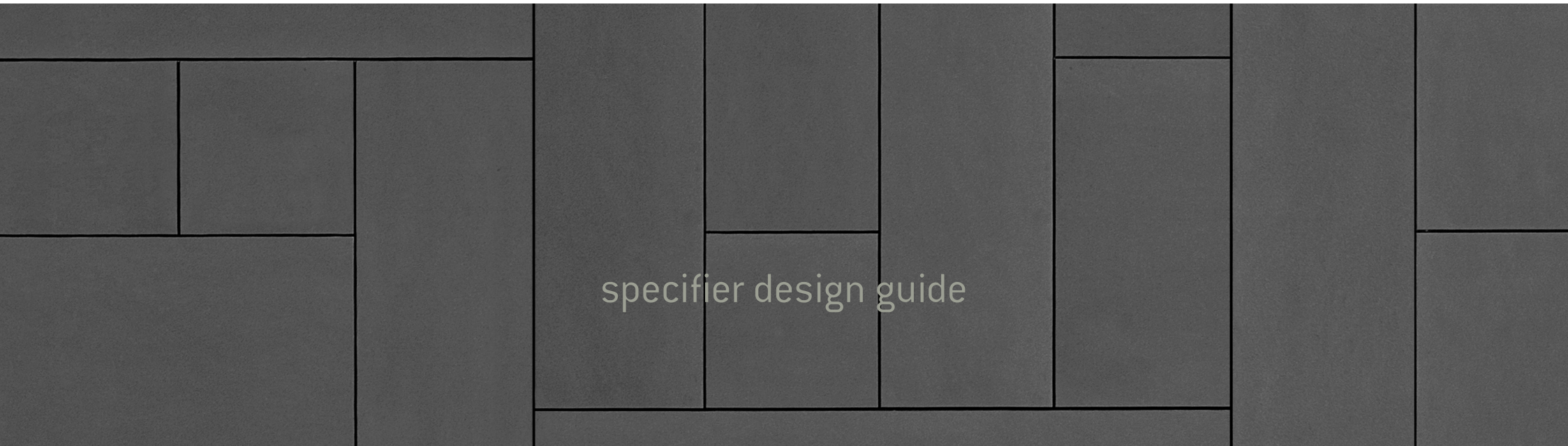
EQUITONE

Fibre cement facade materials



specifier design guide

1.0 Introduction

This Design Guide has been written to illustrate to the reader that designing with EQUITONE is straight forward provided some simple principles are followed.
This guide does not try to address all design possibilities but instead highlights what principles should be considered when designing the façade.
The reader will find more information through our experienced and knowledgeable EQUITONE service teams.

Contents

2.0 Material

Maximum usable sizes in mm.

EQUITONE [tectiva] 8 mm thick
EQUITONE [linea] 10 mm thick
EQUITONE [lunara] 10 mm thick

EQUITONE [natura] 8 and 12 mm thick
EQUITONE [natura] PRO 8 and 12 mm thick
EQUITONE [pictura] 8 and 12 mm thick
EQUITONE [textura] 8 and 12 mm thick

Reaction to fire

Reaction-to-fire focuses on the behaviour of the materials during the development of a fire.
All EQUITONE materials are classified as A2s1-d0 to EN 13501-1

EQUITONE [tectiva]

EQUITONE [linea]

EQUITONE [lunara]

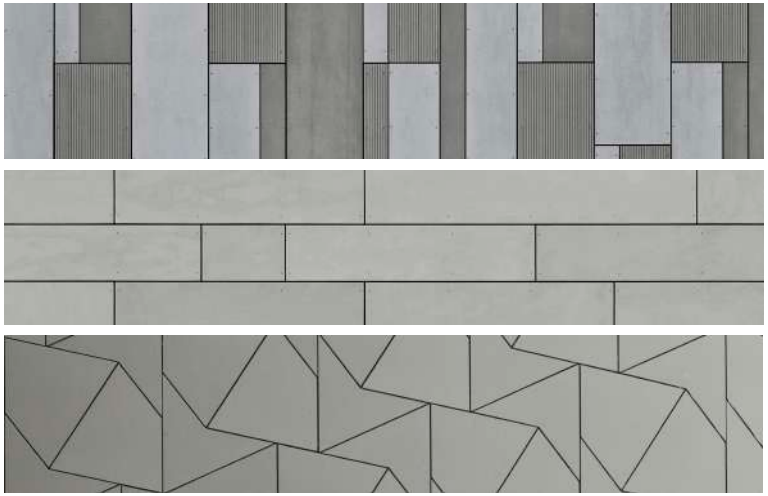
EQUITONE [natura]

EQUITONE [pictura]

EQUITONE [textura]

3.0 Panel layout

EQUITONE panels can be cut and arranged in many forms, limited only by imagination.
Whether a vertical, horizontal or angled layout is desired with large, small, narrow panels, laid either random or staggered are all possible.
The pattern of the panels will have a bearing on the supporting frame.

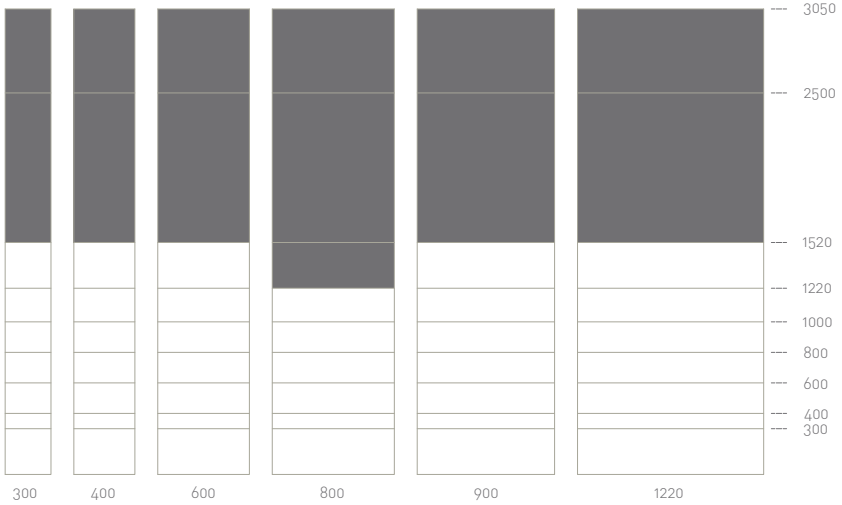


Economic module sizes

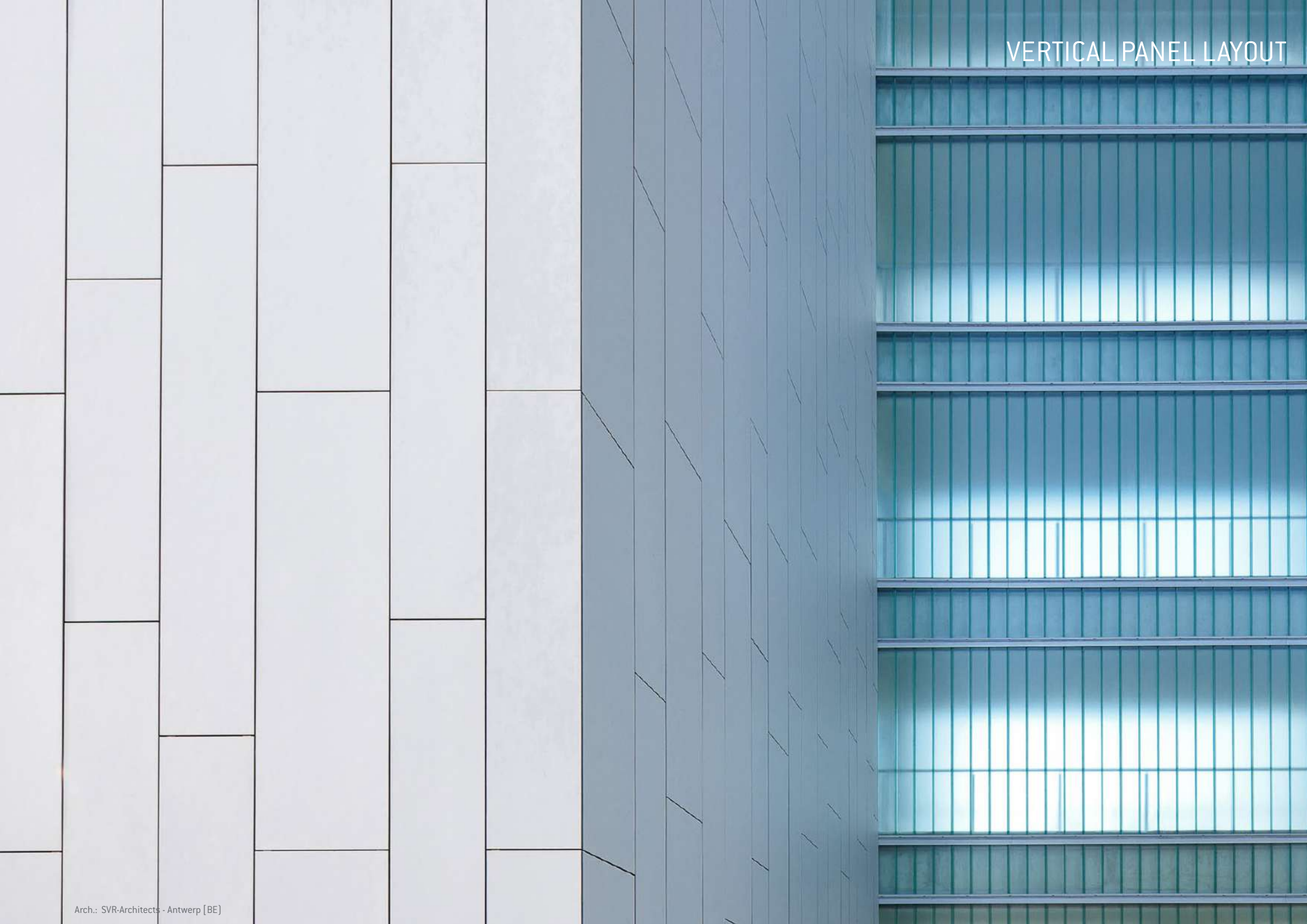
High performance fibre cement panels can be made to any module and offer the architect and designer wide design freedom. When designing, the following information is aimed at providing the specifier with guidance on the most economic material usage from standard sheets. Sizes greater than half the maximum manufacturing lengths become progressively less economical in ratio to the distance downwards from full length to half length as indicated on the charts.

The shaded areas indicate the most uneconomic modules cut from a standard sheet size (based on 1220mm x 3050mm sheet)

EQUITONE can provide support to optimalization calculations.



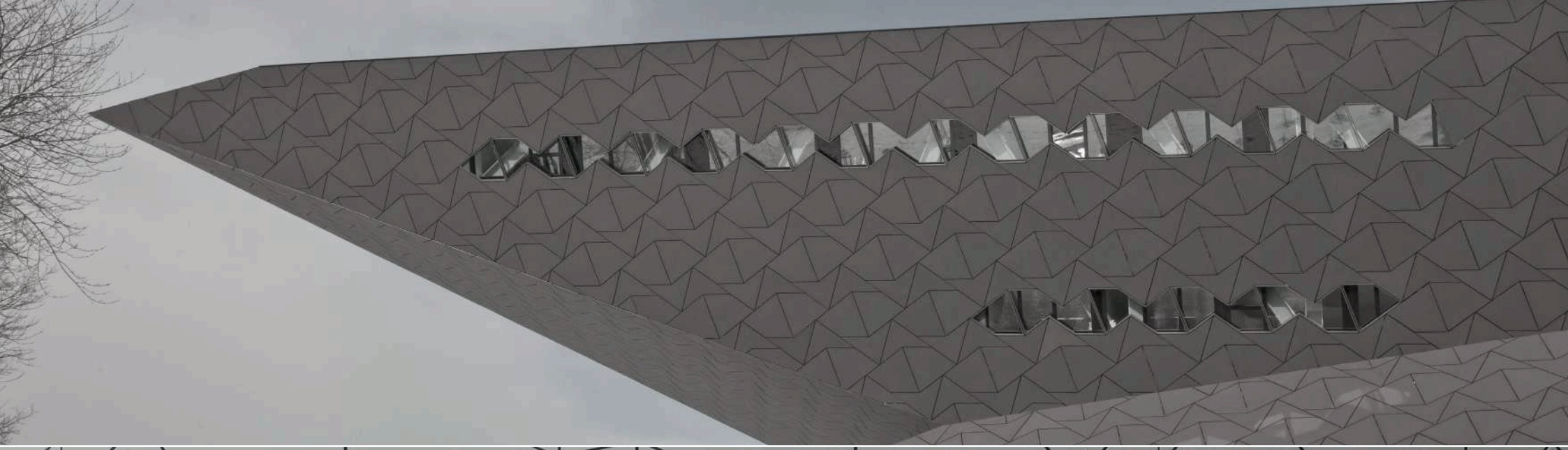
VERTICAL PANEL LAYOUT



Arch.: SVR-Architects - Antwerp [BE]

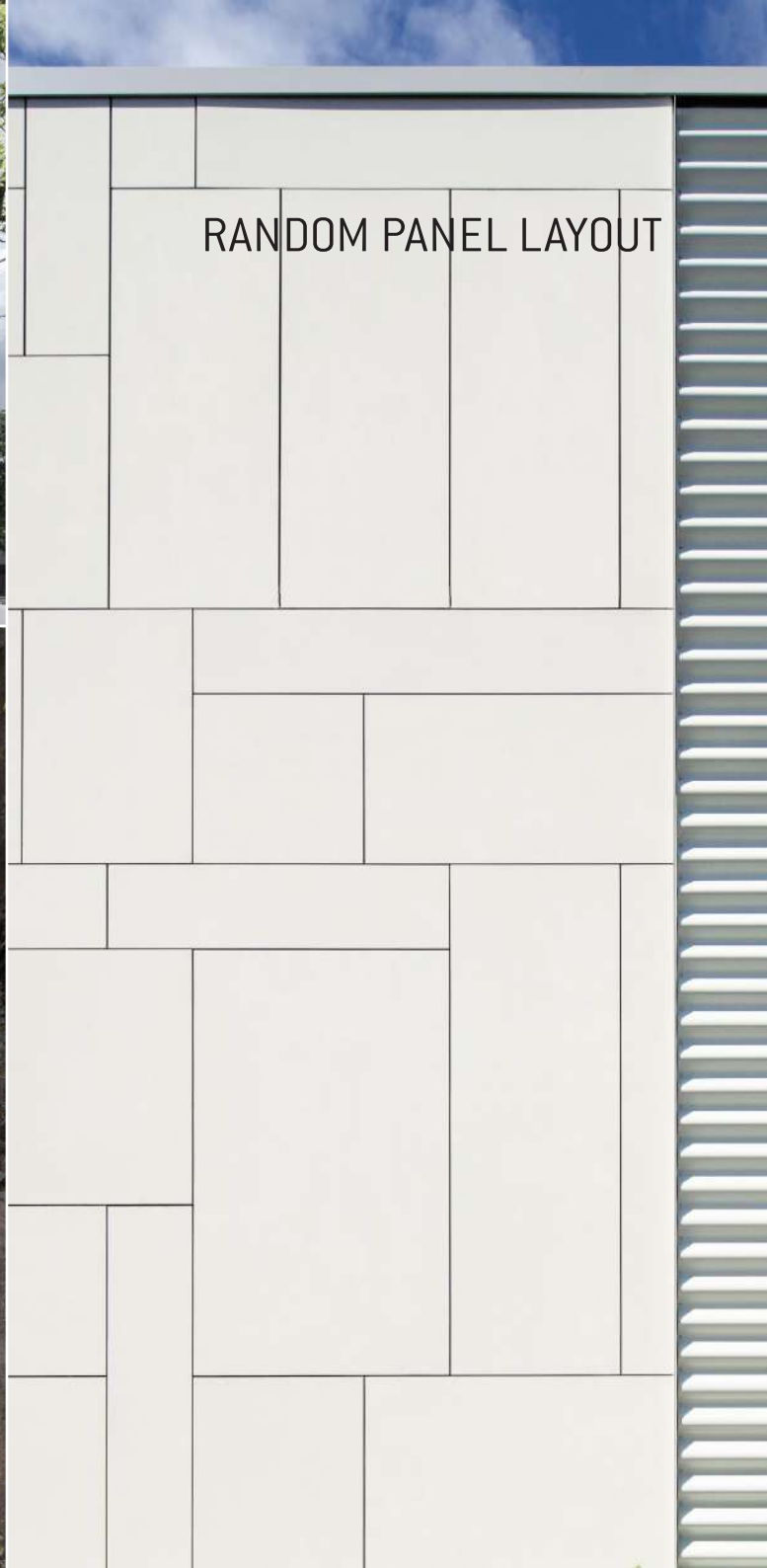
HORIZONTAL PANEL LAYOUT

Arch.: Architectuurstudio HH - Amsterdan (NL)



ANGLED PANEL LAYOUT

Arch.: Delugan & Meissl (AUT)


RANDOM PANEL LAYOUT

STAGGERED PANEL LAYOUT

Arch.: Kuin & Kuin Architecten – Den Bosch (NL)

4.0 Joints

It is a feature of a ventilated facade that the joints do not need to be sealed because any water penetration is managed by a combination of the cavity and the air tightness of the backing wall.
Normally four types of joints are used between the panels.

1. Open joints in which there is a clear open gap between the edges of adjoining panels.

2. Overlap joint in which the bottom of one panel overlaps the top of the lower panel.
   Shiplap is an example of this. This is only suitable for narrow panels.

3. Covered joints where an expressive feature is used over the joints to highlight the pattern.

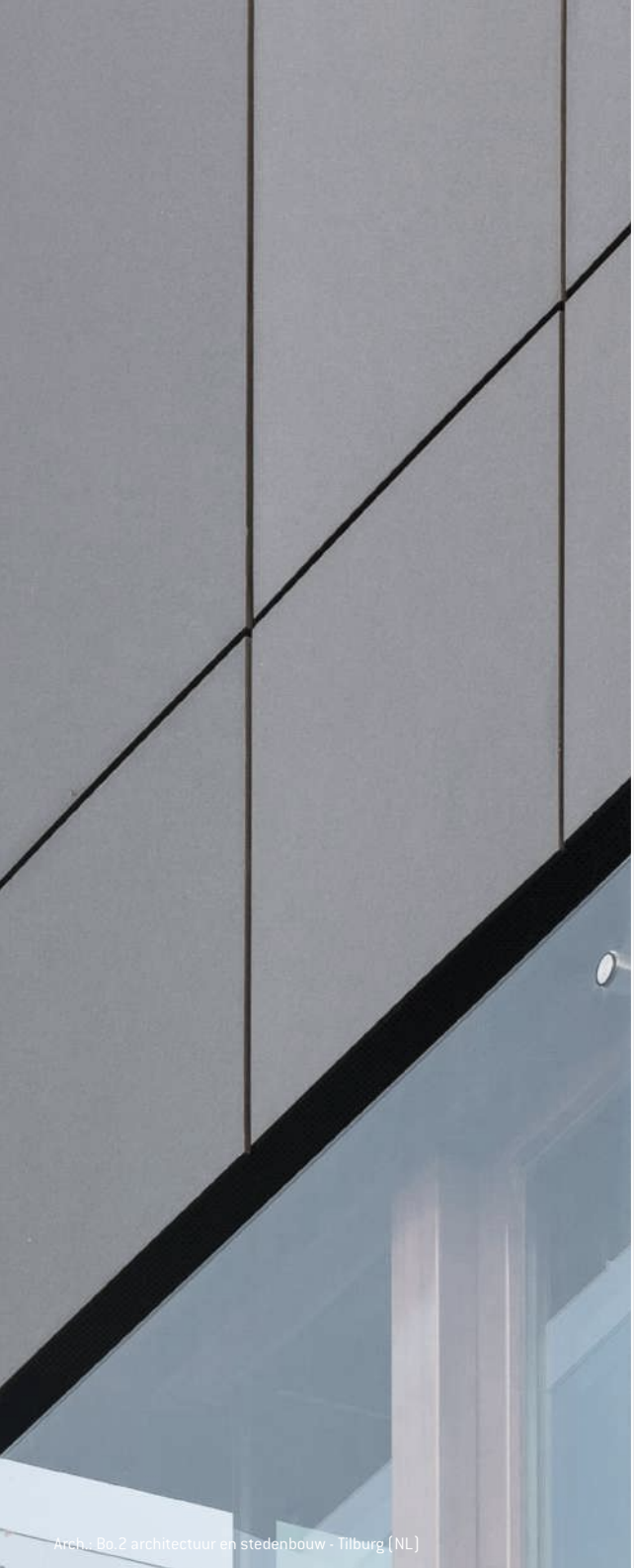
4. Baffled joints where a joint profile is positioned behind the panels to block the direct line through the opening, while not sealing it.

Consider colour choice of support frame, insulation and backing wall as these may be seen.

Joint Size

Many years of practice have shown that the optimum width of the joints between large panels is 10mm. A 10mm joint is the best, aesthetically. 10mm also offers the installer a good level of tolerance when installing the panel.

Minimum joint – 8mm. Maximum joint - 12mm



Arch.: Bo 2 architectuur en stedenbouw - Tilburg (NL)

OVERLAP JOINTS

Arch. Kristinsson - Deventer [NL]

COVERED JOINTS

Arch.: HUB Architects - Antwerpen (BE)

BAFFLED JOINTS

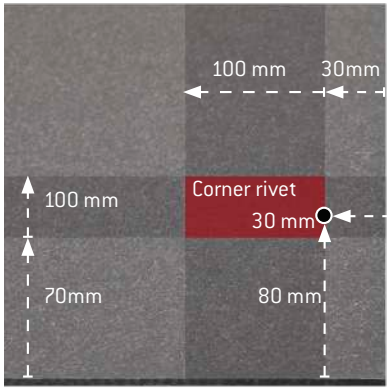
Kantoor gebouw D

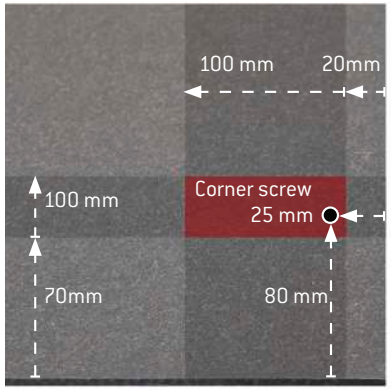
5.0 Fixings

1. Face Fixings

EQUITONE panels can be face fixed using EQUITONE UNI-rivet for metal support frames or the EQUITONE UNI-screw when a timber support frame is used.
All fixings are available with colour match heads to blend in with the panel.
The rivets and screws are both low profile heads.
The fixing systems are designed to accommodate the expansion and contraction of the support frame without putting excessive stresses on the panel.
The fixings are positioned at centres to suit the wind load the façade will be subjected to. Normally centres are up to 625mm and will reduce as determined by the wind calculations.

The corner position of the fixings should be located within the red box.





Refer to Uni rivet and screw fixing guides for full information.

5.0 Fixings

2. Hidden Fixings

For hidden fixings a mechanical system is possible. Please note that this is a precision fixing system and a good knowledge of fabrication and installation is critical to ensure a successful facade.

Mechanical Secret Fix

The mechanical hanging system utilises an undercut anchor which is secured in the rear of the panel in specially drilled holes. To this a hanger bracket is fixed. This hanger then interlocks with a horizontal rail.

* Refer to the individual mechanical hanging systems installation literaturefor details. This system is suitable for EQUITONE [tectiva], EQUITONE [linea], EQUITONE [lunara], and 12mm EQUITONE [natura], EQUITONE [natura PRO], EQUITONE [pictura] and EQUITONE [textura].

6.0 Support frame

EQUITONE panels are strong yet light, which reduces the amount of supporting frame needed compared with other materials. Certification for the structural stability of any supporting frame should be in accordance with local building regulations and must be obtained by the building's owner or his representatives namely the project engineer.

Common Support Frame Materials

Aluminium
Galvanised Steel
Timber

7.0 Backing wall

Structural Wall

The backing wall is critical to the performance of a ventilated facade system. If air movement through the backing wall is too great then the risk of water penetration is increased. Air leakage through the backing wall also presents a path for energy loss, and so must be limited.

Joints in metal support frame must coincide with a panel joint.

8.0 Special applications

General

While EQUITONE panels are used as a facade cladding, they can also be used in other applications.

1. Perforations

Perforations may take the form of round holes, slots, square, rectangular holes or random shaped holes.

2. Extreme cuttings

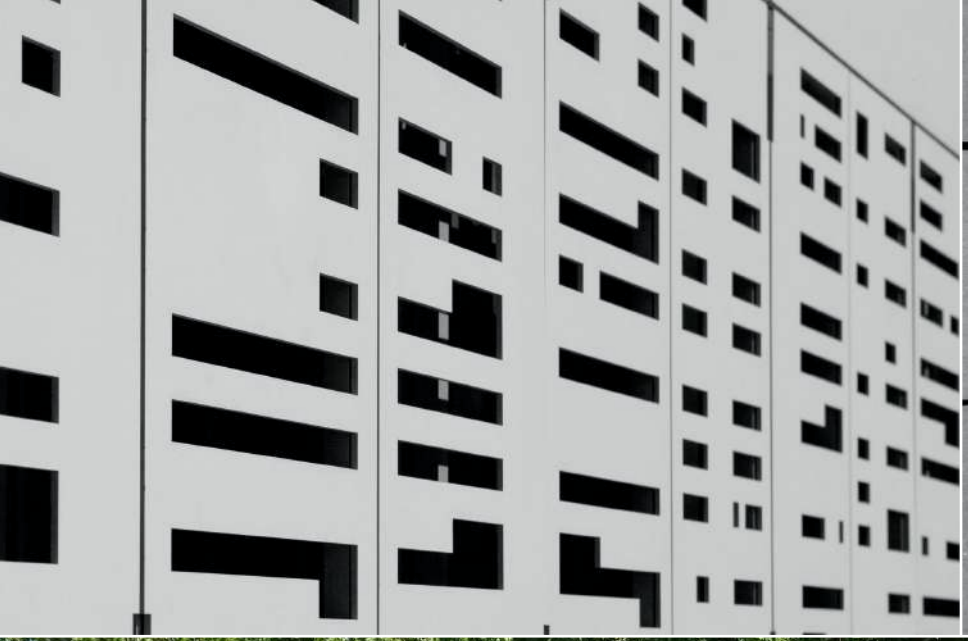
3. Milled surfaces

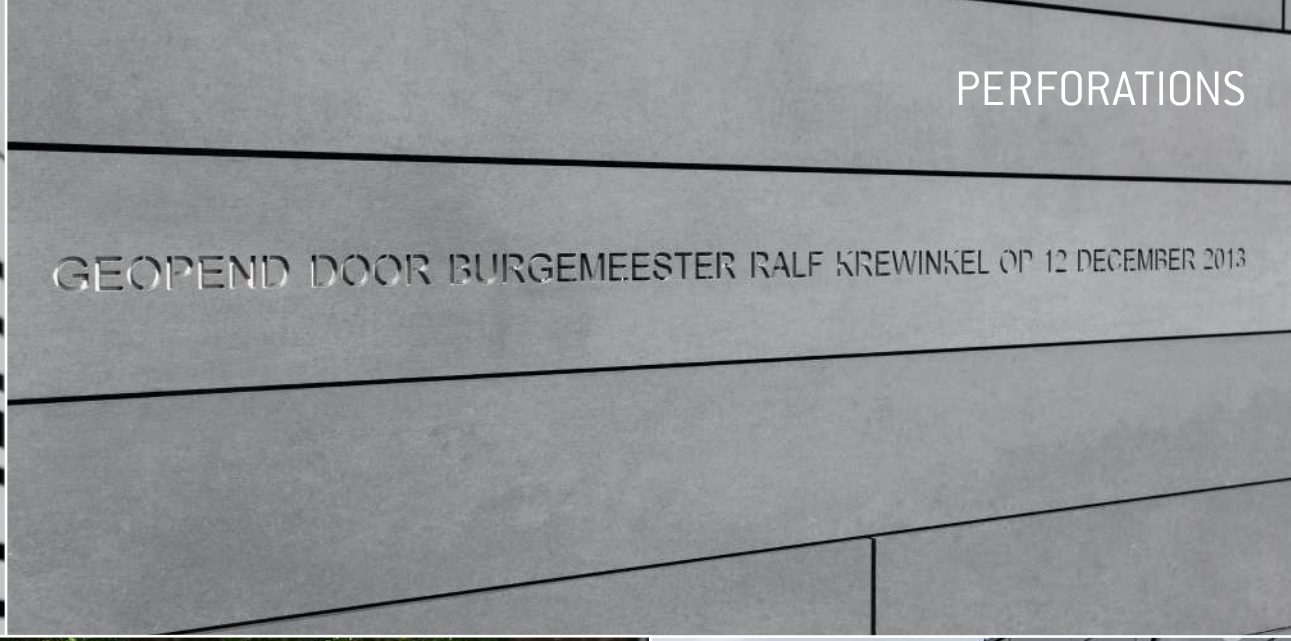
4. Curved Walls

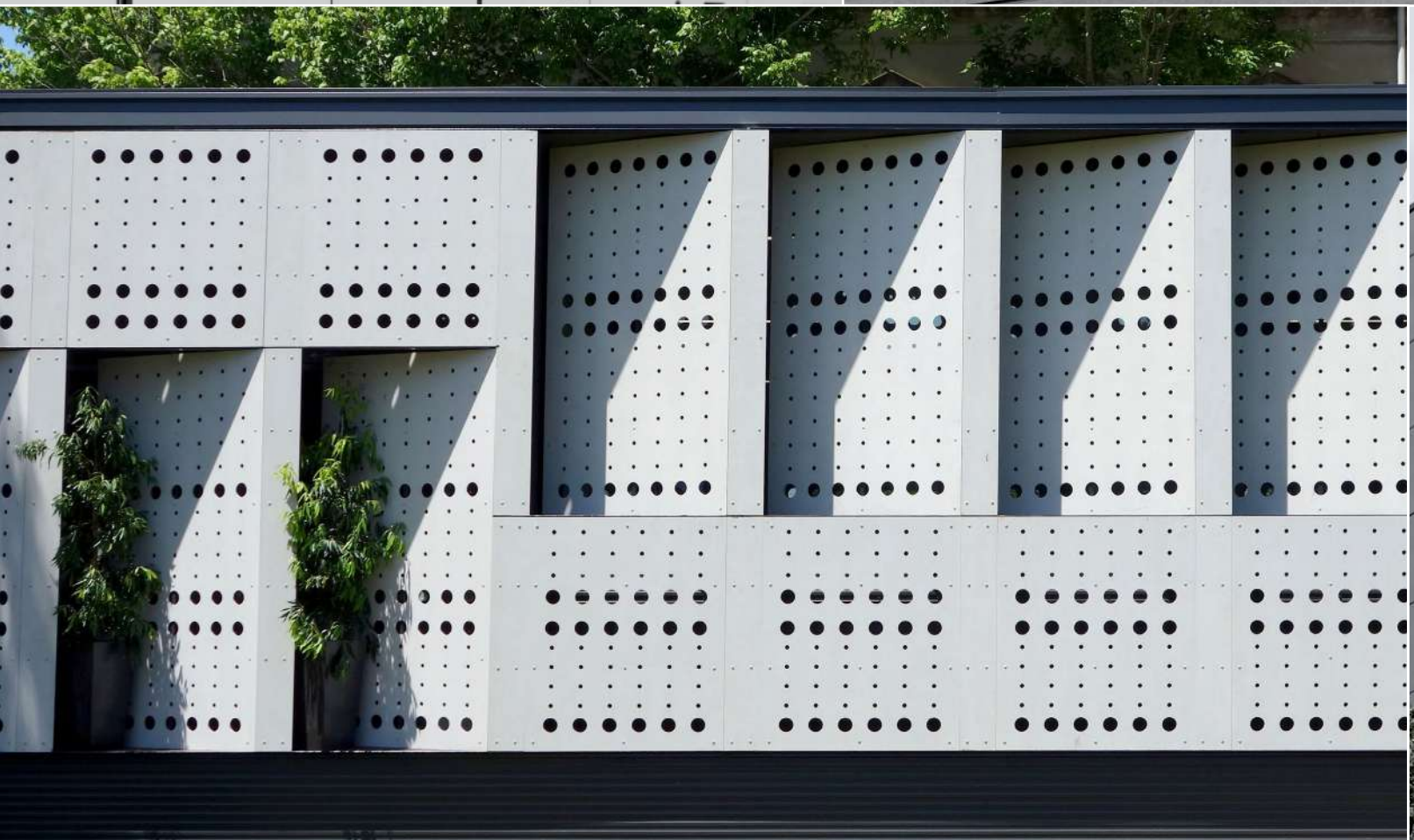
EQUITONE panels are flat. However it is possible to ease them around a curved facade. Note that the orientation of the panel is also critical.
A horizontal panel bends easier than one placed vertically.
The minimum radius that an 8mm EQUITONE panel can be UNI-rivet or UNI-screw fixed to a curving facade is 12.0m.

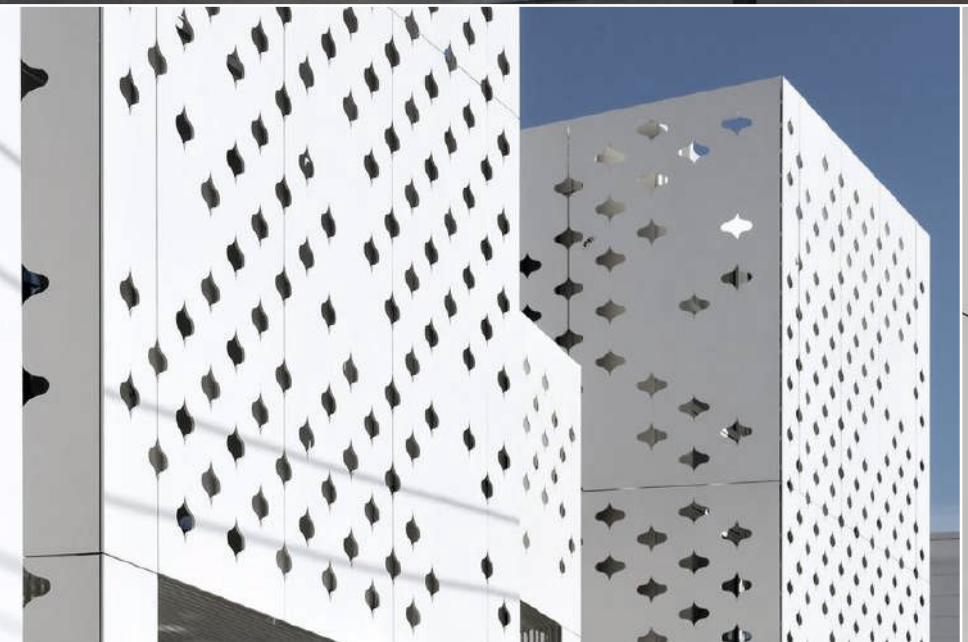
Please contact your local EQUITONE Service team for more assistance.

PERFORATIONS







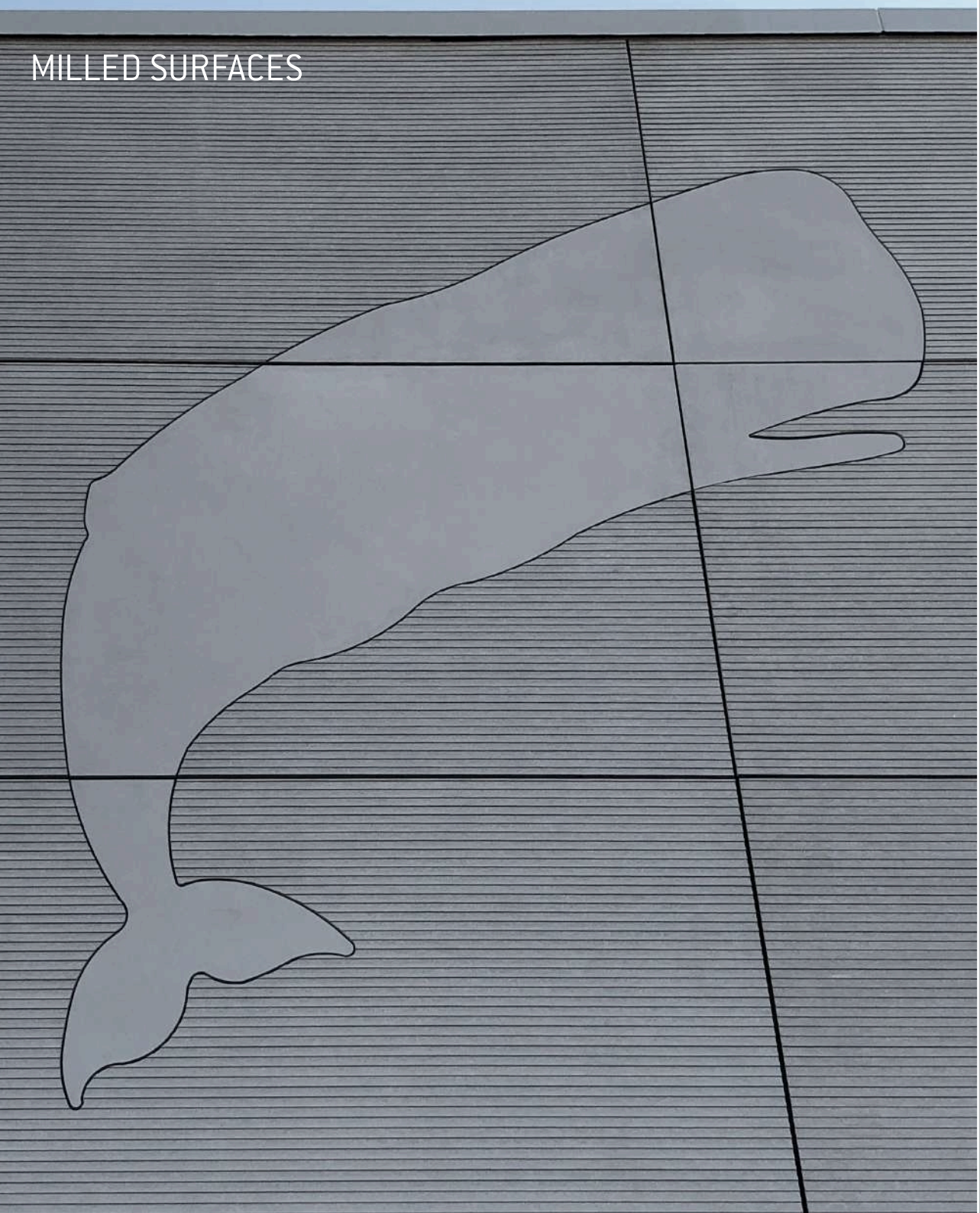


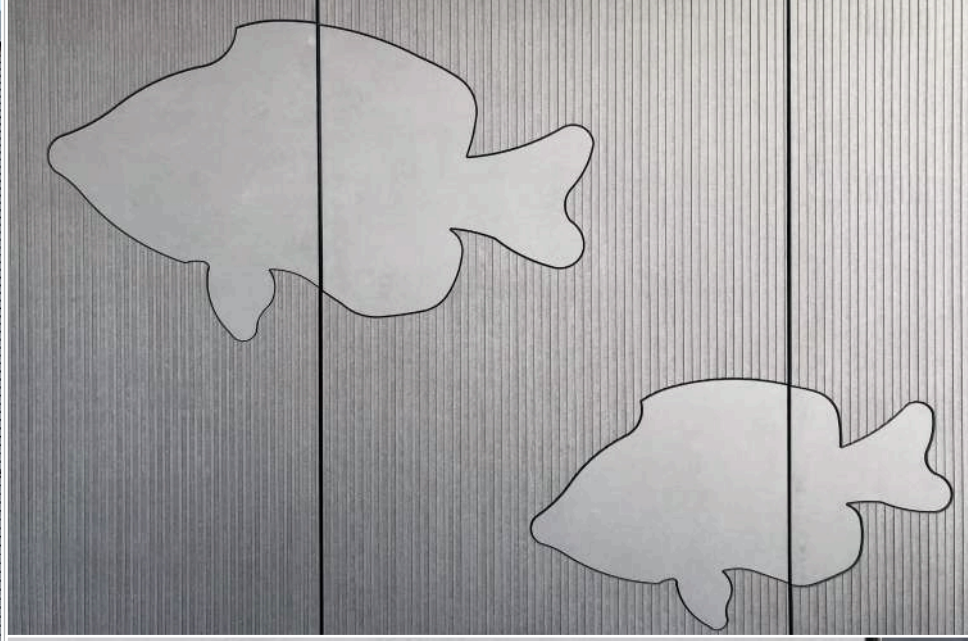
MILLED SURFACES

Arch.:Zwischenräume Architecten und Stadtplanner GmbH, Munchen (DE)

NWKA Architects Malaysia

MILLED SURFACES





CURVED WALLS

8.0 Special applications

5. Roof applications

EQUITONE [textura] and [pictura] can be considered for applications on a roof. Please bear in mind that the panel is only decorative and there must be a suitably designed water-proof construction under the panels.
Please contact your local EQUITONE Service team for more assistance.

6. Weatherboard / Shiplap Pattern

An alternative to the flat facade is the shiplap appearance which emphasises the horizontal lines. This consists of narrow panels fixed to the facade at an angle not parallel to the wall.
Glue and mechanical secret fixing is not possible with this arrangement.
Please contact your local EQUITONE Service team for more assistance.

7. Brise soleil and shutters

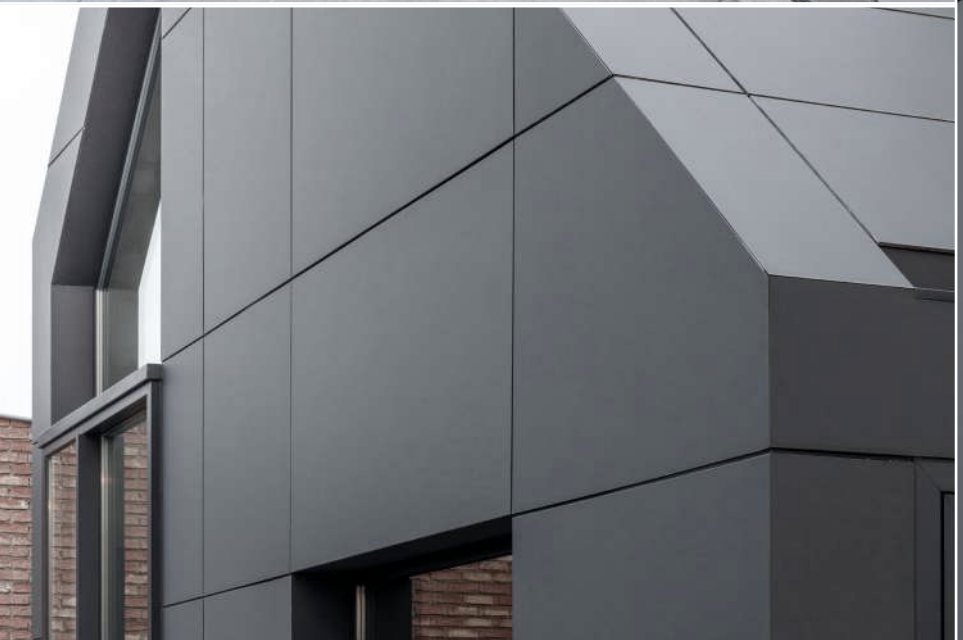
EQUITONE can be used as a Brise Soleil, shutter or architectural feature of a building. To be installed both horizontally and vertically.The Brise Soliel or shutter gives the feature of a continuous façade and can also be perforated if required to give a unique visual aspect to the façade.
Not all materials are suitable for this application, please contact your local technical support for additional information.

8. Curtain Walling

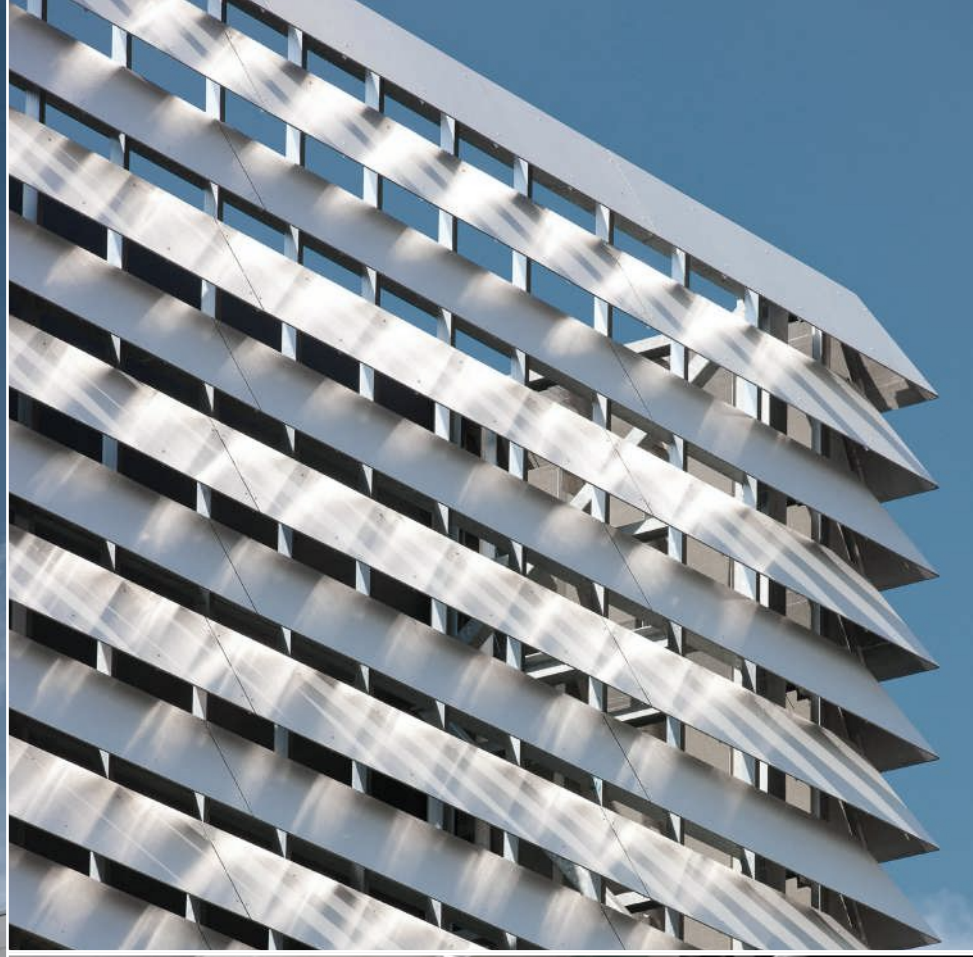
The post-and-beam or stick system is normally assembled on site. The vertical members are fixed to the floor slab and then connected with horizontal transoms. Into this frame will fit the glazing or panels.

9. Internal Use

The use of EQUITONE panels internally is possible, please contact your EQUITONE service team for more assistance.



BRISE SOLEIL



Arch.: Bo.2 architectuur en stedenbouw - Tilburg (NL)

INTERNAL USE

9.0 Detailing

Ground Level

General Principles:

Position the ends of the panels a minimum 150 mm above the finished ground level to

- To help prevent rain splashback
- Ensure entry of air into cavity
- Protect opening with a perforated profile to prevent entry of vermin into the cavity.
- End of panel to form a drip to prevent water running back to wall.

No planting should be grown near the air inlet as over time the plants may block the air flow.

Only EQUITONE [textura] and [pictura] can be used for this arrangement of allowing the panel to run into the ground. Position a 10 mm open continuous joint within 600 mm of the finished ground. Form a drainage trench at the base of the panels to prevent water build-up.

Figure 1: Ground Level

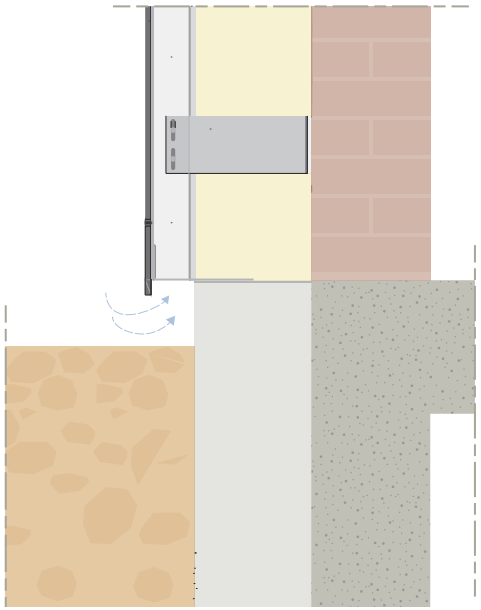
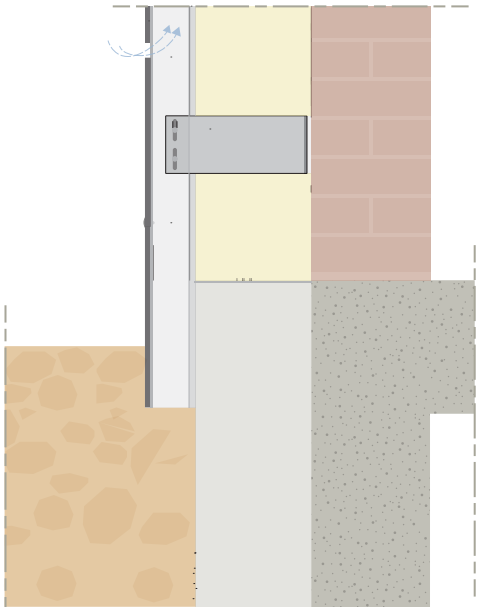


Figure 2: Ground Level



9.0 Detailing

External Corners

General Principles:
The edges of the panels can be open joints or fitted with a decorative trim profile.
Supporting the corners of the panels is critical.
A continuous vertical cavity closer can be introduced so that the wind pressures are separated from one side to the other.

Figure 3:
Open Joint External Corner

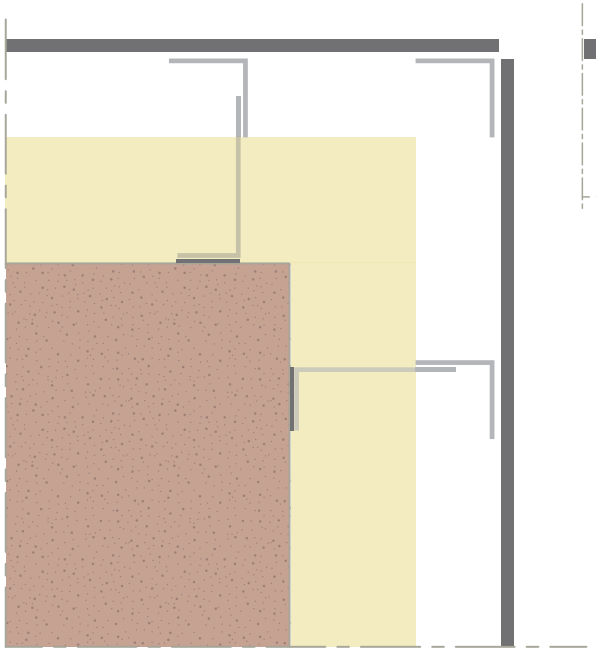
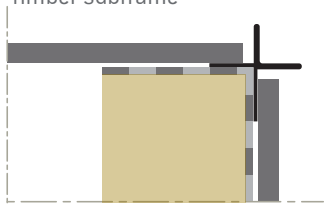


Figure 4:
Standard External Corner Detail

Figure 5:
Mitred External Corner Detail

Figure 6:
External Corner with trim
Timber subframe



9.0 Detailing

Internal Corners

General Principles:
Similar to external corners, Internal corners can be left as open joints or fitted with a trim profile.
Any trim profile must be less than 0.8mm thick to prevent distortion of panel. Trim profiles need to be fully supported on angle profiles.

Figure 7:
Robust Internal Corner Detail
Metal

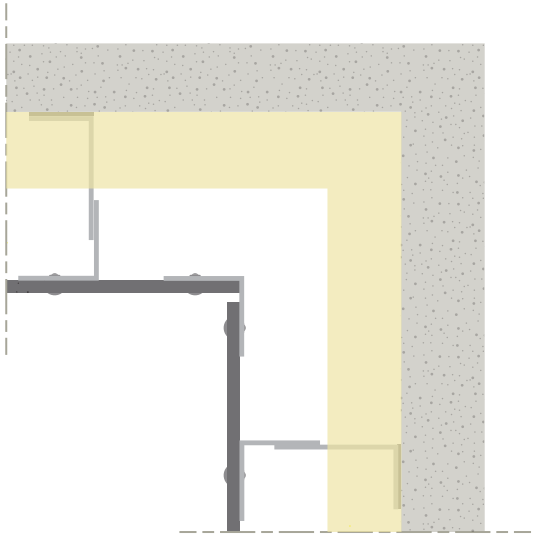


Figure 8:
Internal corner trim
Could be metal or plastic

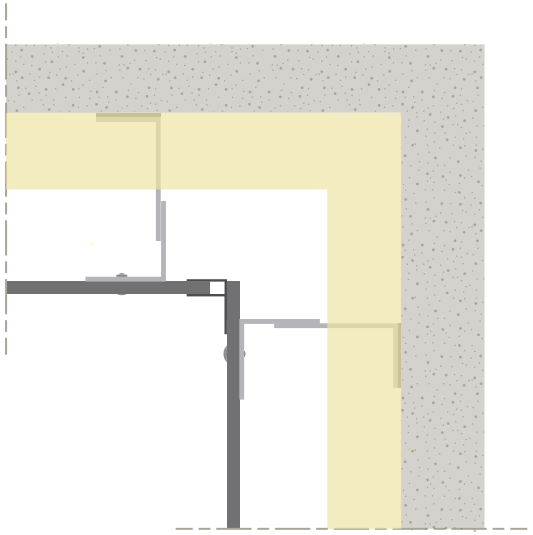
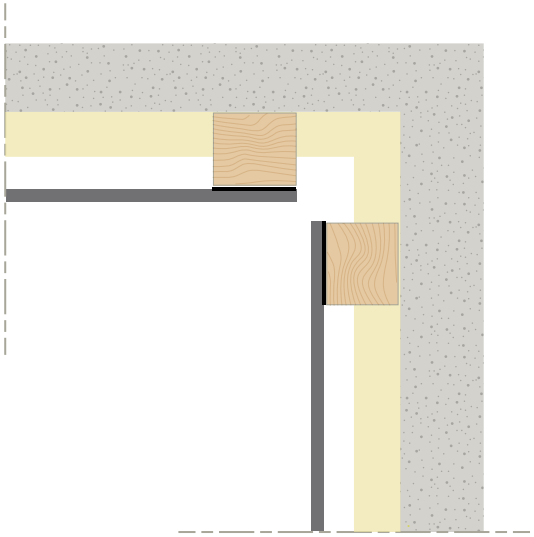


Figure 9:
Alternative Internal corner trim
Timber



9.0 Detailing

Parapet

General Principles:
Protect the top of the cavity against water ingress.
Ensure sufficient air flow is maintained out under the coping.
For wider gaps a perforated profile can be used to prevent entry of birds.

Flush Parapet Detail:

Where a parapet is desired without an overhanging coping it is important to;

Protect the top of the cavity against water ingress.

Seal back of panel to the metal flashing.

Figure 10: Parapet Detail

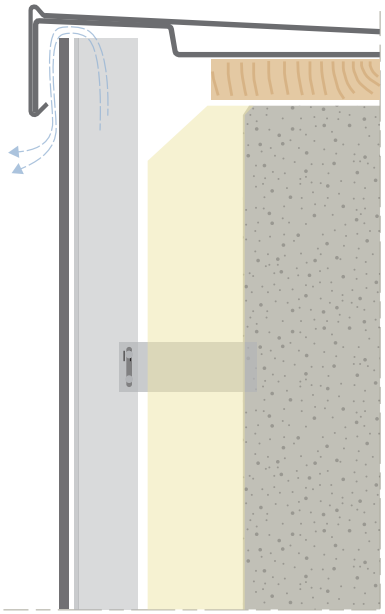
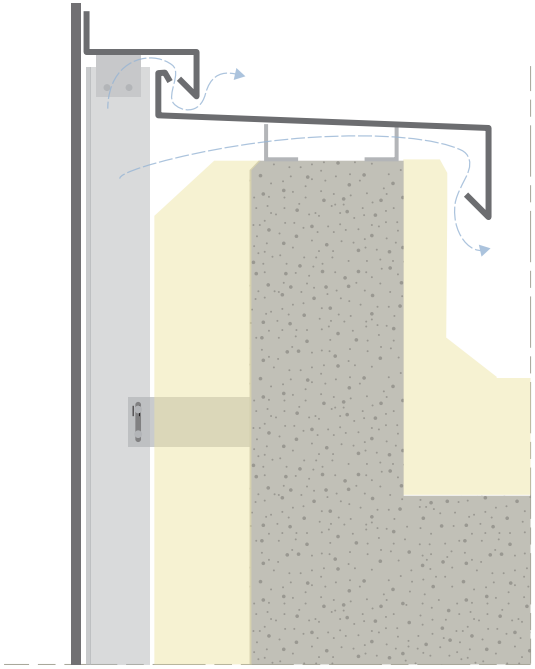


Figure 11: Flush Parapet Detail



9.0 Detailing

Recessed Window

The ends of the window cill must be returned up behind the panel or the flashing at the reveals to offer protection from moisture ingress.

Figure 13: Window Jamb

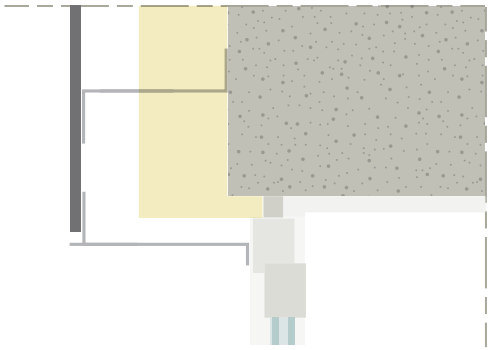
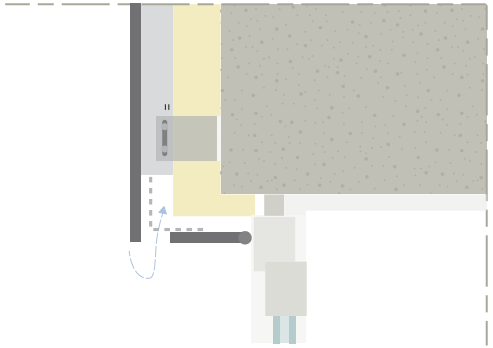


Figure 16: Window Head



See Figure 15.

For Narrow Window Reveals Specialist flashings as part of the window are best suited. The ends of the window cill must be returned up behind the panel or the flashing at the reveals to offer protection from moisture ingress.

Figure 14: Jamb Detail

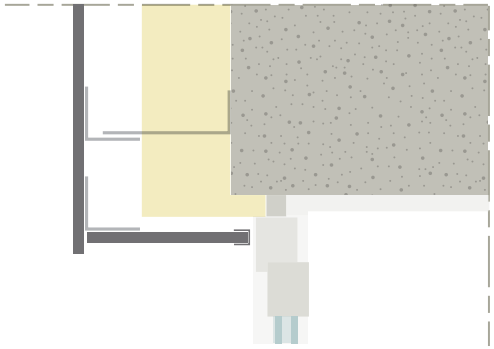
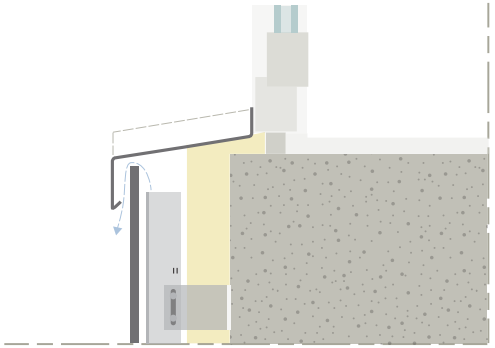
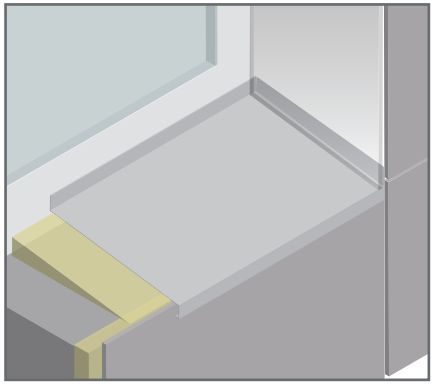


Figure 15: Window Cill





9.0 Detailing

Flush Window

General Principles:
Typically formed using an Aluminium profile or similar to create the closer to cavity and cover to the window abutments. The maximum unsupported edge of the panel must be respected.

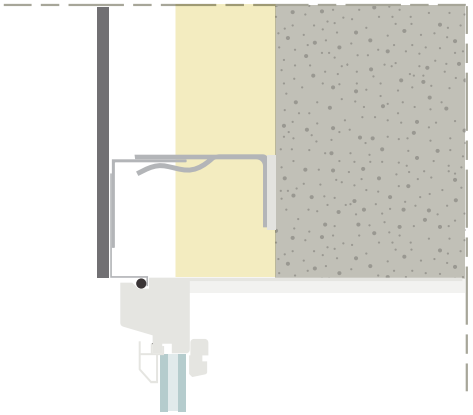


Figure 17: Flush Window

Structural Movement Joint

General Principles:
For the building structural expansion joints the panel must not be fixed crossing over this expansion joint.

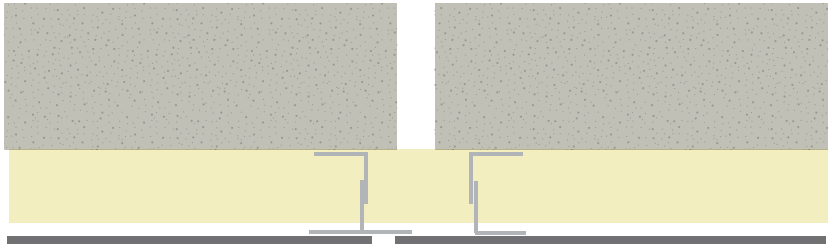


Figure 18: Vertical Movement Joint

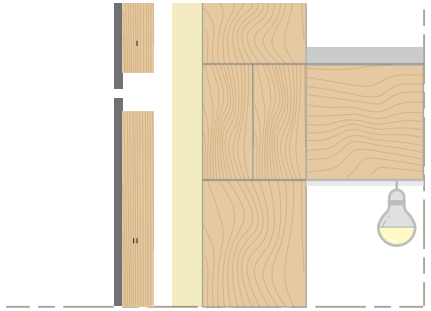


Figure 19: Horizontal Movement Joint

9.0 Detailing

Soffit/Junctions

General Principles:

EQUITONE to Flat Soffit

EQUITONE materials can be used for a soffit application either as a small soffit and fascia or a large soffit/ceiling. When used in this application it is recommended to ventilate the rear of the material and to reduce the framing/fixing centres.

Please contact your local EQUITONE Service team for more assistance.

A clear ventilation path must be provided at the head of any façade panel/framing where it abuts a soffit. Depending upon the soffit type and finish this may require ventilation as well.

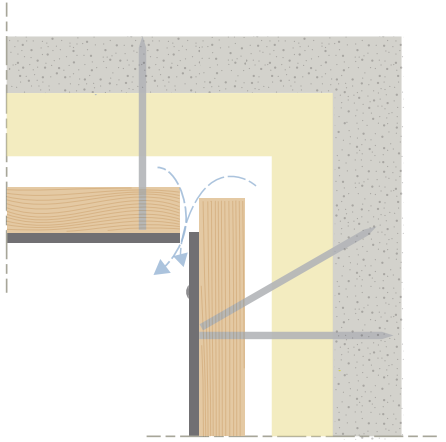


Figure 20: Soffit Detail

Junction with other Façade Materials

EQUITONE to Render

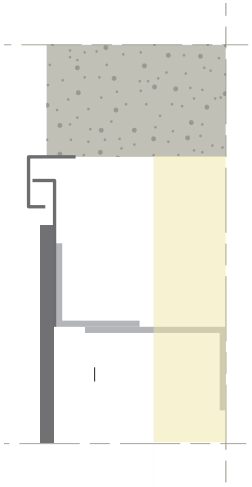


Figure 21:
EQUITONE to render side abutment

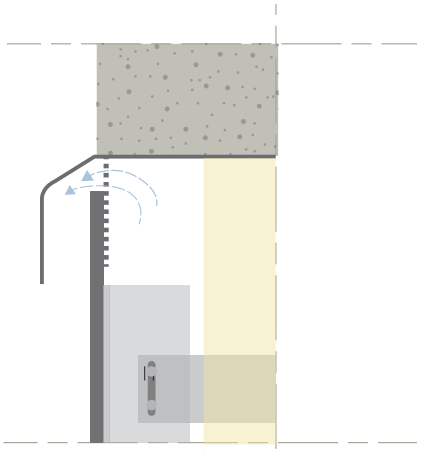


Figure 22:
EQUITONE to render top abutment

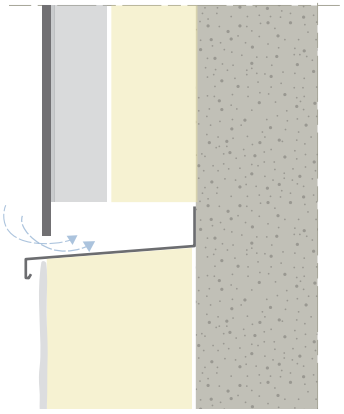


Figure 23:
EQUITONE to render base detail

9.0 Detailing

Equitone to Curtain Wall

General Principles
Any abutment or side detail must prevent the penetration of water or moisture between the different constructions/ materials

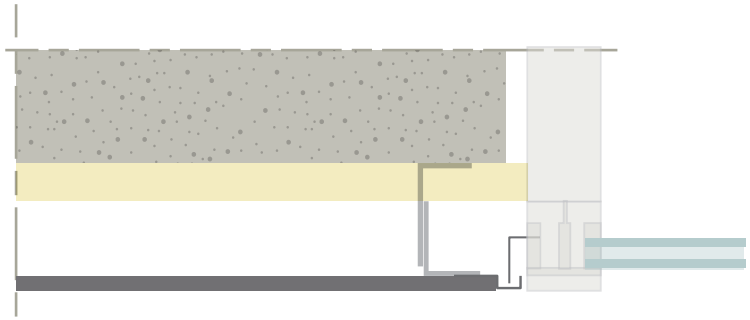


Figure 24: EQUITONE side detail Curtain Wall

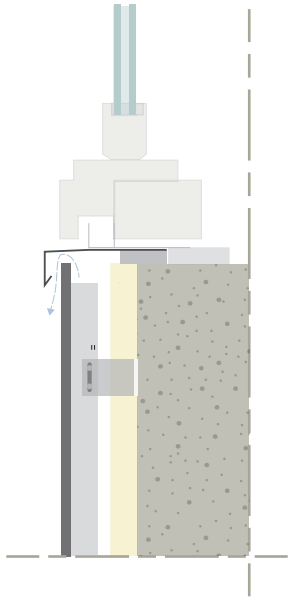


Figure 25: EQUITONE top detail Curtain Wall

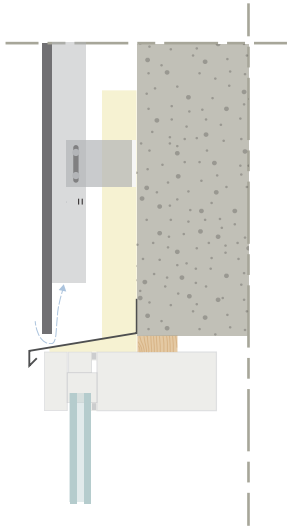


Figure 26: EQUITONE base detail Curtain Wall

9.0 Detailing

EQUITONE TO MASONRY

Any abutment or side detail must prevent the penetration of water or moisture between the different constructions/materials

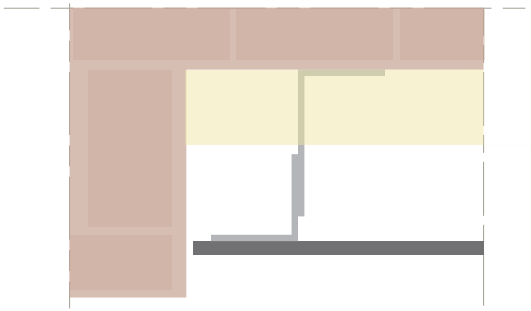


Figure 27: EQUITONE to masonry side detail

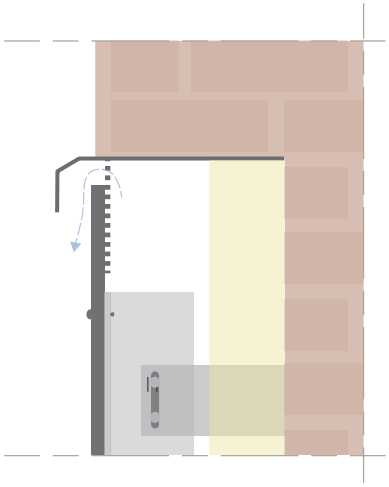


Figure 28: EQUITONE to masonry top detail

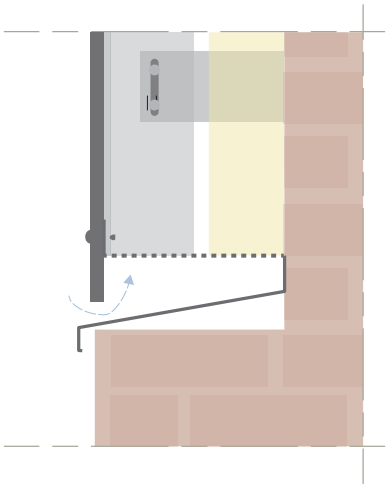


Figure 29: EQUITONE to masonry base detail

10.0 Maintenance and cleaning

GENERAL

All façades, irrespective of the material used, should be serviced regularly. Then, unnecessary and high costs are avoided in the long term. The building also retains its continuous and attractive appearance. If one the allows the soiling to work into the materials for too long, it is possible that it will have penetrated so deeply into the pores of the material that simple cleaning is no longer possible

The building should be designed with access in mind so all panel areas can be inspected and maintained.

THE SOILING PROCESS AND METAL FLASHINGS

Dust, soot, oils, greasy substances, etc. are present in the air and rainwater and can be deposited on a façade. If care is taken through considerate design and application, local soiling and runs can be avoided. This can be achieved by having adequate drip-moulding, good sealing and attention to combat corrodible materials such as zinc, copper, aluminium, steel, etc. The degree and speed at which materials become soiled largely depends on the surface, chemical stability, hardness, porosity, ability to become electrostatically charged or not.

Consideration should be given to how the building may weather and the how the water run-off from materials affects other materials below.

GRAFFITI

The UV-cured EQUITONE [pictura] and EQUITONE [natura pro] surface coating provides superior protection against common colours and spray paints. It is smooth and cleanable. The [pictura] and [natura pro] surface coating meets the requirements of the placement test and test cycle 2 of the Quality Association for Anti-Graffiti eV for surface-protective anti-graffiti systems (ILF 4-013/2006 report of the Institute for paints and inks eV). Note that when an on-site graffiti protection is applied to the panels the appearance of the panel may change as the protection effects the light reflectance of the panel's colour.

CLEANING

There are two methods of cleaning façades, mechanical cleaning and chemical cleaning. In principle, perform the cleaning of the facade over the entire surface, because partial cleaning can result in colour tone differences. Normal stains can be removed with a sponge and water. The use of abrasive materials such as scourer, steel wool, etc. is not allowed, as they leave irreparable scratches on the surface.

EFFLORESENCE

Lime scumming can be avoided by handling the sheets in the correct way. The sheets must be stacked in a dry ventilated space. The sheets must always be protected from rain. During storage the synthetic film may not be removed; the foil is only removed with use. If the sheets do become wet in the packing, all packaging must be removed and the sheets must be rubbed dry and placed in a way that they can dry out thoroughly.

If lime scumming still occurs, one can remove it with a light acid solution, only applied to the sheet (not to glass, aluminium, etc.).

More information is contained in the application guidelines, contact technical support.

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