viroc
by Investwood

Facades
Fact Sheets

Ventilated Facades - Screw System

Ventilated Facades - Viroclin

Ventilated Facades - Virocnail

Ventilated Facades - Mixed System

Please consult **Viroc Technical File** available at www.viroc.pt, on EN language, on Downloads page.
Other **Viroc Recommended Solutions files,** organized by type of application, available on request.

Ventilated Facades
Screw System

Facades
Fact Sheet

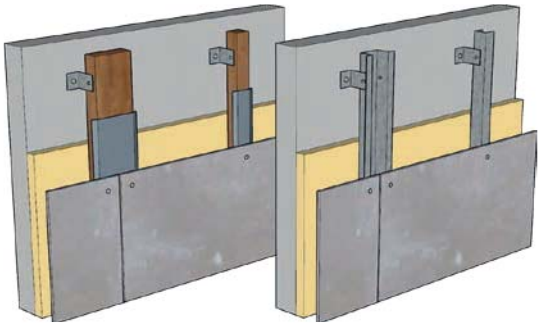
Application: Outdoors

Support structure: Wood or Metal

Fastening: External head screws

Thickness: 12 mm (1/2") or 16 mm (5/8")

Board maximum size:
Wood structure: 3000 x 1250 mm (118,11" x 49,21")
Metallic structure: 1500 x 1250 mm (59,00" x 49,21")



1. Description

Viroc is a cement bonded particle board. It is a composite material, composed by a compressed and dry mixture of pine wood particles and cement.
Its appearance is not homogeneous. A natural characteristic of the product is to have patches of various shades.
The Viroc panel is produced in different colours.

2. Relative humidity effect

Viroc boards have small size variations due to the air relative humidity.
In situations of extreme humidity and temperature amplitude, the expected maximum size variation of the board would be +1.0‰ to -3.0‰.
The fastening system near the edges will have to take into account those size variations.

3. Application conditions

Before installation, the board must be exposed for 48 hours to the relative humidity of the location where it will be applied and should be left in a dry location out of direct sunlight.
It is the installer's responsibility to check the support structure conditions (distance between supports and respective width) for the correct application.

4. Support structure

Treated dry pine beams or metallic profiles of galvanized steel and aluminum can be used to support the boards.
The structure that will support Viroc boards must be aligned and leveled and the board cannot be warped.
Keep the distance between the structural elements as further described.

5. Fastening

Boards are fastened with external head screws. Only stainless steel screws or screws that have been treated against corrosion must be used in outdoor applications.
Peripheral screws have to allow board movements.
The screws in the center may be fixed.
Peripheral holes diameter should be 10 mm (3/8") and the center ones 5 mm (3/16").
Particular attention is needed regarding the screws position - it is necessary to place them on the center of the drilled holes.
Distance between the holes to the edges should be 50 mm (2") minimum, with a maximum of 100 mm (4").
Joints between boards must be 5 mm (3/16"), minimum.
It is advised the use of a screwdriver with a depth regulator in order to prevent an excessive tightness of the screws.

6. Surface treatment

Viroc boards must be protected with paint or varnish. Before applying varnish the panel surfaces must be completely clean and dry, free from grease, dust or surface salts. The surface should be cleaned by polishing with a cleaning disc. Viroc S.A. has suitable cleaning discs available that can be supplied on request.
The first coat must cover both sides and edges of the board. The other coats need only to be applied on exposed face and edges. For more information, see the application of paints and varnishes procedures.

Notes & recommendations

Please consult Viroc Product Data Sheet to know the board tolerances and properties.
Always check standard safety procedures and local legislation requirements.
Please contact the finishing suppliers for application procedures.

7. Wood structure

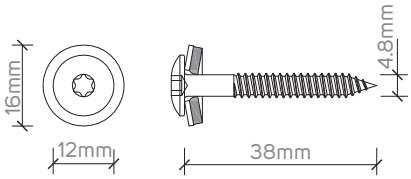
The wood beams must be, at least, Class C18 of resistance according to the Standard EN338 and durability corresponding to Class 2 or 3 according to Standard EN335-2.

7.1 Board fastening

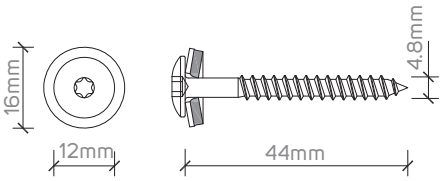
○ M - Mobile support - Ø 10mm ✕ F - Fixed support - Ø 5mm

7.2 Screws

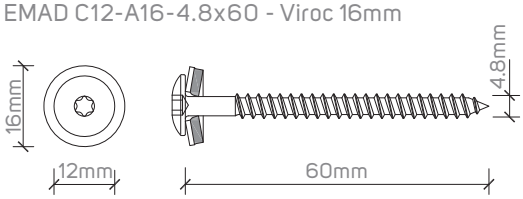
EMAD C12-A16-4.8x38 - Viroc 12mm



EMAD C12-A16-4.8x44 - Viroc 12 and 16mm

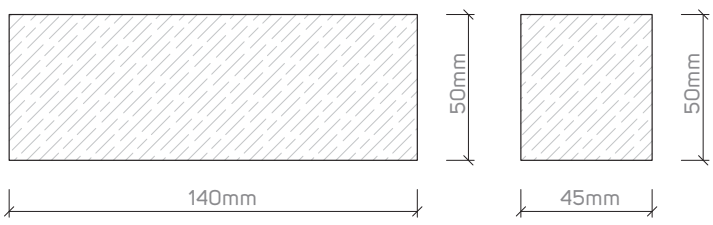


EMAD C12-A16-4.8x60 - Viroc 16mm

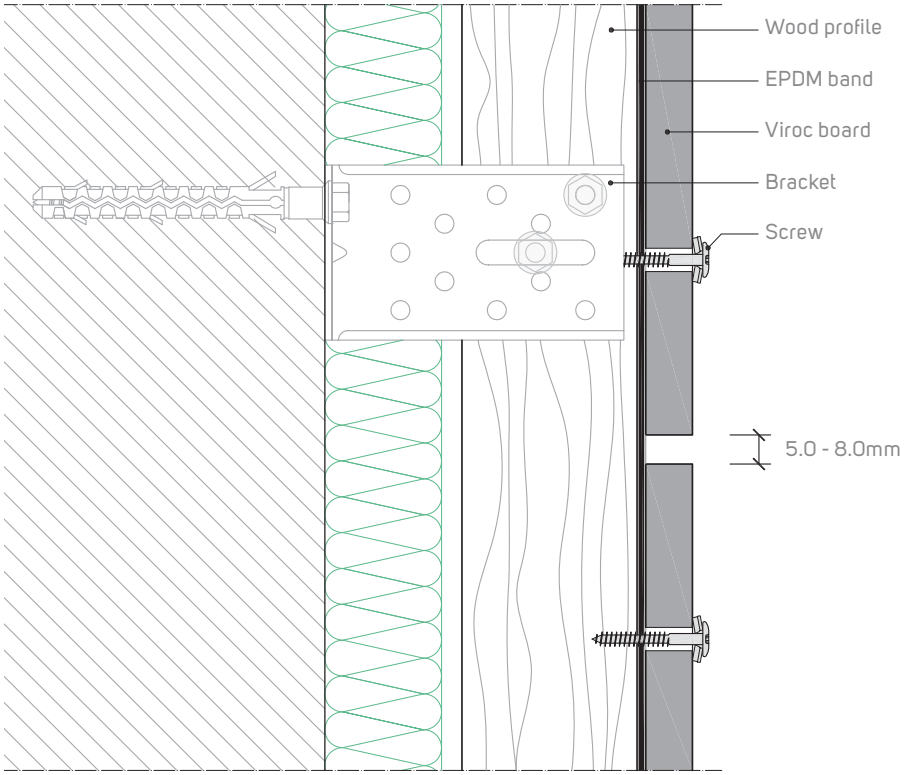


7.3 Profiles

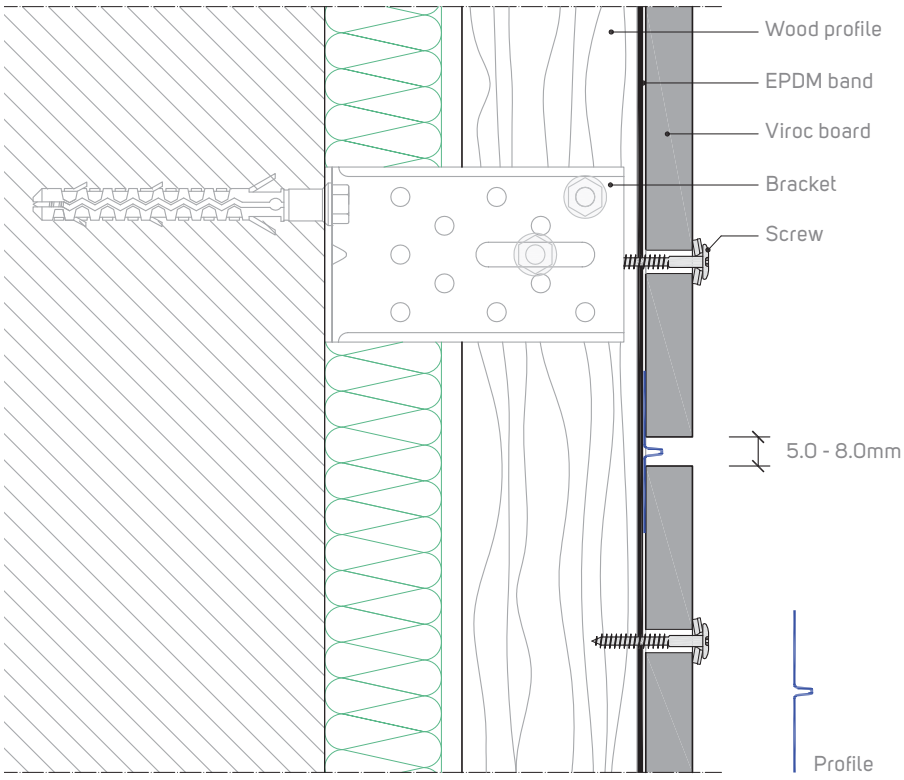
Wood: Class resistance C18 according to Standard EN338.



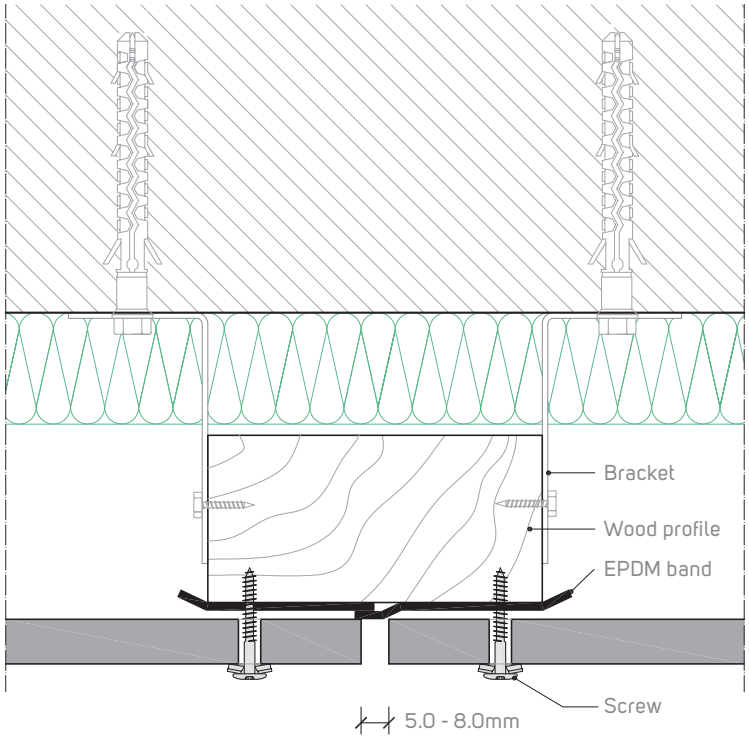
7.4 Horizontal joint (vertical section)



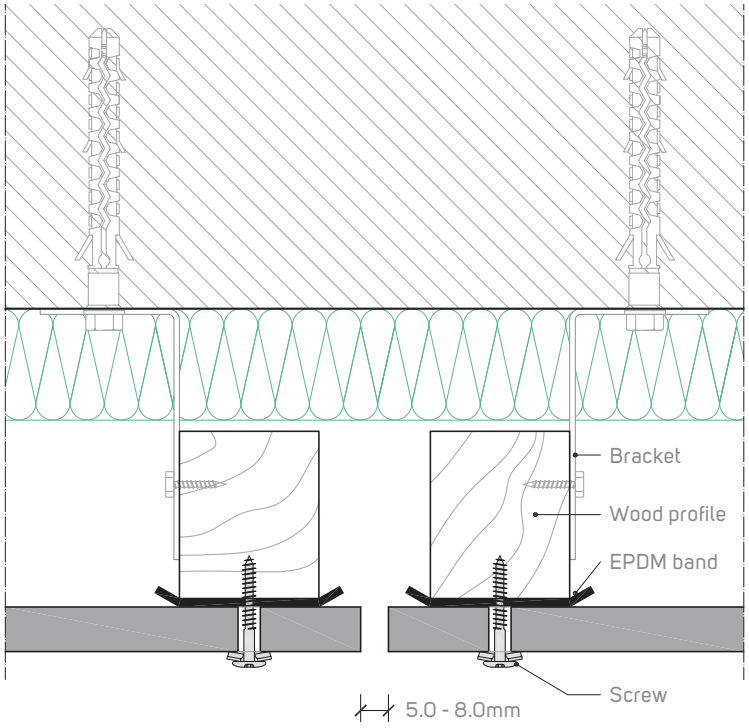
7.5 Horizontal joint (vertical section - with profile)



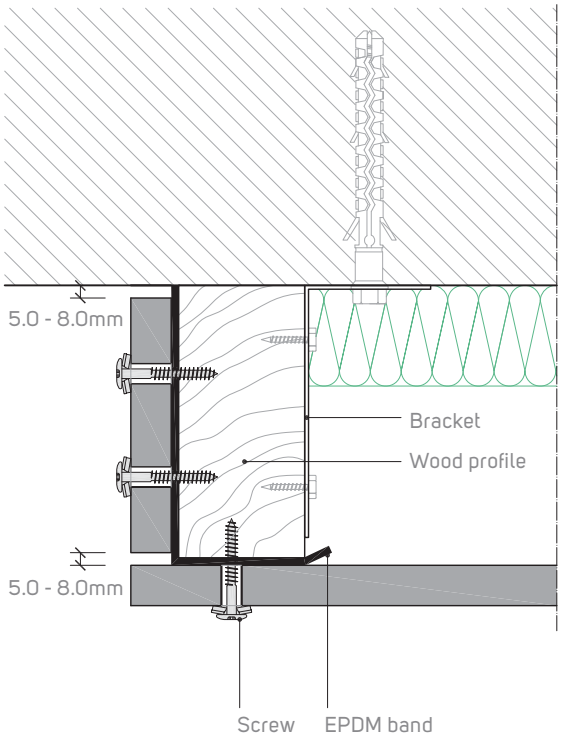
7.6 Vertical joint (horizontal section)



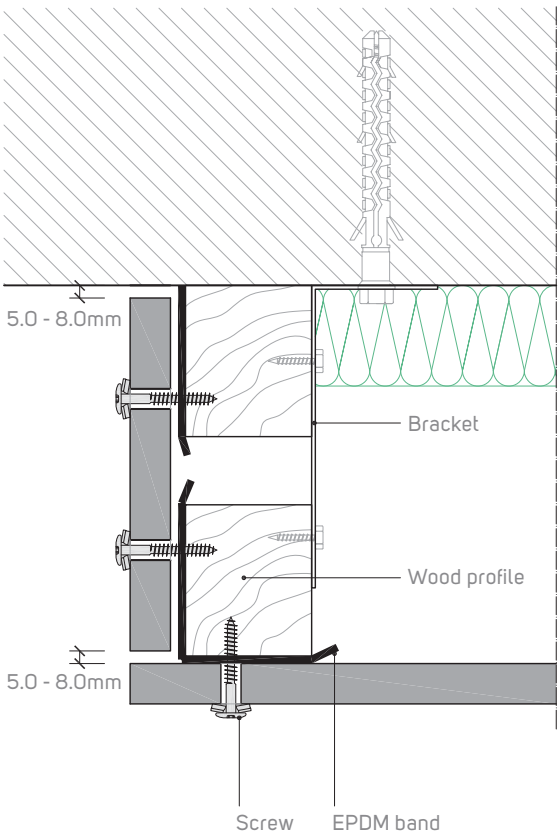
7.7 Vertical joint (horizontal section - alternative)



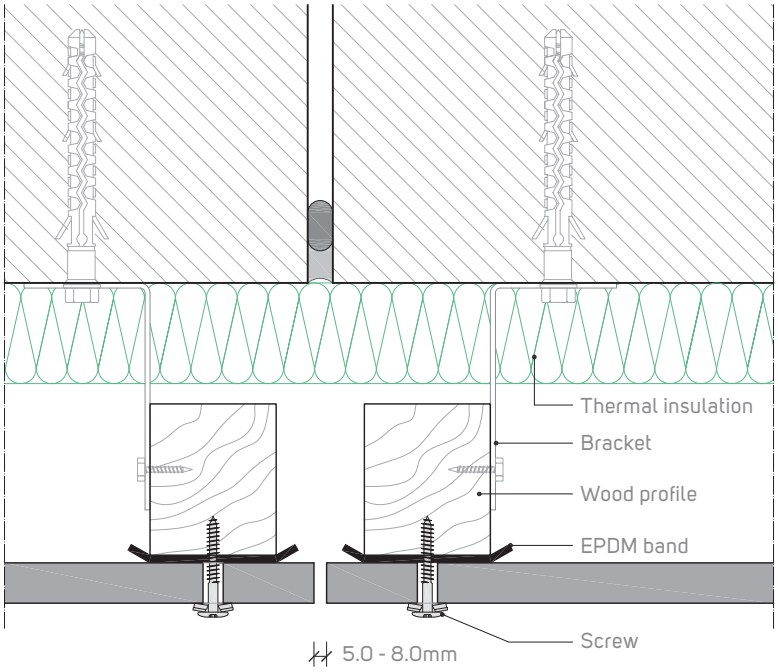
7.8 Lateral edge



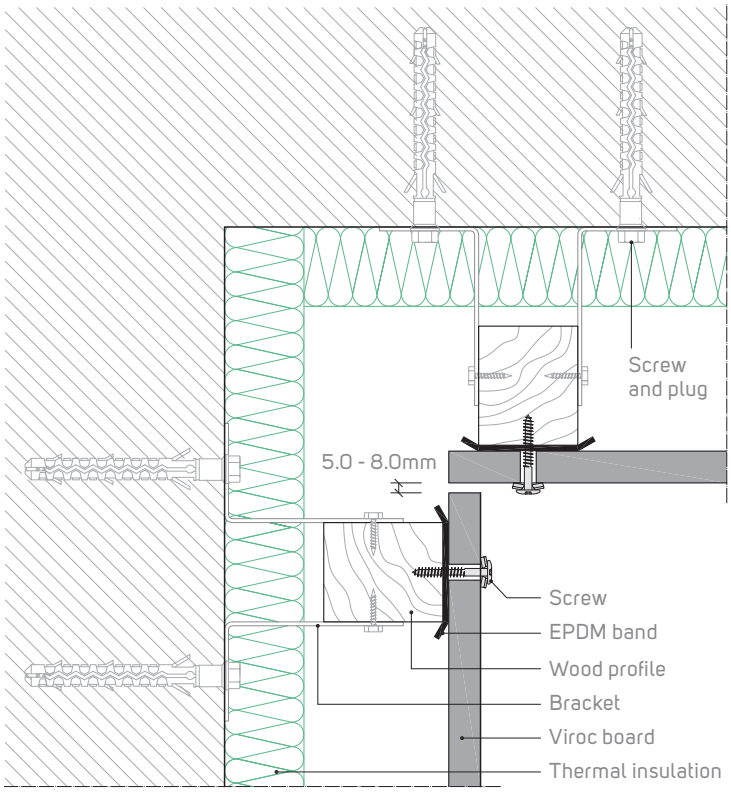
7.9 Lateral edge (variant)



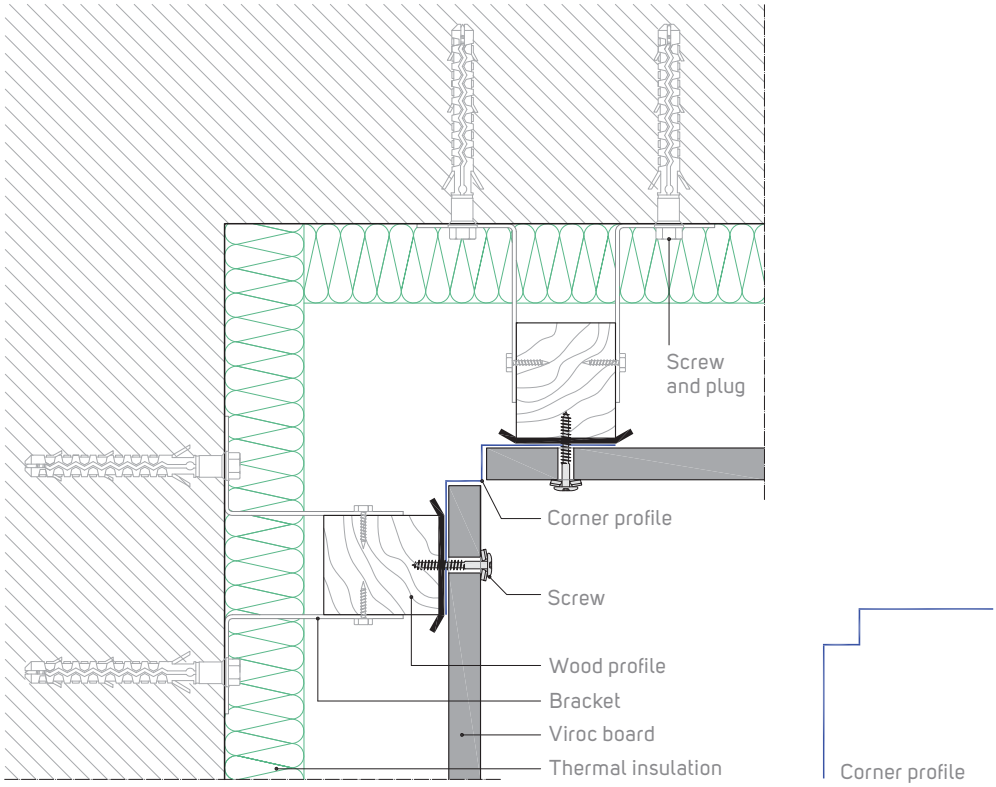
7.10 Expansion joint



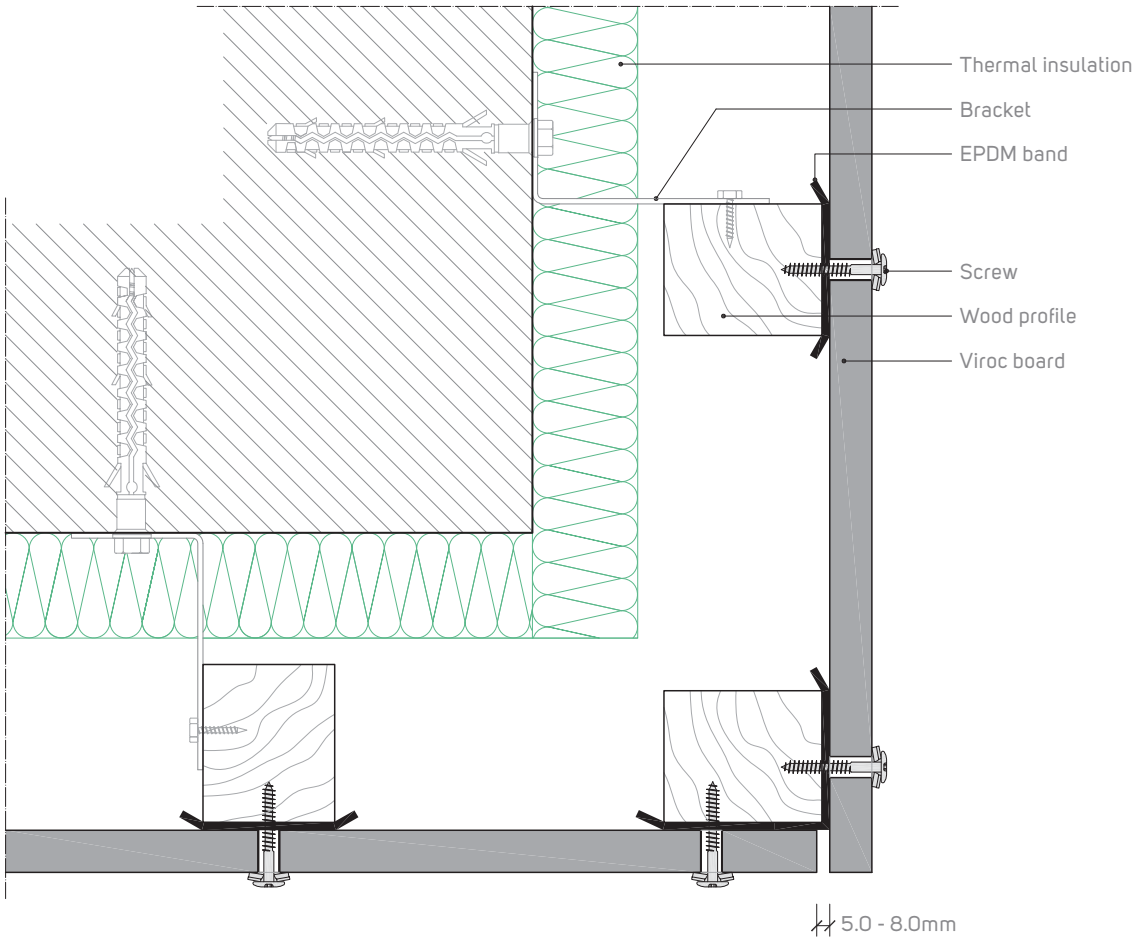
7.11 Interior angle



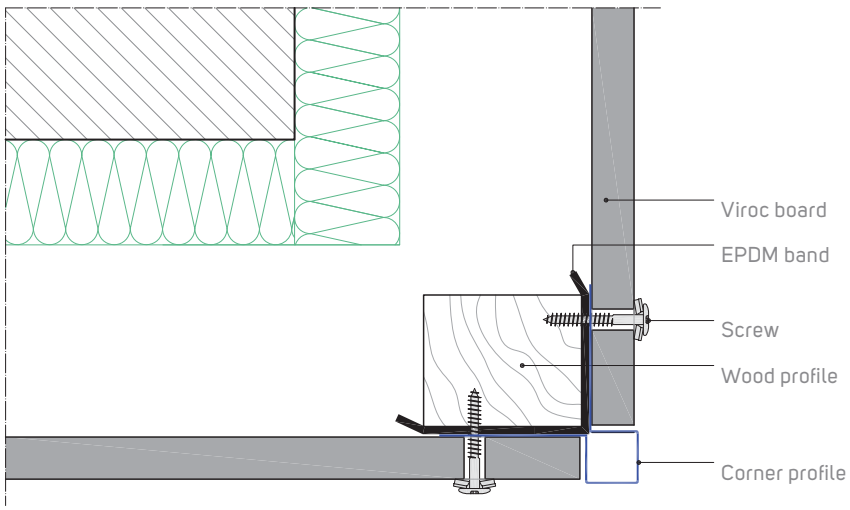
7.12 Interior angle (variant)



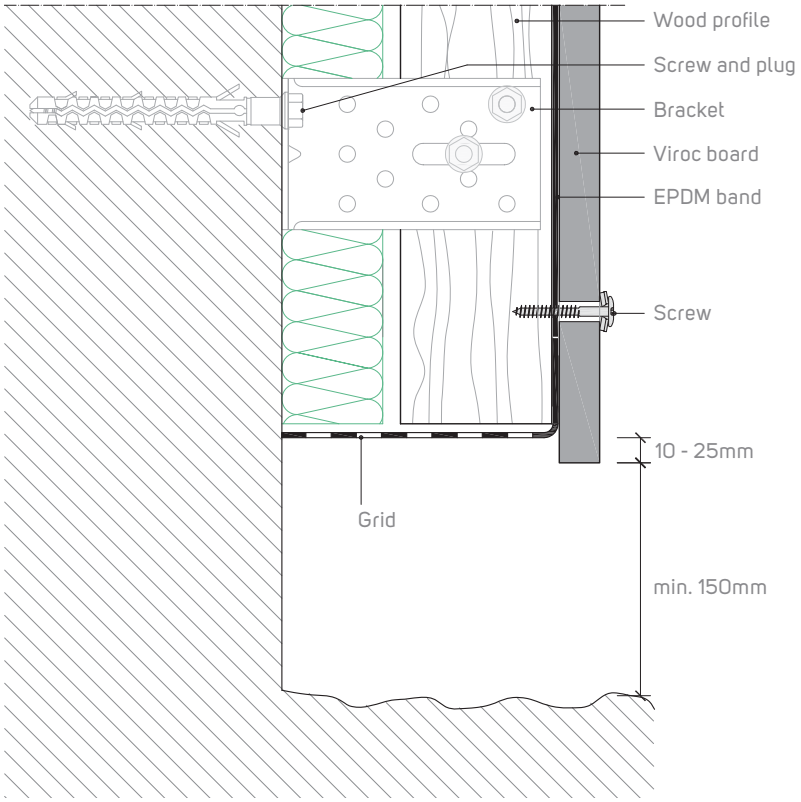
7.13 Exterior angle (horizontal section)



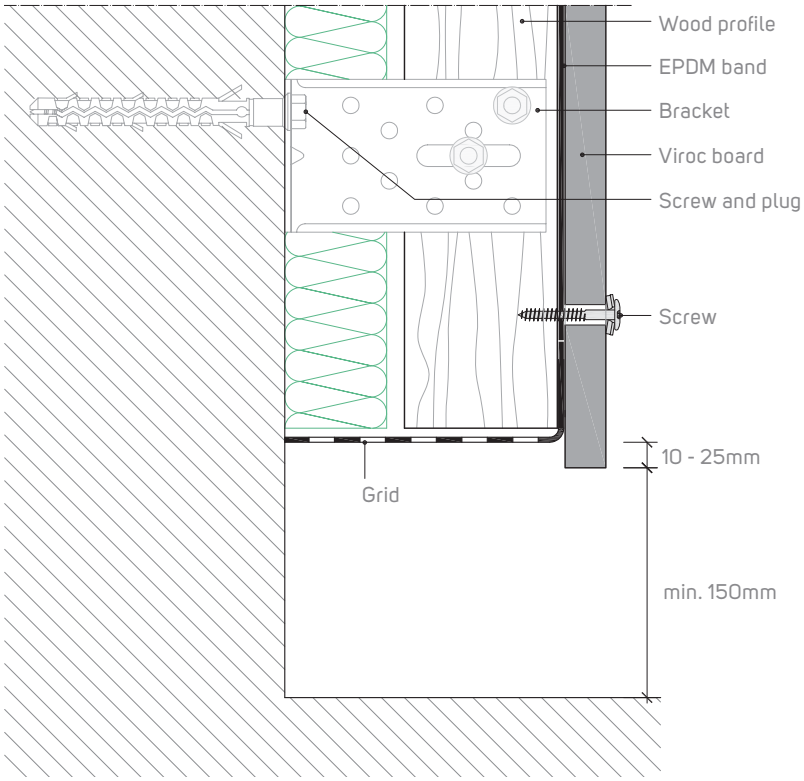
7.14 Exterior angle (horizontal section - variant)



7.15 Cladding above soil without flooring

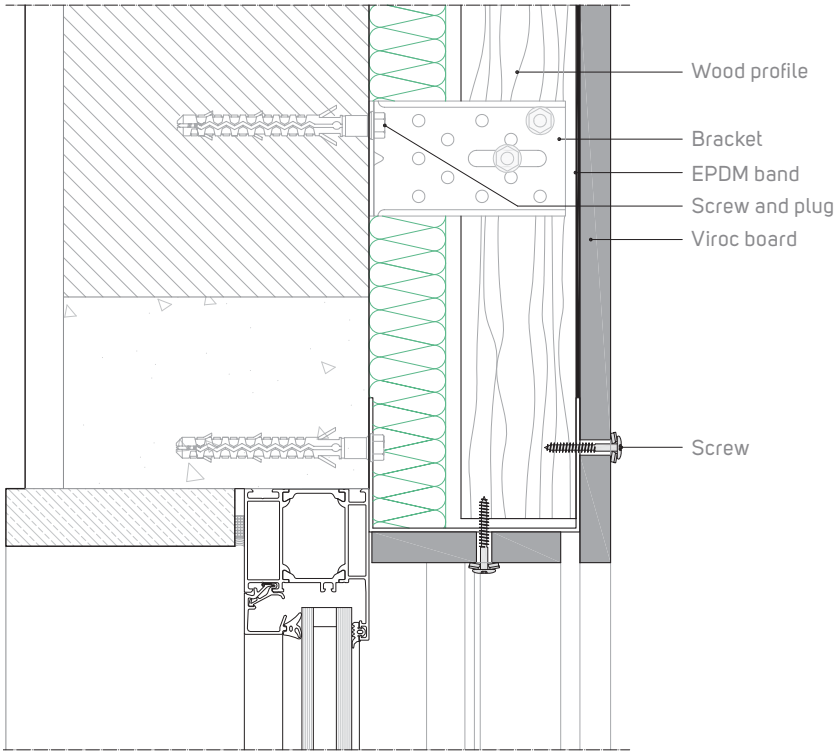


7.16 Cladding above soil with flooring

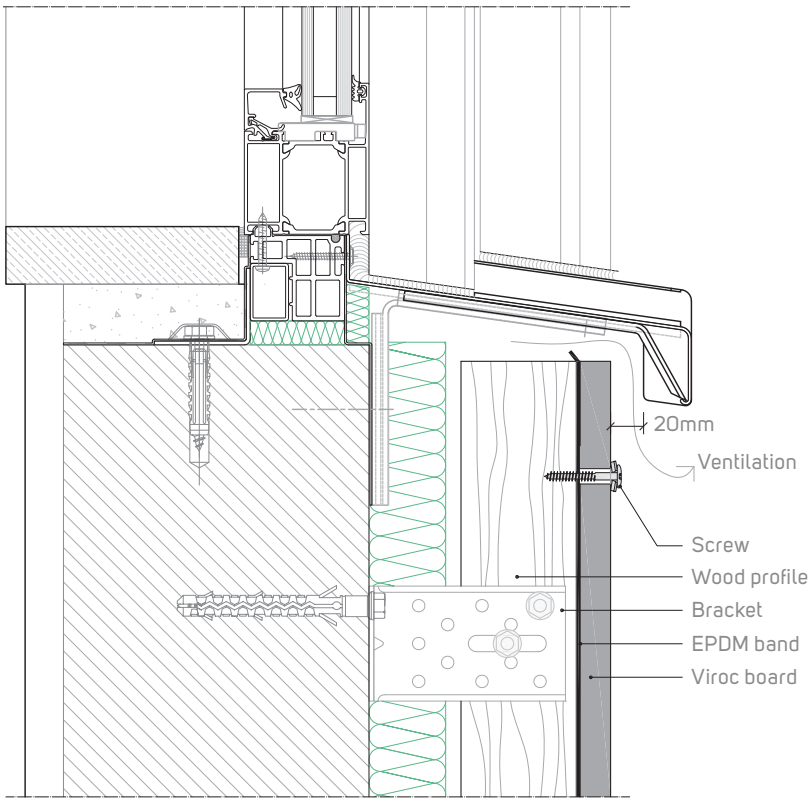


7.17 Window lintels and sills

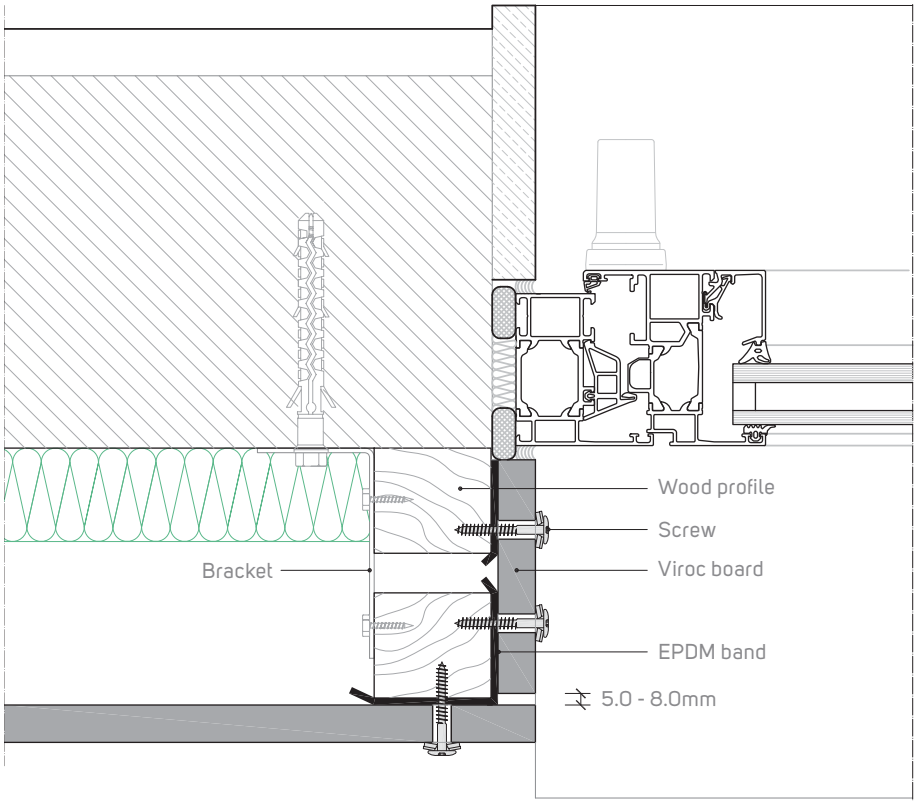
Lintel section



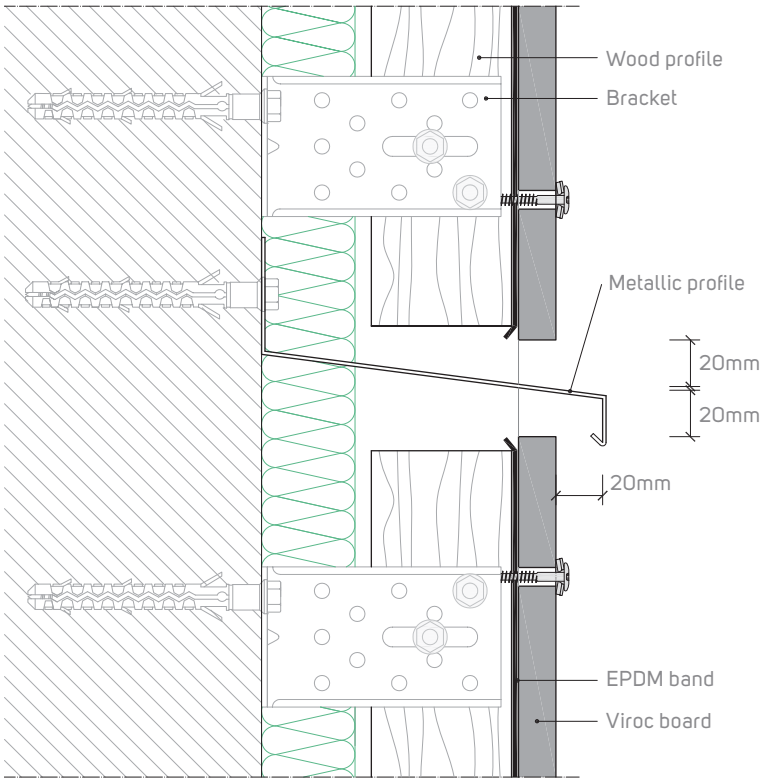
Sills section



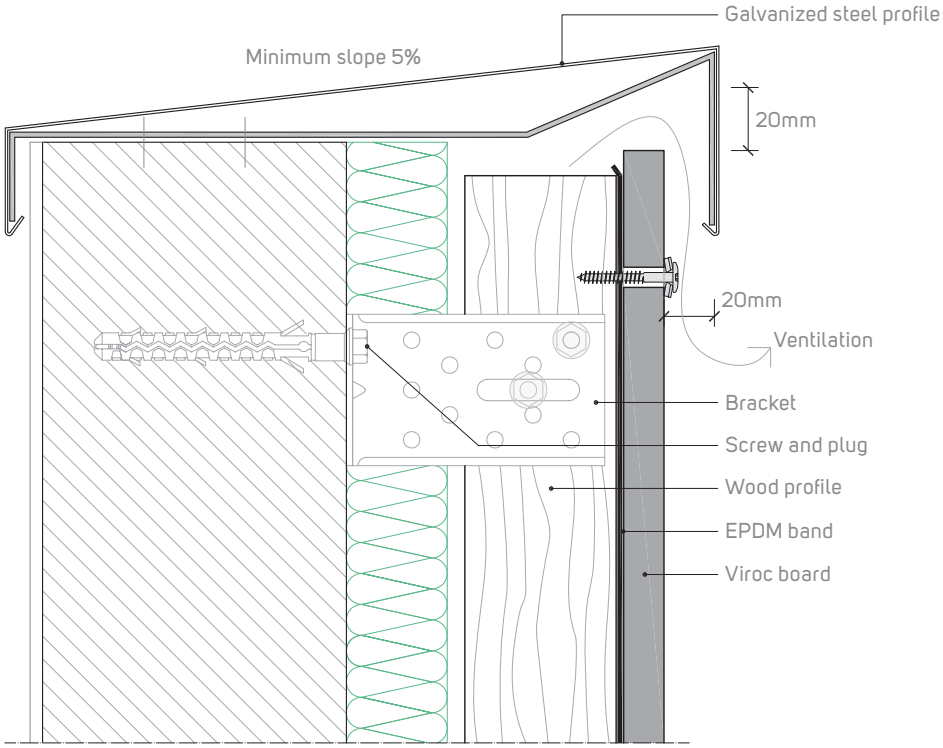
7.18 Jamb board



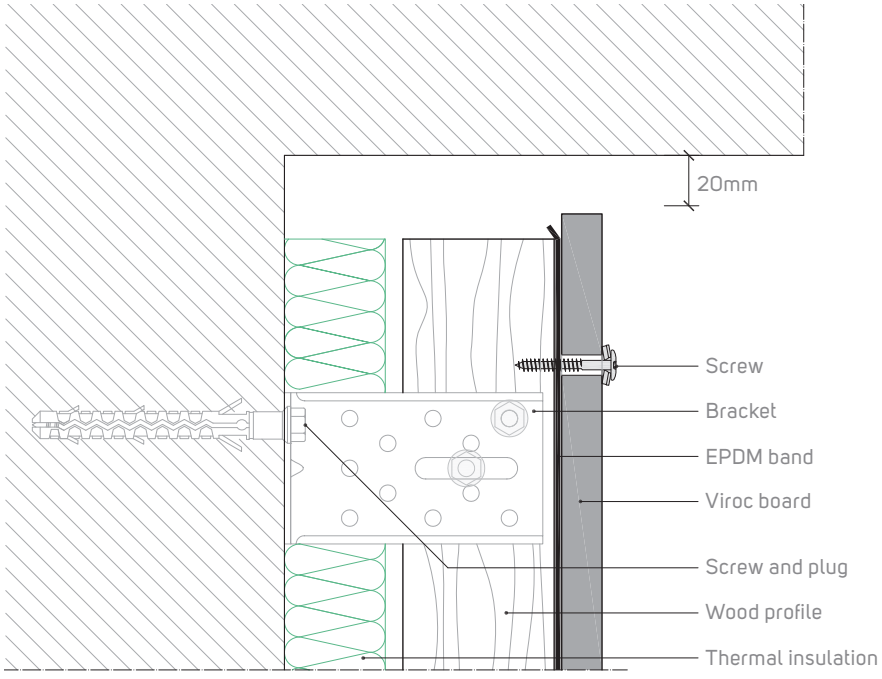
7.19 Horizontal ventilation compartment



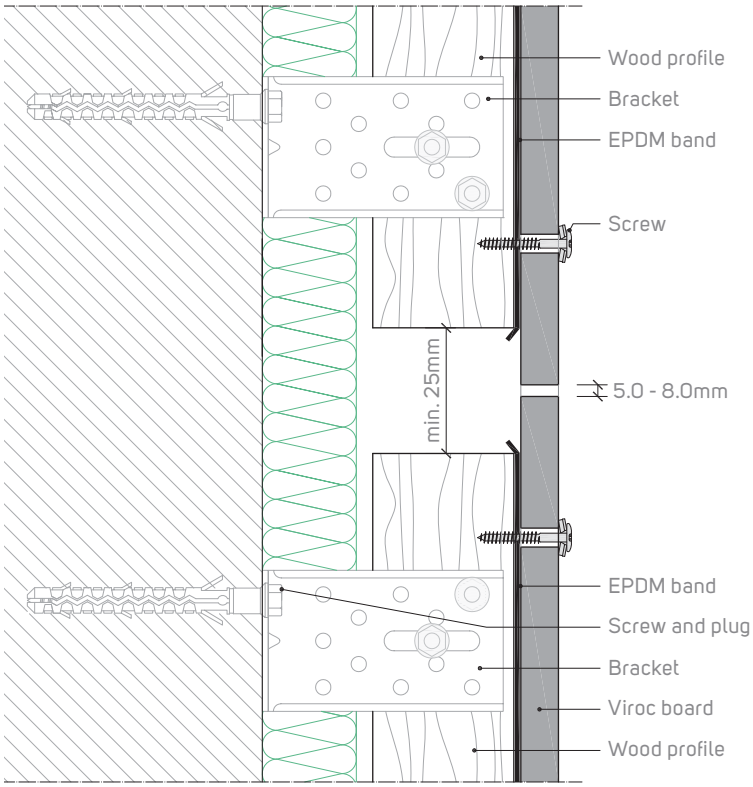
7.20 Covering



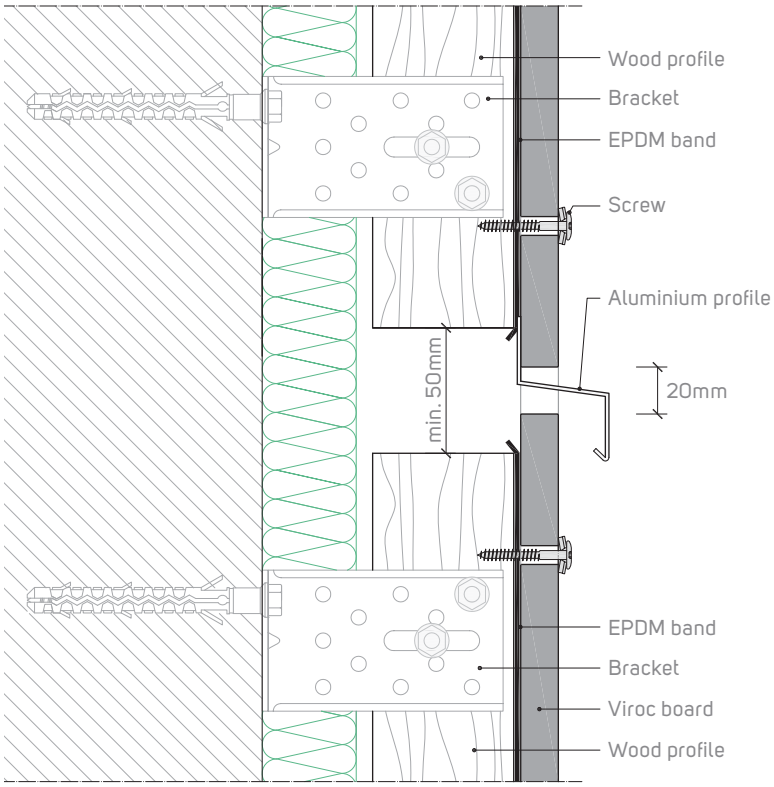
7.21 Board top edge



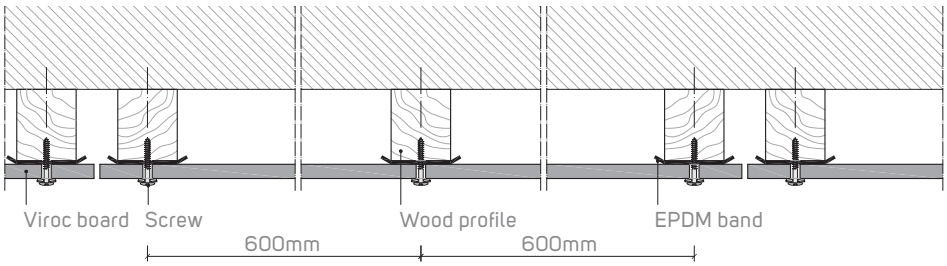
7.22 Structural sectioning (profiles with length ≤ 5.40m)



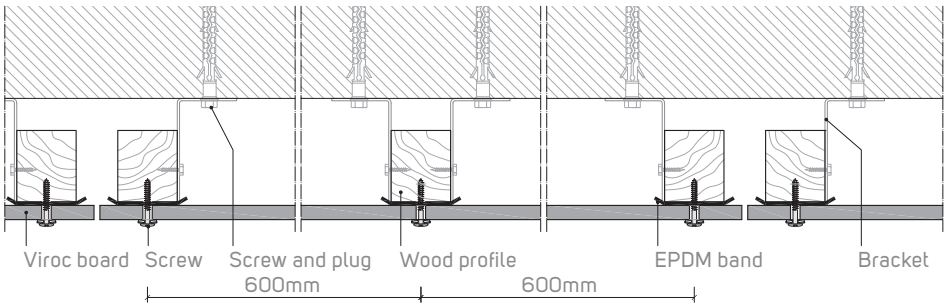
7.23 Structural sectioning (profiles with length > 5.40m)



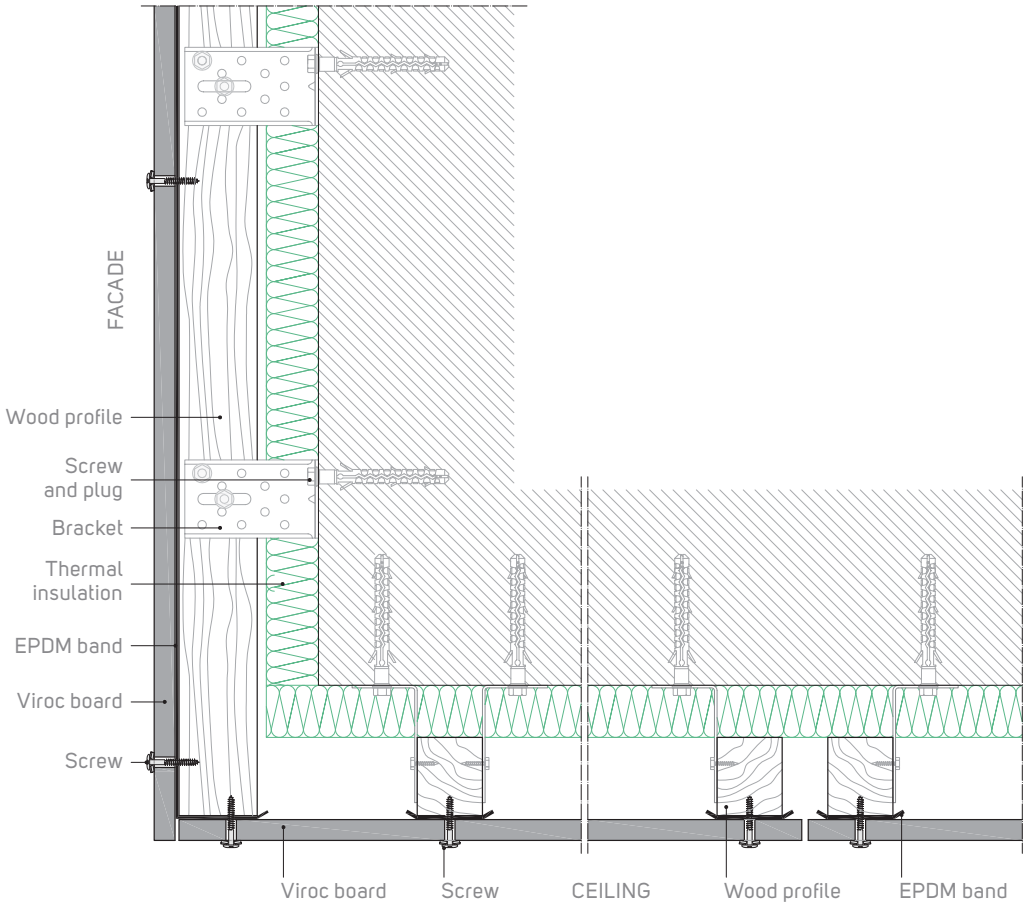
7.24 Ceiling covering



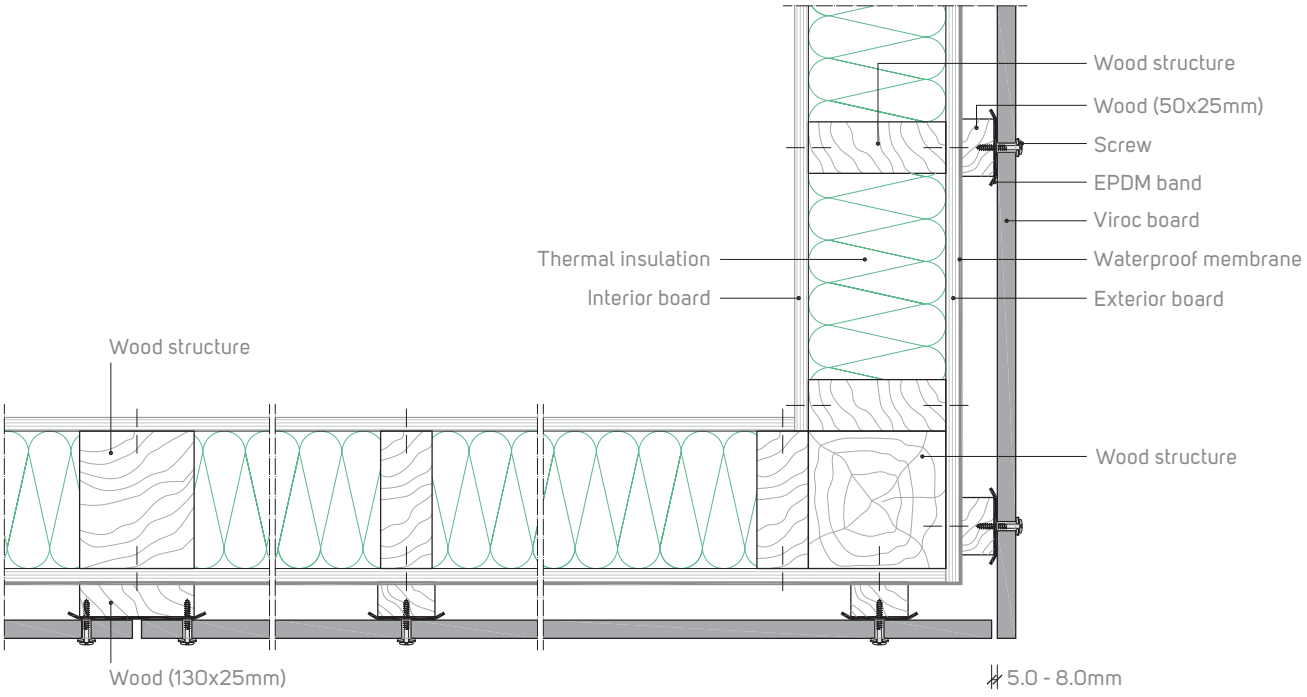
7.25 Ceiling covering (variant)



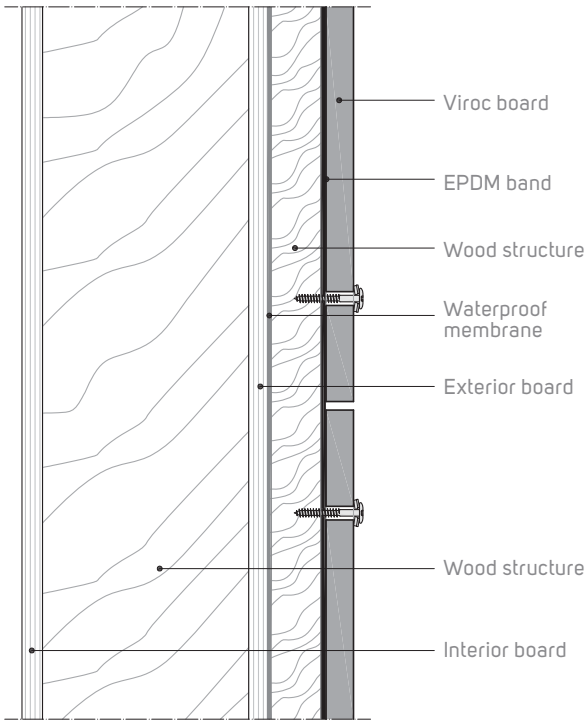
7.26 Detail of connection between facade and ceiling



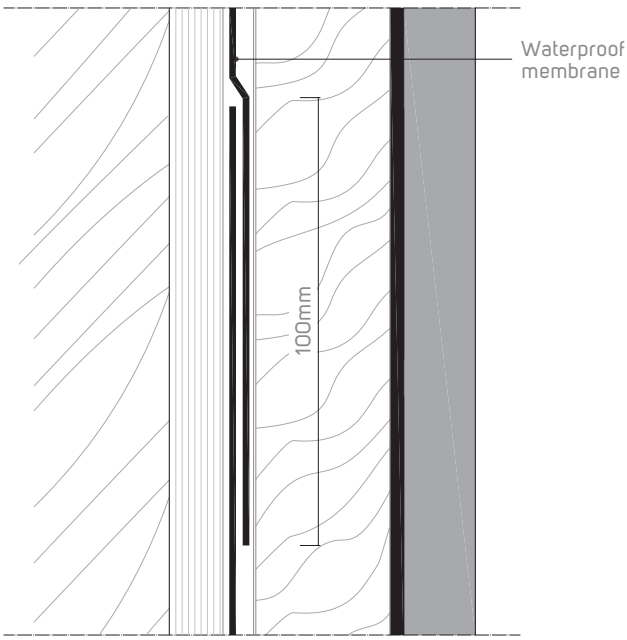
7.27 Horizontal section, houses with wood structure



7.28 Vertical section, houses with wood structure

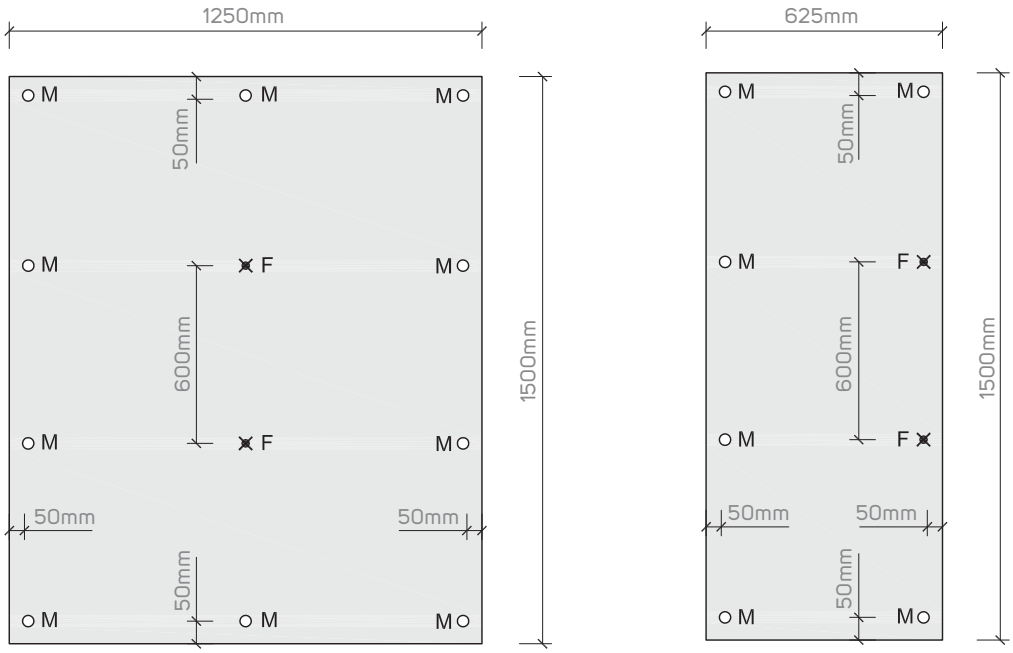


7.29 Overlap of waterproof membrane



8 Metal structure

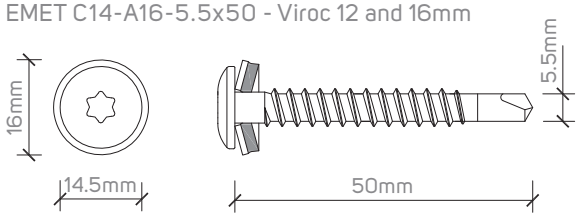
8.1 Board fastening



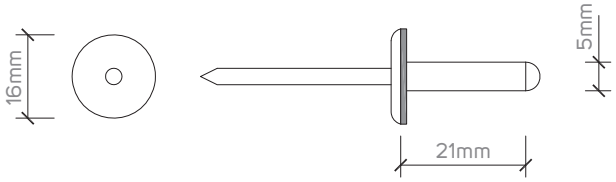
M - Mobile support - Ø 10mm F - Fixed support - Ø 6mm

8.2 Screws

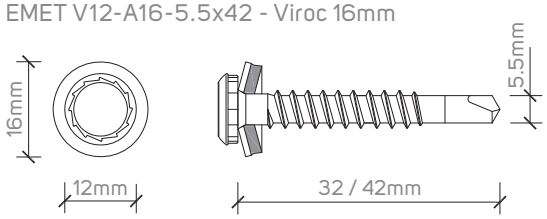
EMET C14-A16-5.5x50 - Viroc 12 and 16mm



Rivet C16-W16-5x21 - Viroc 12mm



EMET V12-A16-5.5x32 - Viroc 12mm
EMET V12-A16-5.5x42 - Viroc 16mm

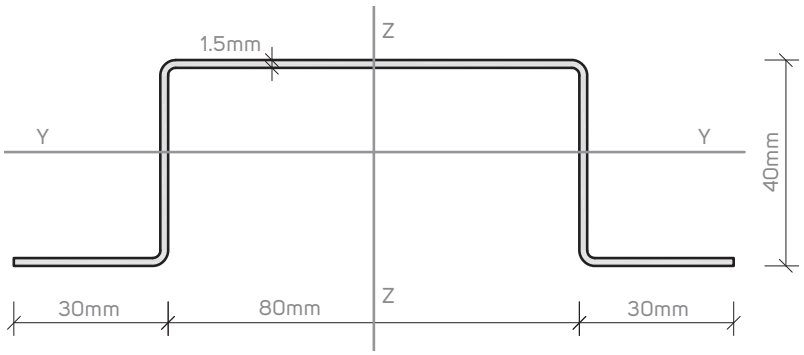


Rivet nose, obligatory use

8.3 Steel profiles

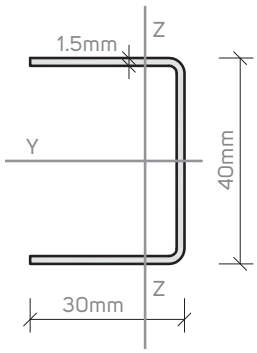
Minimum thickness of 1.5mm, galvanized according to Standard EN 10326 Class Z275 minimum.

OMEGA Profile - 30x40x80x40x30



Iy = 88557.9 mm^4
Iz = 525194.8 mm^4
A = 319.7 mm^2
Wy = 4947.4 mm^3

U-Profile - 30x40x30

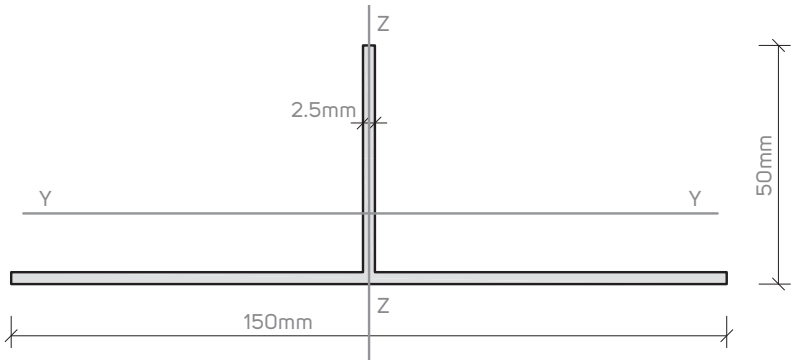


Iy = 33012.1 mm^4
Iz = 8166.5 mm^4
A = 127.6 mm^2
Wy = 1650.6 mm^3

8.4 Aluminium profiles

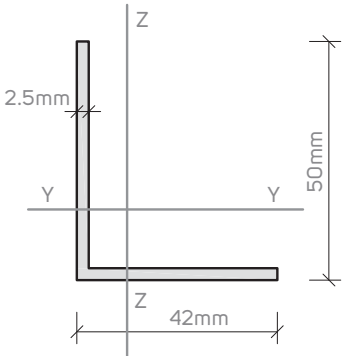
Minimum thickness of 2.5mm, alloy 6060-T5 or 6063 according to Standard EN 573.

T-Profile - 150x50



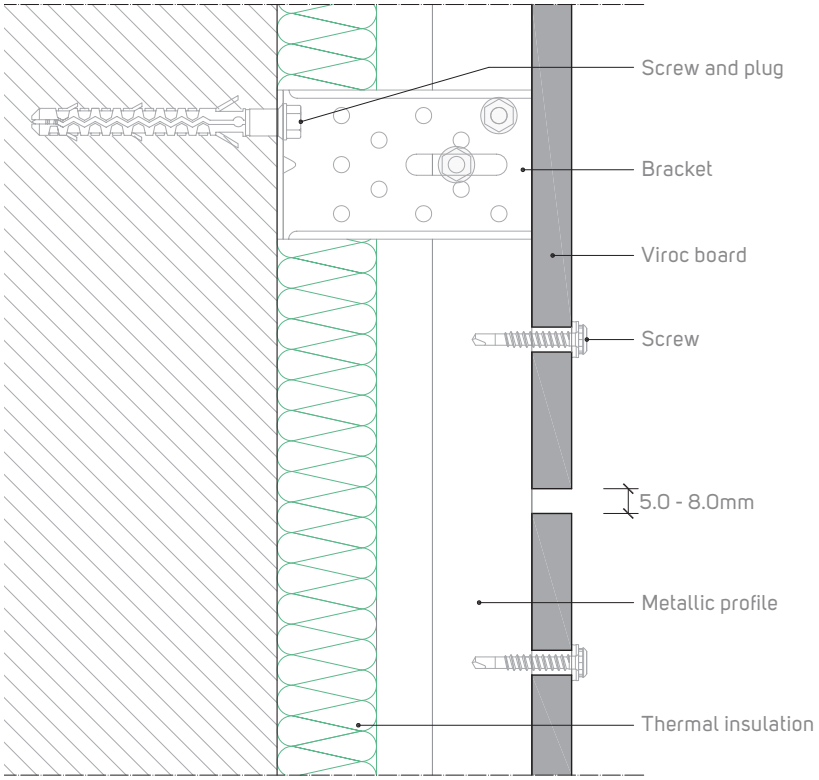
Iy = 78891.5 mm^4
Iz = 703186.8 mm^4
A = 493.8 mm^2
Wy = 10862.6 mm^3

L-Profile - 42x50

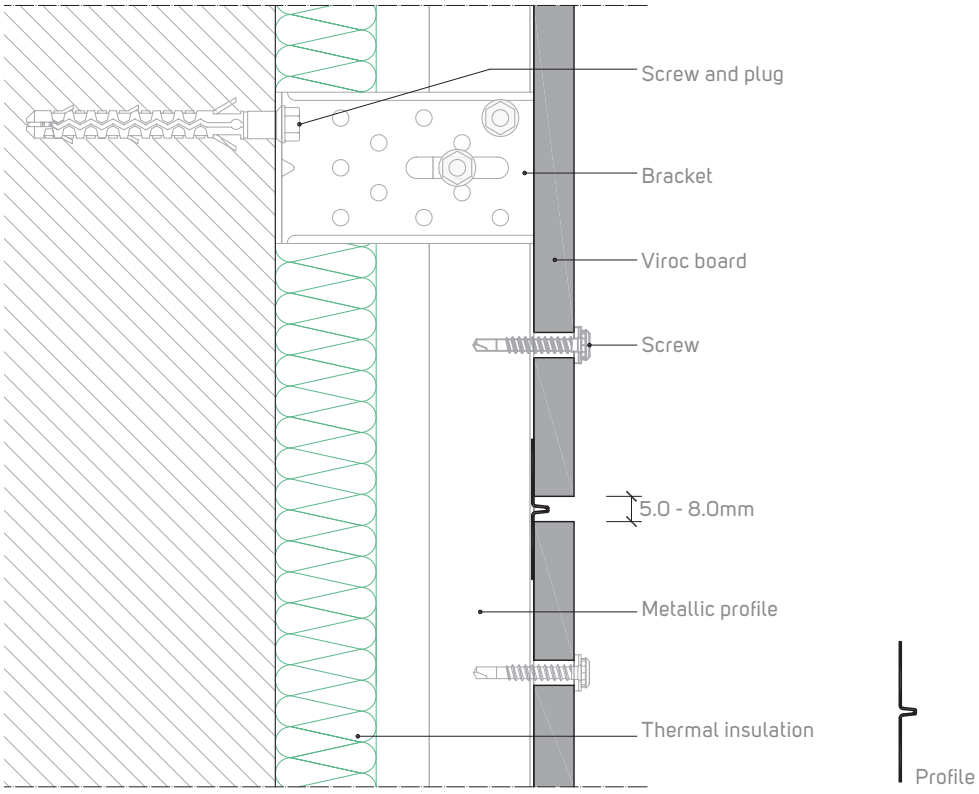


Iy = 57211.0 mm^4
Iz = 37233.6 mm^4
A = 223.8 mm^2
Wy = 3940.6 mm^3

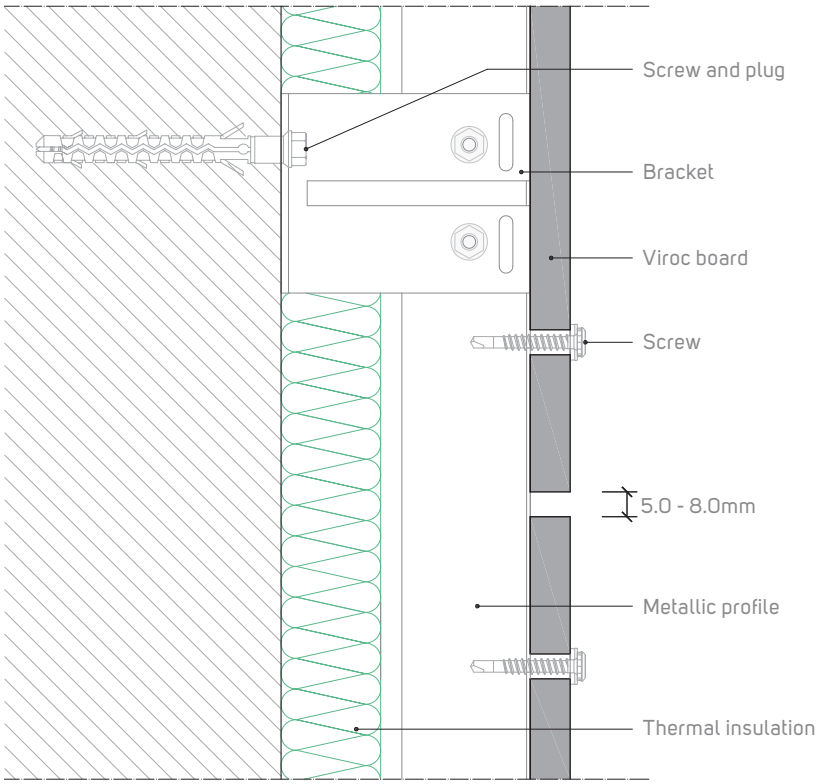
8.5 Horizontal joint (vertical section - steel)



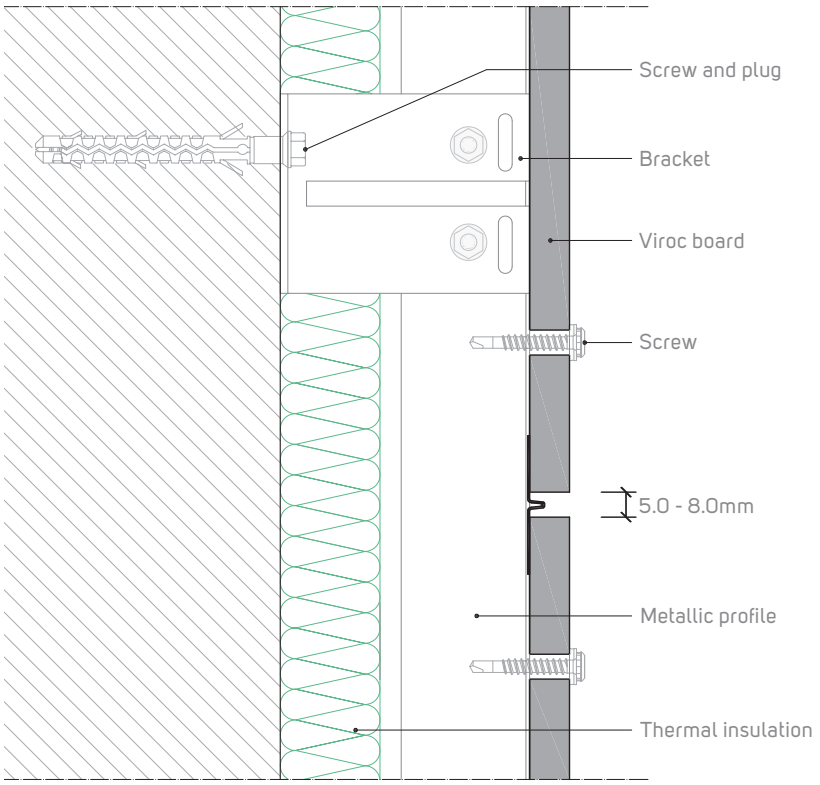
8.6 Horizontal joint (vertical section with profile - steel)

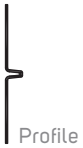


8.7 Horizontal joint (vertical section - aluminium)

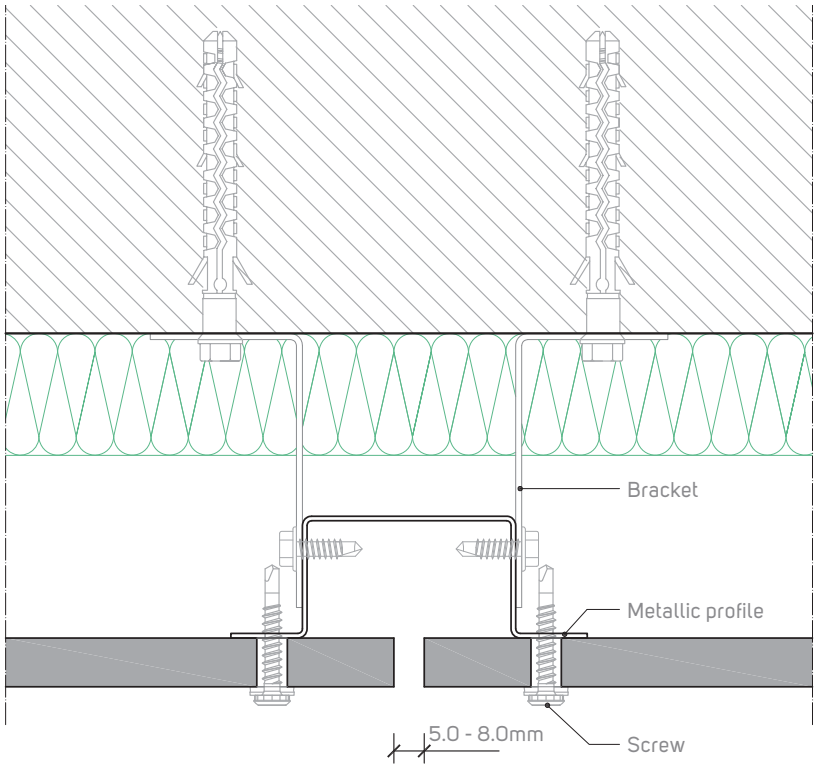


8.8 Horizontal joint (vertical section with profile - aluminium)

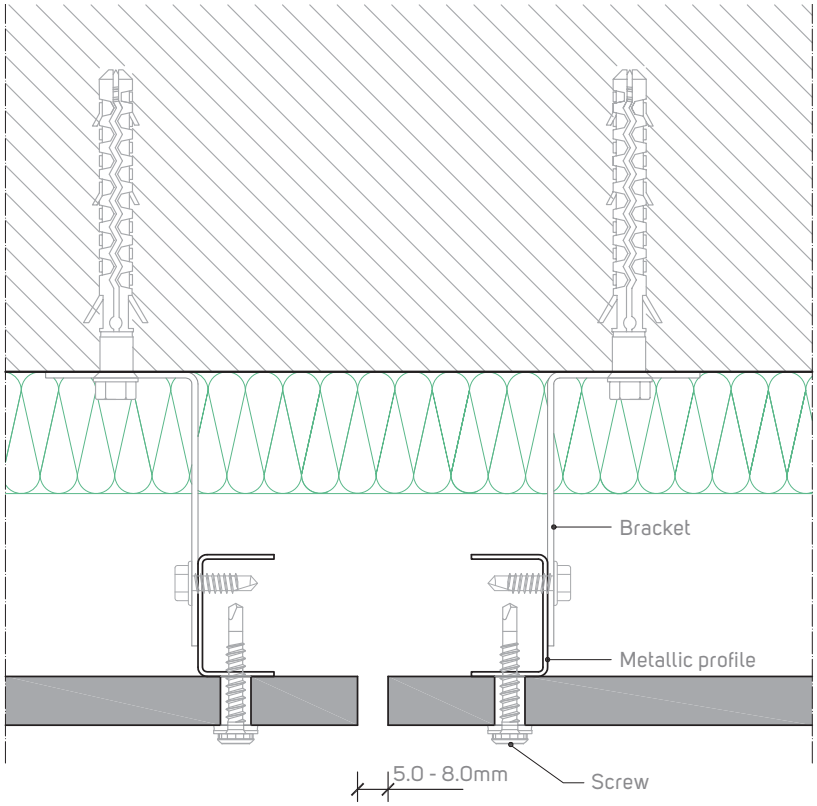




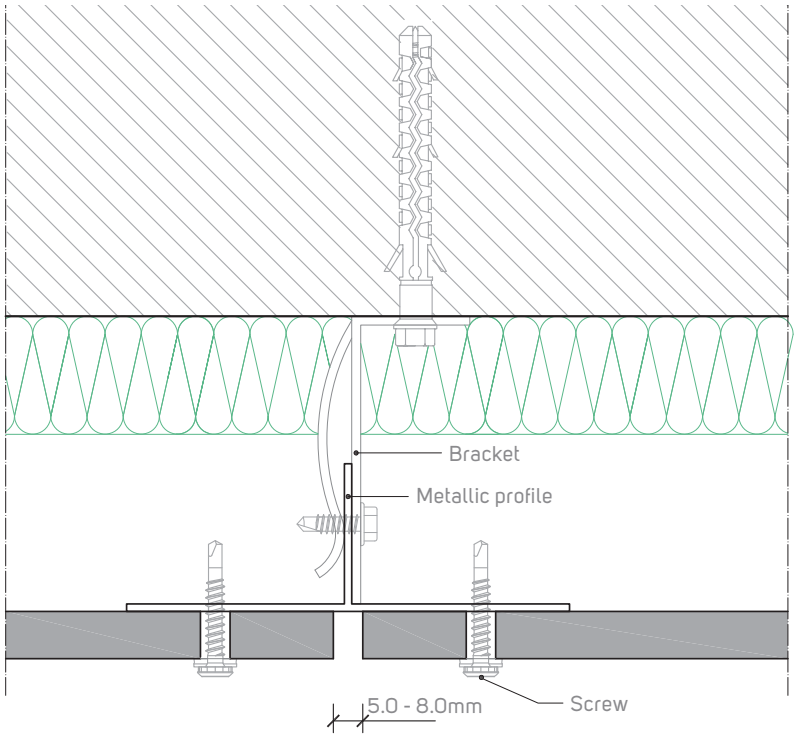
8.9 Vertical joint (horizontal section - steel)



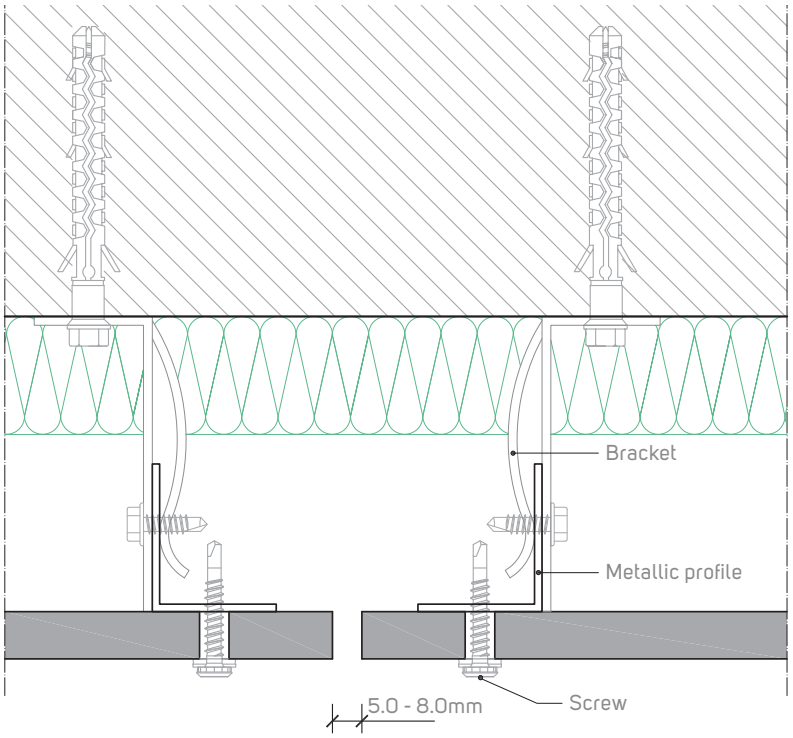
8.10 Vertical joint (horizontal section alternative - steel)



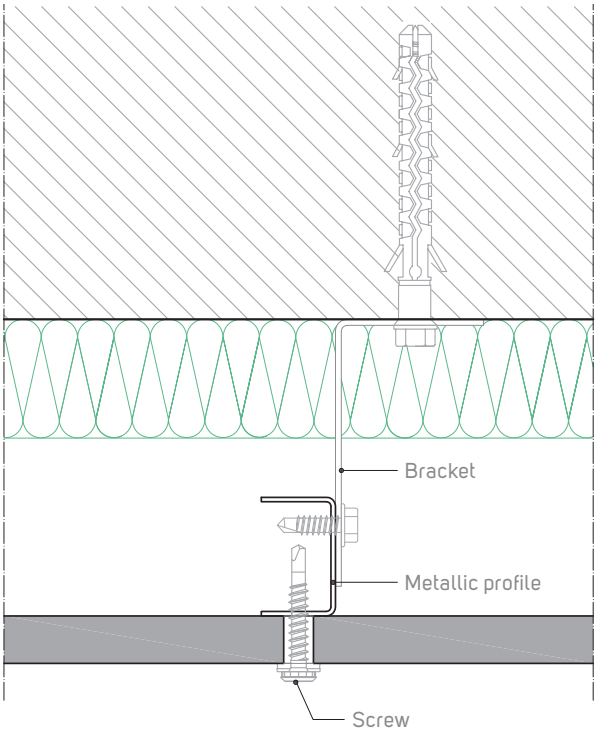
8.11 Vertical joint (horizontal section - aluminium)



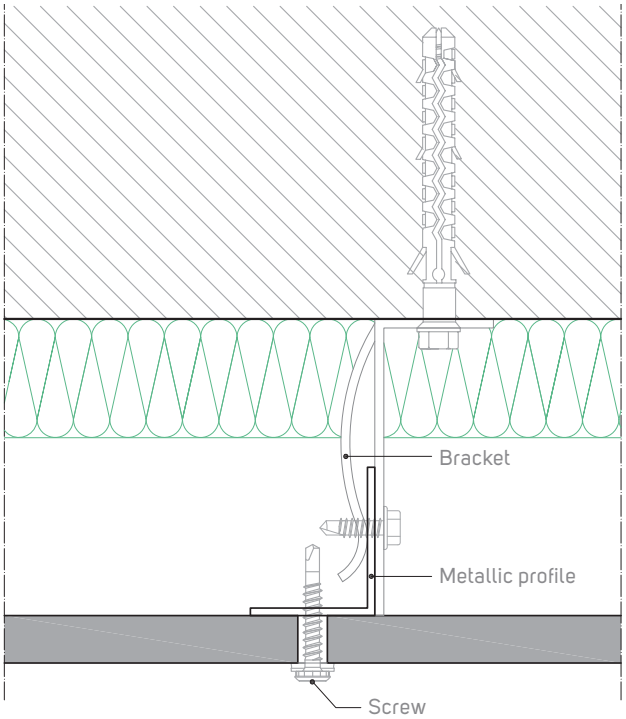
8.12 Vertical joint (horizontal section alternative - aluminium)



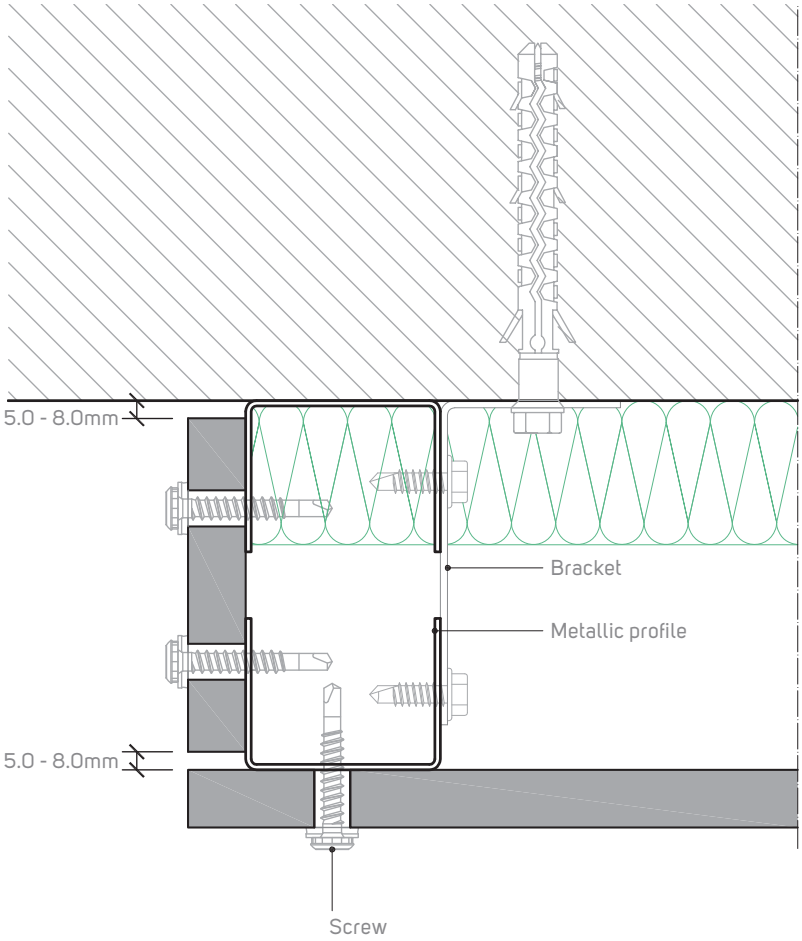
8.13 Horizontal section (board central zone - steel)



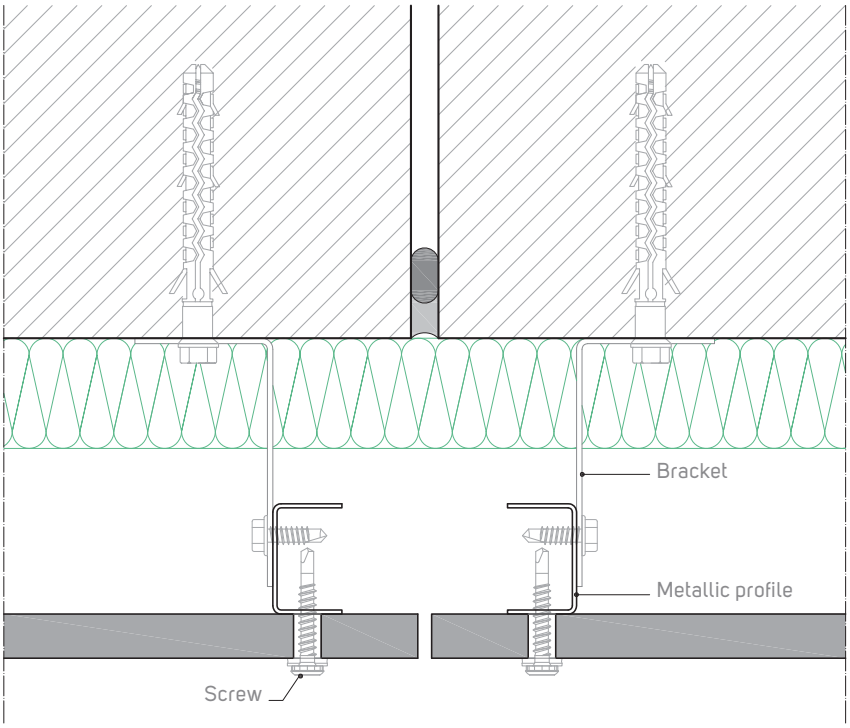
8.14 Horizontal section (board central zone - aluminium)



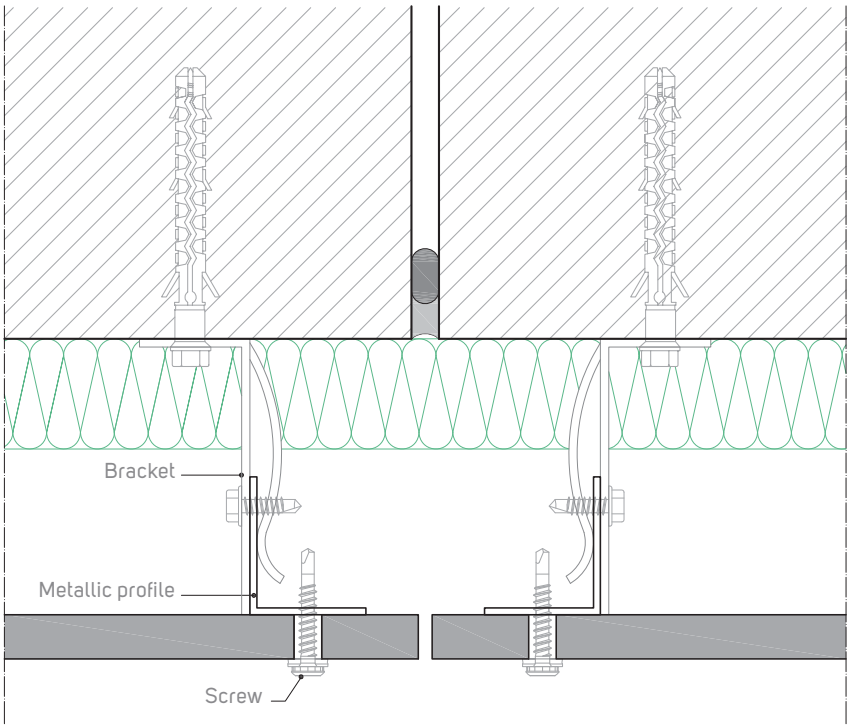
8.15 Lateral edge



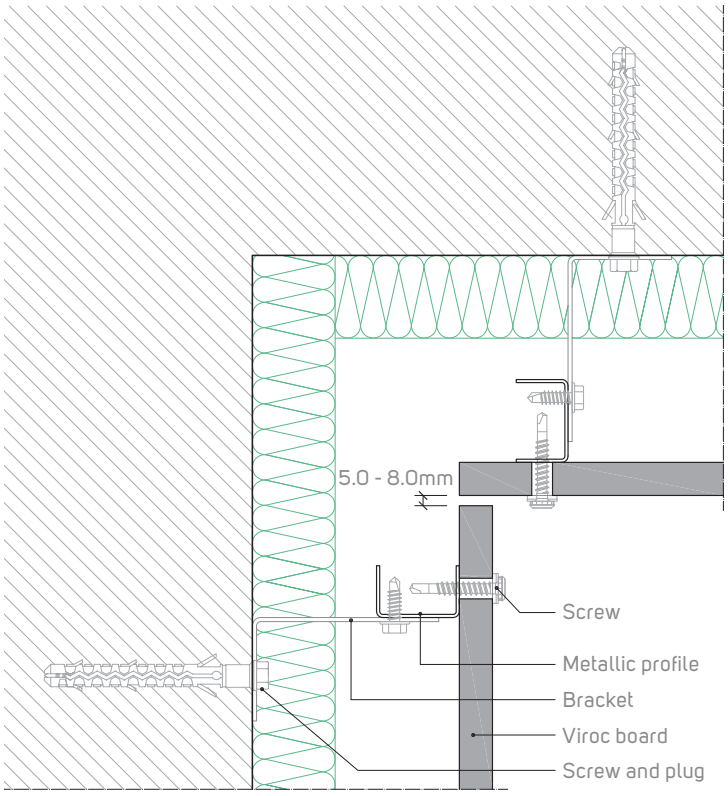
8.16 Expansion joint (steel)



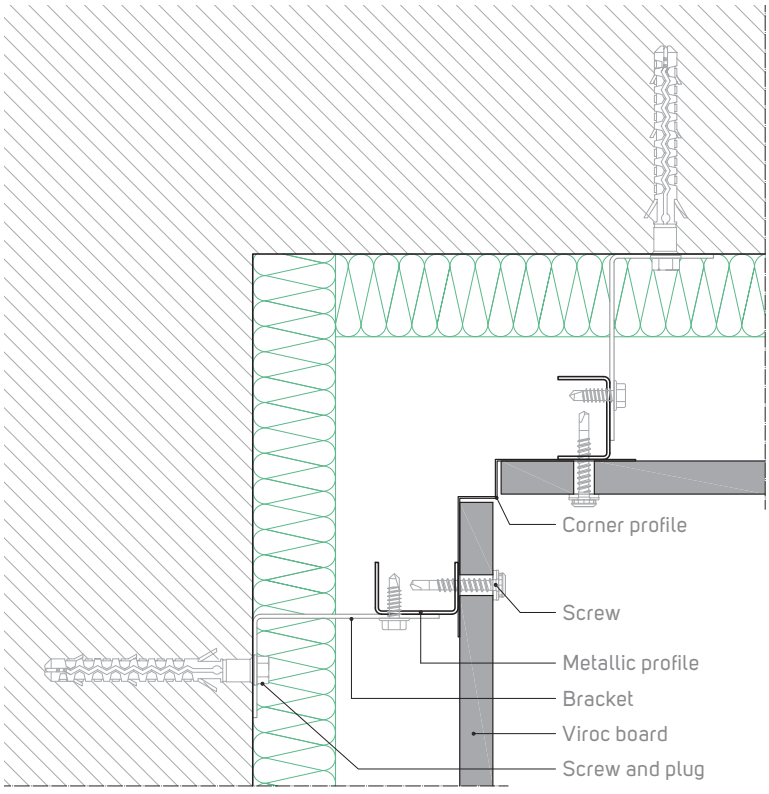
8.17 Expansion joint (aluminium)



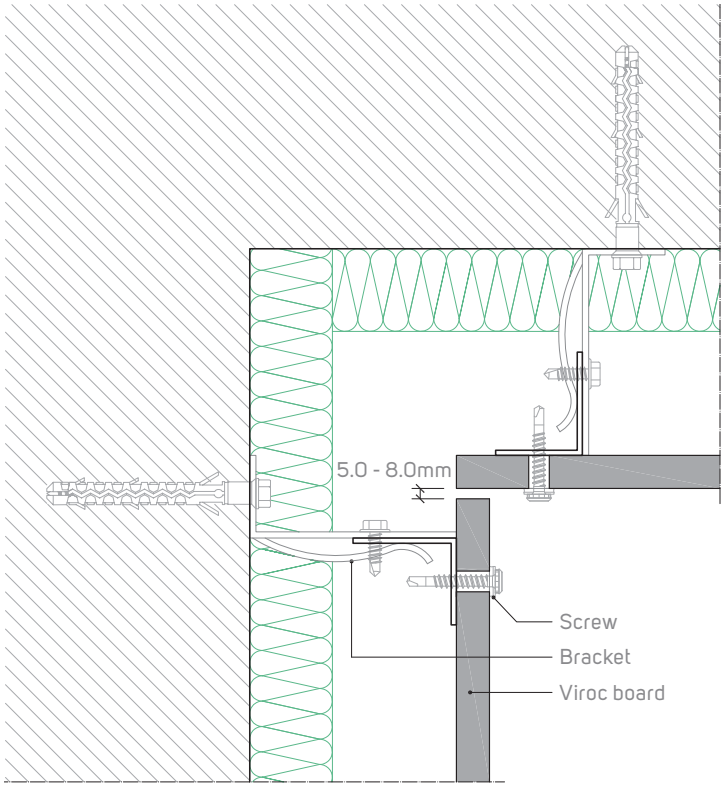
8.18 Interior angle (steel)



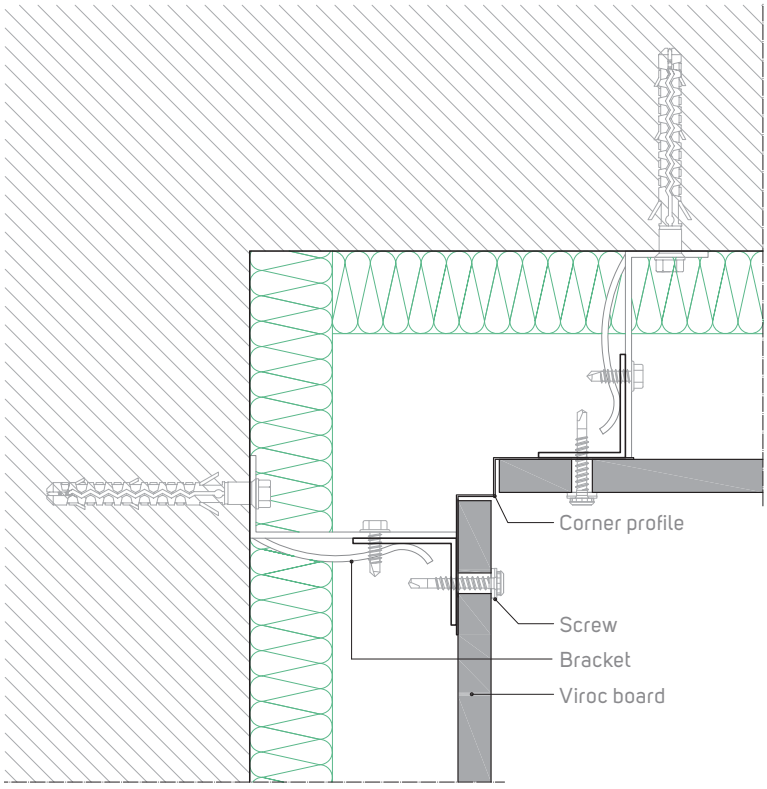
8.19 Interior angle (alternative with profile - aluminium)



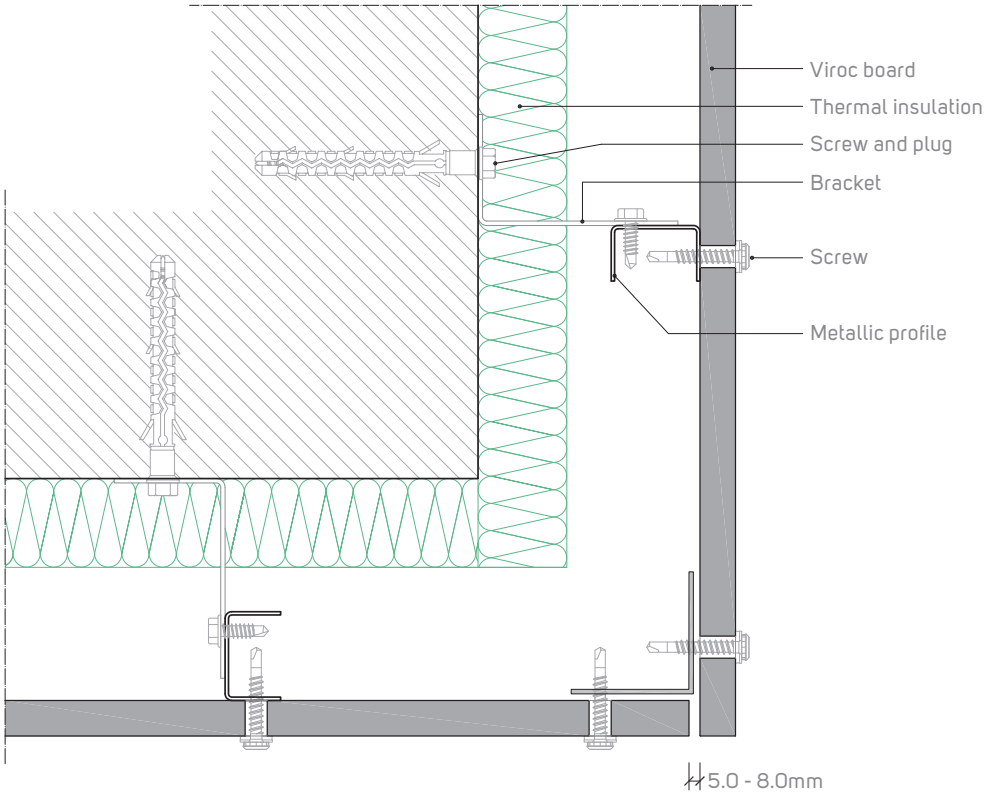
8.20 Interior angle (aluminium)



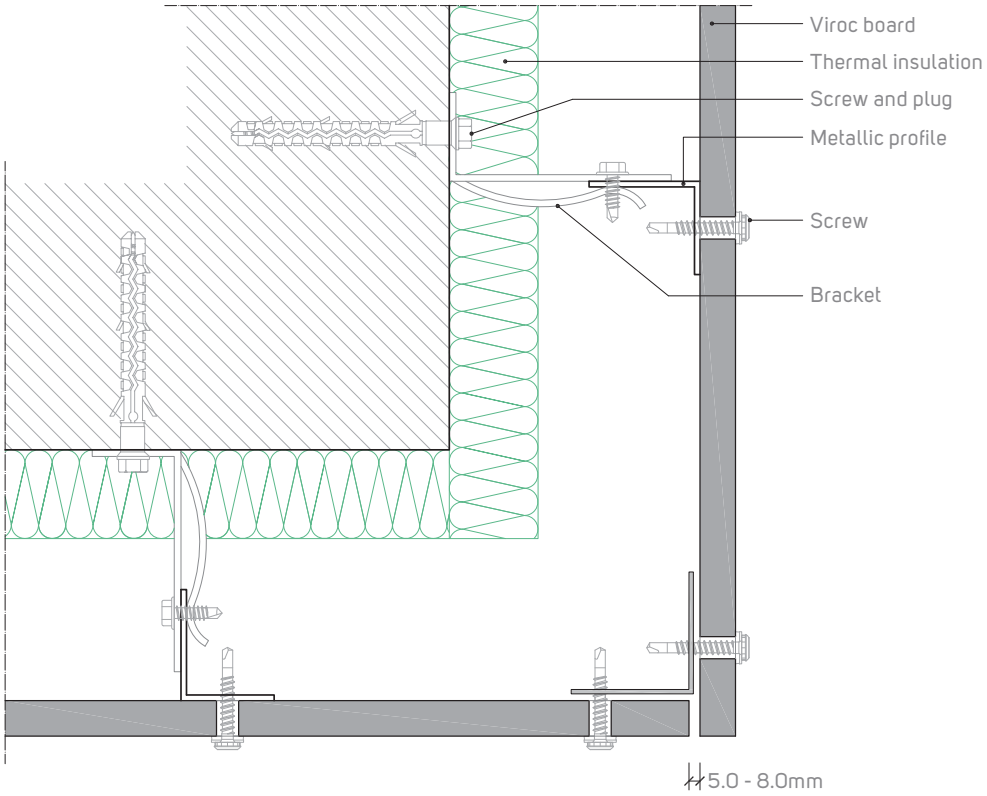
8.21 Interior angle (alternative with profile - aluminium)



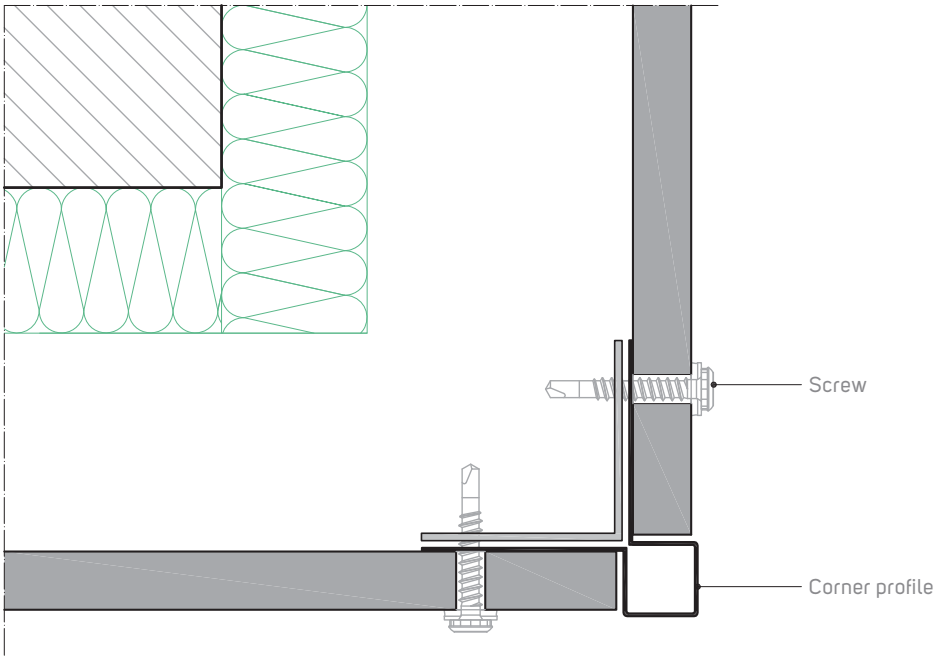
8.22 Exterior angle (horizontal section - steel)



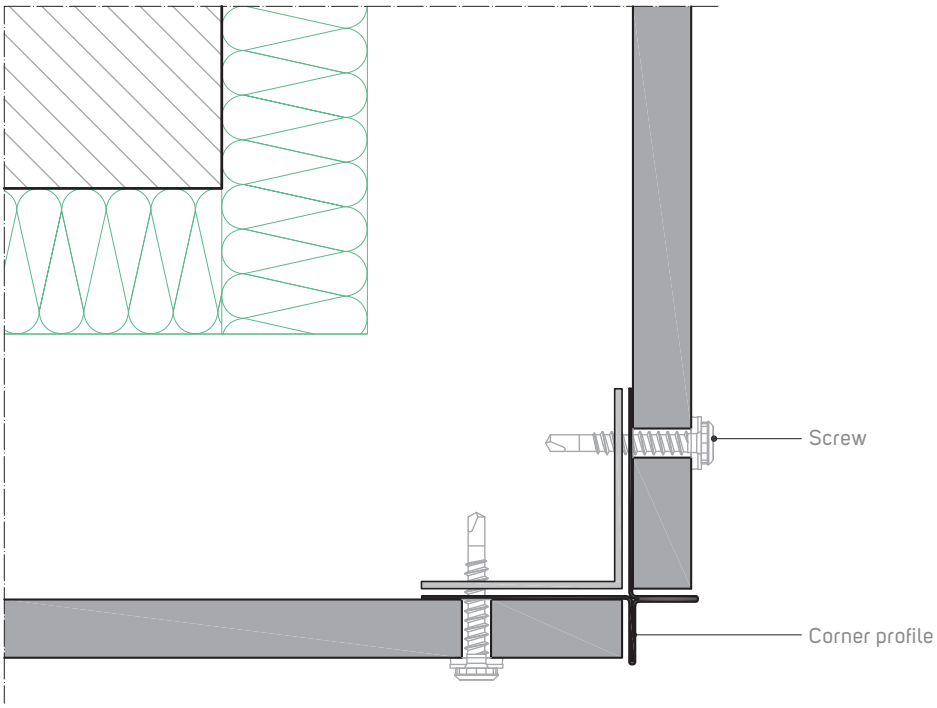
8.23 Exterior angle (horizontal section - aluminium)



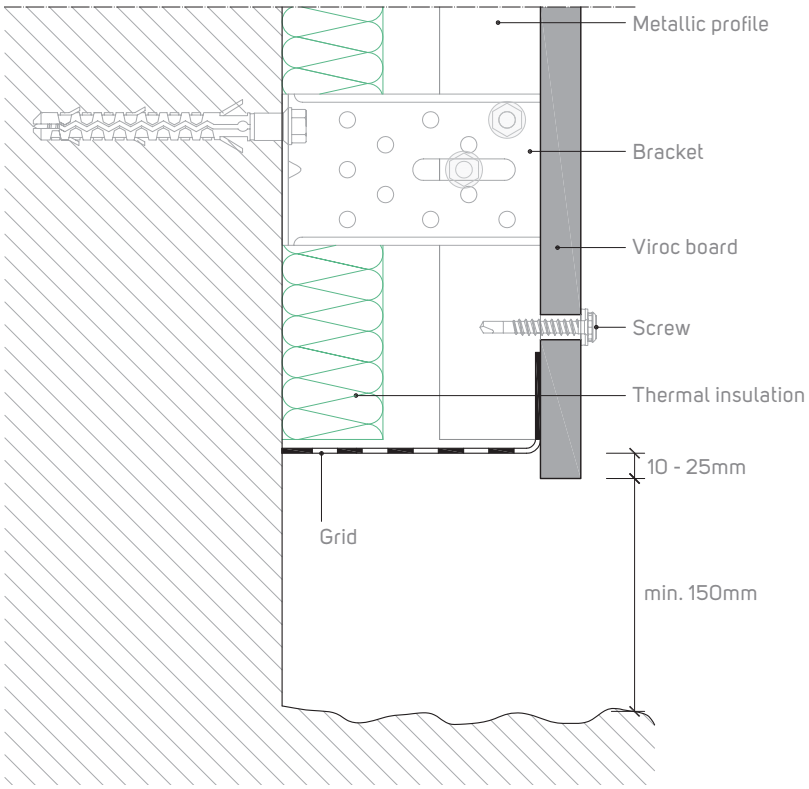
8.24 Exterior angle (horizontal section - alternative)



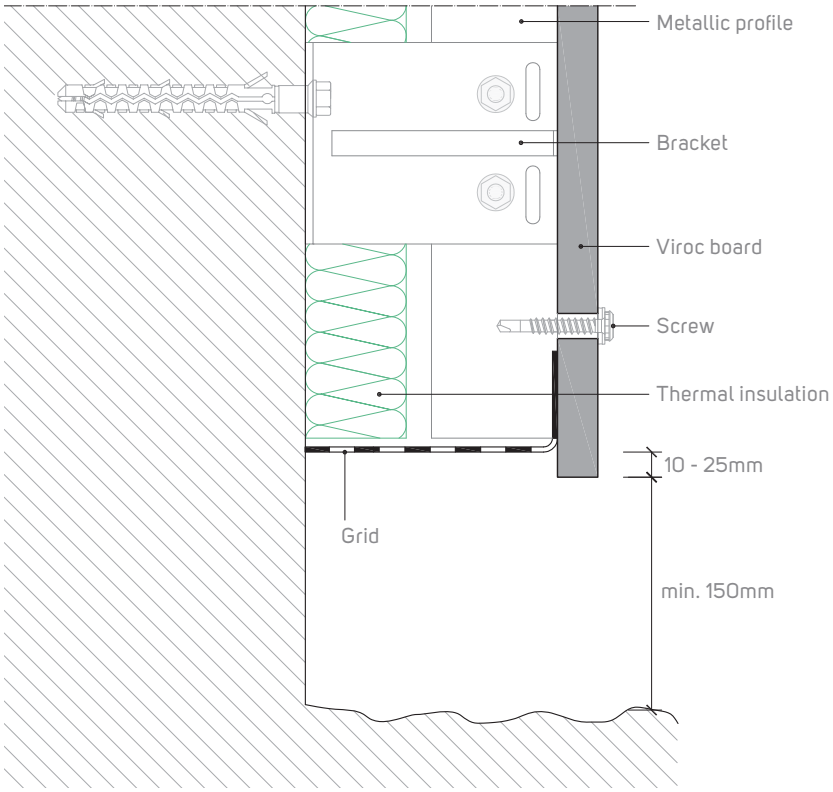
8.25 Exterior angle (horizontal section - alternative)



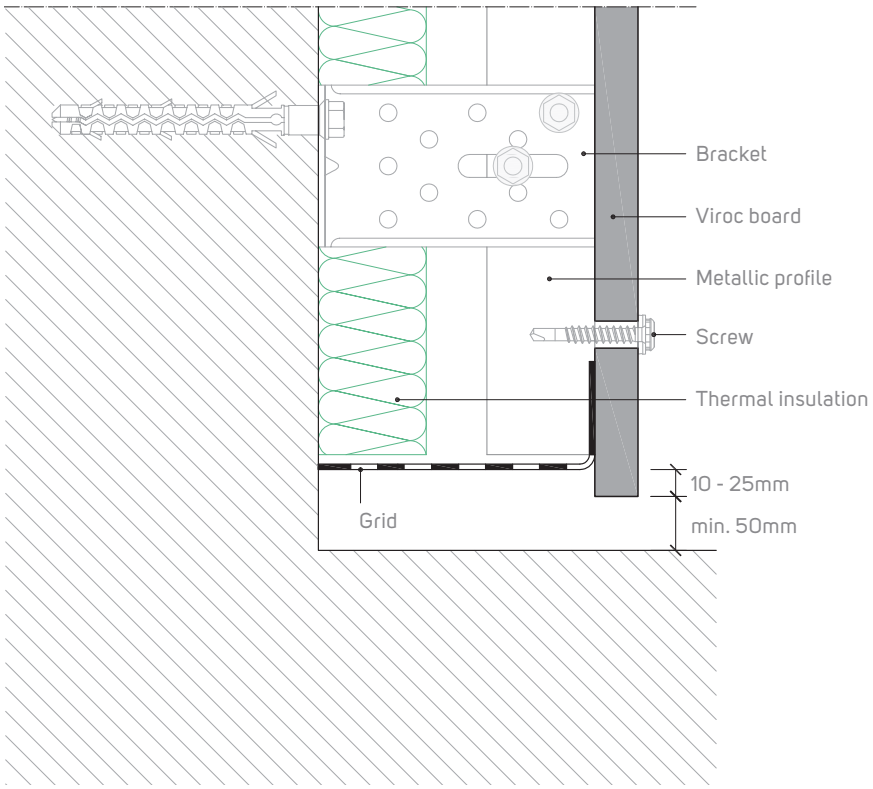
8.26 Cladding above soil without flooring (steel)



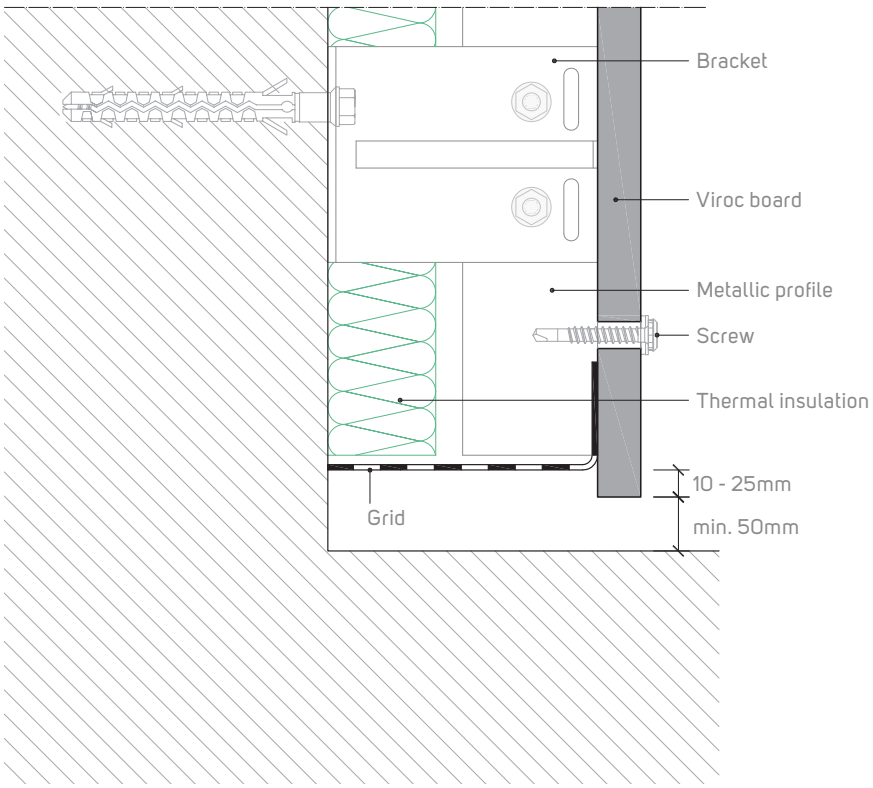
8.27 Cladding above soil without flooring (aluminium)



8.28 Cladding above soil with flooring (steel)

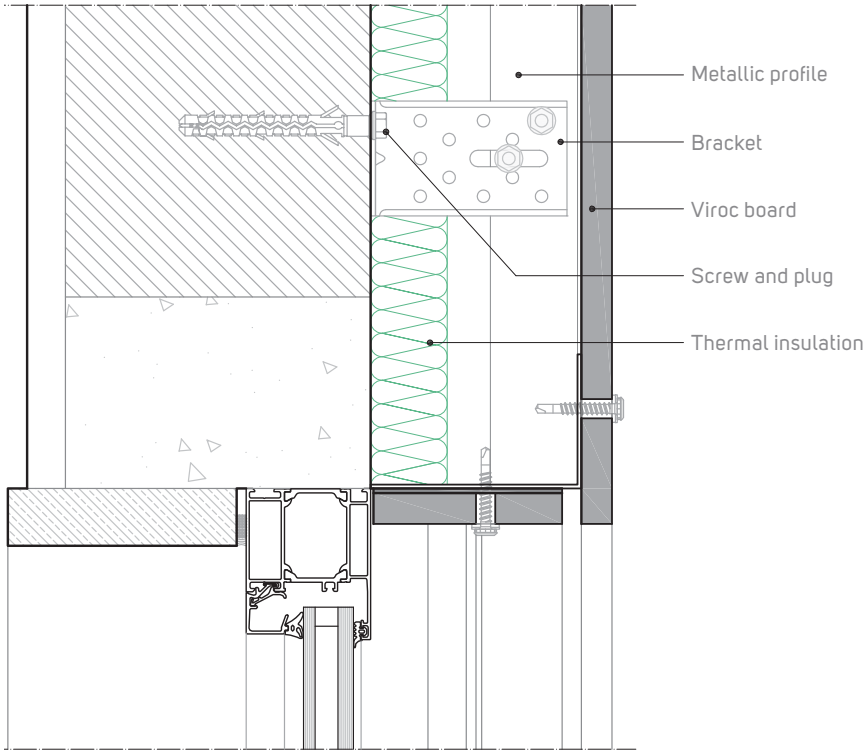


8.29 Cladding above soil with flooring (aluminium)

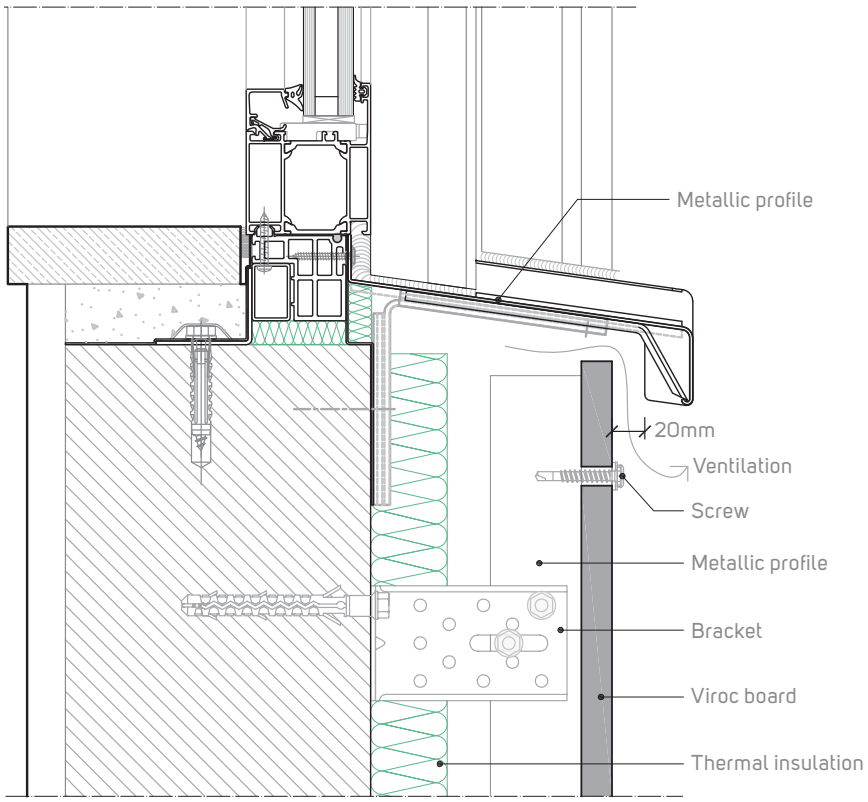


8.30 Window lintels and sills (steel)

Lintel section

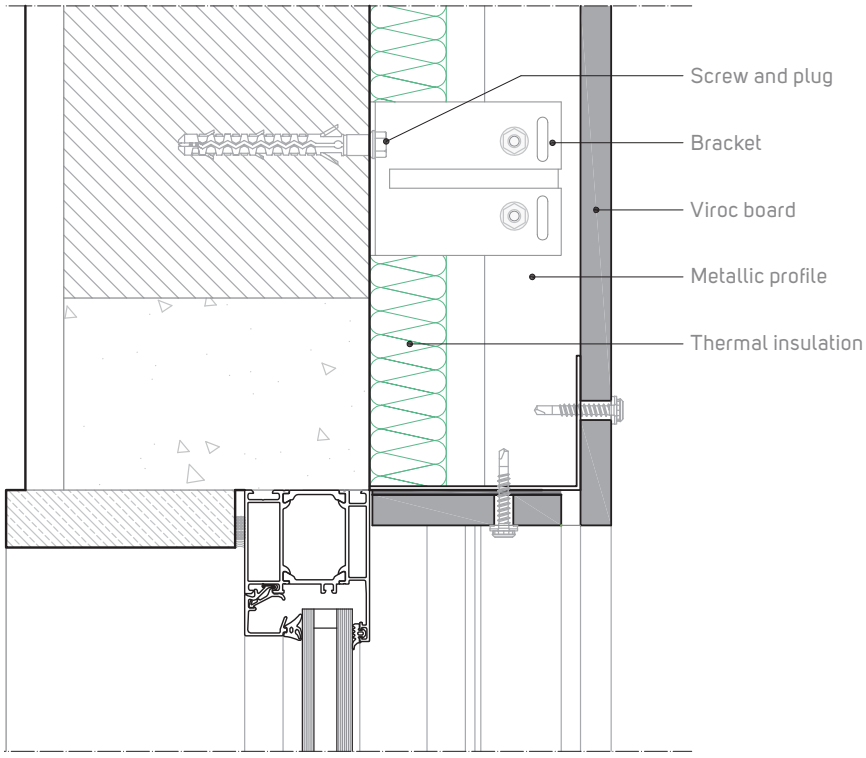


Sills section

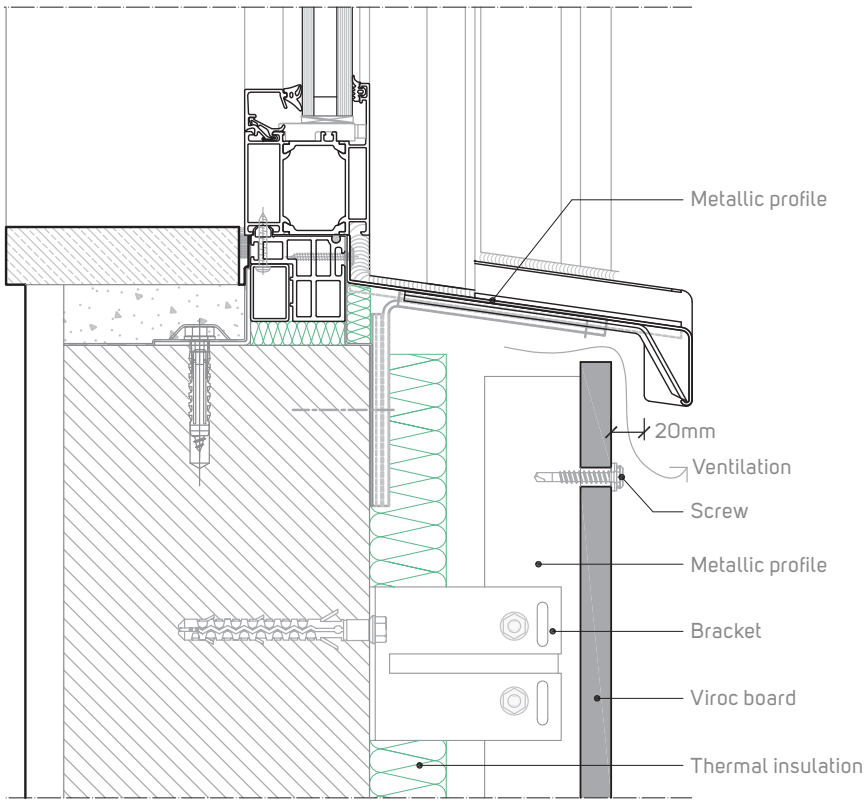


8.31 Window lintels and sills (aluminium)

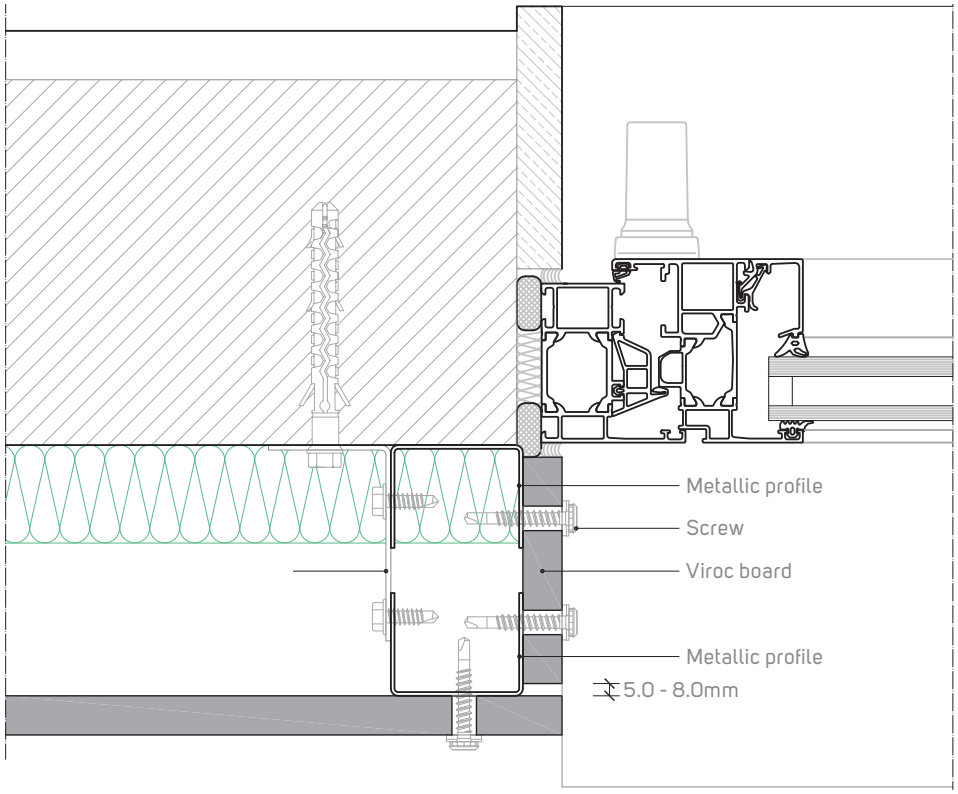
Lintel section



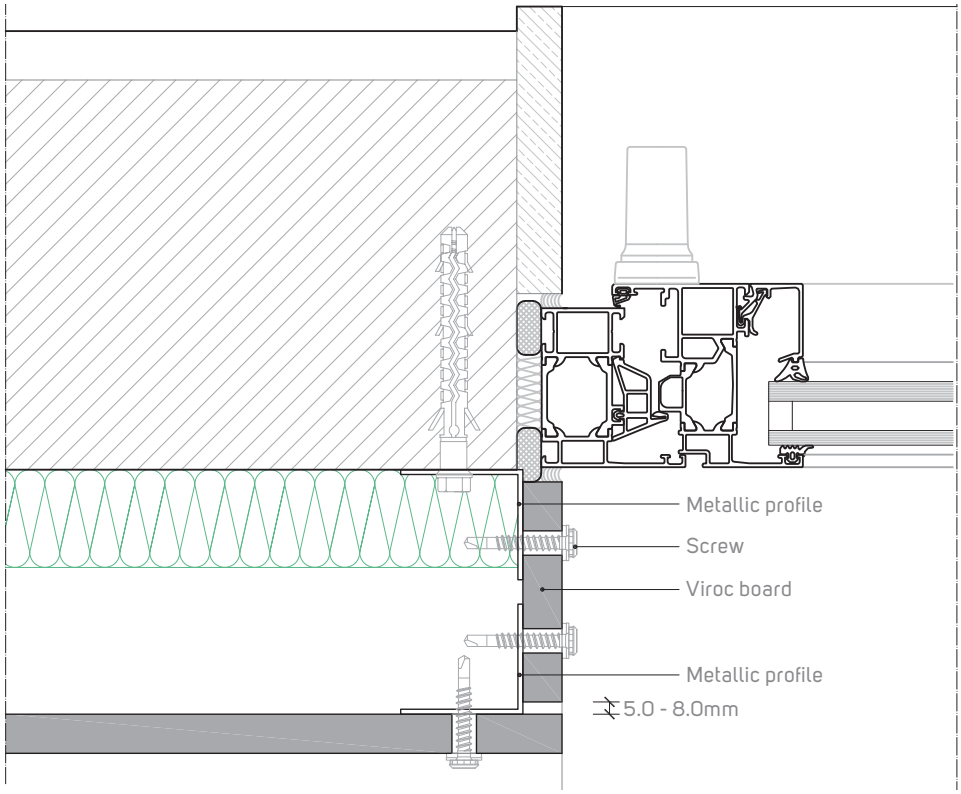
Sills section



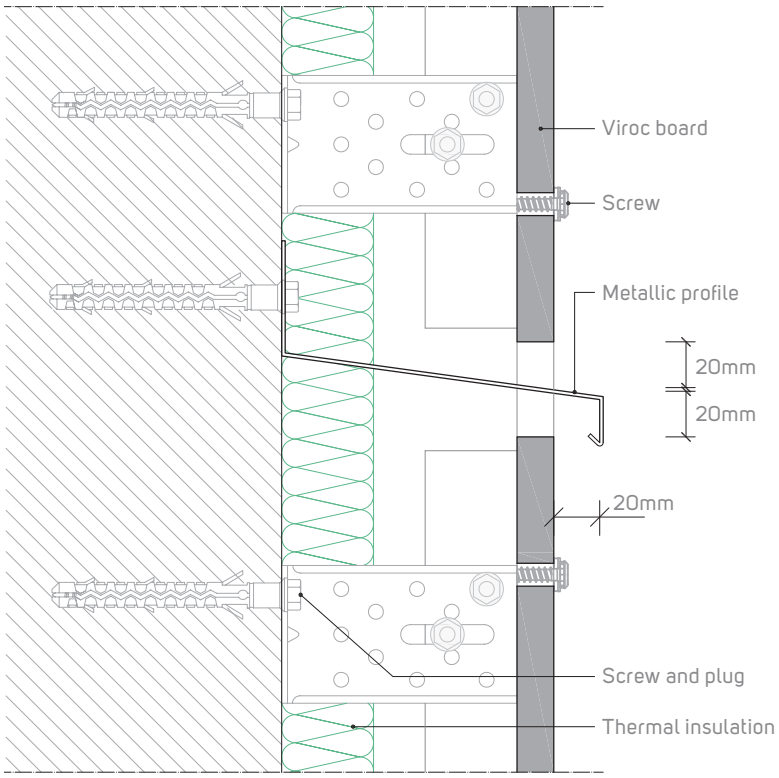
8.32 Jamb board (steel)



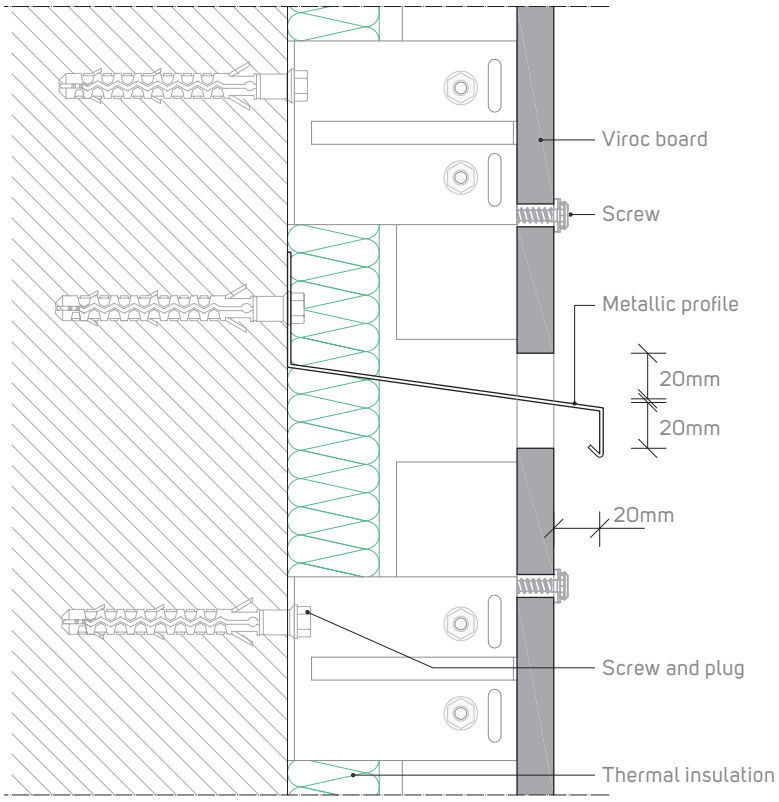
8.33 Jamb board (aluminium)



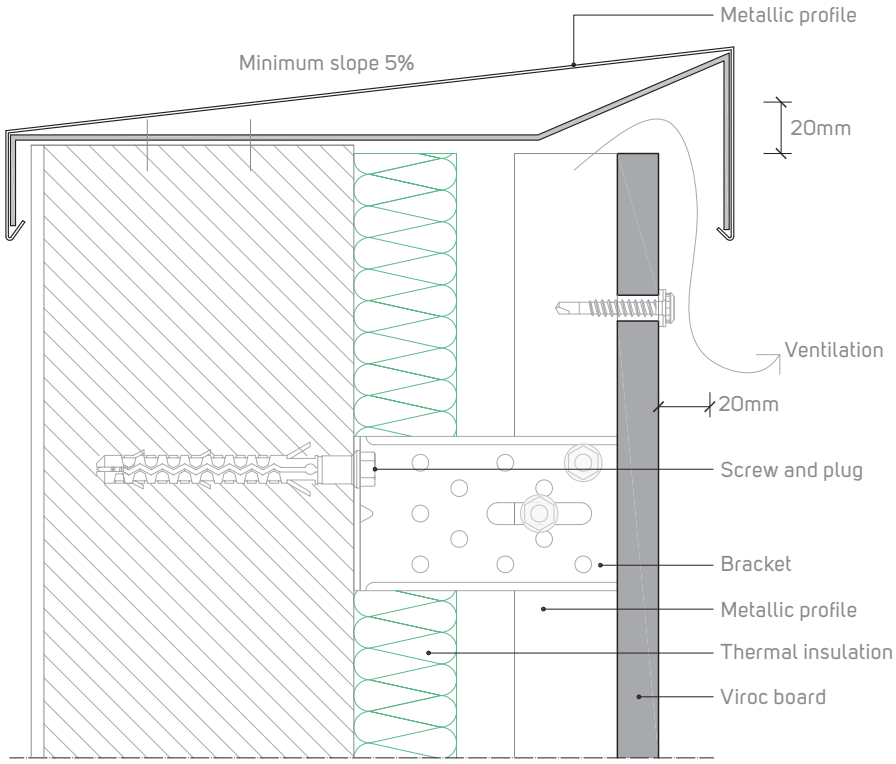
8.34 Horizontal ventilation compartment (steel)



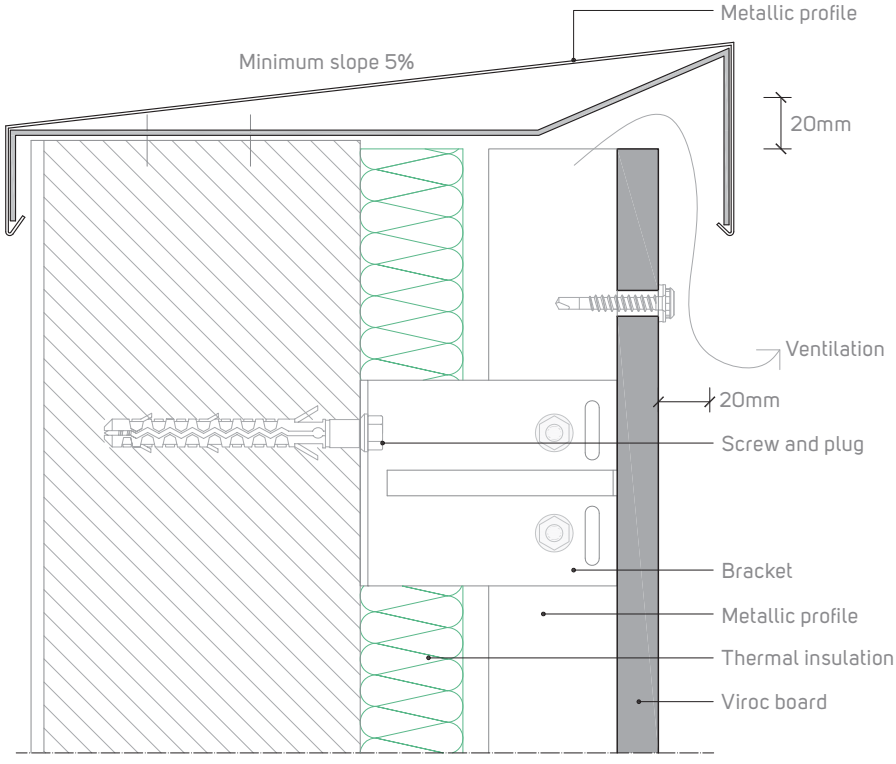
8.35 Horizontal ventilation compartment (aluminium)



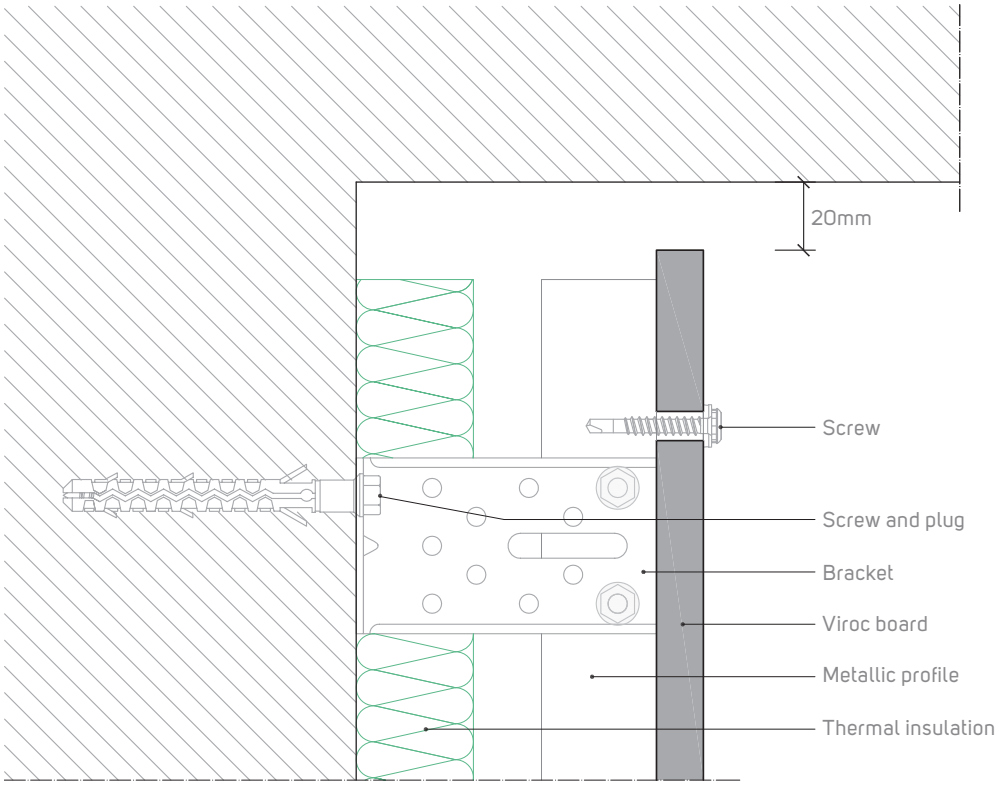
8.36 Covering (steel)



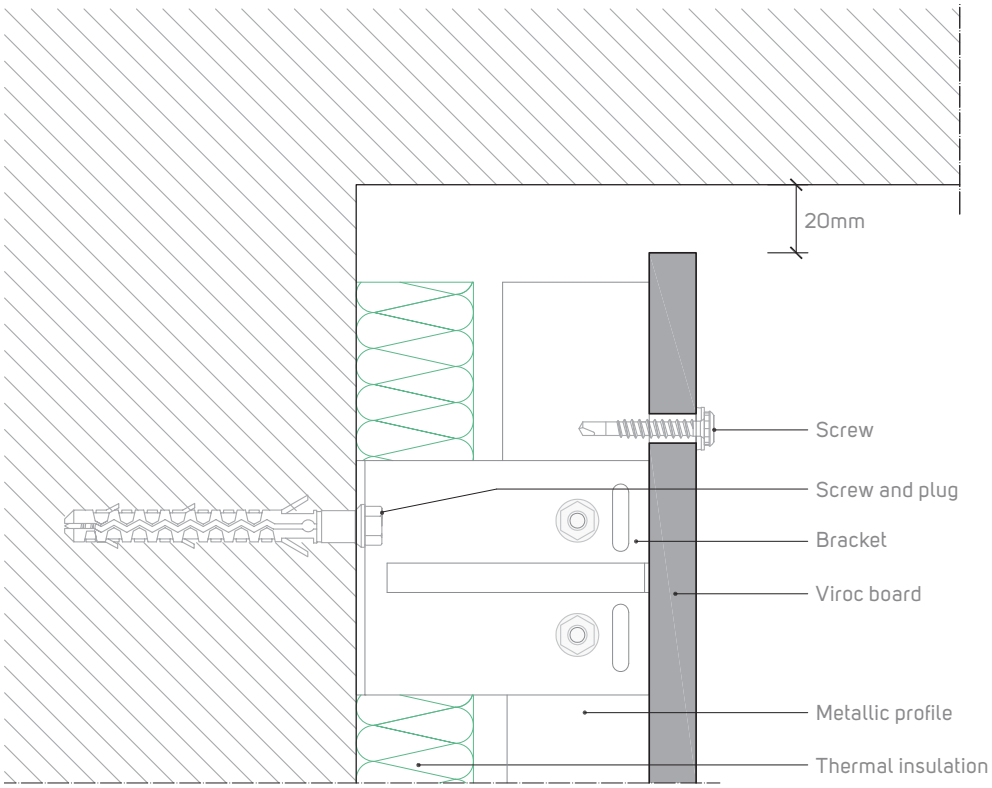
8.37 Covering (aluminium)



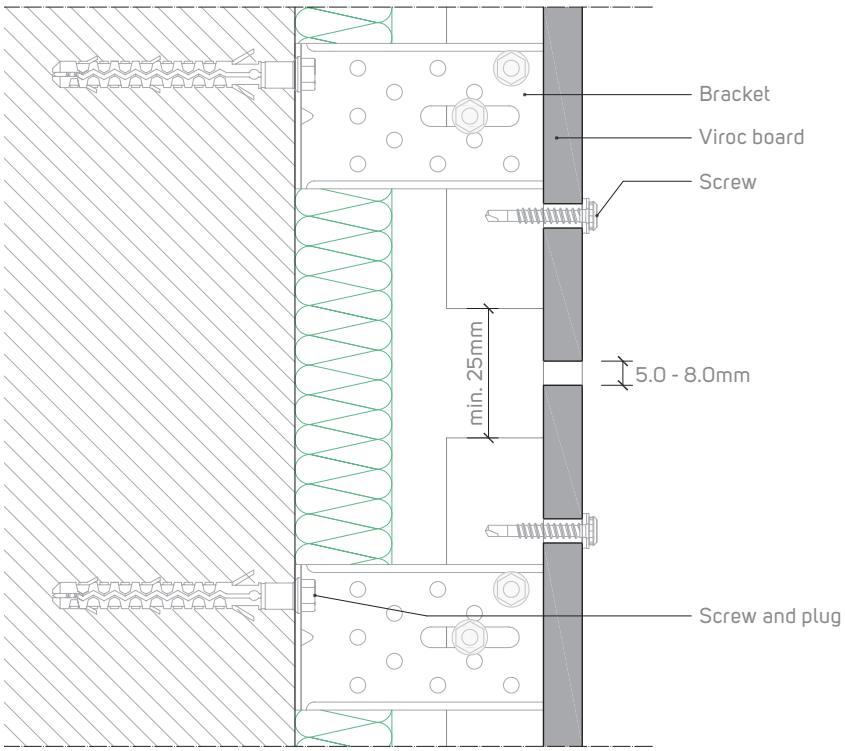
8.38 Board top edge (steel)



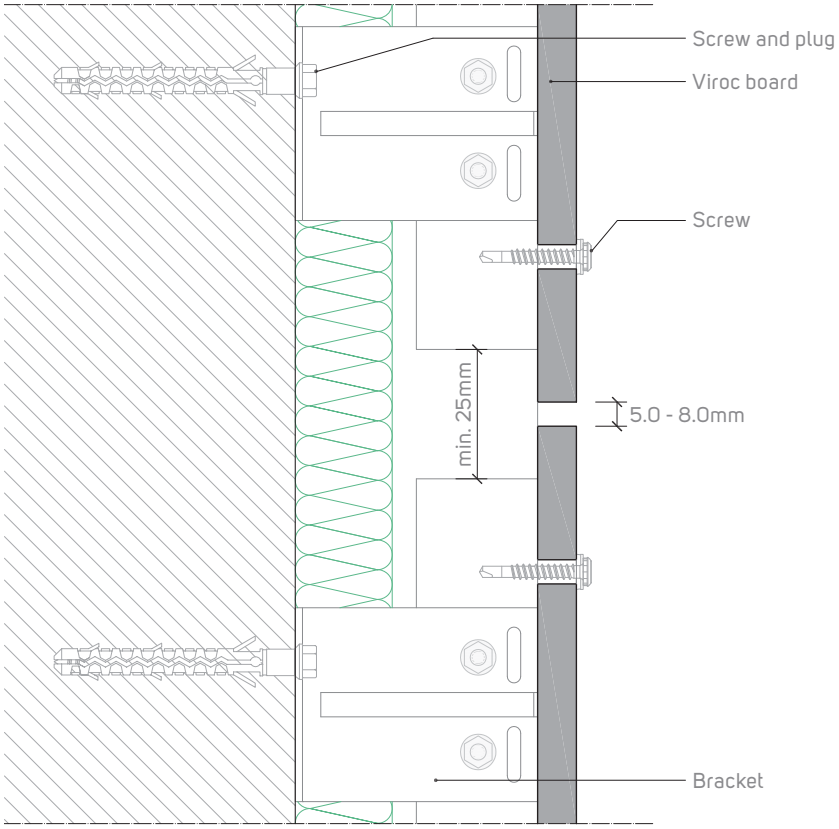
8.39 Board top edge (aluminium)



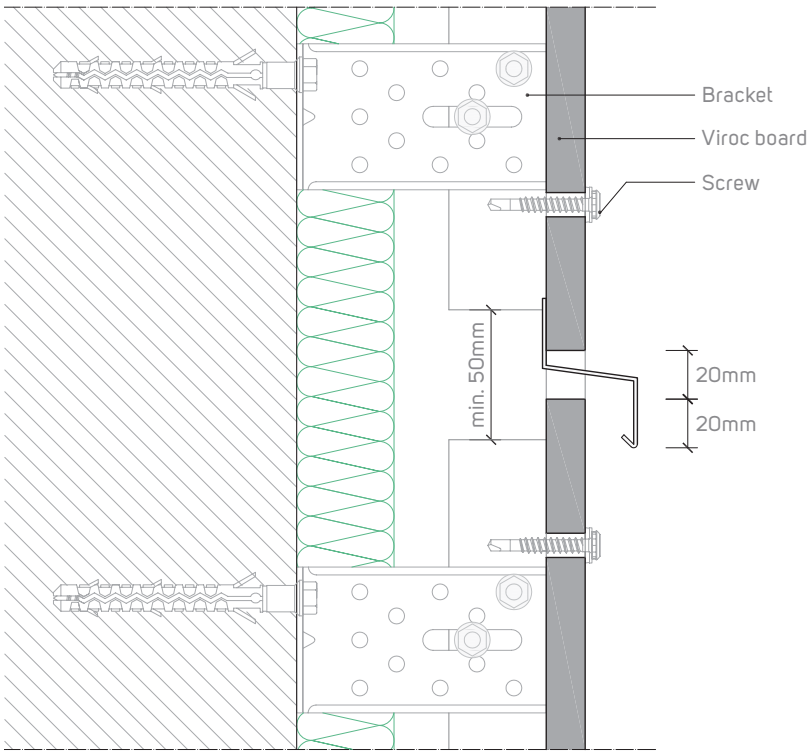
8.40 Structure sectioning (steel profiles with length ≤ 6m)



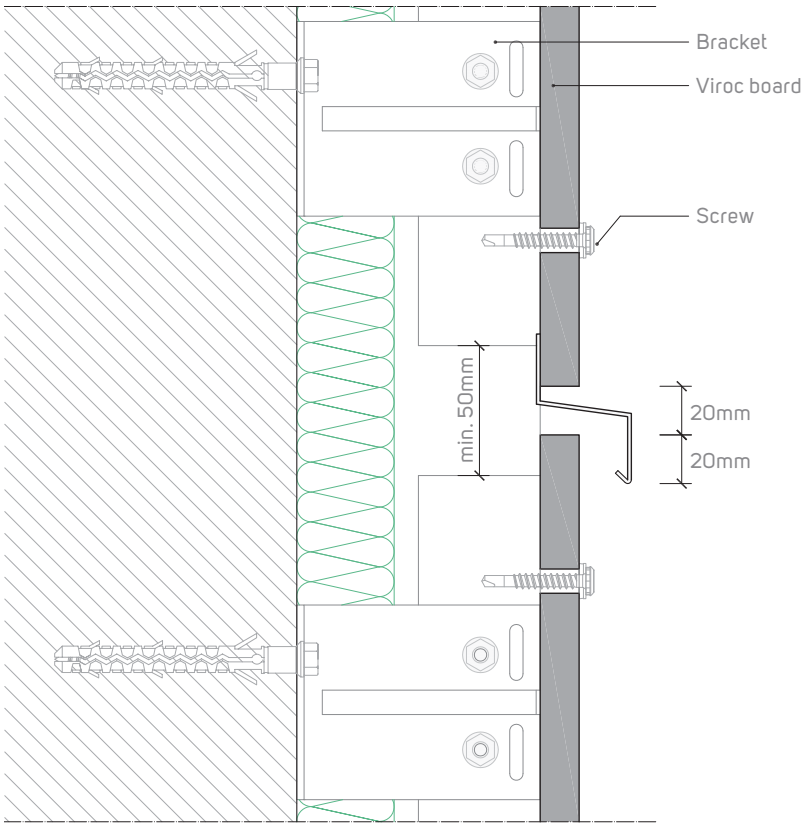
8.41 Structure sectioning (aluminium profiles with length ≤ 6m)



8.42 Structure sectioning (steel profiles with length > 6m)

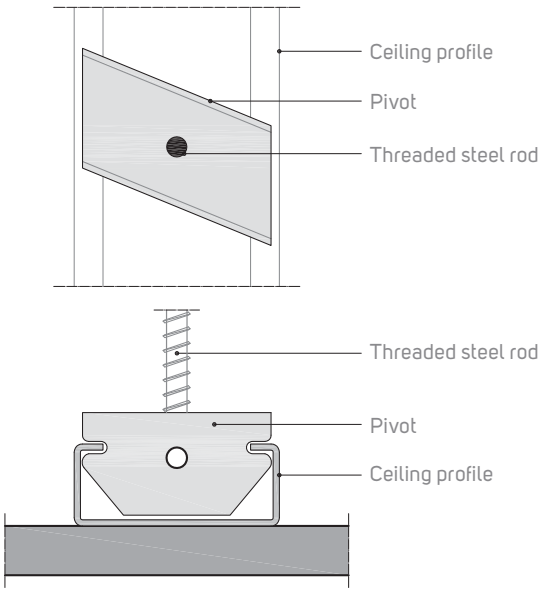


8.43 Structure sectioning (aluminium profiles with length > 6m)

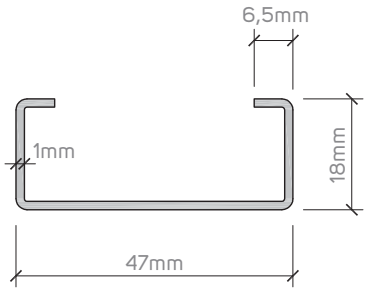


8.44 Steel ceiling profiles

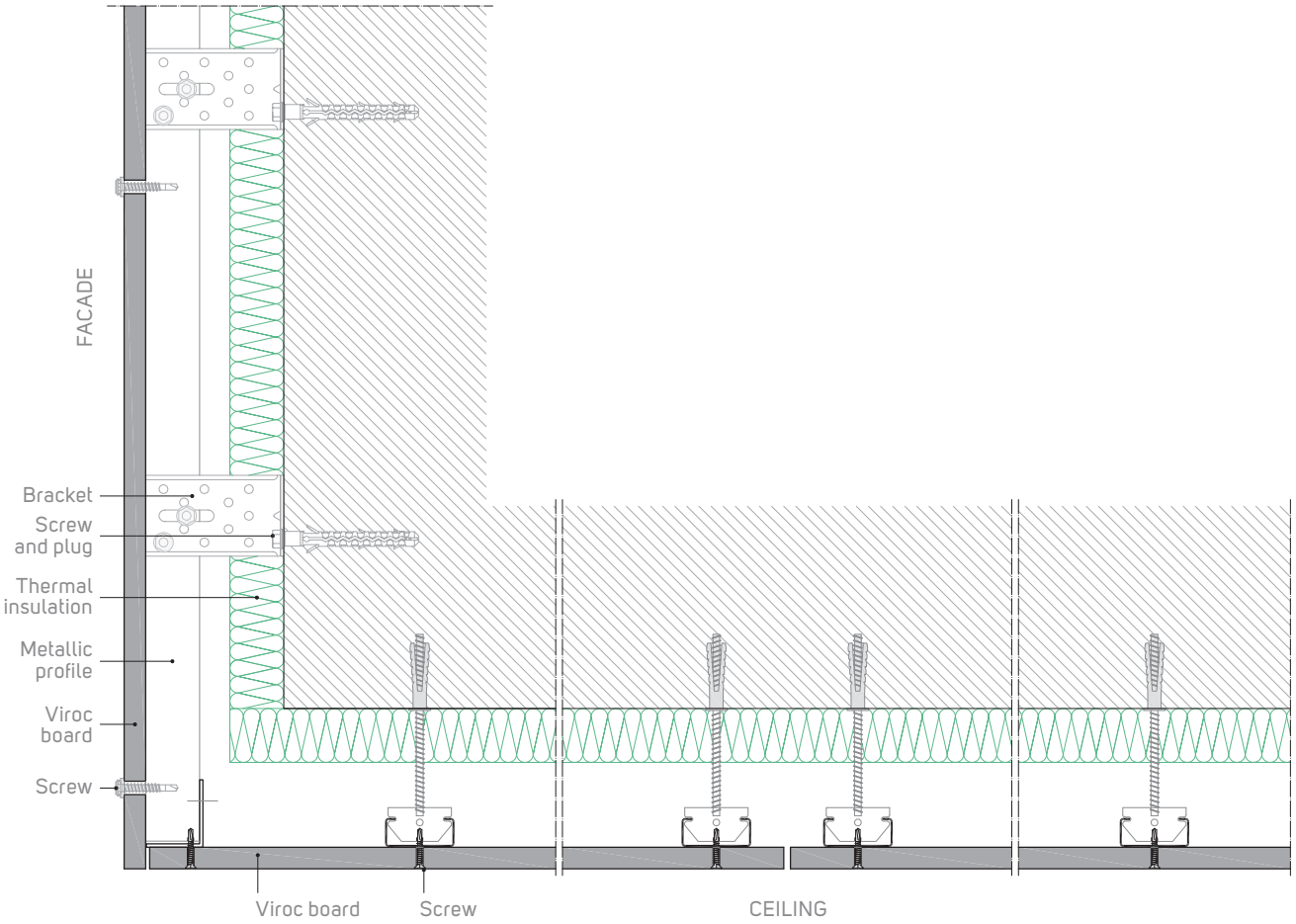
Pivot detail



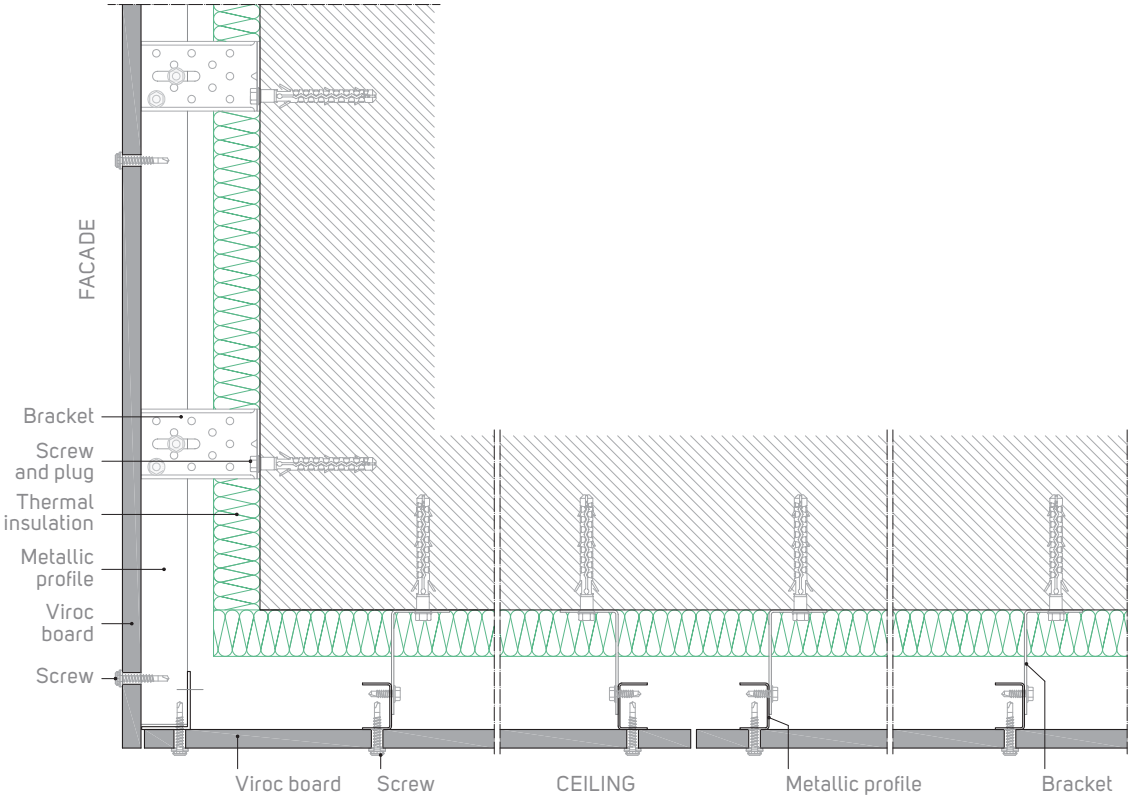
Ceiling profile



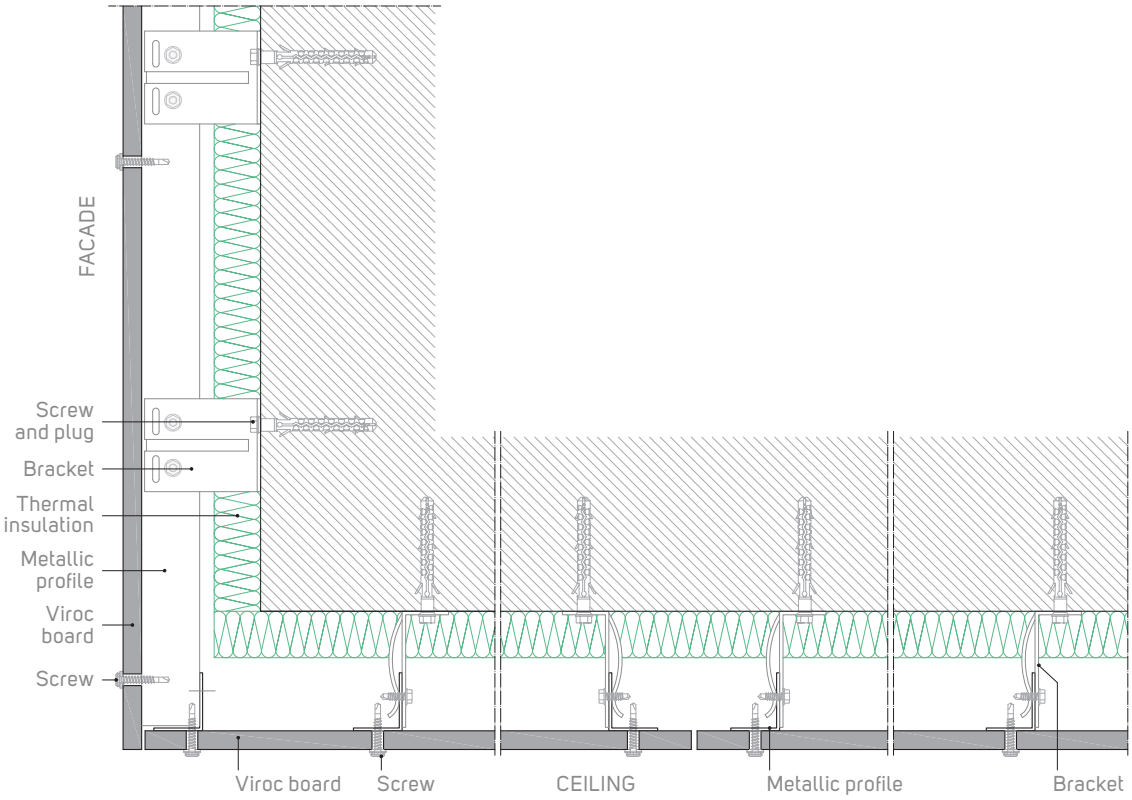
8.45 Facade-ceiling connection detail (steel)



8.46 Facade-ceiling connection detail (steel variant)



8.47 Facade-ceiling connection detail (aluminium)



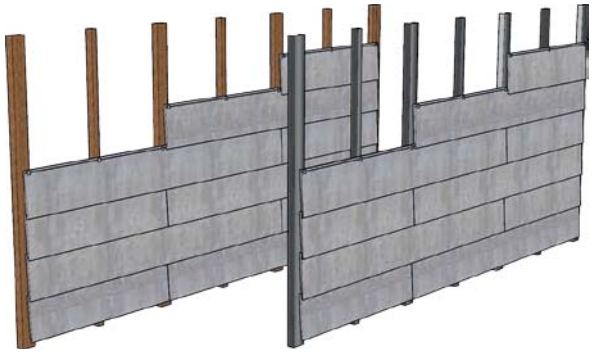
Application: Outdoors

Support structure: Wood or Metal

Fastening: Hidden with screws

Thickness: 15 mm (9/16")

Board maximum size:
2440 x 300 mm (96" x 11,81")



1. Description

Viroc is a cement bonded particle board. It is a composite material, composed by a compressed and dry mixture of pine wood particles and cement.
Its appearance is not homogeneous. A natural characteristic of the product is to have patches of various shades.
The Viroc panel is produced in different colours.

2. Relative humidity effect

Viroc boards have small size variations due to the air relative humidity.
In situations of extreme humidity and temperature amplitude, the expected maximum size variation of the board would be +1.0‰ to -3.0‰.
The fastening system near the edges will have to take into account those size variations.

3. Application Conditions

Before installation, the board must be exposed for 48 hours to the relative humidity of the location where it will be applied and should be left in a dry location out of direct sunlight.
It is the installer's responsibility to check the support structure conditions (distance between supports and respective width) for the correct application.

4. Support structure

Treated dry pine beams or metallic profiles of galvanized steel and aluminum.
The structure that will support Viroc boards must be aligned and leveled and the board cannot be warped.
Keep the distance between the structural elements as further described.

5. Fastening

Viroclin boards are applied from bottom upwards by successive fittings with partial overlap.
The board bottom side has a groove which fits inside the existing shims of the previous layer.
On the board upper side, screws are placed with shims to fix the boards to the structure and support the next layer.
On the first layer an initial shim is used, providing an equal inclination of all boards.
The vertical joints of two consecutive layers should not match. Those joints are always located on the widest structural elements and should have 3mm (1/8"), minimum.

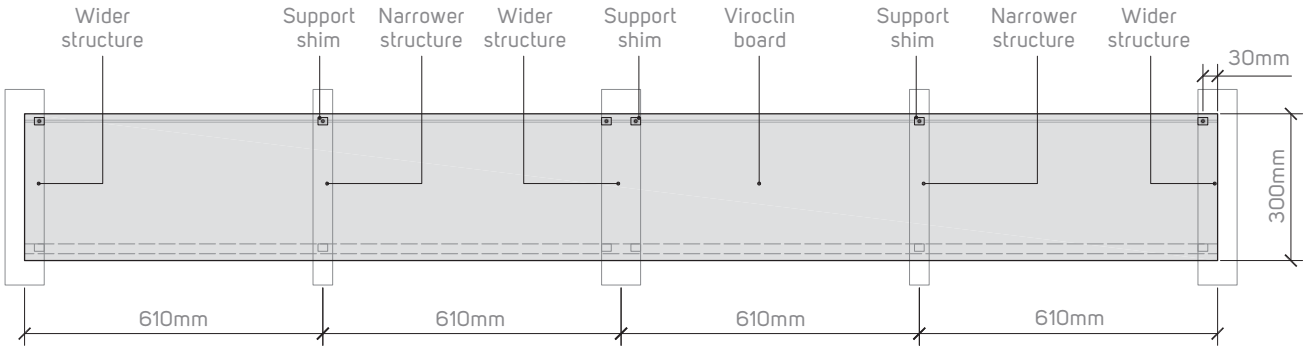
6. Surface treatment

Viroc boards must be protected with paint or varnish. Before applying varnish the panel surfaces must be completely clean and dry, free from grease, dust or surface salts. The surface should be cleaned by polishing with a cleaning disc.
Viroc S.A. has suitable cleaning discs available that can be supplied on request.
Viroclin boards are supplied with a coat of primer on the hidden face. The other coats need only to be applied on exposed face and edges.
For more information, see the application of paints and varnishes procedures.

Notes & recommendations

Please consult Viroc Product Data Sheet to know the board tolerances and properties.
Always check standard safety procedures and local legislation requirements.
Please contact the finishing suppliers for application procedures.

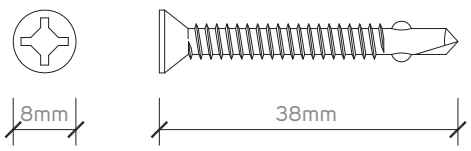
7. Fastening system



8. Screws

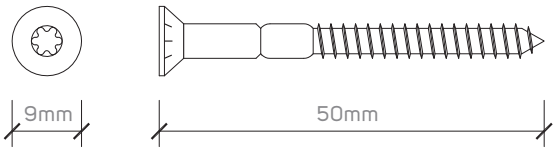
Screw for steel structure

CLIN EMET D8-4.2x38

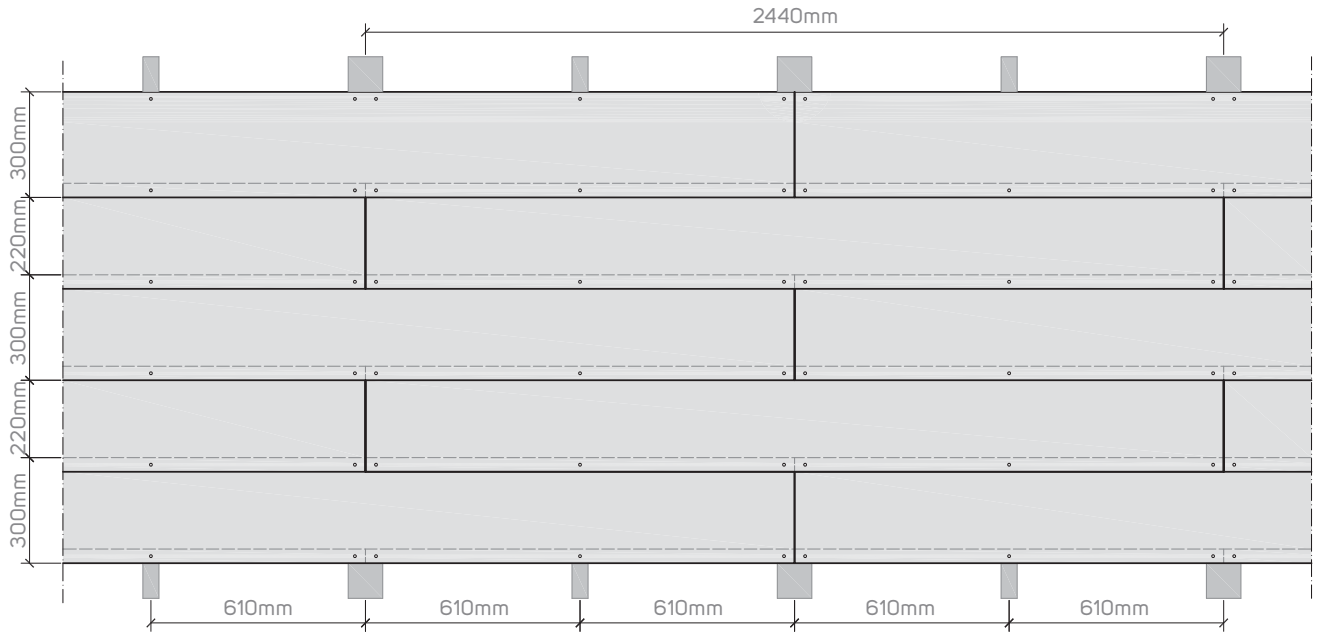


Screw for wood structure

CLIN EMAD D9-4.5x50



9. Support structure

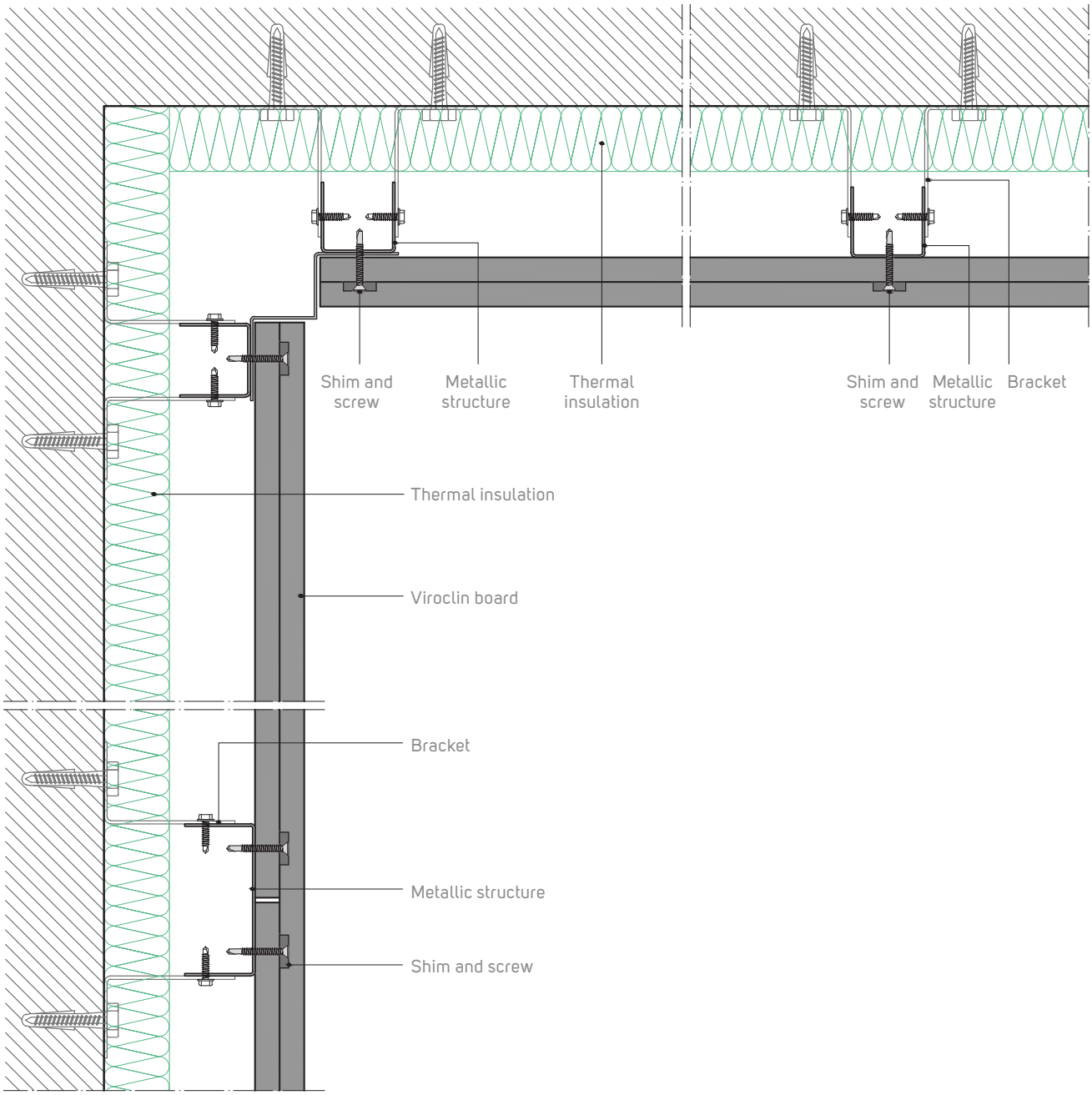


Wood structure: The wood beams must be, at least, Class C18 of resistance according to the Standard EN338 and durability corresponding to Class 2 or 3 according to Standard EN335-2.

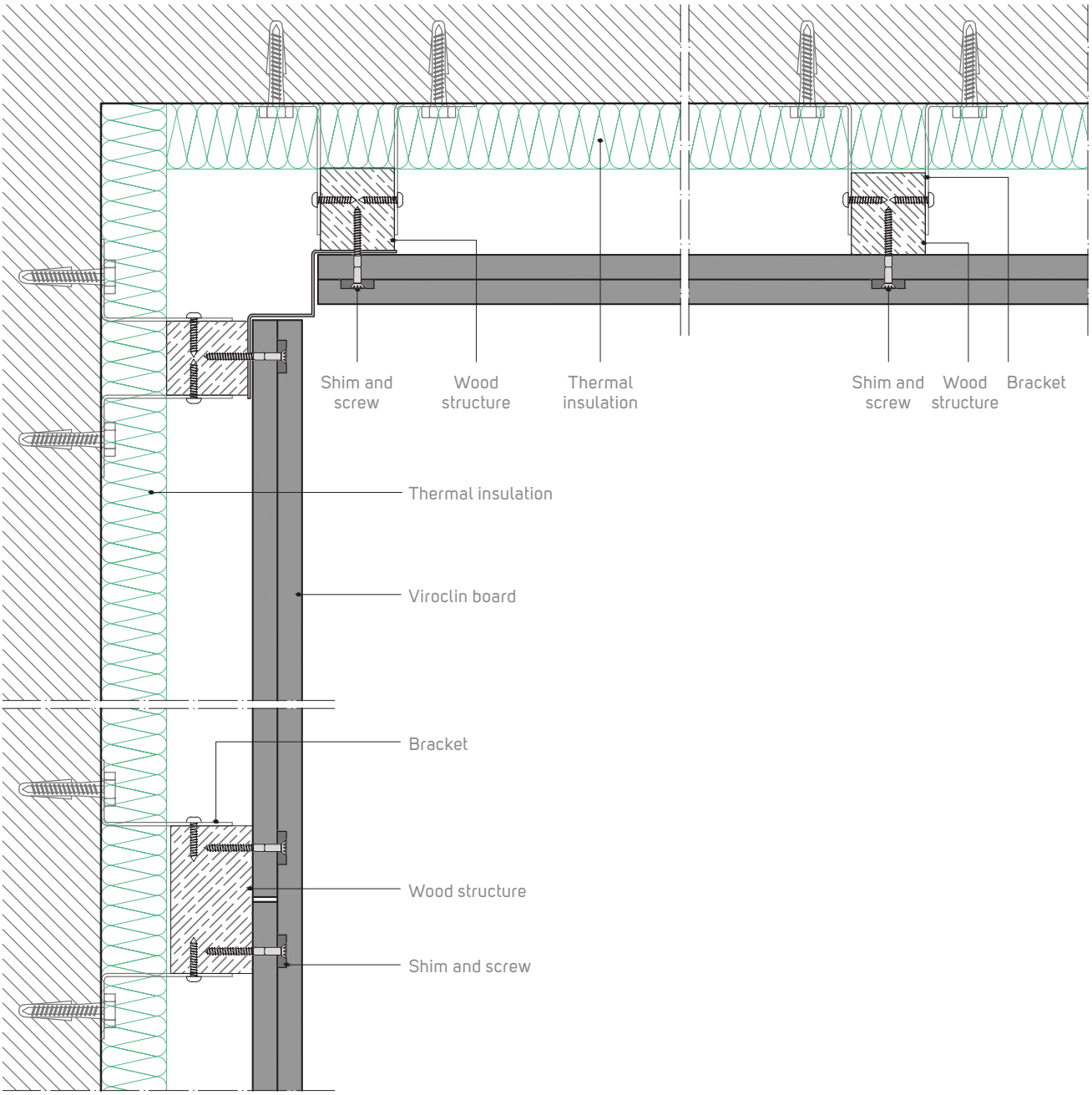
Steel structure: Minimum thickness of 1.5mm, galvanized according to Standard EN 10326 Class Z275 minimum.

Aluminium structure: Minimum thickness of 2.5mm, alloy 6060-T5 or 6063 according to Standard EN 573.

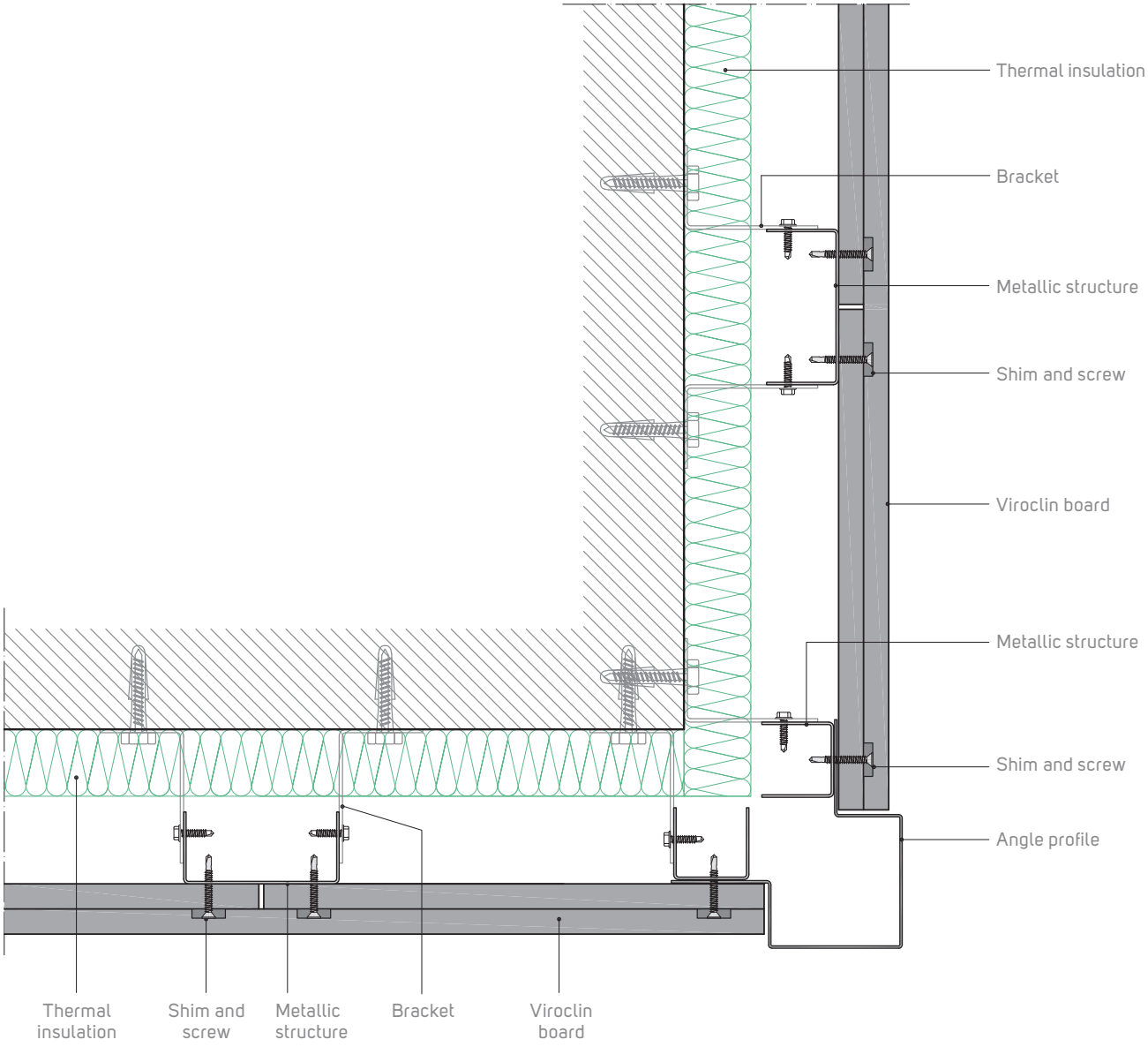
10. Interior angle (steel structure)



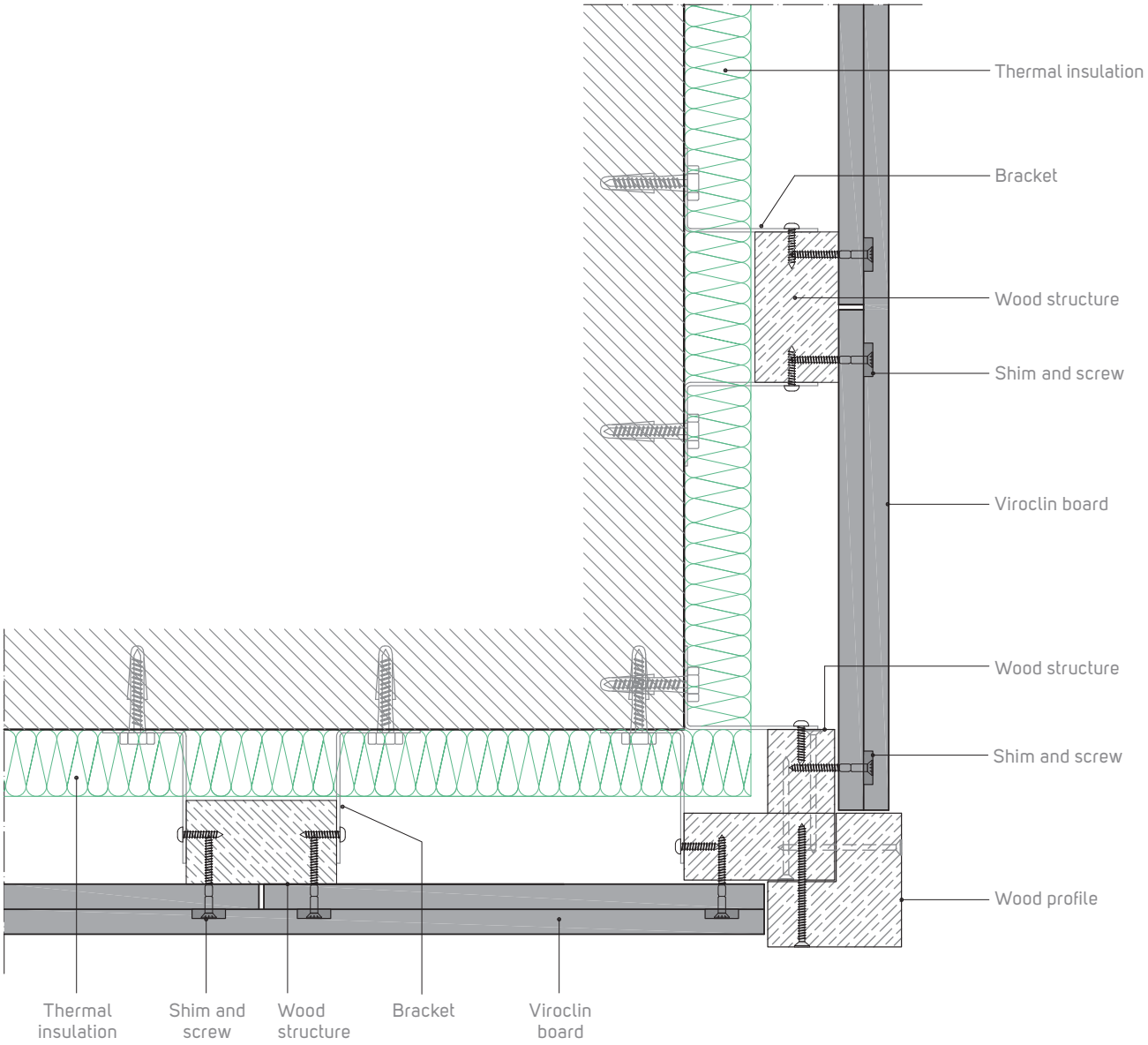
11. Interior angle (wood structure)



12. Exterior angle (steel structure)

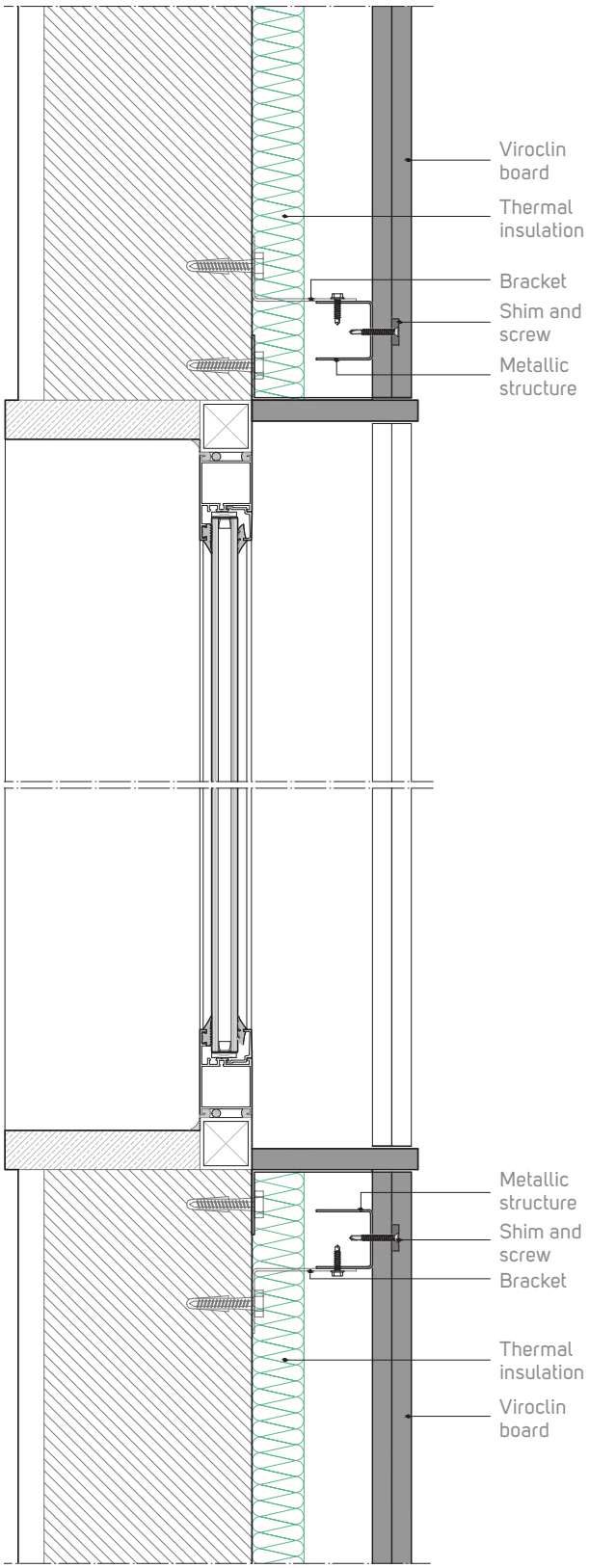


13. Exterior angle (wood structure)

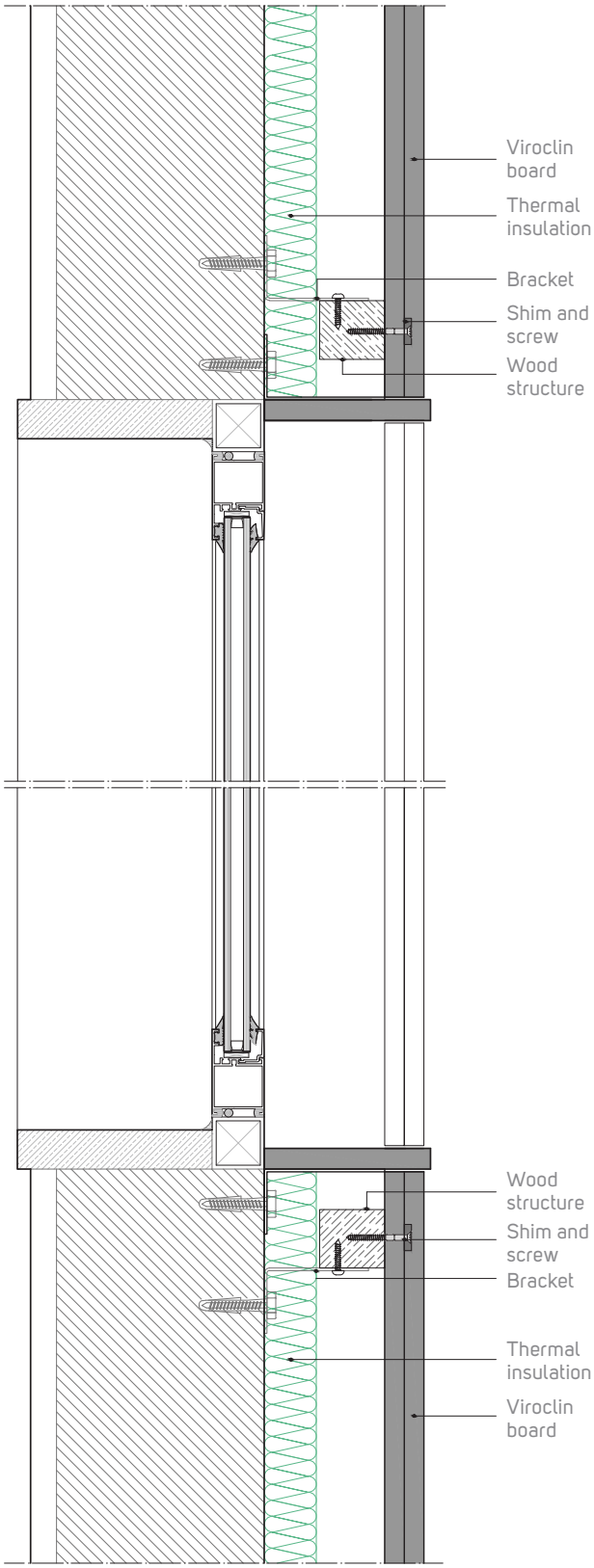


14. Horizontal section

Steel structure

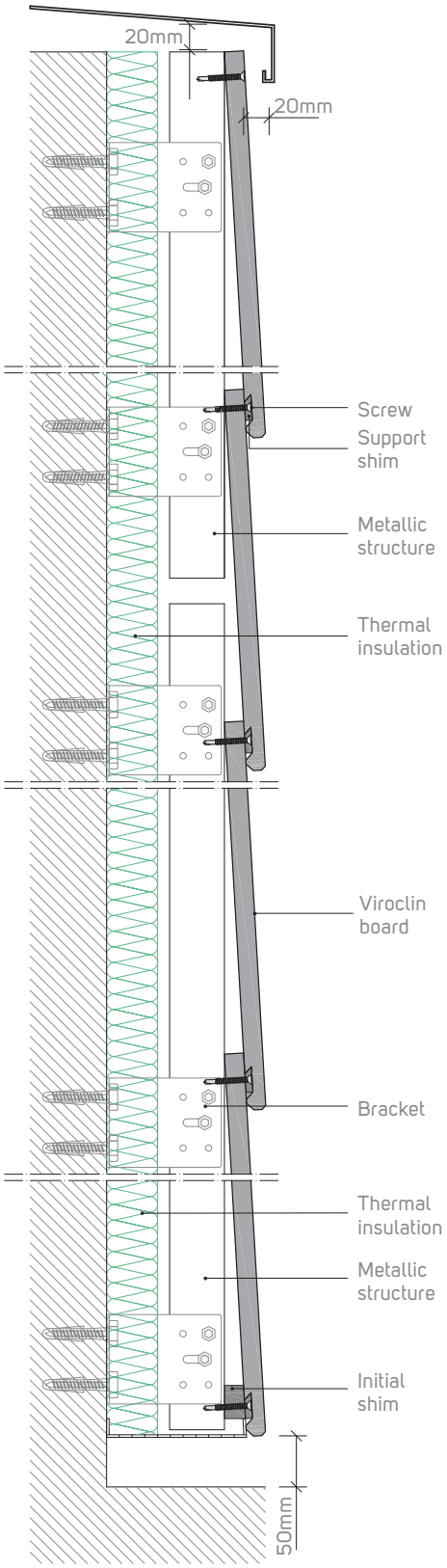


Wood structure

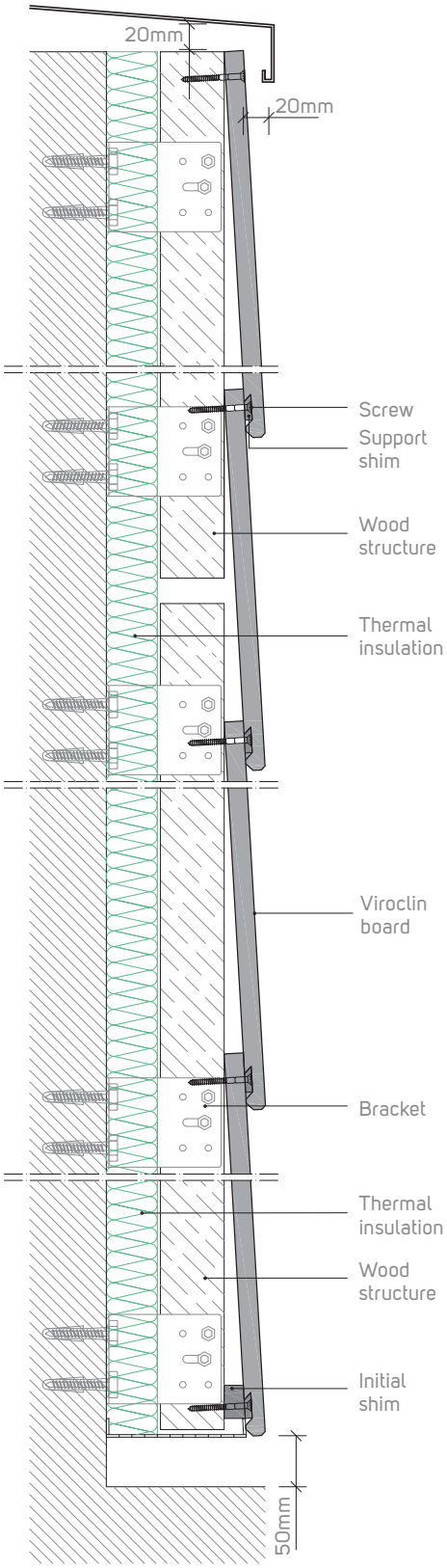


15. Vertical section

Steel structure

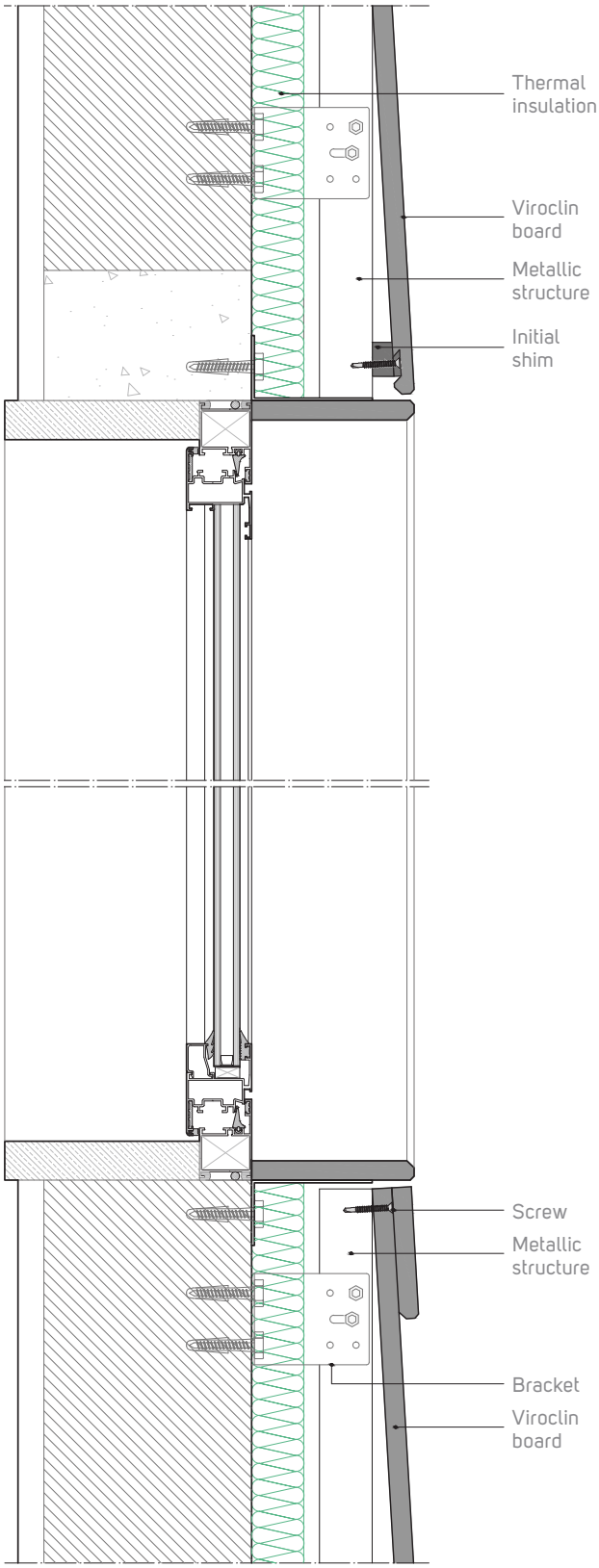


Wood structure

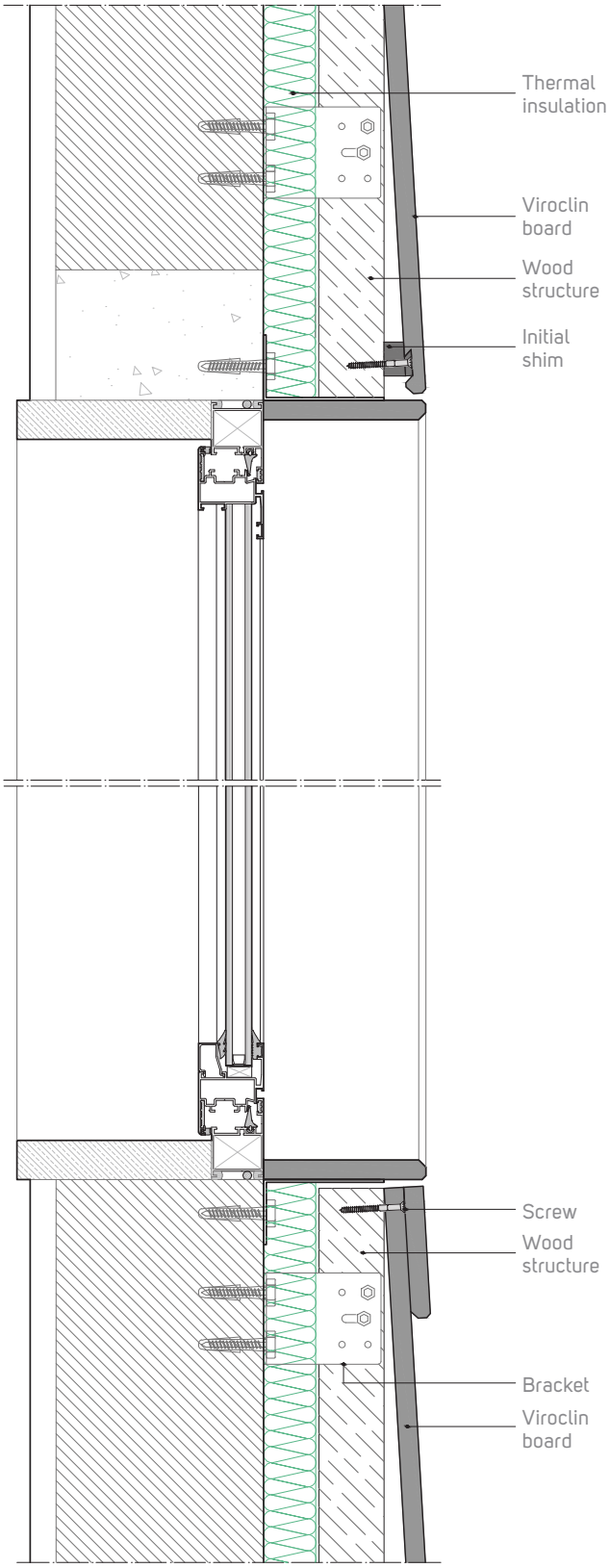


16. Vertical section (detail)

Steel structure

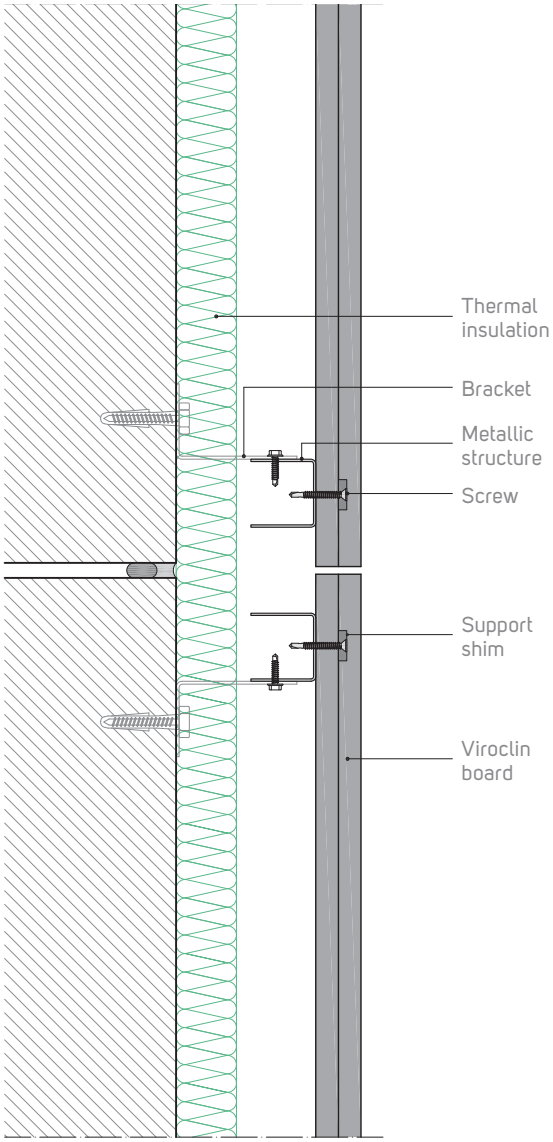


Wood structure

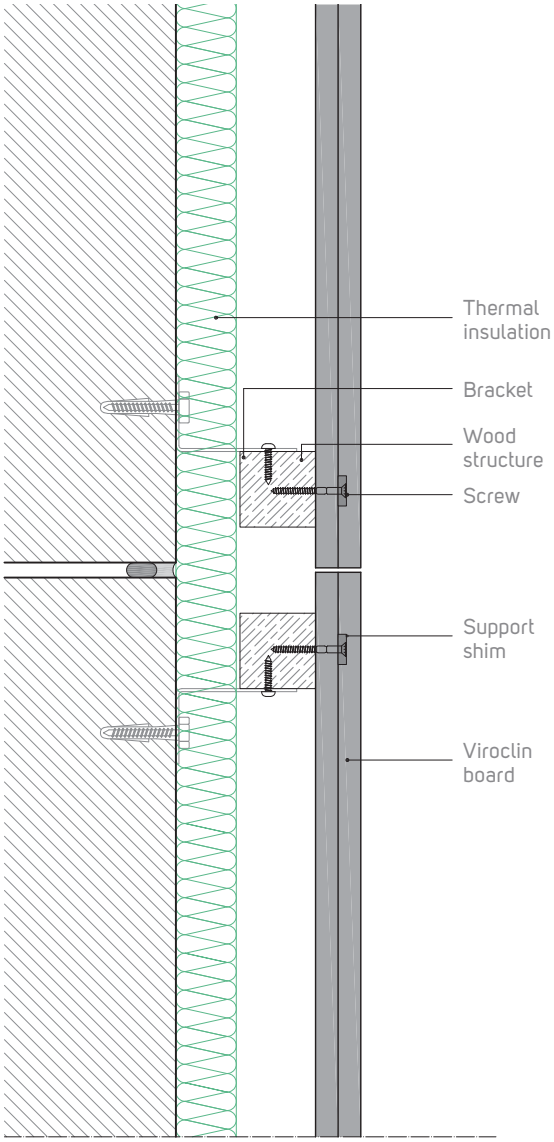


17. Expansion joint

Steel structure



Wood structure



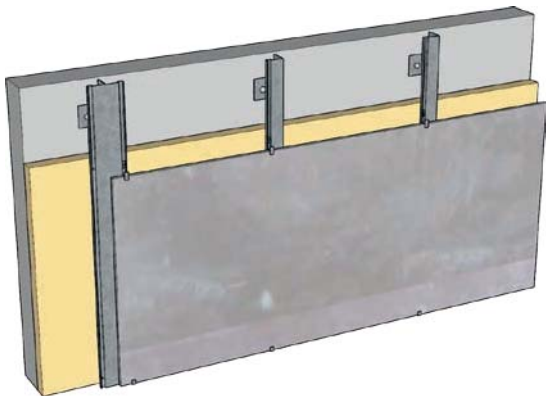
Application: Outdoors

Support structure: Metal

Fastening: Brackets

Thickness: 16 mm (5/8")

Board size:
1200 x 600 mm (47,24" x 23,62")
3000 x 600 mm (118,11" x 23,62")



1. Description

Viroc is a cement bonded particle board. It is a composite material, composed by a compressed and dry mixture of pine wood particles and cement.
Its appearance is not homogeneous. A natural characteristic of the product is to have patches of various shades.
The Viroc panel is produced in different colours.

2. Relative humidity effect

Viroc boards have small size variations due to the air relative humidity.
In situations of extreme humidity and temperature amplitude, the expected maximum size variation of the board would be +1.0‰ to -3.0‰.
The fastening system near the edges will have to take into account those size variations.

3. Application Conditions

Before installation, the board must be exposed for 48 hours to the relative humidity of the location where it will be applied and should be left in a dry location out of direct sunlight.
It is the installer's responsibility to check the support structure conditions (distance between supports and respective width) for the correct application.

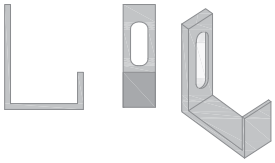
4. Support structure

Aluminum profiles in L and T shape, supplied by Strow (www.strow.es). Brackets of aluminum should have 3mm (1/8") thickness, minimum.
The structure that will support Viroc boards must be aligned and leveled and the board cannot be warped.
Keep the distance between the structural elements as further described.

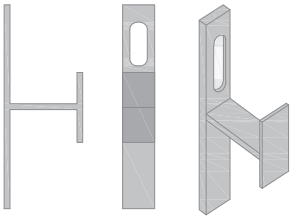
5. Fastening

The Virocnail system is composed by two types of brackets: preliminary supporting brackets and brackets providing support between boards.
Both elements are made of aluminum.

Preliminary bracket



Bracket between boards



6. Surface treatment

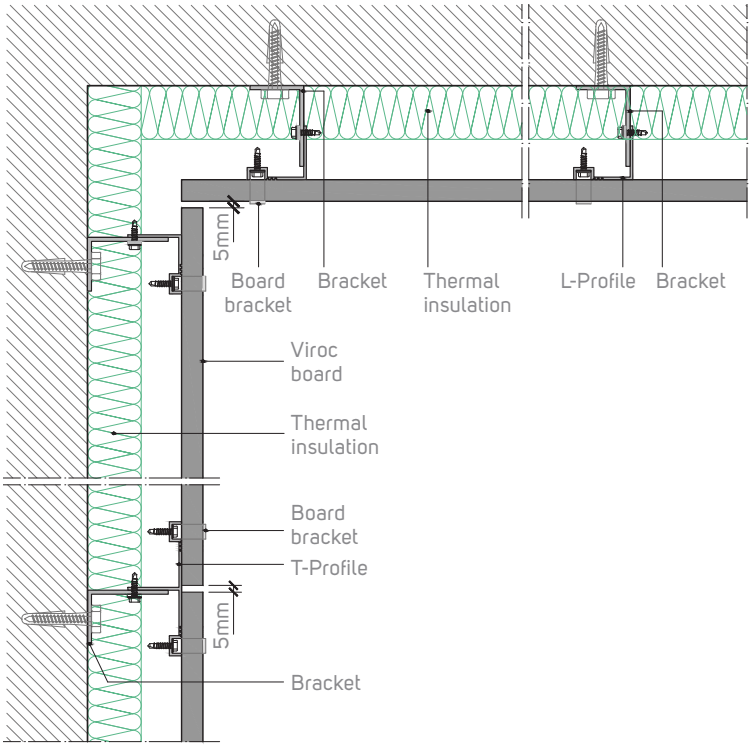
Viroc boards must be protected with paint or varnish. Before applying varnish the panel surfaces must be completely clean and dry, free from grease, dust or surface salts. The surface should be cleaned by polishing with a cleaning disc.
Viroc S.A. has suitable cleaning discs available that can be supplied on request.
The first coat must cover both sides and edges of the board. The other coats need only to be applied on exposed face and edges.
For more information, see the application of paints and varnishes procedures.

Notes & recommendations

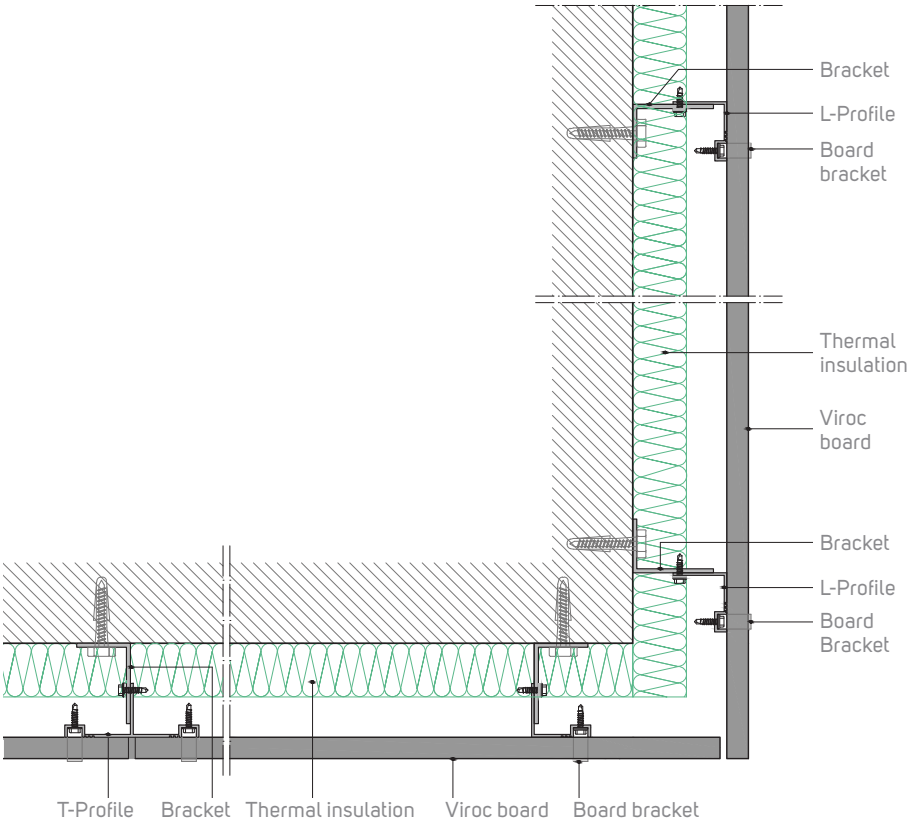
Please consult Viroc Product Data Sheet to know the board tolerances and properties.
Always check standard safety procedures and local legislation requirements.
Please contact the finishing suppliers for application procedures.

7. Board system

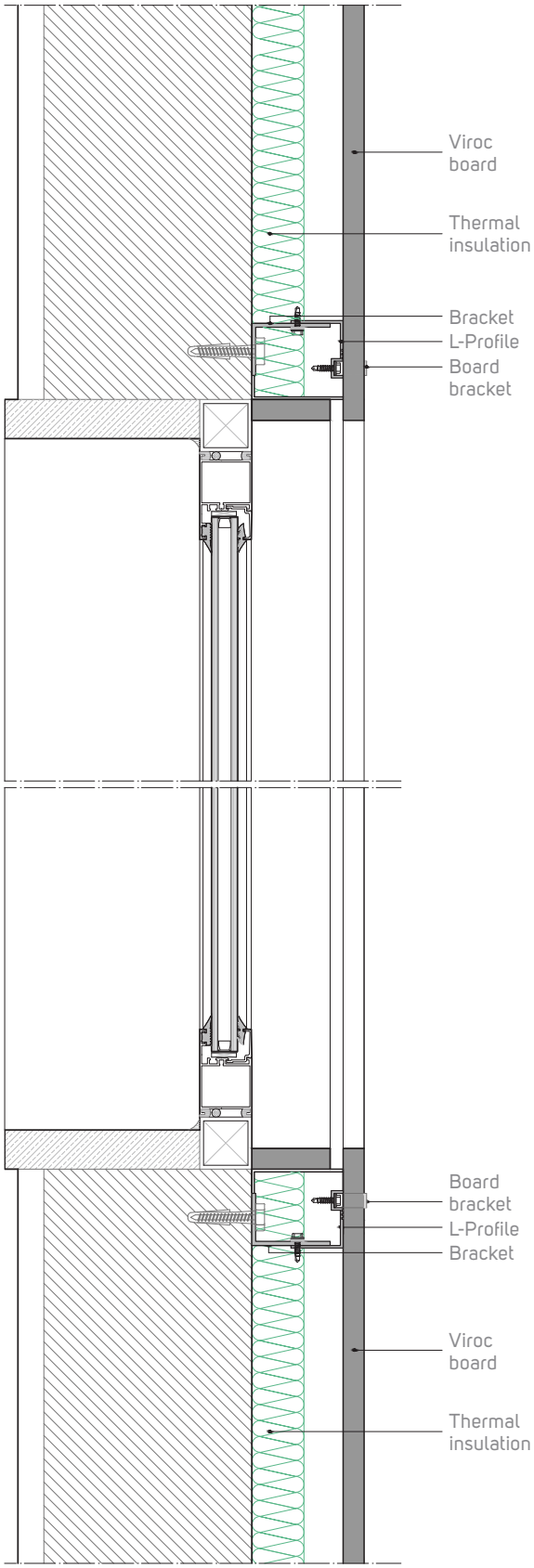
8. Horizontal section (interior angle)



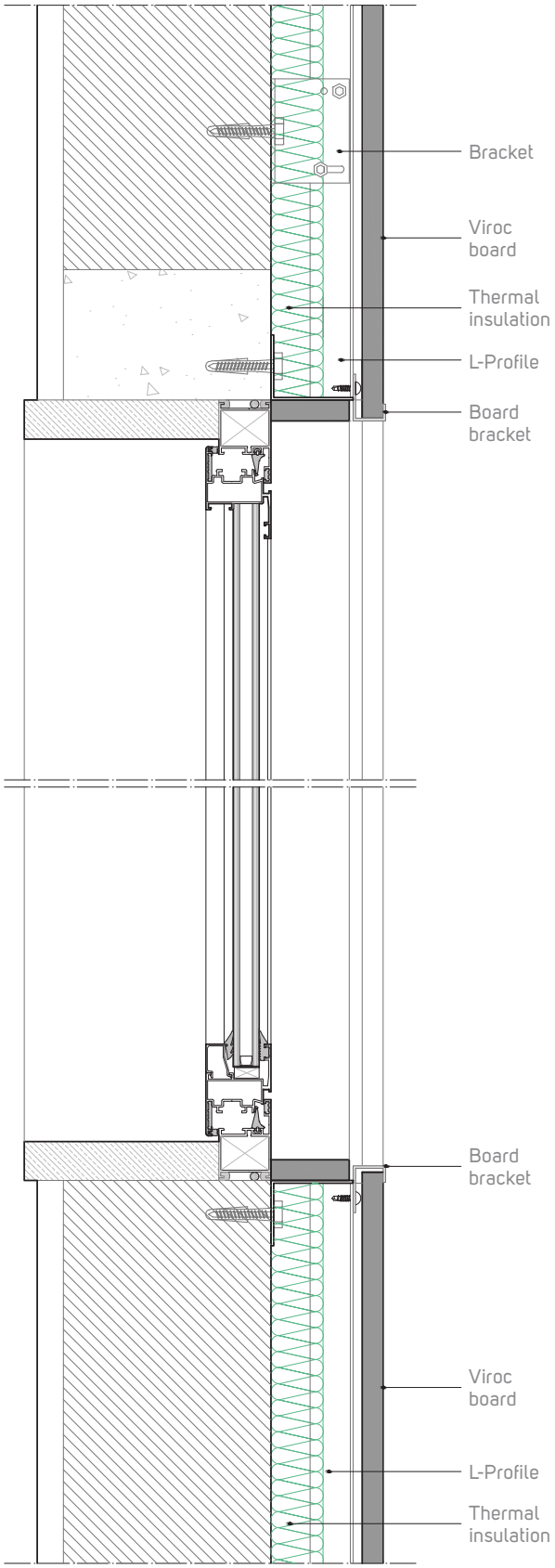
9. Horizontal section (exterior angle)



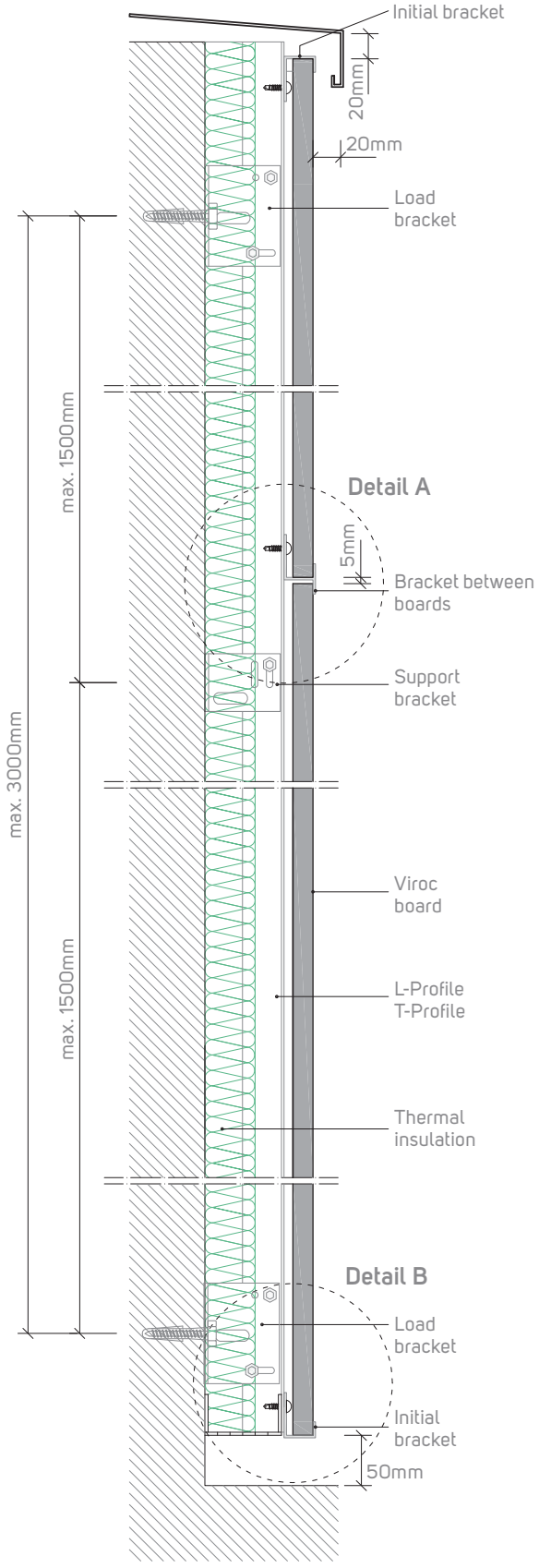
10. Horizontal section (window detail)



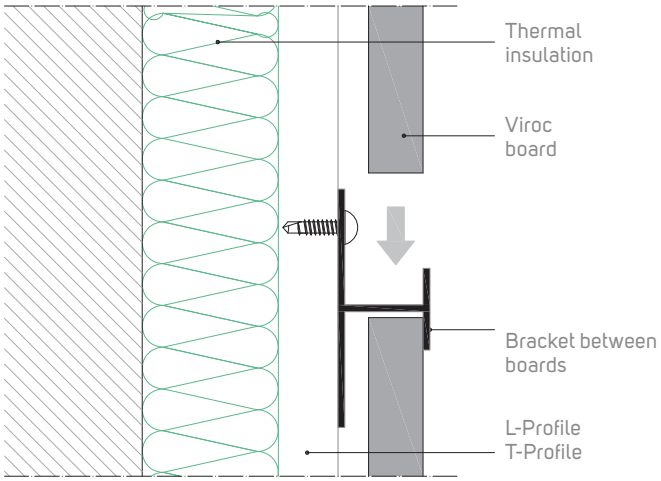
11. Vertical section (window detail)



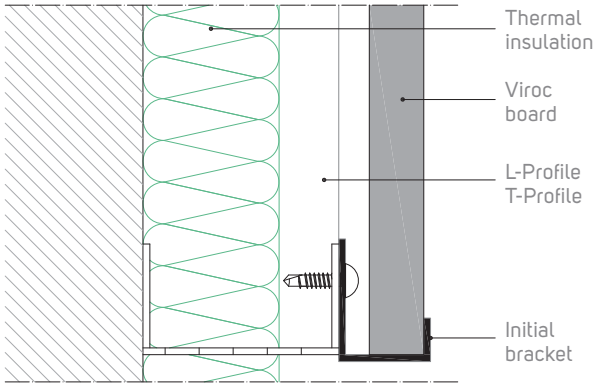
12. Vertical section



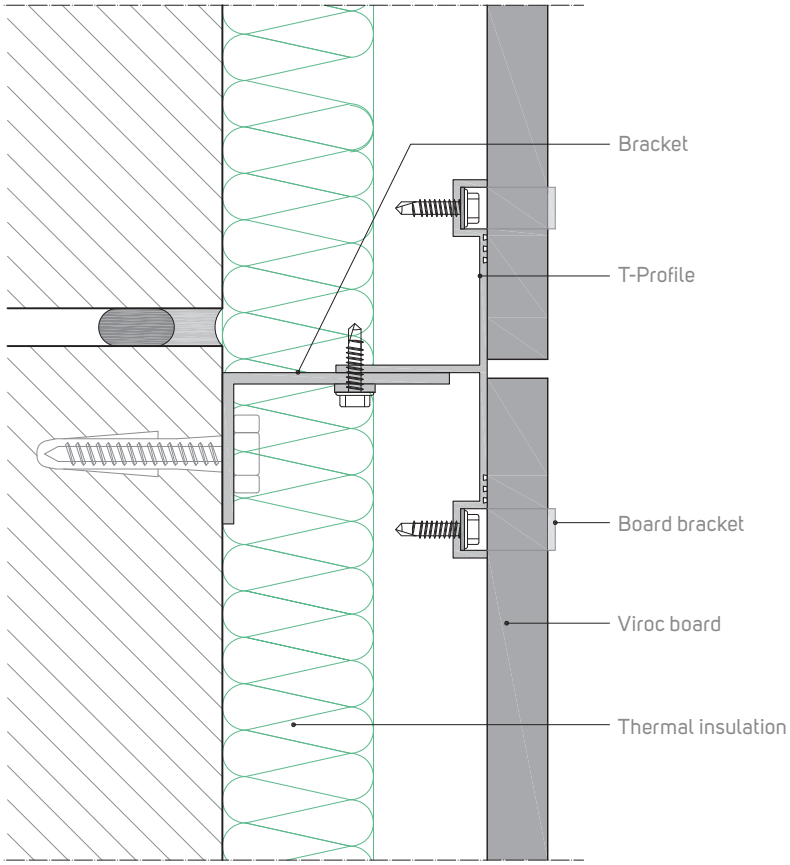
Detail A



Detail B



13. Horizontal section (expansion joint)



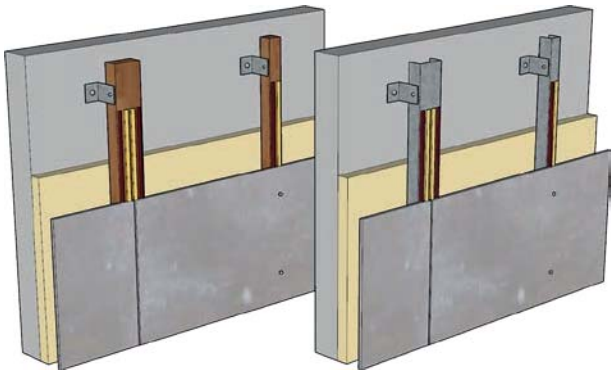
Application: Outdoors

Support structure: Wood or Metal

Fastening: Screws and bonding system

Thickness: 12 mm (1/2") or 16 mm (5/8")

Board maximum size:
3000 x 1250 mm (118,11" x 49,21")



1. Description

Viroc is a cement bonded particle board. It is a composite material, composed by a compressed and dry mixture of pine wood particles and cement.
Its appearance is not homogeneous. A natural characteristic of the product is to have patches of various shades.
The Viroc panel is produced in different colours.

2. Relative humidity effect

Viroc boards have small size variations due to the air relative humidity.
In situations of extreme humidity and temperature amplitude, the expected maximum size variation of the board would be +1.0‰ to -3.0‰.
The fastening system near the edges will have to take into account those size variations.

3. Application conditions

Before installation, the board must be exposed for 48 hours to the relative humidity of the location where it will be applied and should be left in a dry location out of direct sunlight.
It is the installer's responsibility to check the support structure conditions (distance between supports and respective width) for the correct application.
During application, the temperature must be between +5ºC and +30ºC; the board temperature must be +3ºC above dew point.
Primers and adhesives cannot be applied if it is raining or if the environment is very damp (e.g. foggy).
The surface must be clean, dry and free of dust and grease before applying primers.
This system should only be used by specialised companies that know how to install this type of Viroc board.

4. Support structure

Treated dry pine beams or metallic profiles of galvanized steel and aluminum can be used to support the boards.
The structure that will support Viroc boards must be aligned and leveled and the board cannot be warped.
Keep the distance between the structural elements as further described.

5. Fastening

As the anchorages in the centre of the board act as fixed supports, the holes that are made in the board must be big enough for the screws to go in.
The anchorages on the edges allow the normal expansion and contraction of the boards and act as moveable supports. These anchorages will be made with mastic adhesive.

The mastic adhesion system is composed of four parts:

1 - Mastic adhesive – Polymer MS , Polyurethane Mastic or Hybrid Mastic

2 - Double-sided adhesive tape

3 - Adhesive primer specifically designed for application to the supporting structure

4 - Adhesive primer specifically designed for use with Viroc boards

Manufacturers that supply bonding system for panels on facades: Bostik, Sika, 3M and Henkel.

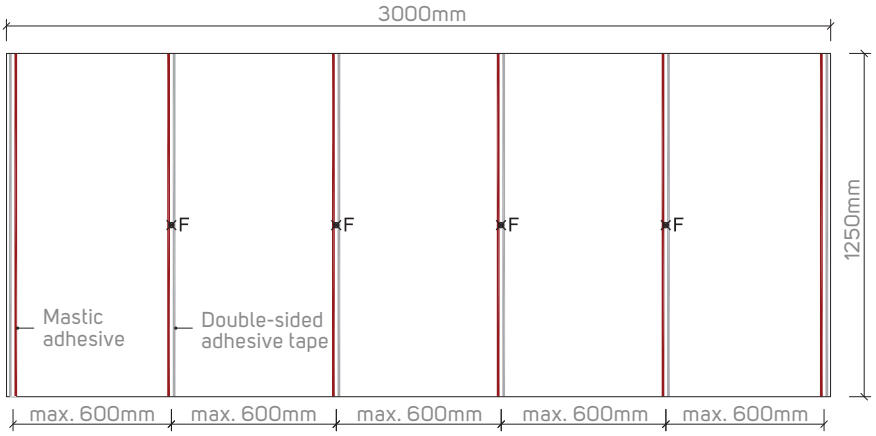
6. Surface treatment

Viroc boards must be protected with paint or varnish. Before applying varnish the panel surfaces must be completely clean and dry, free from grease, dust or surface salts. The surface should be cleaned by polishing with a cleaning disc. Viroc S.A. has suitable cleaning discs available that can be supplied on request.
The first coat must cover both sides and edges of the board. The other coats need only to be applied on exposed face and edges.
The bonding system adhesive primer applied to the back of the board should not be mixed with or applied over paint or varnish. For more information, see the application of paints and varnishes procedures.

Notes & recommendations

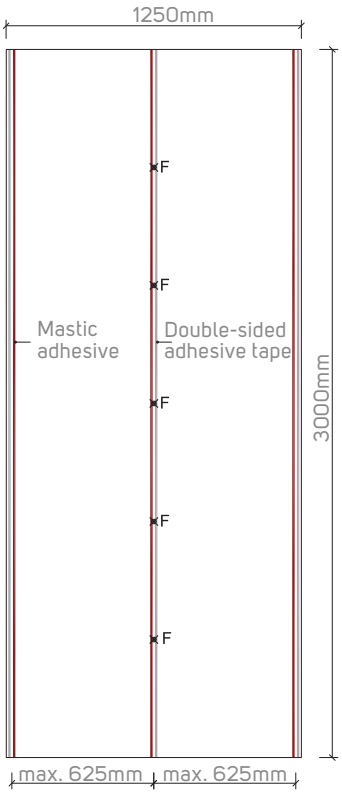
Viroc, SA does not recommend this solution using Black Viroc.
Please consult Viroc Product Data Sheet to know the board tolerances and properties.
Always check standard safety procedures and local legislation requirements.
Please contact the finishing suppliers for application procedures.

7. Board fastening (horizontal)



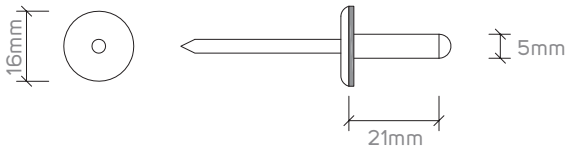
F - Fixed support

8. Board fastening (vertical)

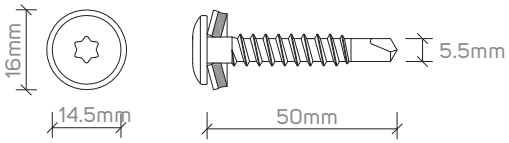


9. Fastening elements for metallic structure

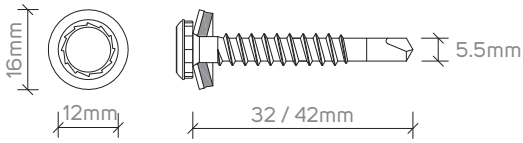
Rivet C16-W16-5x21 - Viroc 12mm



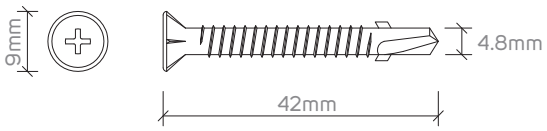
EMET C14-A16-5.5x50 - Viroc 12 and 16mm



EMET V12-A16-5.5x32 - Viroc 12mm
EMET V12-A16-5.5x42 - Viroc 16mm

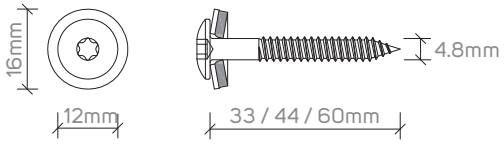


EMET C9-4.8x42 - Viroc 12 and 16mm

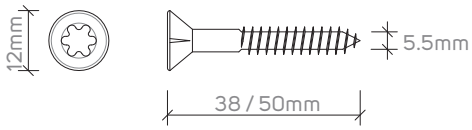


10. Fastening elements for wood structure

EMAD C12-A16-4.8x38 - Viroc 12mm
EMAD C12-A16-4.8x44 - Viroc 12 and 16mm
EMAD C12-A16-4.8x60 - Viroc 16mm

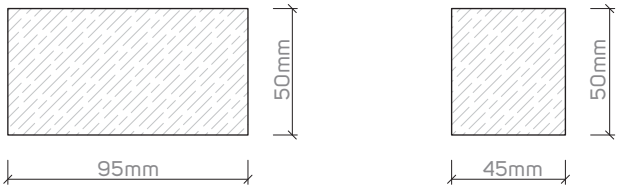


EMAD C12-5.5x38 - Viroc 12mm
EMAD C12-5.5x50 - Viroc 16mm



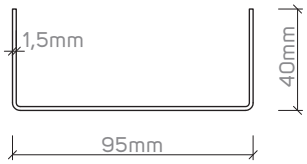
11. Profiles

Wood: Class resistance C18 according to Standard EN338.

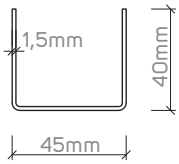


Steel: Profile thickness should be 1.5mm minimum, galvanized a according to Standard EN10326 Class Z 275 minimum.

Profile U - 40x95x40

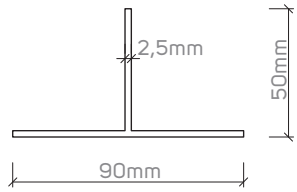


Profile U - 40x45x40

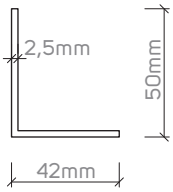


Aluminium: Minimum thickness of 2.5mm, alloy 6060-T5 or 6063 according to Standard EN 573.

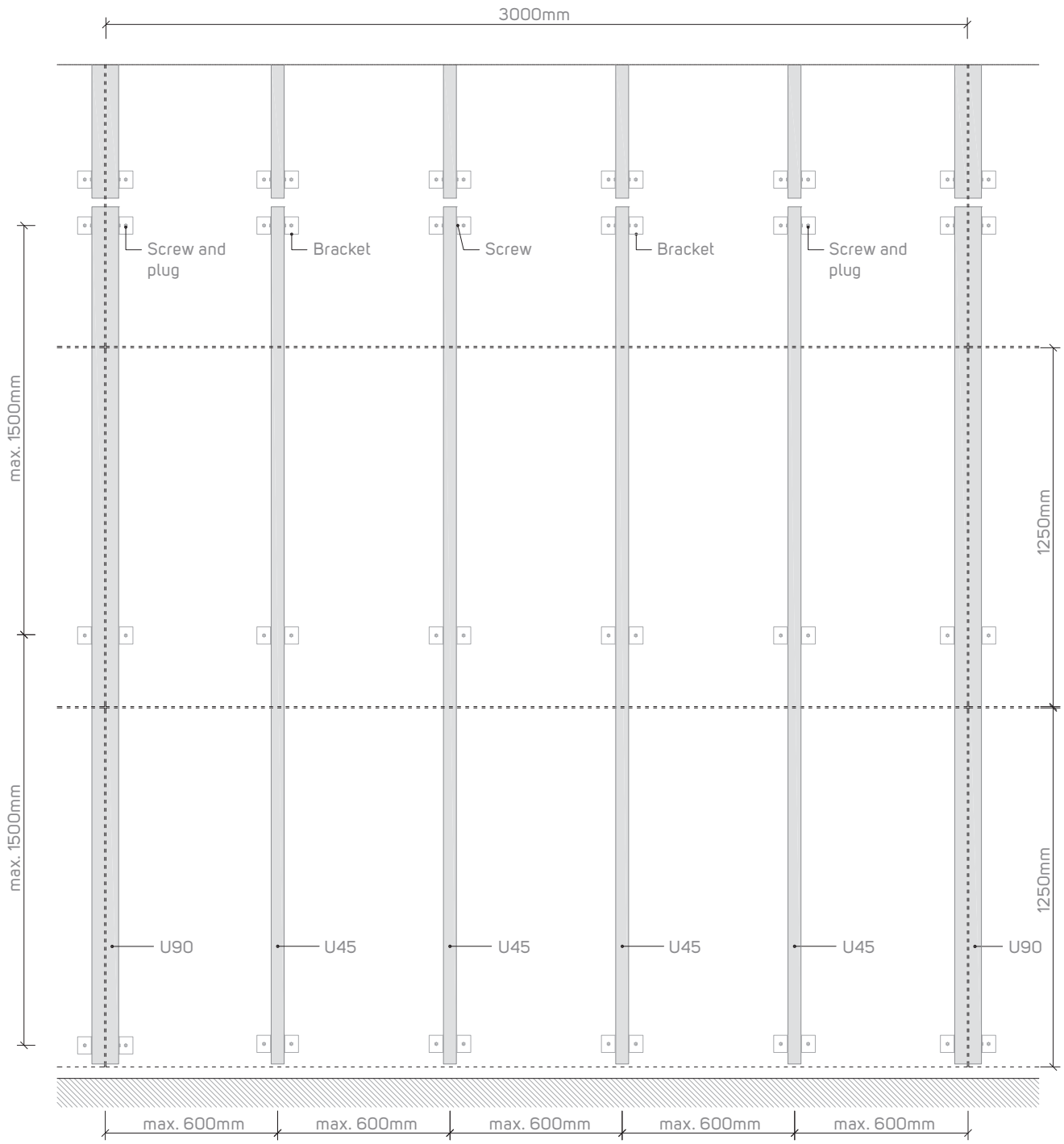
Profile T - 90x50



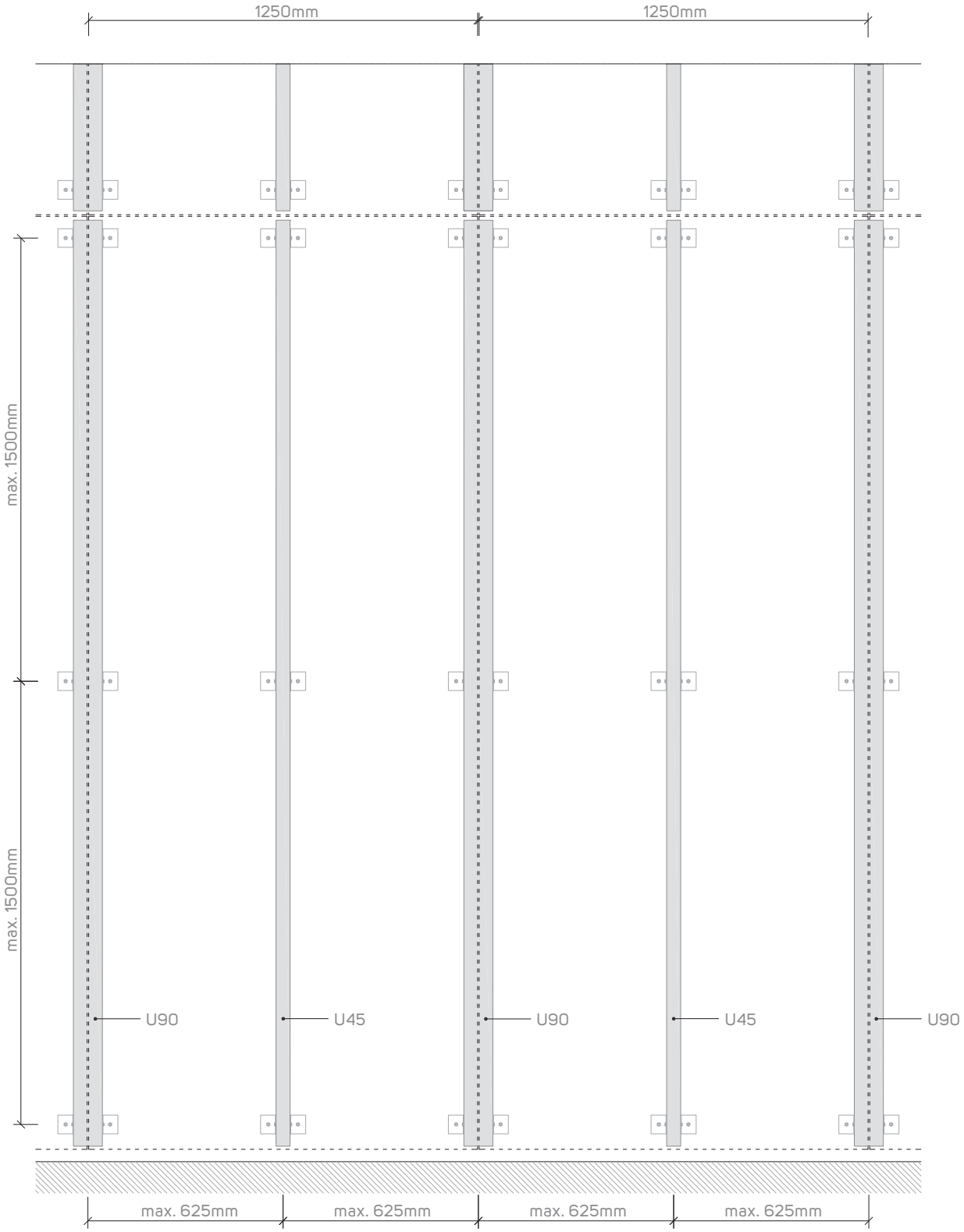
Profile L - 42x50



12. Board support structure in horizontal position

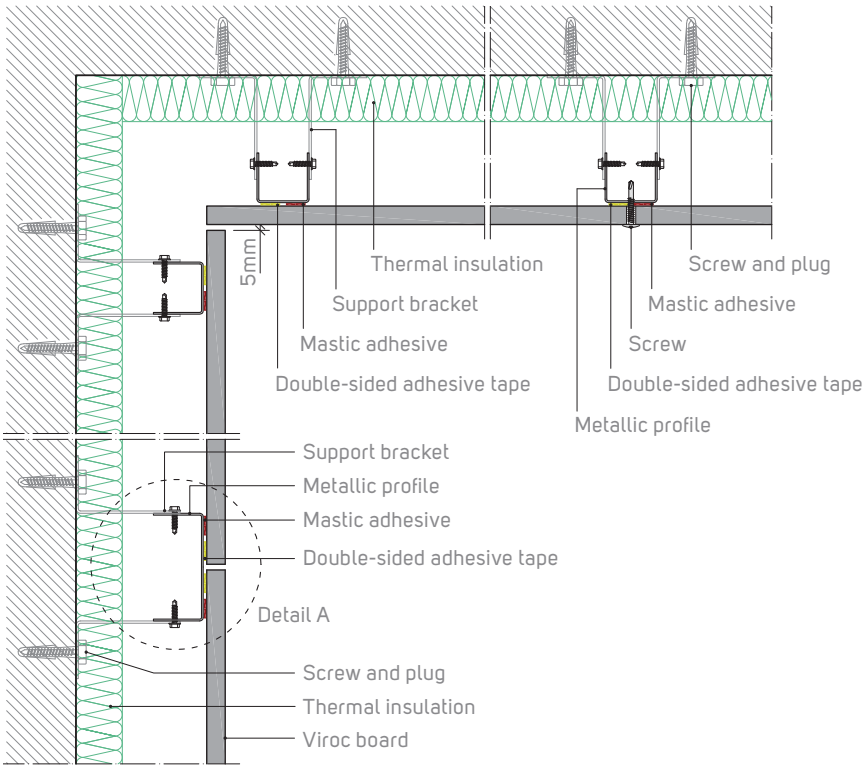


13. Board support structure in vertical position

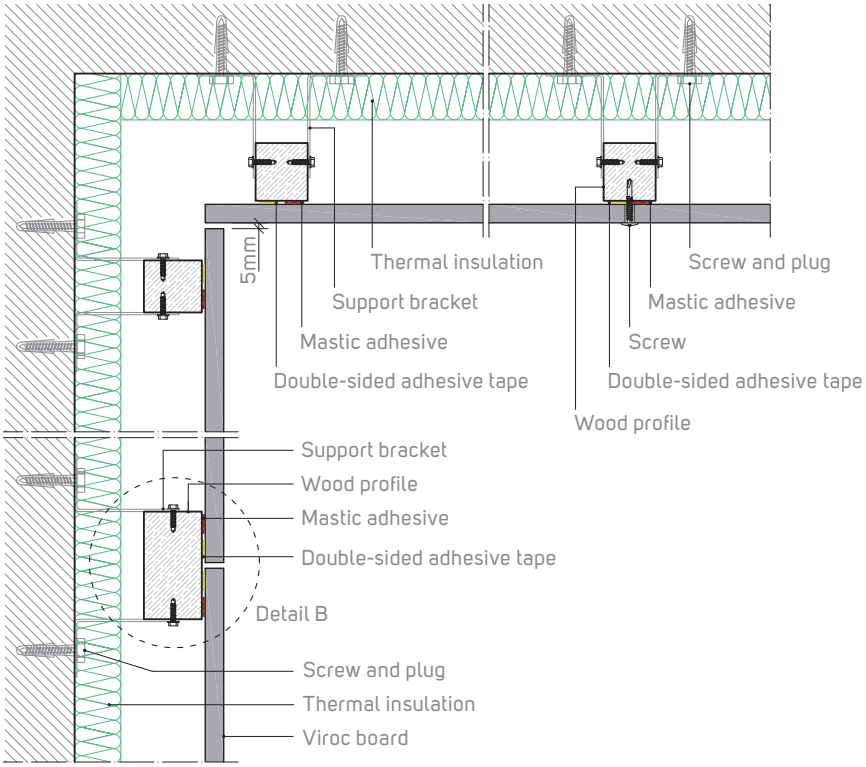


14. Horizontal section - interior angle

Metallic structure

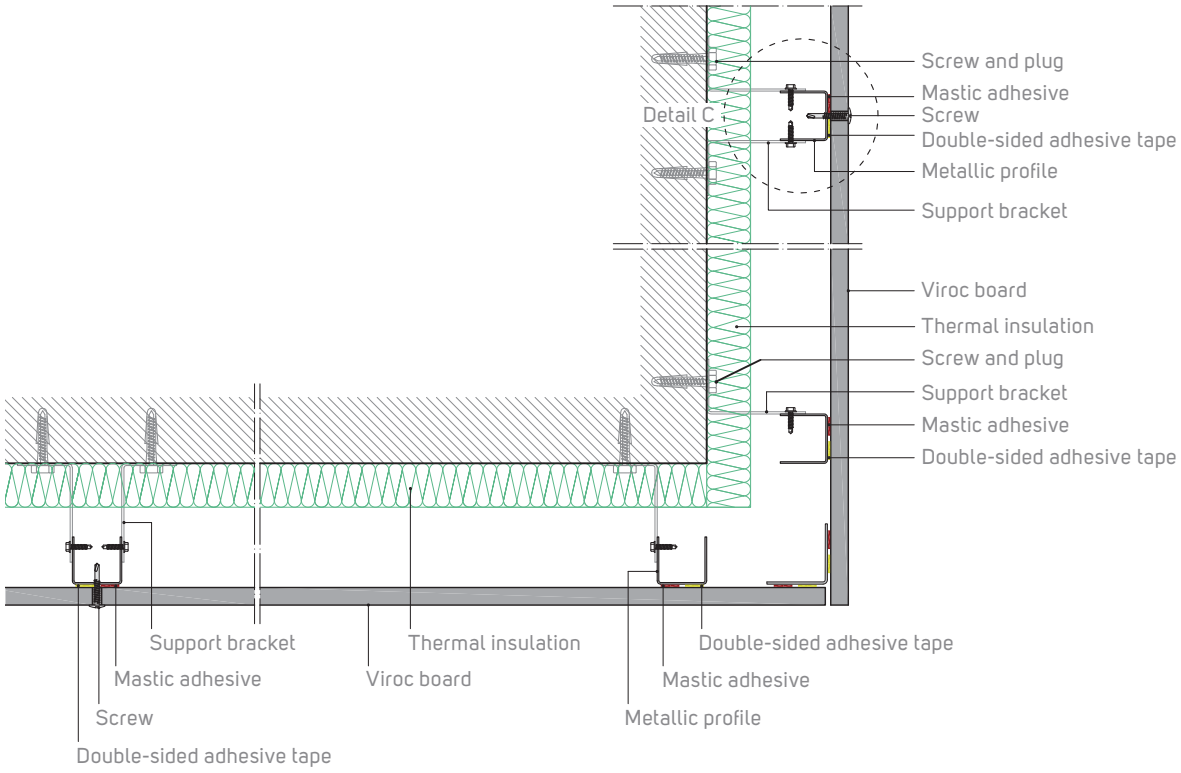


Wood structure

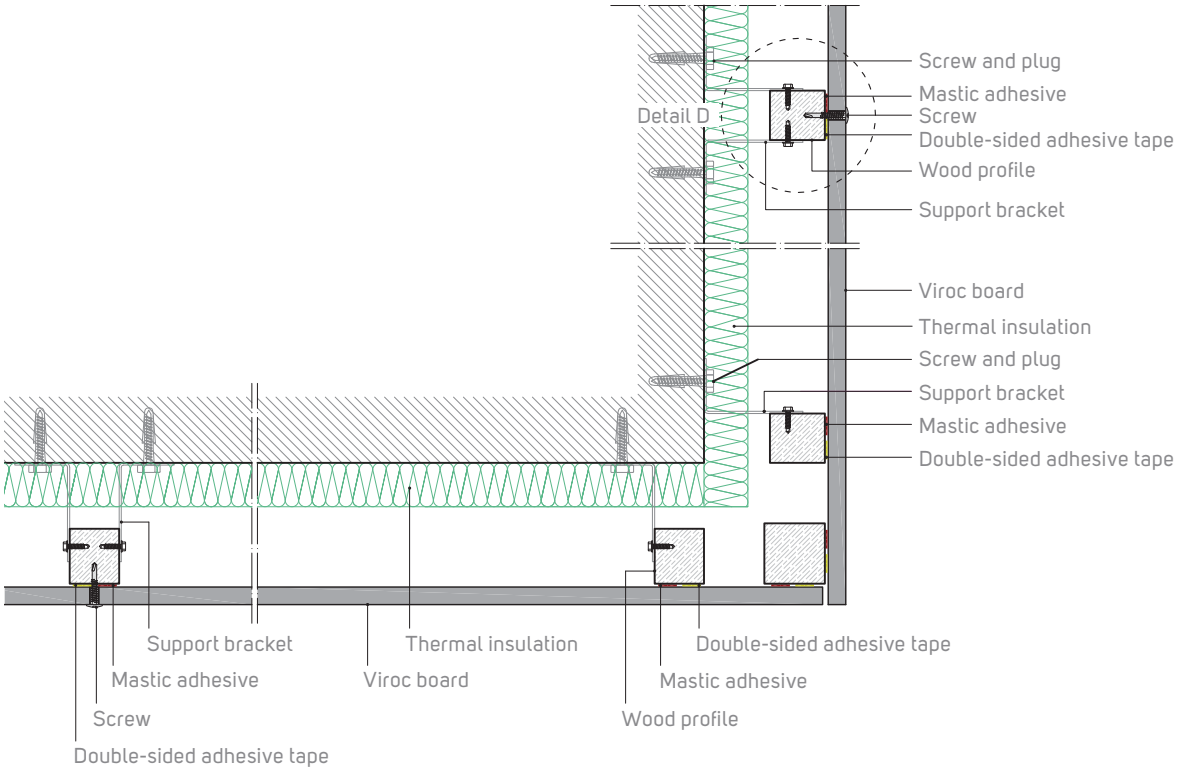


15. Horizontal section - exterior angle

Metallic structure

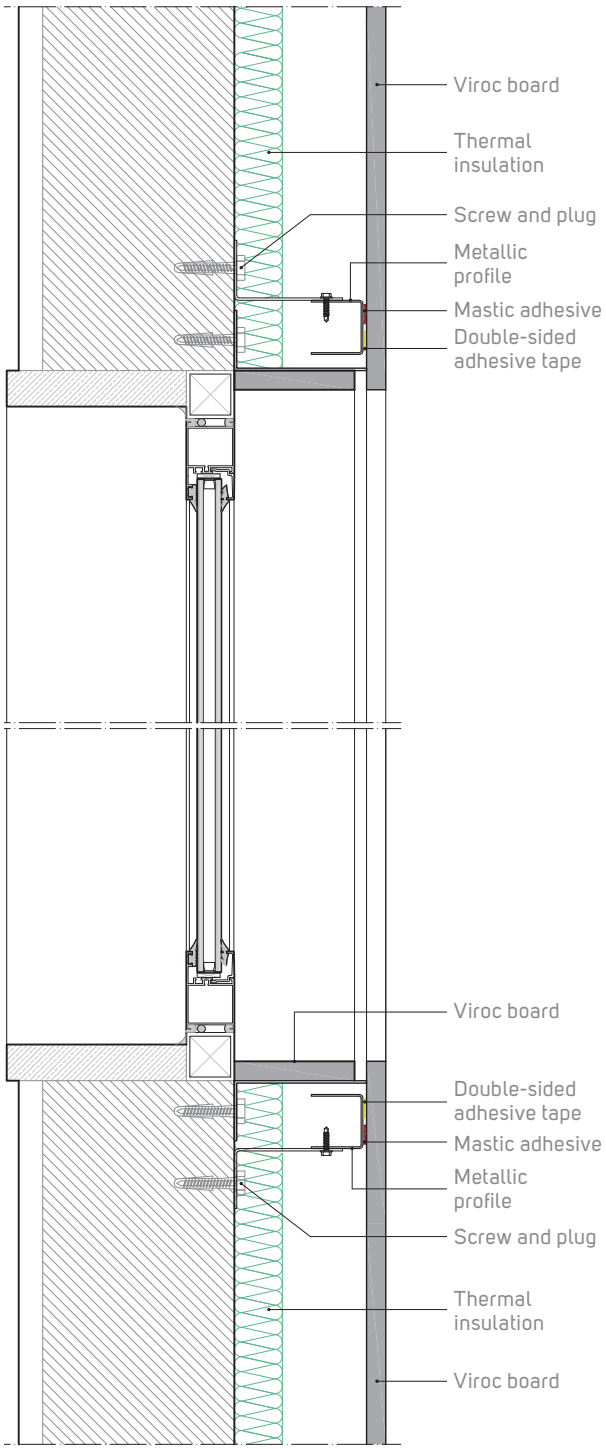


Wood structure

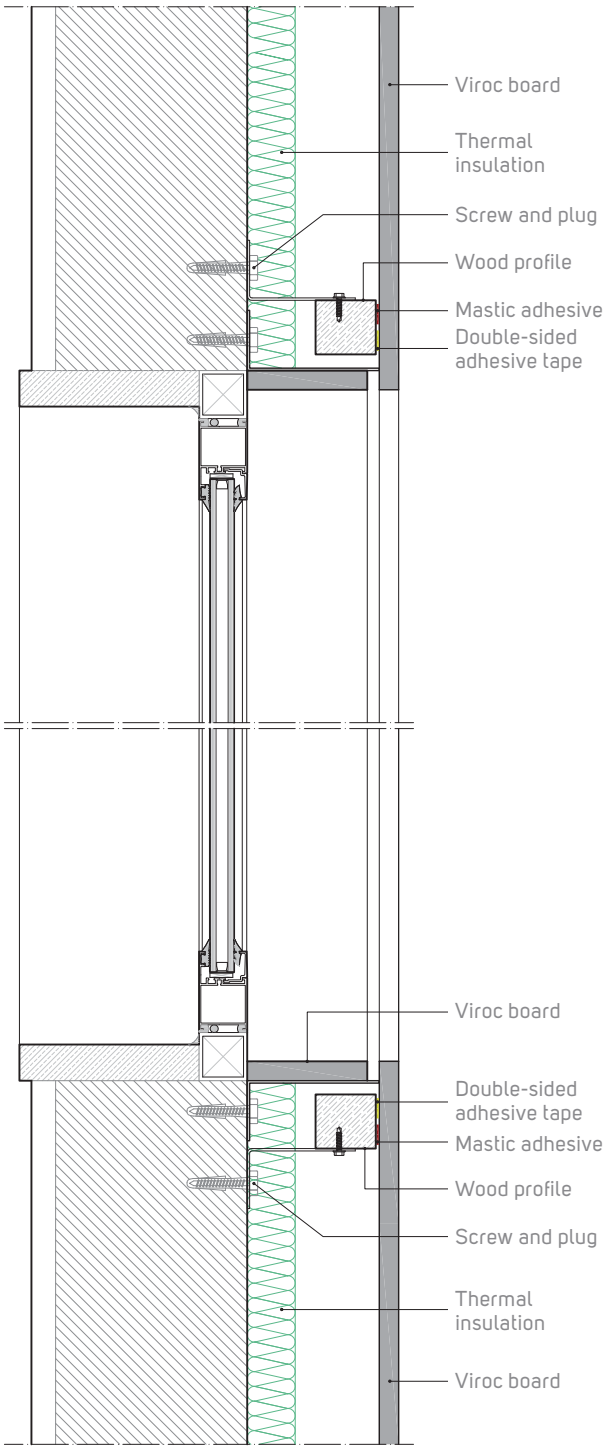


16. Horizontal section - window detail

Metallic structure

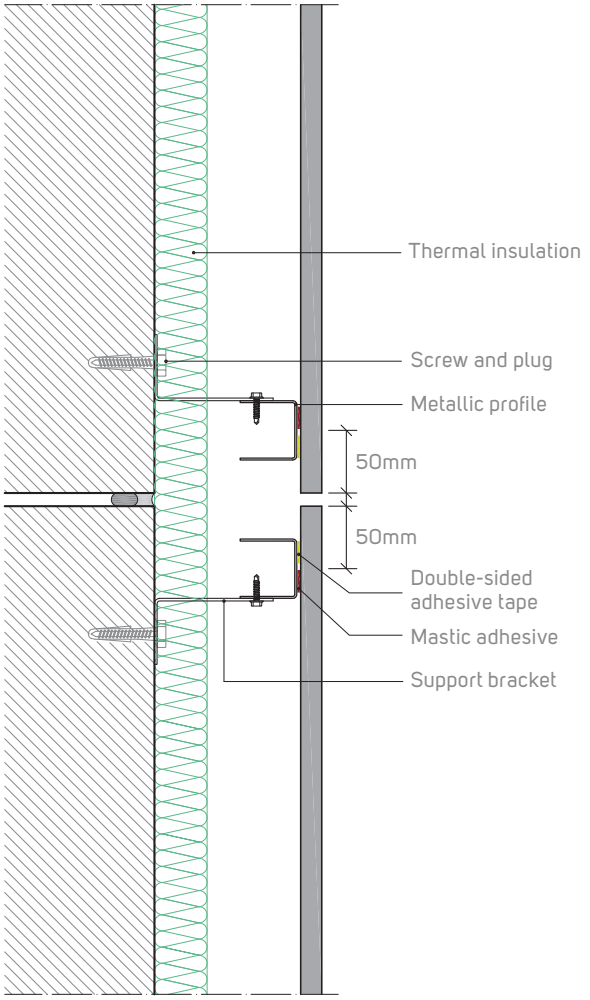


Wood structure

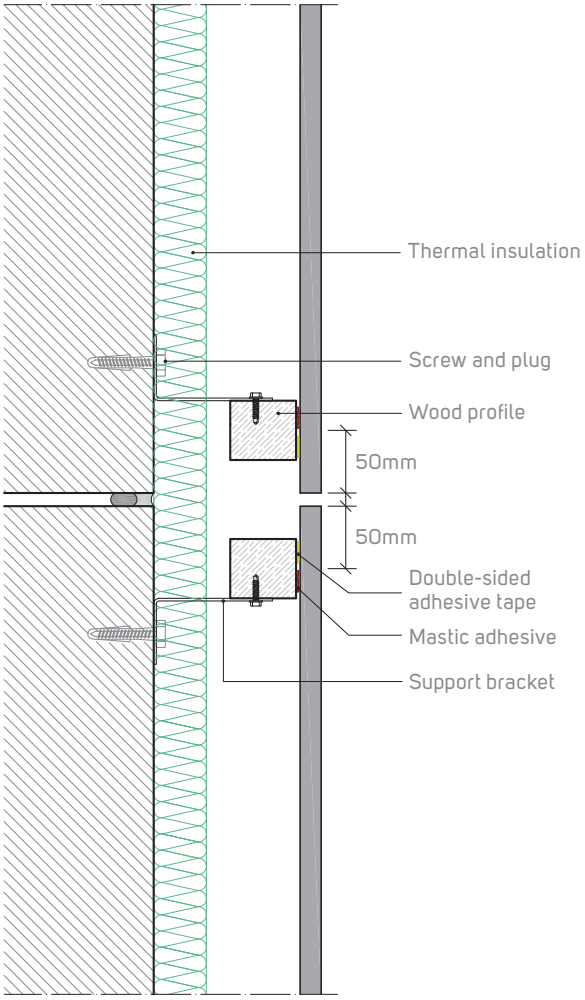


17. Horizontal section - expansion joint

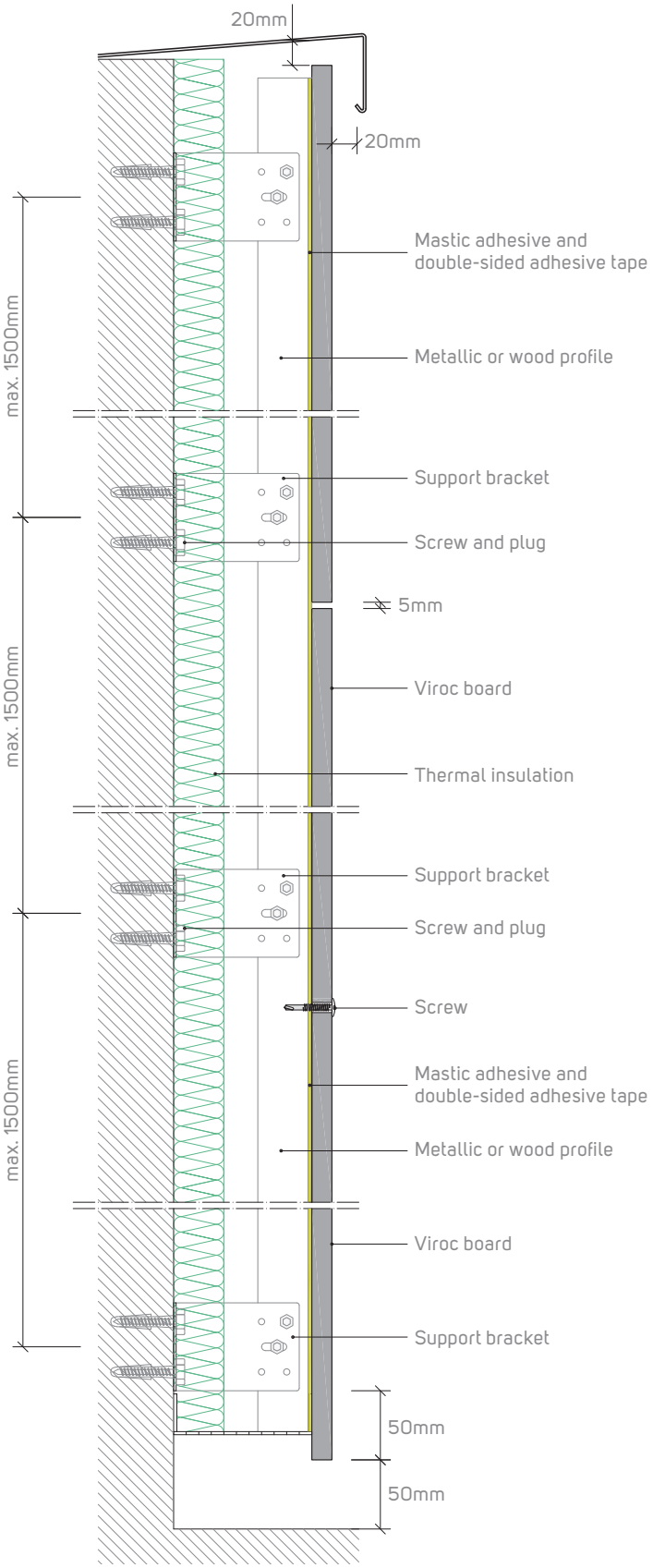
Metallic structure



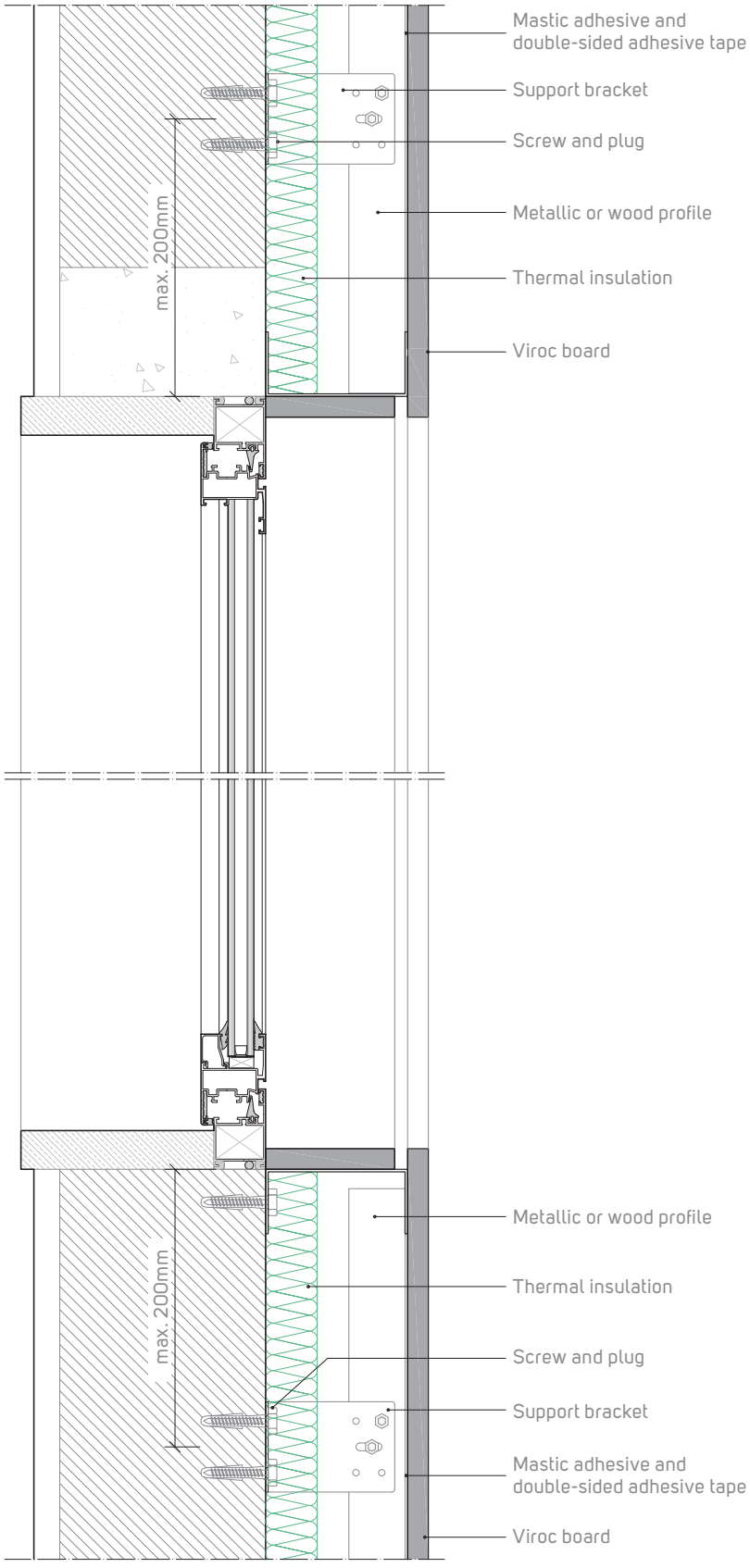
Wood structure



18. Vertical section

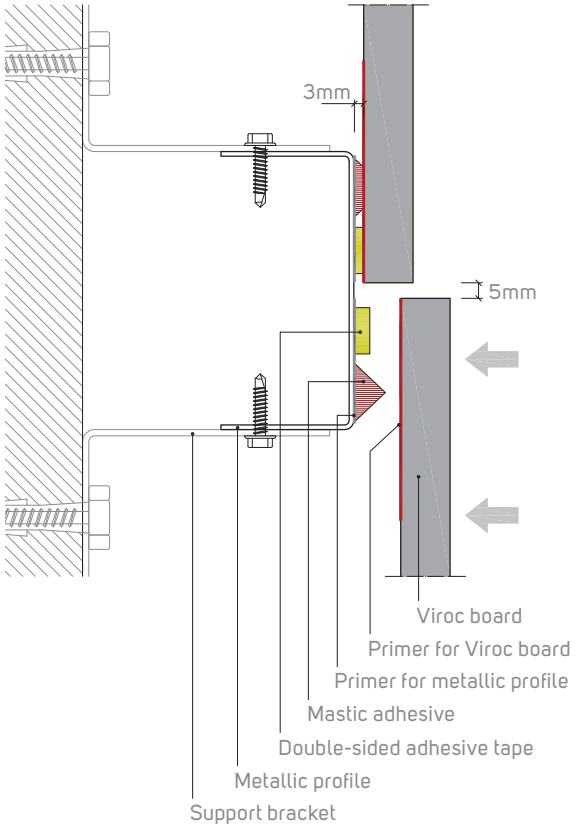


19. Vertical section - window detail

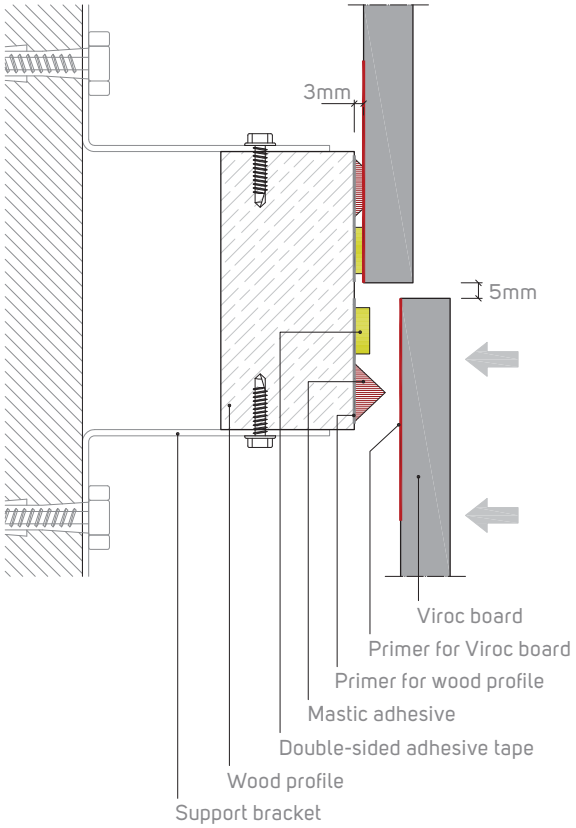


20. Fastening details

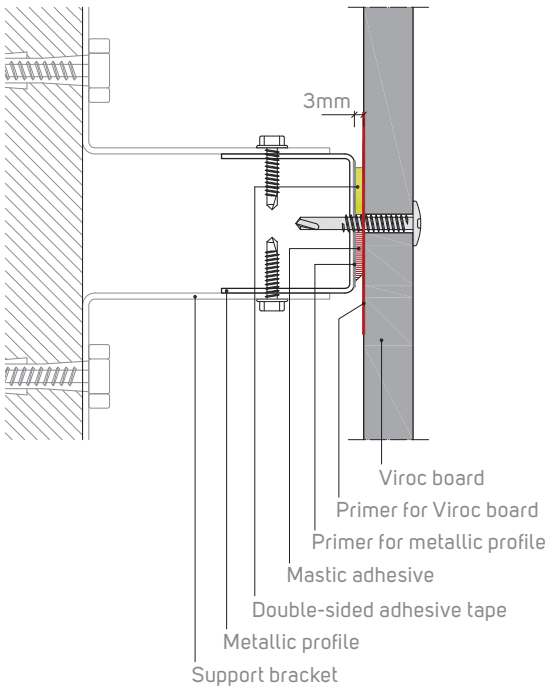
Detail A



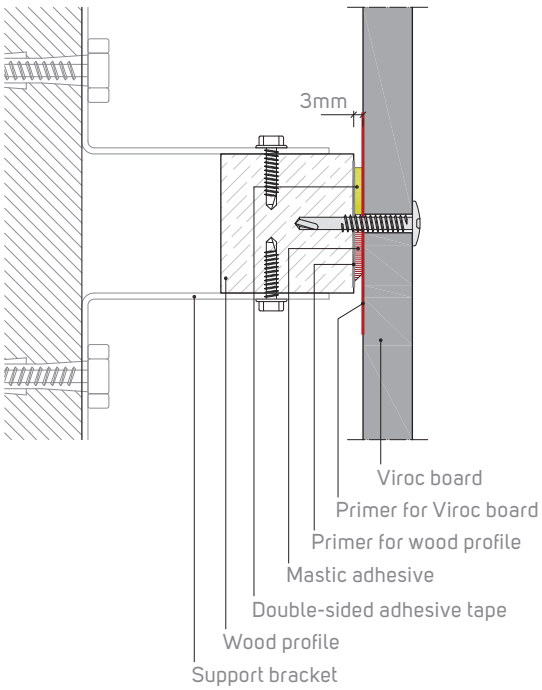
Detail B



Detail C



Detail D



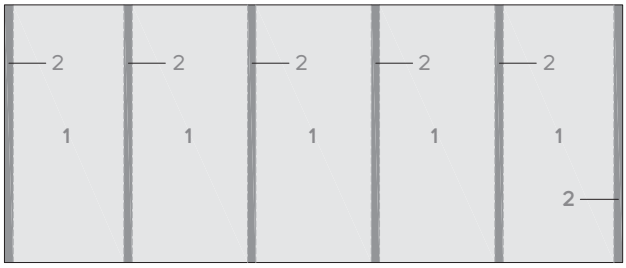
21. Application

a) Clean the board

Clean the Viroc board to remove any dirt, grease or dust by sanding gently with a cleaning disk. Viroc, SA can supply disks suitable for cleaning the boards upon request.

b) Apply the first coat of paint or varnish to the back of the Viroc board

Protect the parts of the Viroc board where the bonding system adhesive will be applied with masking tape or a previously prepared profile at least 45 mm wide.
Apply the first coat of paint or varnish to the areas where it is required.
While the paint or varnish is still wet, remove the masking tape from the protected area taking care not to leave any residue on the Viroc board.



1 - Paint or varnish

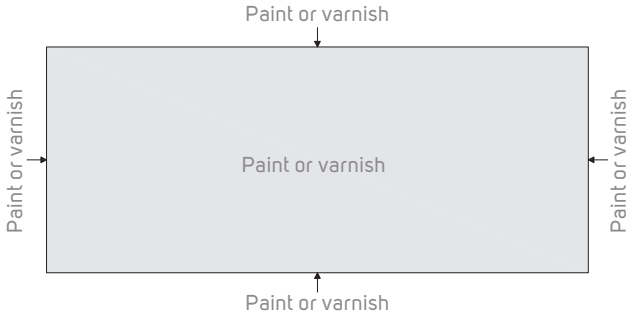
2 - Bonding system adhesive primer

c) Apply the bonding system adhesive primer

A primer suitable for use with Viroc boards is applied to the parts of the board that were previously protected by the masking tape or profile to ensure the adherence of the Viroc board.
For efficiency's sake, the special adhesive primer can be applied to the entire back surface of the Viroc board.

d) Apply the first coat of paint or varnish to the visible side of the board and the edges

Apply the first coat of paint or varnish to the remaining surfaces of the board – the visible side and the four edges.



e) Apply as many top coats of paint or varnish as needed to the visible side of the board

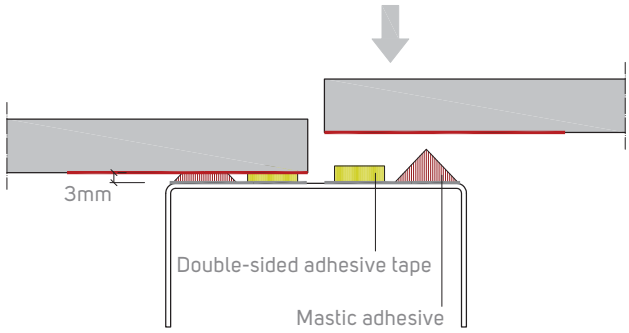
Usually, two coats will be enough. However, more coats may be needed for some colours. We recommend a preliminary test to make sure the final finish is acceptable.

f) Install the board to the support structure

The Viroc board will be attached to the structure using a dual mounting system consisting of screwing the board to the central support structure and applying a bonding system that consists of mastic adhesive and double-sided adhesive tape.

Once the structure is in place and properly lined up, ensuring the proper space between the profiles, a coat of primer is applied to the structure in the areas where the adhesive tape and mastic will not be applied. There is a specific primer for wooden structures and another for metal structures.

Apply the double-sided adhesive tape to the structure profile, immediately followed by the mastic adhesive no more than 1.5 cm away.



The double-sided adhesive tape serves two functions: it ensures a 3 mm gap between the structure and the board and it supports the weight of the board while the mastic is setting and not yet strong. Once the mastic cord hardens and sticks, the tape no longer serves any function.

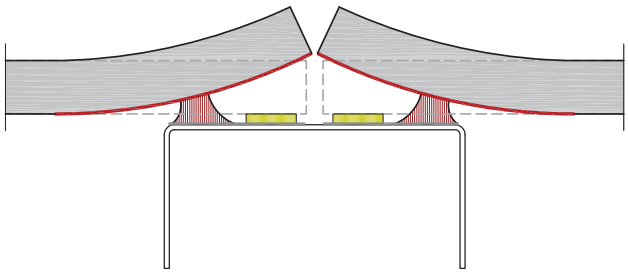
At the joints between two boards, the double-sided tape is always placed on the outer surface to prevent the mastic from being squeezed into the joint and being visible on the outer surface.

In certain applications, when the boards are hung in zones with high exposure to the sun, the edges may warp immediately after the boards are attached before the mastic has set and is not strong.

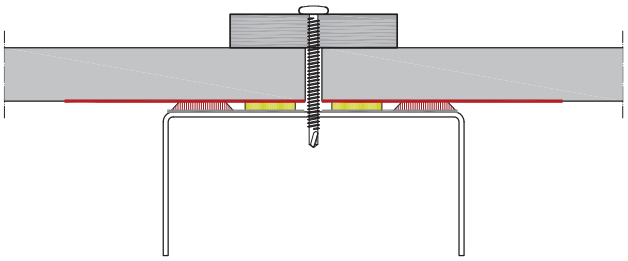
This warping is more noticeable if the boards have not been treated with any kind of primer/varnish or if it has only been applied to one side.

In these situations, the adhesive tape may not be strong enough to prevent deformation while the mastic is still setting. To prevent this warping, some additional wedges should be screwed to the support structure between the board joints.

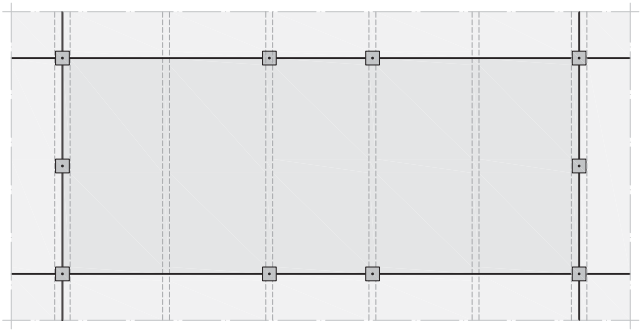
The wedges should only be removed three days after application, by which time the mastic will have hardened and be strong enough to support the loads.



Possible warping at the edges of the board



Placing an additional wedge to prevent the edges of the board from getting warped



Location of the additional wedges to prevent the edges of the board from getting warped