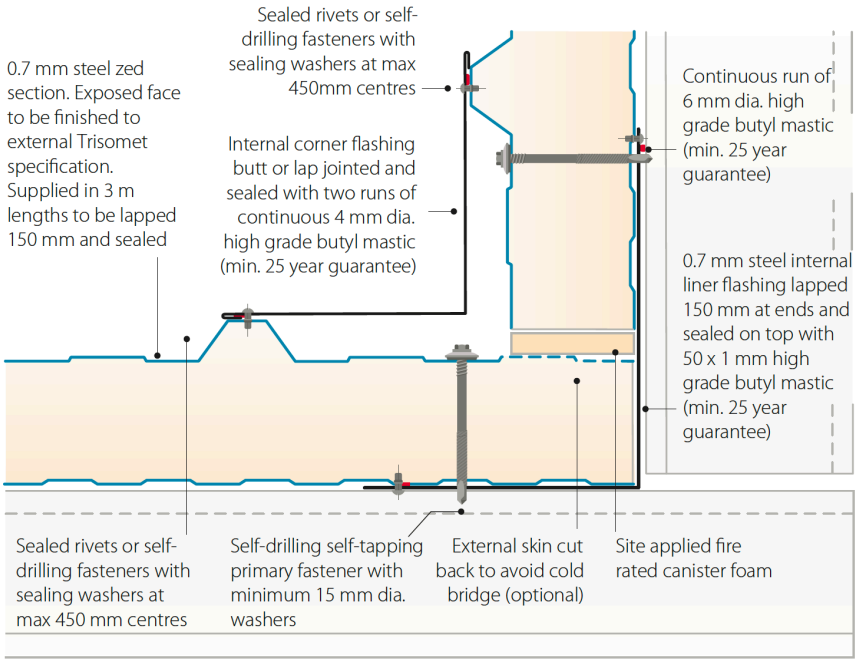
END LAP



END LAP
Three fasteners should be used at the end lap. Fasteners are positioned in the centre of every trough.

CONSTRUCTION DETAILS – WALL

INTERNAL CORNER



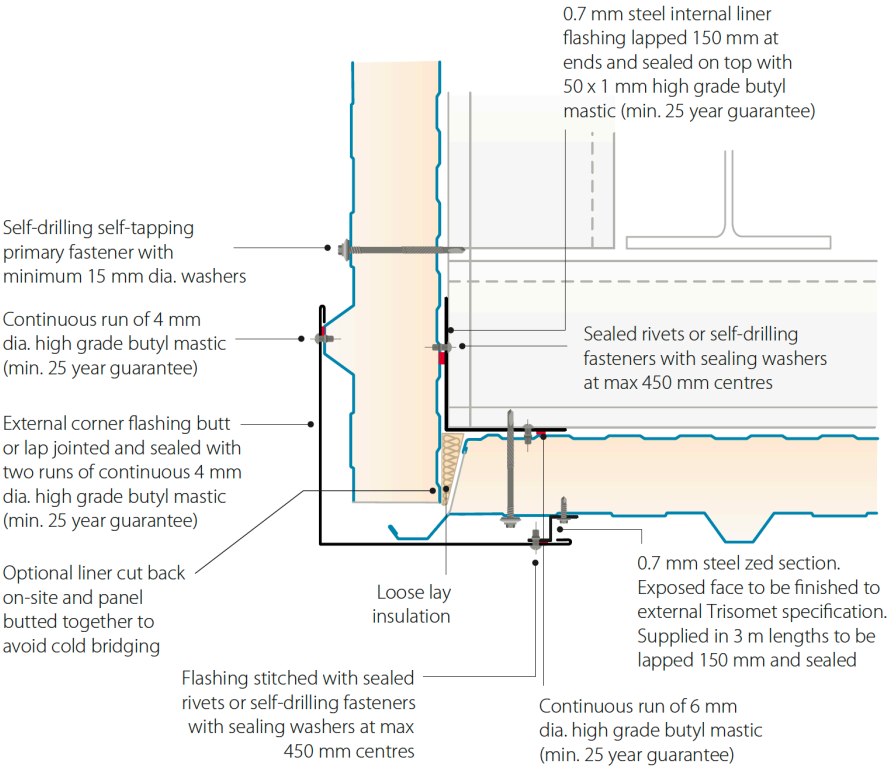
INTERENAL CORNER

Thermal performance can be enhanced by the on-site removal of the panel outer skin, within the corner junction, therefore reducing the risk of cold bridging. The outer skin can be easily removed by running a circular saw through the steel approximately 100 mm from the panel edge and then peeling the cut strip away.

Psi value (W/mK)	f factor
With liner cut back	
0.041	0.957
Without liner cut back	
0.092	0.939

Stated calculation results are dependant on components being as shown. Computer modelled in accordance with EN ISO 10211.

EXTERNAL CORNER



EXTERNAL CORNER

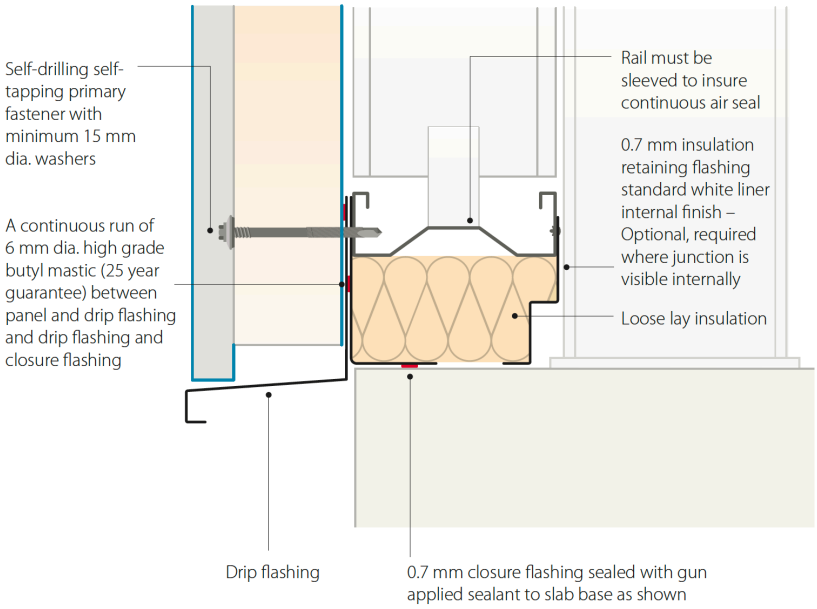
Thermal performance can be enhanced by the on-site removal of the panel liner, within the corner junction, therefore reducing the risk of cold bridging. The liner can be easily removed by running a circular saw through the steel approximately 100mm from the panel edge and then peeling the cut strip away.

Psi value (W/mK)	f factor
With liner cut back	
0.019	0.940
Without liner cut back	
0.092	0.939

Stated calculation results are dependant on components being as shown. Computer modelled in accordance with EN ISO 10211.

CONSTRUCTION DETAILS – WALL

DRIP DETAIL BASE



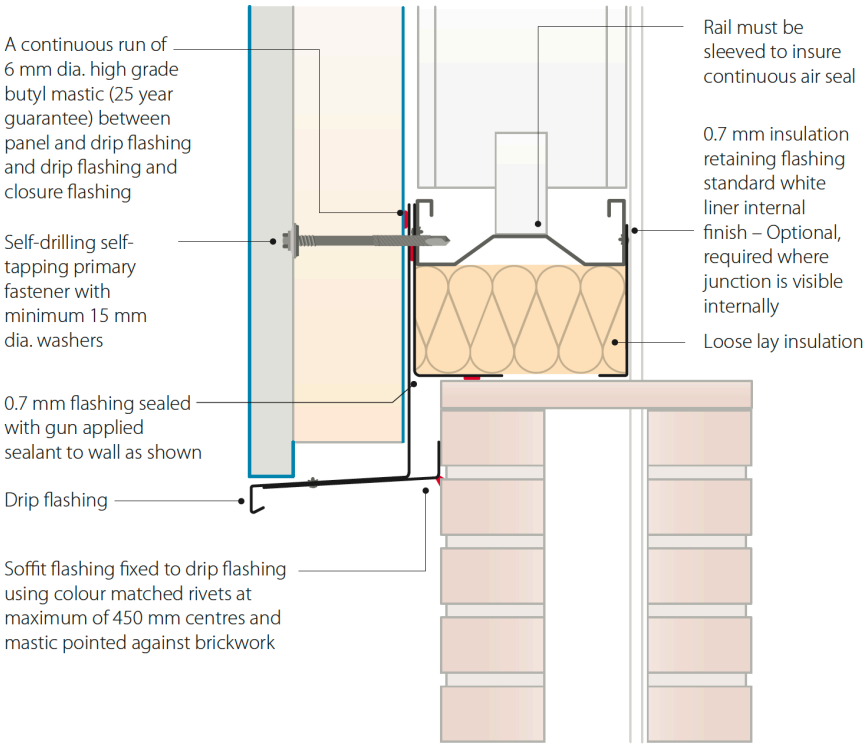
DRIP DETAIL BASE

Loose laid mineral fibre quilt insulation is used below bottom cladding rail to reduce cold bridging at slab base.

Psi value (W/mK)	f factor
0.275	0.687

Stated calculation results are dependant on components being as shown. Computer modelled in accordance with EN ISO 10211.

DRIP DETAIL DADO WALL



DRIP DETAIL DADO WALL

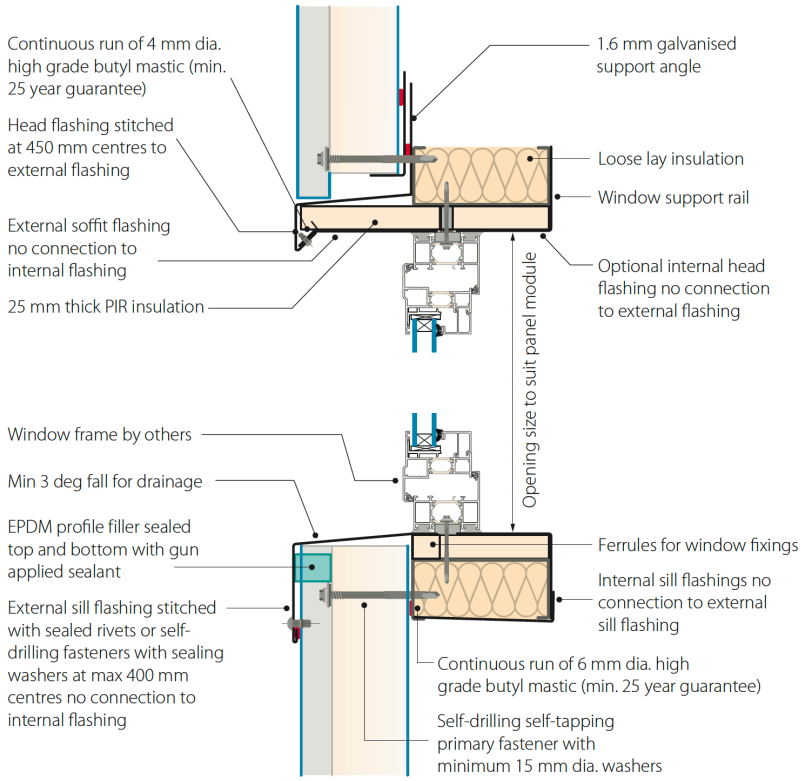
A 1.6 mm galvanised steel support angle is fixed to the wall, level with the base of the panel, in order to facilitate installation and to ensure the panel is level before fixing.

Psi value (W/mK)	f factor
0.062	0.948

Stated calculation results are dependant on components being as shown. Computer modelled in accordance with EN ISO 10211.

CONSTRUCTION DETAILS – WALL

WINDOW/DOOR HEAD



WINDOW/DOOR HEAD

This window flashing detail has been designed so that it can accommodate any proprietary window.

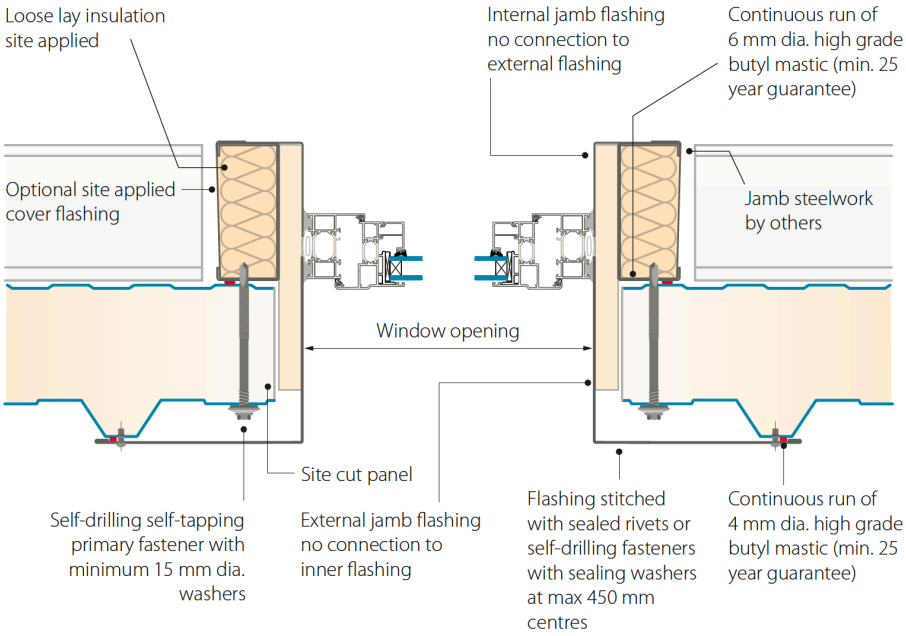
Psi value (W/mK)	f factor
0.614	0.735

Stated calculation results are dependant on components being as shown. Computer modelled in accordance with EN ISO 10211.

WINDOW SILL

Psi value (W/mK)	f factor
0.613	0.878

WINDOW/DOOR JAMB

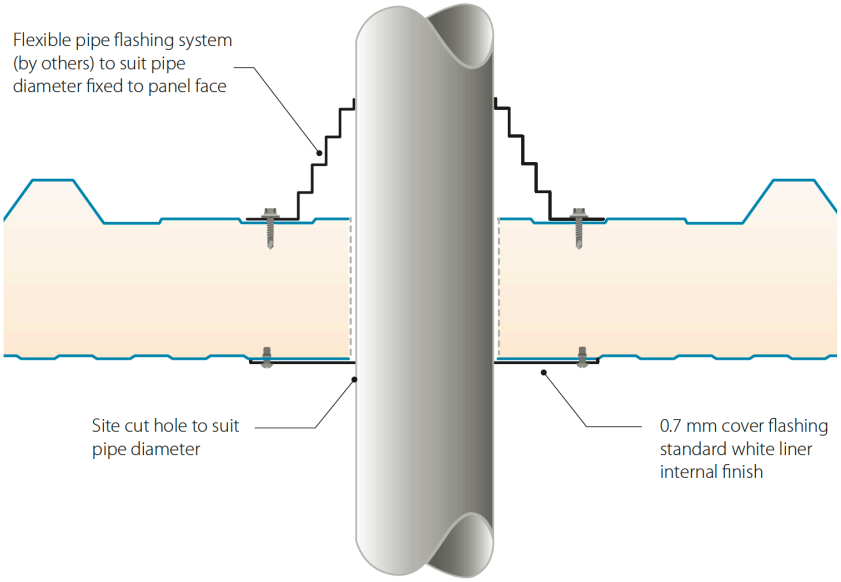


WINDOW/DOOR JAMB

Trimming steel work around the opening is required to support the window or door independent to the panels.

CONSTRUCTION DETAILS – WALL

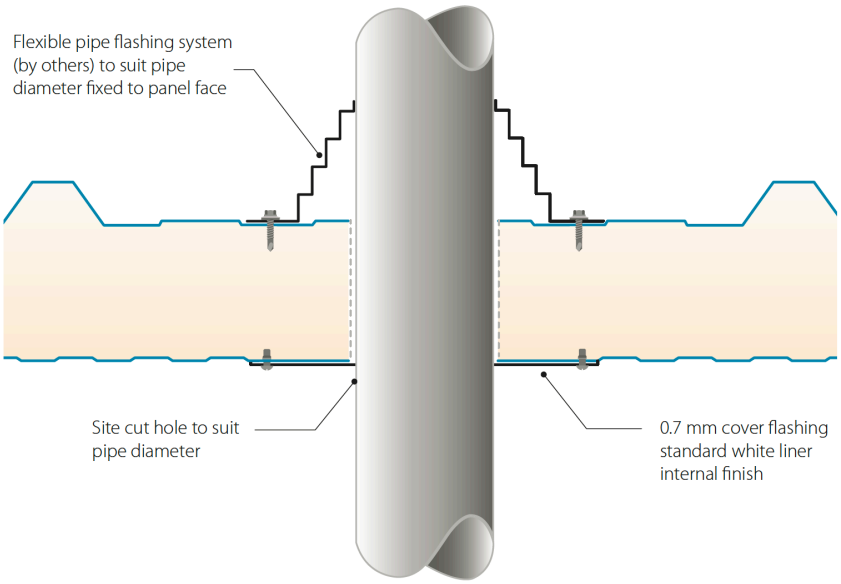
PENETRATION OPTIONS, SMALL



PENETRATION OPTIONS, SMALL AND SMALL HOT
The pipe flashings are available in various specifications to facilitate different opening sizes and temperature ranges. Further details on these specifications and for order placement please contact our Platinum Plus system guarantee approved suppliers, who are:

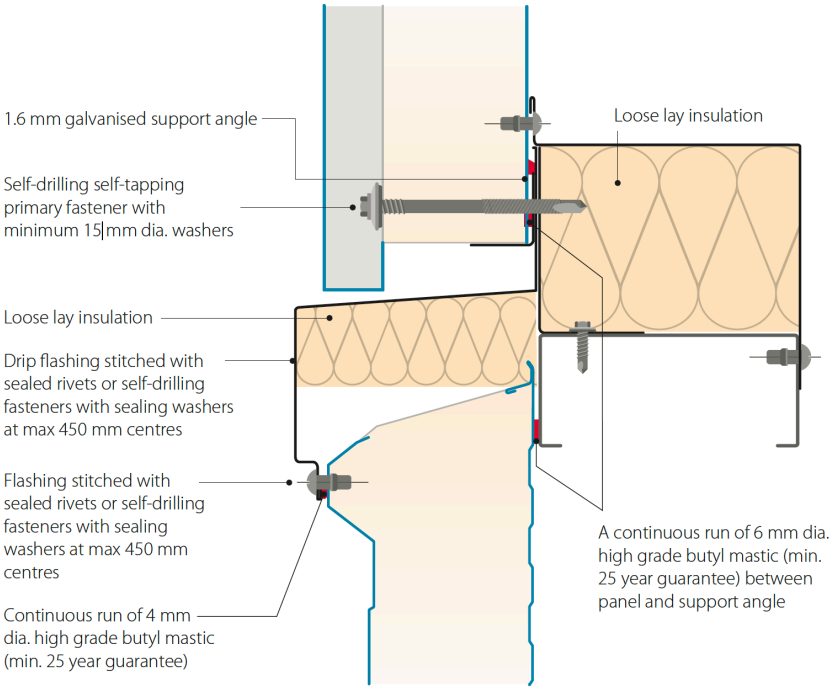
SFS intec Ltd, T: +44 (0) 113 208 5500
or EJOT UK, T: +44 (0) 1977 687040.

PENETRATION OPTIONS, SMALL HOT



CONSTRUCTION DETAILS – WALL

VERTICAL TO HORIZONTAL BREAK

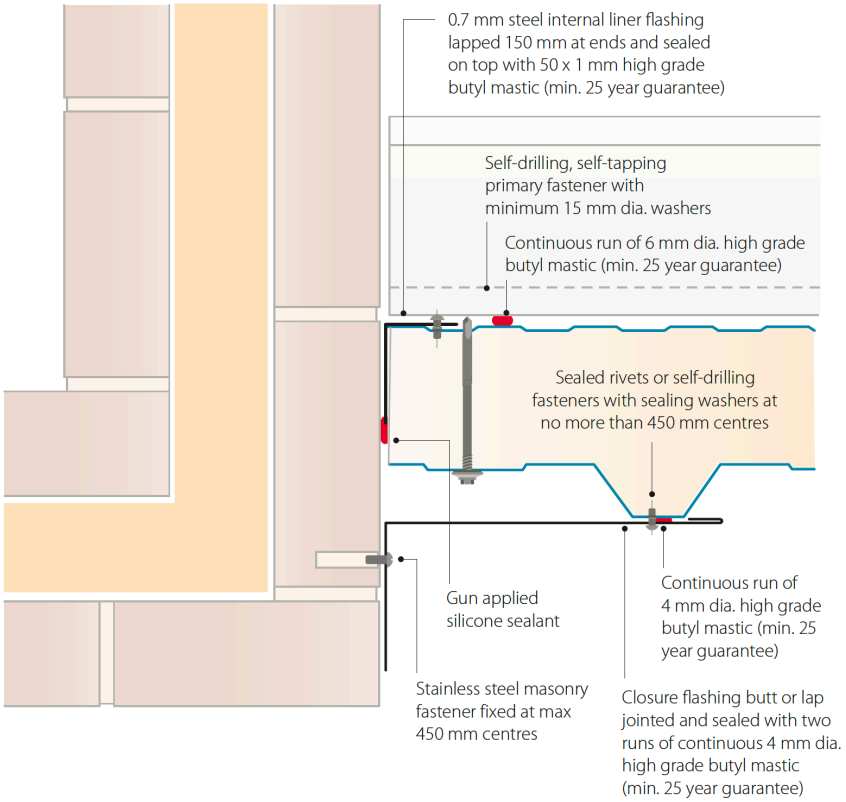


VERTICAL TO HORIZONTAL BREAK
Horizontal and vertical panels can be installed adjacent to each other creating interesting architectural features, while the drip flashing detail still maintains thermal performance and an efficient weather seal.

Psi value (W/mK)	f factor
1.103	0.579

Stated calculation results are dependant on components being as shown. Computer modelled in accordance with EN ISO 10211.

BRICK WALL ABUTMENT



BRICK WALL ABUTMENT
Masonry fasteners to be stainless steel to maintain the durability of the system.

Psi value (W/mK)	f factor
0.260	0.837

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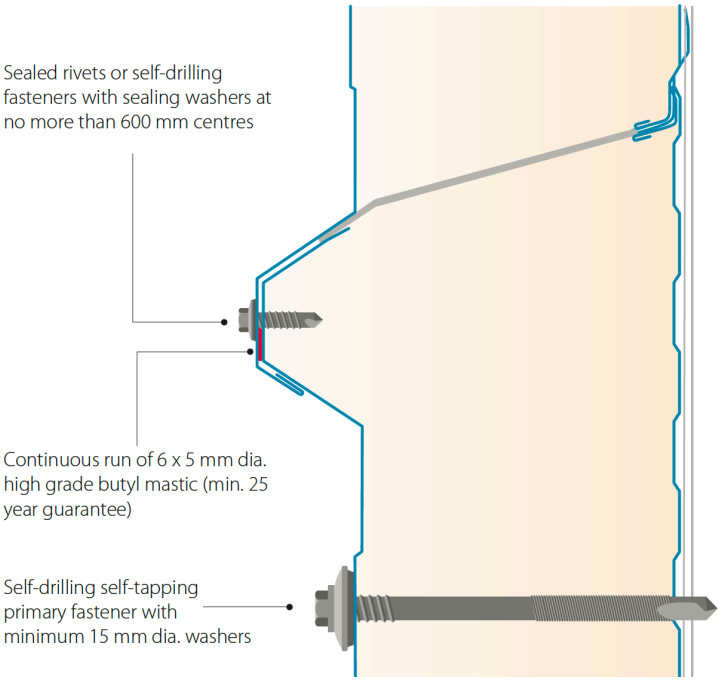
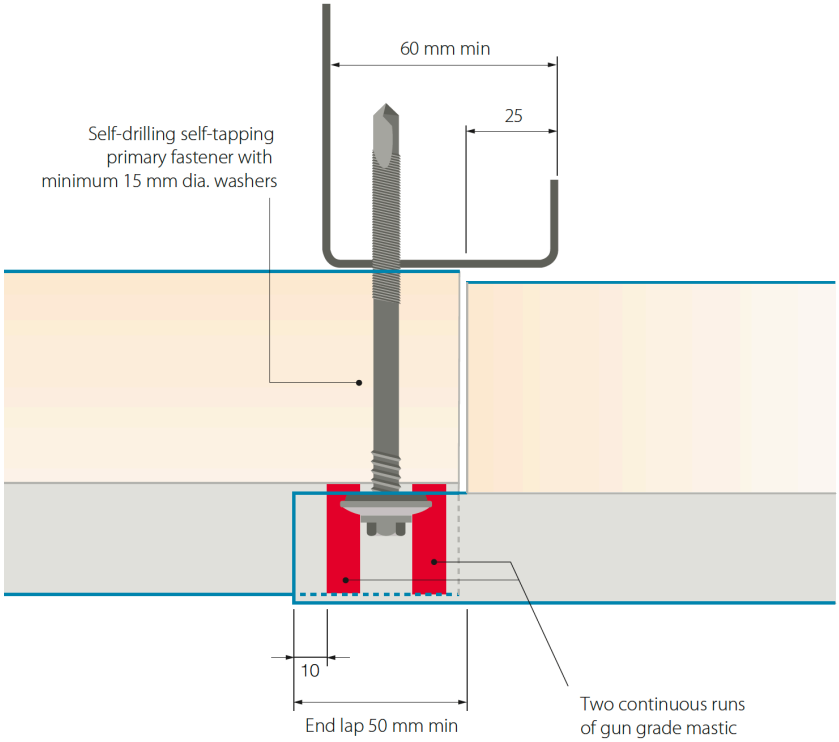
CONSTRUCTION DETAILS – WALL

HORIZONTAL DETAILS
SIDE LAP



SIDE LAP
The new side lap joint design enables panels to be lapped simply providing fast and efficient installation.

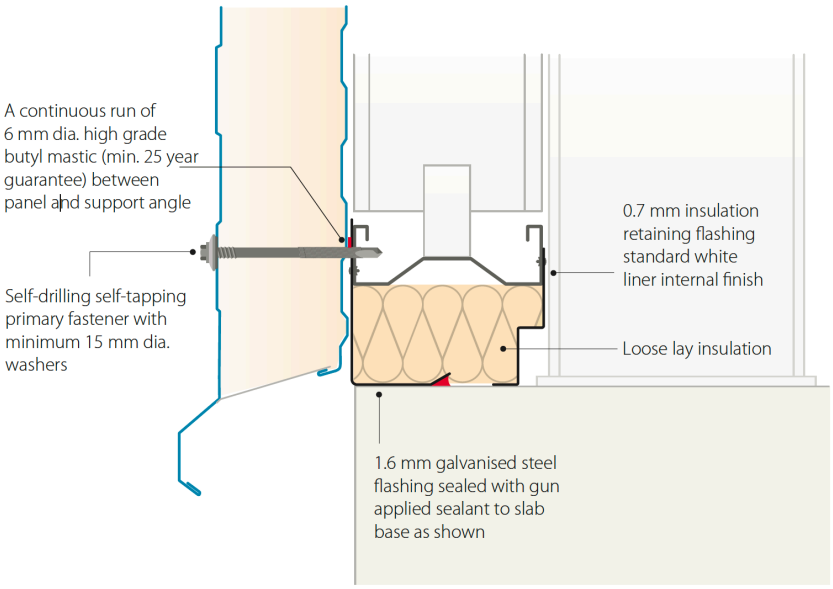
END LAP



END LAP
Gun grade silicon sealant is used in the end laps to ensure the outer profiles nestle closely for improved aesthetics.

CONSTRUCTION DETAILS – WALL

SLAB BASE DRIP



EXPANSION JOINT
The 'V' formed flashing allows movement at this junction.

Psi value (W/mK)	f factor
0.024	0.972

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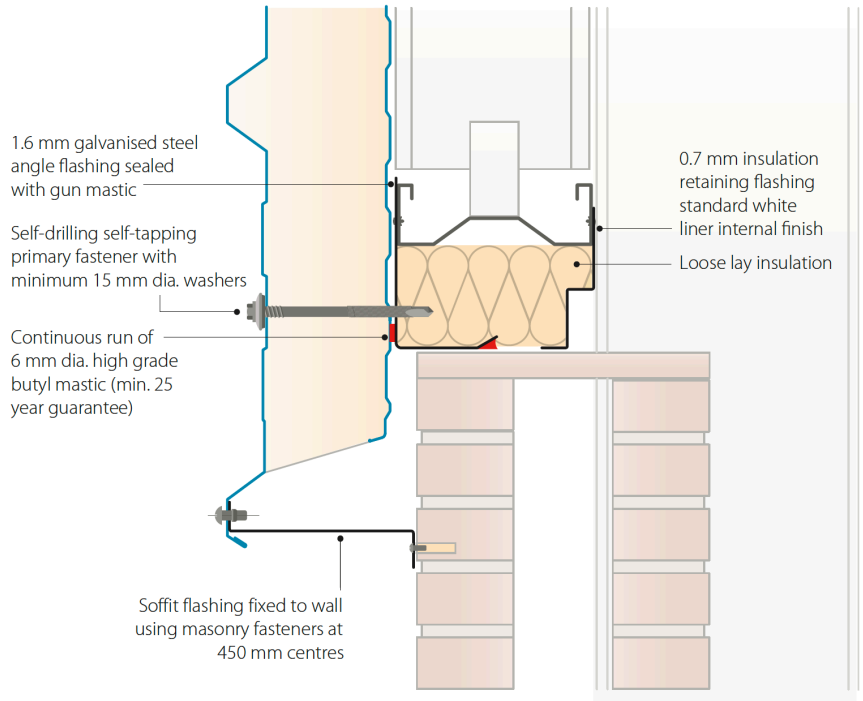
DADO WALL DRIP



DADO WALL DRIP
The 1.6 mm galvanised steel support flashings should be fixed together prior to placement and securing to wall capping and bottom rail.

Psi value (W/mK)	f factor
0.260	0.837

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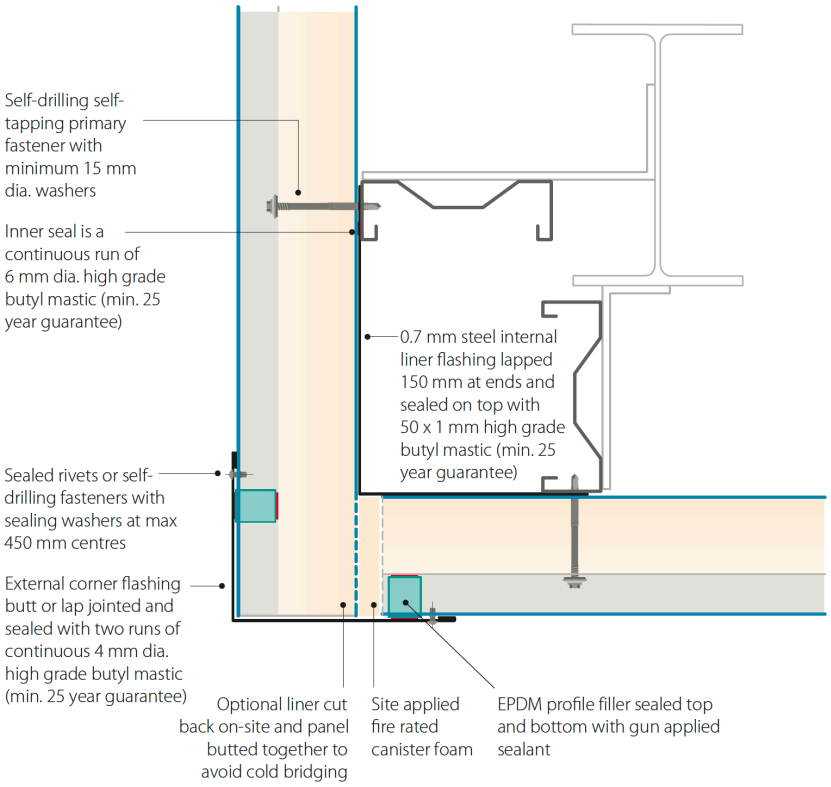
CONSTRUCTION DETAILS – WALL

EXTERNAL CORNER



EXTERNAL CORNER
Thermal performance can be enhanced by the on-site removal of the panel liner, within the corner junction, therefore reducing the risk of cold bridging. Running a circular saw to a depth of 15 mm at approximately 100 mm from the panel edge and then peeling the cut strip of steel away can easily remove the liner.

Psi value (W/mK)	f factor
With liner cut back	
0.041	0.957
Without liner cut back	
0.092	0.939

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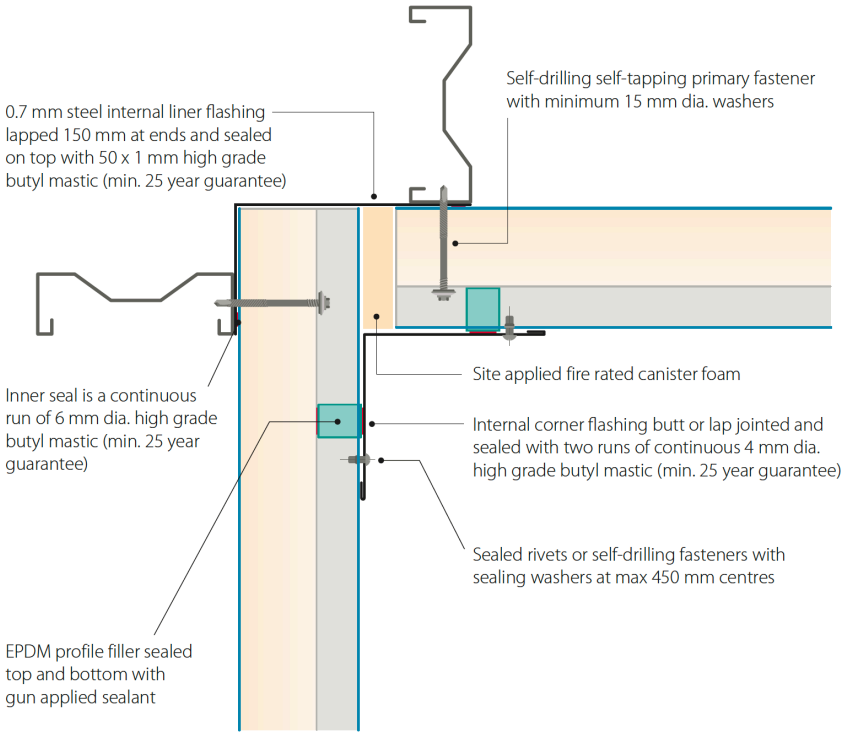
INTERNAL CORNER



INTERNAL CORNER
Before fillers and outer flashing are applied, fire rated canister foam should be applied into the void between the panel end and the trough of the adjacent panel.

Psi value (W/mK)	f factor
With liner cut back	
0.019	0.940
Without liner cut back	
0.092	0.939

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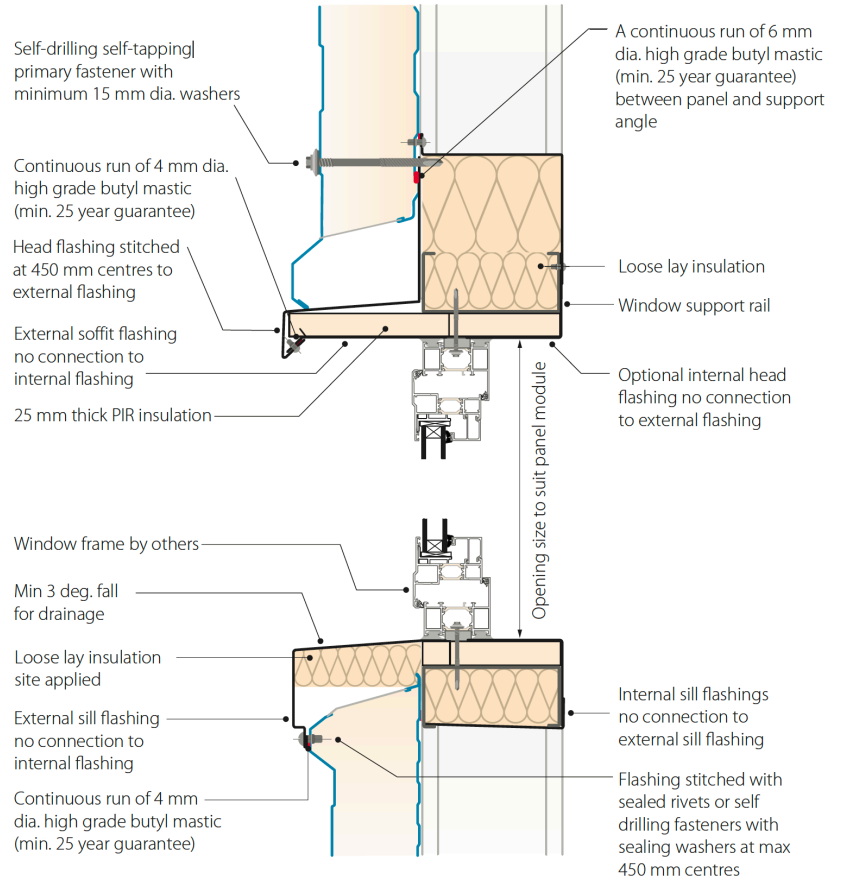
CONSTRUCTION DETAILS – WALL

WINDOW/DOOR HEAD



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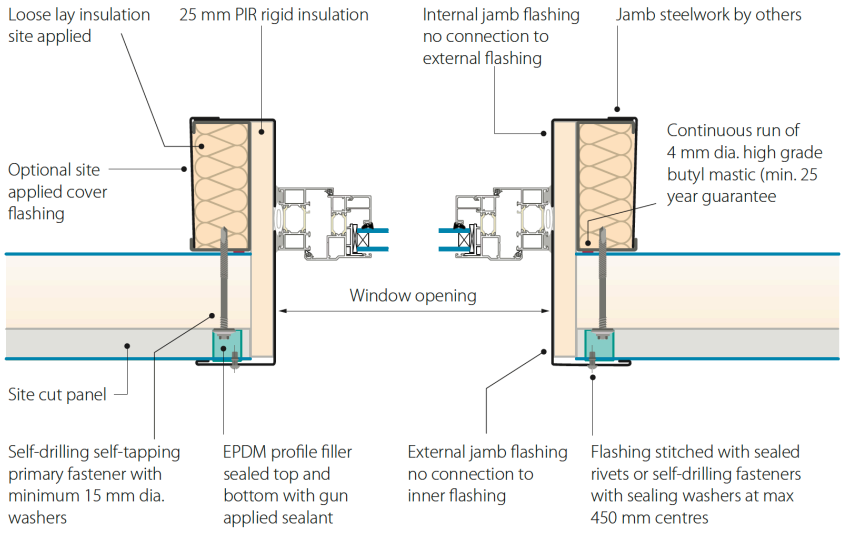

WINDOW/DOOR JAMB
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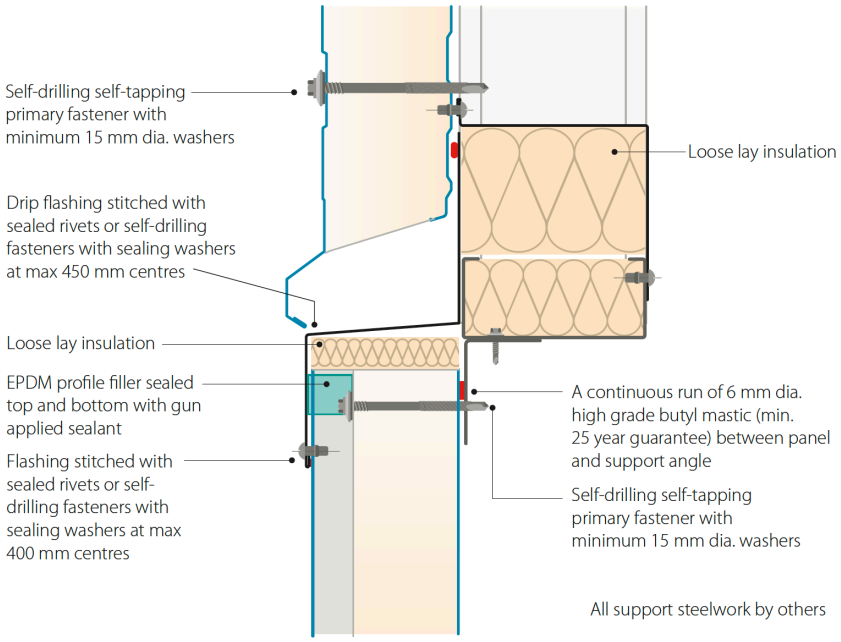
CONSTRUCTION DETAILS – WALL

HORIZONTAL TO VERTICAL BREAK



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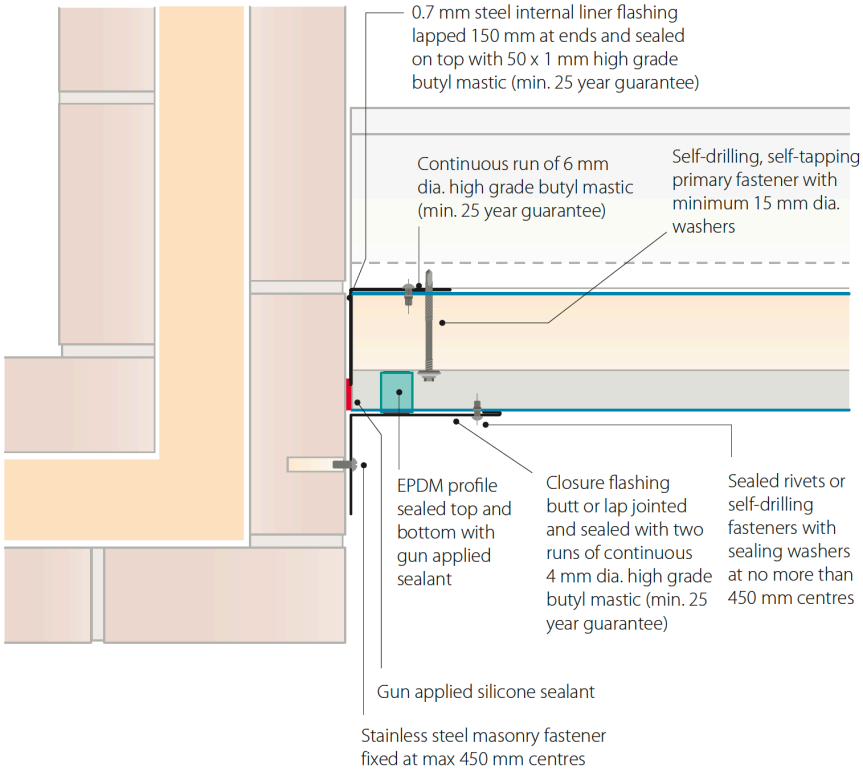

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