Preliminary Facade Materials Presentation

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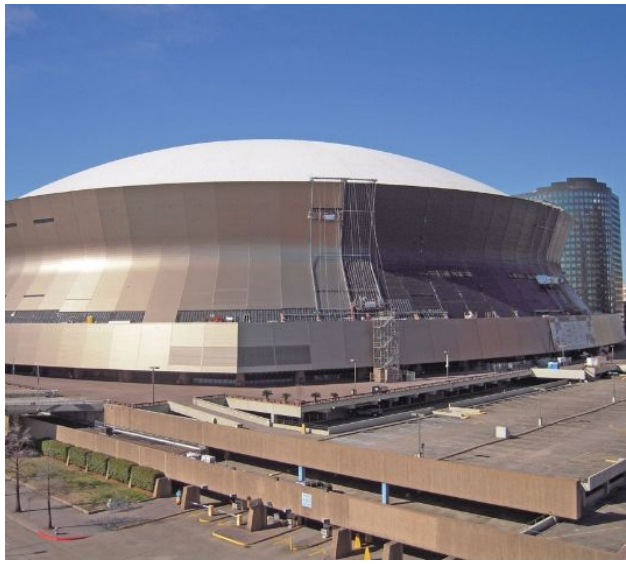
Building Tech 3

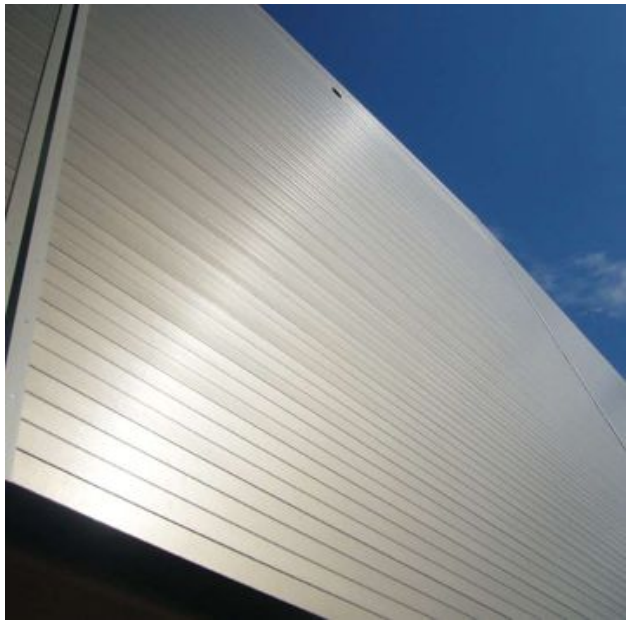
Arch 2431 Professor King

Team Members : Dominik and Hubert

Opaque Material : Kalzip Rainscreen system

Case Study : Louisiana Superdome, New Orleans





2.0 System overview

The FC rainscreen from Kalzip is a fast-to-install, open-jointed, lightweight, flat metal rainscreen system. It provides a cost-effective solution for horizontally spanning cladding applications in both new-build and refurbishment projects.

Fixing-free supports

The FC façade system is supplied with proprietary fixing-free panel supports. Panels can be clicked into either individual support brackets (mono-click brackets) or continuous modular rails (modular click rails). In summary the system consists of:

- FC panels with edge returs
- A range of modular click rails or alternatively mono-click brackets
- Additional system components, accessories and installation tools such as the fixed point clamp, guidance snapper, flashing holder and modular click rail setting out tool

To ensure trouble-free panel installation, it is essential that the modular click rails or mono-click brackets are accurately aligned according to the guidelines in this manual to give a plane and level underlying support for the FC panels. A range of typical adjustable sub-construction options are illustrated which provide solutions for all types of backing wall.

Profile parameters

The FC panels are available from 250 mm to 500 mm in 50 mm cover width increments. Bespoke cover widths can be produced on request. The nominal profile depth is 30 mm. Panels can be roll-formed from min. 350 mm to max. 10 m standard lengths in the gauges given in Table 1.

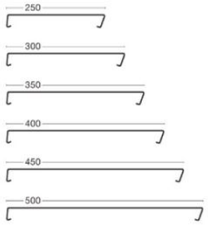


Tabelle 1: FC panel thickness and cover width availability

Thickness (mm)	FC 30/250	FC 30/300	FC 30/350	FC 30/400	FC 30/450	FC 30/500
1.0	●	●	●	●	–	–
1.2	○	○	○	○	○	○

● Available as standard ○ Available on request – Not available

Panel edge returns

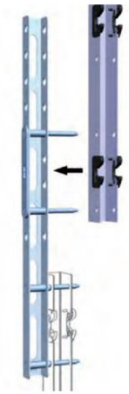
Kalzip FC rainscreen panels are Supplied as standard with edge returns. Panels can be supplied without edge returns on request. The diagrams illustrating panel installation in this manual are shown without edge returns for clarity.

Mono-click bracket

The mono-click bracket consists of a 2 mm thick aluminium bracket fitted with specially designed plastic inserts to accommodate the upper and lower FC panel edge geometry. The plastic inserts allow the panels to easily click into place and reduce any noise caused by rattling. The bracket is supplied with two pre-drilled Ø 5.2 mm holes at 50 mm centres. The bracket must always be fixed in both holes.

Setting out tool

The setting out tool is used to accurately join together adjacent modular click rails. Made from stainless steel, the adjustable pins can be moved up or down to accommodate the full range of standard panel cover widths. When the next rail is fixed in position, the setting tool can then be removed. See section 5.7 for detailed installation instructions.



Fixed-point clamp

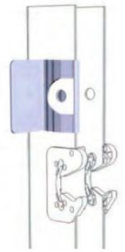
The fixed-point clamp is used to secure the panel at a single position either at the middle or the end of the sheet. Every FC panel must have a fixed point at a single position. See section 6.4 and 6.5 for detailed installation instructions.

Guidance snapper

The guidance snapper is designed to ensure a constant gap between adjacent panels. See section 4.2 for information on use of the guidance snapper with straight panels (single- and triple-span). The guidance snapper is also used on internal and external corner panels to ensure correct alignment. See section 6.6 for detailed installation instructions for corner panels.

Flashing support

The flashing support clips into the modular click rails without the need for additional mechanical fasteners. It ensures a consistent, level surface is provided to which flashings can either be screwed or riveted. See section 7 for detailed installation instructions.



Modular click rails

There are three different types of modular click rail available for mounting FC panels (NE, SE and SEL). Fabricated from 2 mm thick aluminium and pre-fitted with plastic inserts, they are supplied in standard lengths between 2.7 m and 3.0 m. Bespoke lengths up to 6.0 m can be supplied on request. The rails are pre-punched with arrows indicating the correct way up.

Modular click rail NE

The modular click rail NE is a Non-structurally Effective support rail. That means it must be fixed at every panel locking position to a structurally effective support rail. The rail is supplied with two Ø 5.2 mm pre-punched holes at 50 mm centres at each panel locking position.

Modular click rail SE

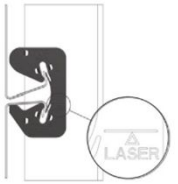
The modular click rail SE is a Structurally Effective support rail i.e. it can be used independently as a spanning element. The spanning capacity must be calculated by a structural engineer. It does not have pre-punched holes for fixing as the fixing position is not necessarily at the panel locking positions.

Modular click rail SEL

The SEL 40 provides a Structurally Effective rail with an integrated web for ease of fixing to standard L-profile wall brackets. The spanning capacity must be calculated by a competent structural engineer.

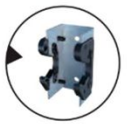
Plastic inserts

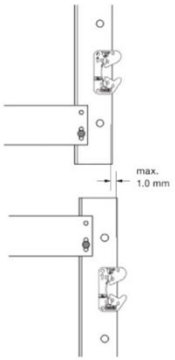
The plastic inserts are supplied pre-fitted to mono-click brackets and modular click rails. Due to the panel locking geometry the inserts are provided for left and right sides of the rail or bracket. When correctly installed the embossed arrow indicates the upward direction. The insert is also provided with a marking for convenience of alignment using a laser level. The laser level line also corresponds to the centre of the panel gap.



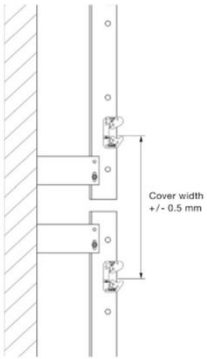
3. Vertically adjacent mono-click brackets or modular click rails must be aligned within 1.0 mm of each other.

View from side





Panel cover width
The distance between panel locking points in vertically adjacent mono-click brackets or modular click rails must be within + / -0.5 mm of the nominal panel cover width. See section 5.7 for information on using the modular click rail setting out tool.



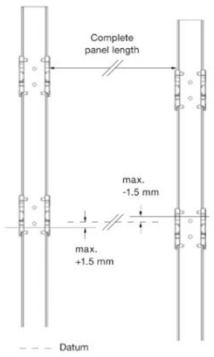
Sub-construction requirements

Height alignment

Note

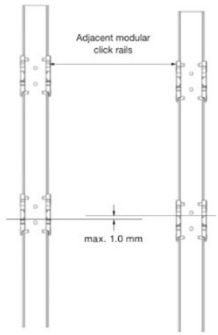
Do not use the top of the modular click rails to take measurements – always use the laser markings on the plastic inserts to check the height alignment.

Over a complete FC panel length, the maximum deviation from the datum level must not exceed 1.5 mm.



Between adjacent modular click rails or mono-click brackets, the difference in height must not exceed 1 mm (independent of rail spacing).

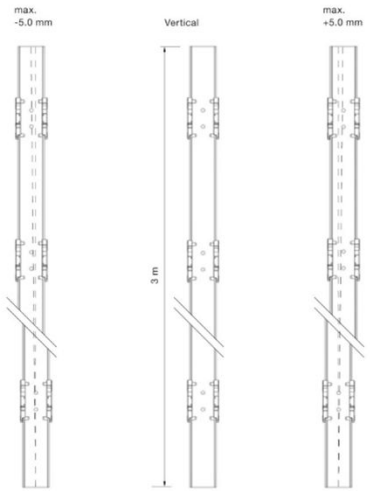
View from front



Sub-construction requirements

Vertical alignment
Over a 3 m distance, the alignment of modular click rails or mono-click brackets must be within + / - 5 mm of the vertical.

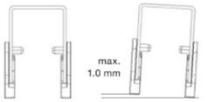
View from front



Sub-construction requirements

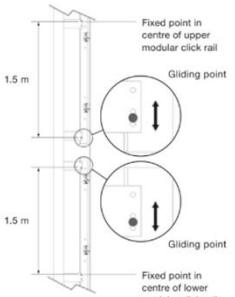
Rotational alignment
The modular click rails or mono-click brackets must be aligned to within the tolerance shown below.

View from top



Modular click rail expansion joint
To allow for thermal movement, the modular click rails should be a maximum of 3 m lengths, preferably with the fixed point at the top of each modular click rail. It is also possible to make the fixed point in the centre of the modular click rail as shown in the example below.

View from side

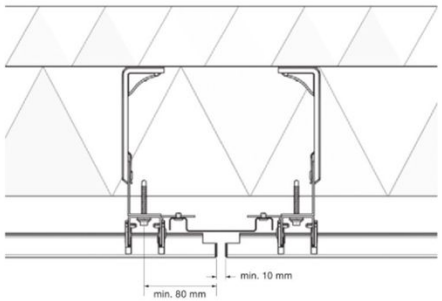


4.2 Panel support requirements

This section gives an overview of the panel support requirements. Section 6.3 gives further information on vertical panel joints.

Panel overhangs
To ensure sufficient room for the installation of flashings (either directly on the sub-construction or using the proprietary flashing support) the minimum distance between the centre of the panel locking area and the edge of the panel is 80 mm. The maximum allowable panel overhang is 20% of the panel span.

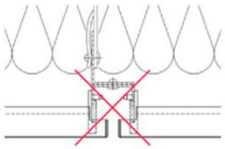
Minimum joint width
All vertical panel joints must be a minimum of 10 mm width. This is to ensure there is sufficient space for the panels to expand and contract. For panels longer than 10 m, 1 mm per linear metre gap should be allowed.



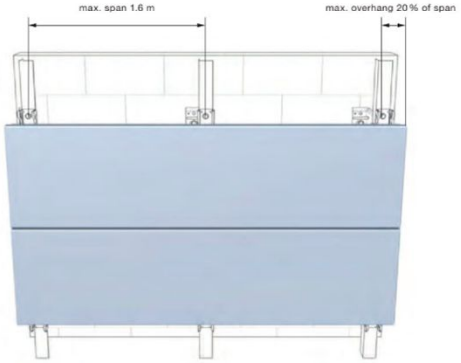
Panel support requirements

Stop

A single mono-click bracket or modular click rail must never be used to support two FC panels.

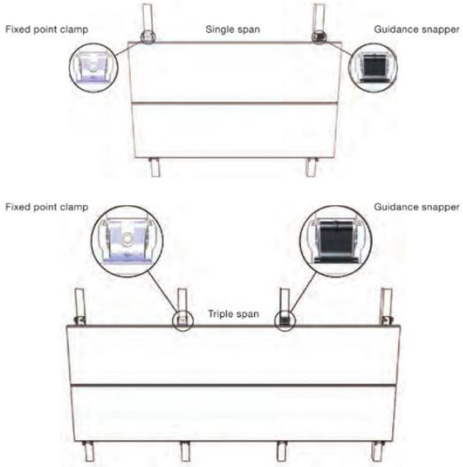


Maximum panel span
The maximum panel span (distance between adjacent panel supports) is limited to 1.60 m independent of structural performance.



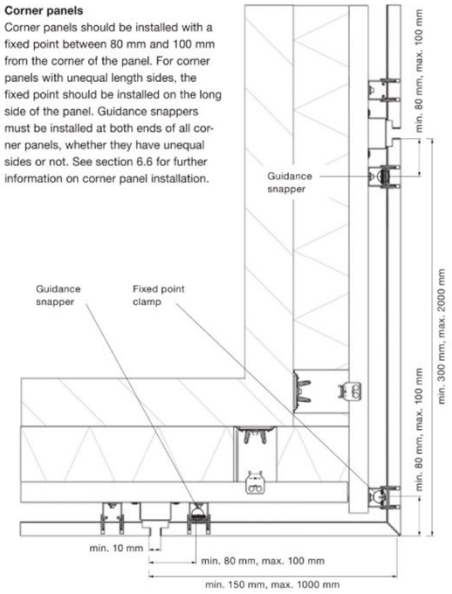
Panel support requirements

Single and triple-span supports
In situations where the FC rainscreen panel is supported in a single span configuration, the panel must be fitted with a guidance snapper adjacent to the fixed point clamp. In a triple span configuration, it is also recommended to install a guidance snapper adjacent to the fixed point clamp. For double and multiple span configurations, a single fixed point in the middle of the panel is sufficient.



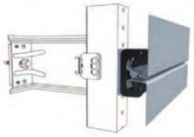
Panel support requirements

Corner panels
Corner panels should be installed with a fixed point between 80 mm and 100 mm from the corner of the panel. For corner panels with unequal length sides, the fixed point should be installed on the long side of the panel. Guidance snappers must be installed at both ends of all corner panels, whether they have unequal sides or not. See section 6.6 for further information on corner panel installation.

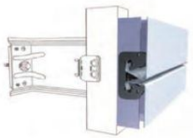


5.0 Sub-construction installation

The Kalzip FC rainscreen system must be installed on an adjustable sub-construction system. This is required to ensure a plane, level surface for supporting elements. It also provides a cavity for wall insulation and an air gap for drainage and ventilation. This chapter gives an overview of six different variations on a range of types of back wall. The type numbering follows the same sequence as the 2D construction details.



1. Mono-click brackets on vertical rails



2. Modular click rail NE on vertical rails

3. Modular click rail SEL on L-brackets

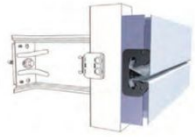
4. Modular click rail SE on U-brackets

5. Modular click rail SE on horizontal rails

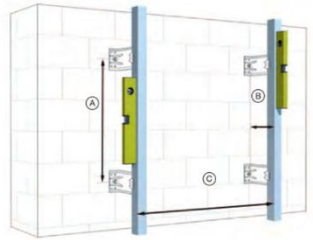
6. Modular click rail SE on structural cassette

5.2 Modular click rail NE on vertical rails

The modular click rail NE is fixed to vertical support rails. Use of this system allows adjustment to be made in two subsequent steps and provides an easy-to-install solution with standard wall brackets.



Vertical support rails
The vertical rails (e.g. L-profiles) must first be accurately aligned in the plane of the back wall. Adjust the rails to the in-plane, vertical and rotational alignment tolerances specified in section 4.1. Check the distances A, B and C are correct according to the project drawings.

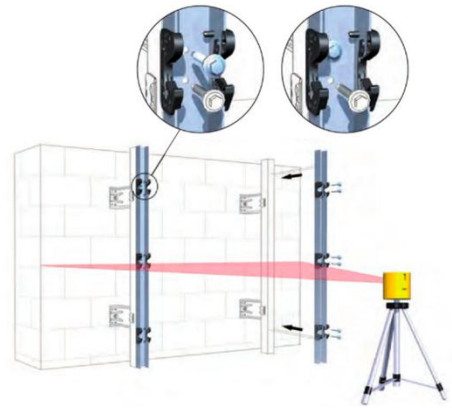


Fixing modular click rail NE
Align the modular click rails on the vertical support rails and adjust the height accurately with a laser.

Note

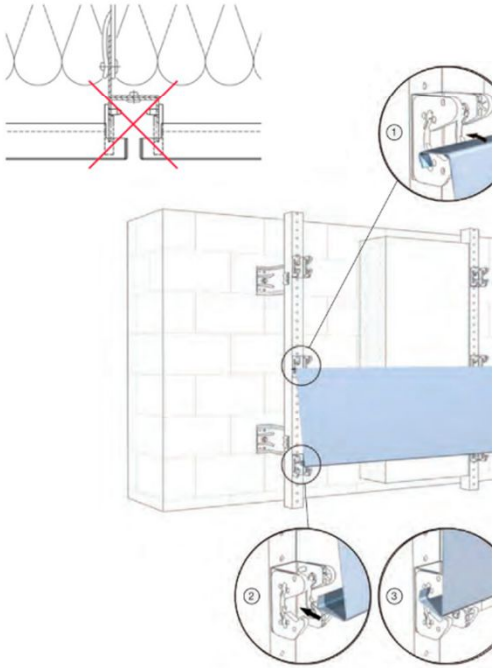
The modular click rail NE must be fixed at every panel locking position.

Two pre-punched Ø 5.2 mm holes are provided in the modular click rail NE for rivets or screw fixings. The number of fixings must be installed according to the project structural design calculations and drawings.



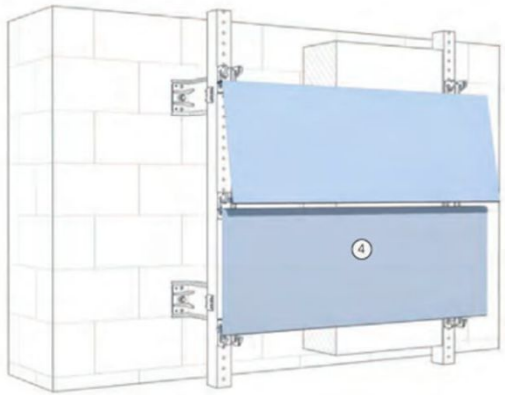
6.1 Panel installation (bottom to top)

This sequence shows the installation of FC panels from bottom to top. Refer to section 6.4 for making the fixed point.



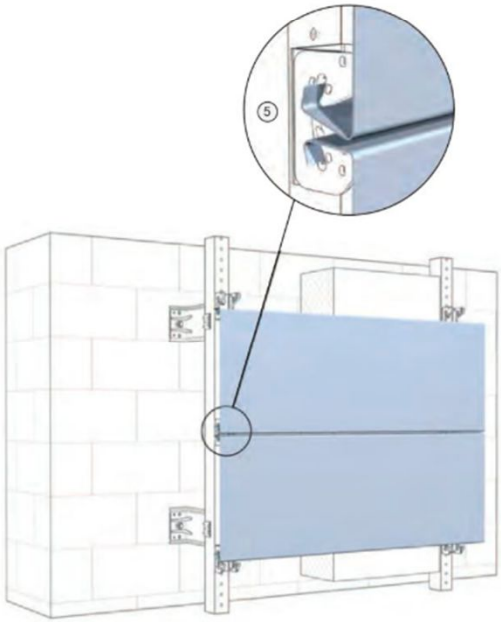
Panel installation (bottom to top)

4. Make a fixed point in the lower panel (see section 6.4) before hooking the second panel in place above. For single and triple-span applications the guidance snapper must also be installed at the positions shown in section 4.2.



Panel installation (bottom to top)

5. During bottom-to-top installation, each panel can be clicked directly into the mono-click brackets or modular click rails.

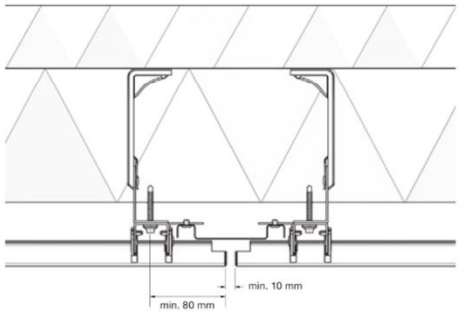


6.3 Vertical panel joints

Vertical panel joints are important for the appearance of the rainscreen. This section should be read together with section 7 on flashing installation which gives a range of possible joint flashings.

Minimum joint width
All vertical panel joints must be a minimum of 10 mm width. This is to ensure there is sufficient space for the panels to expand and contract. For panels longer than 10 m, 1 mm per linear metre gap should be allowed.

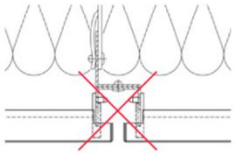
Panel overhangs
To allow sufficient space for flashings to be fixed (either directly to the sub-construction or via the proprietary flashing supports) there should be a minimum of 80 mm distance between the centre of the supports and the edge of the panel. The maximum allowable panel overhang is 20% of the panel span.

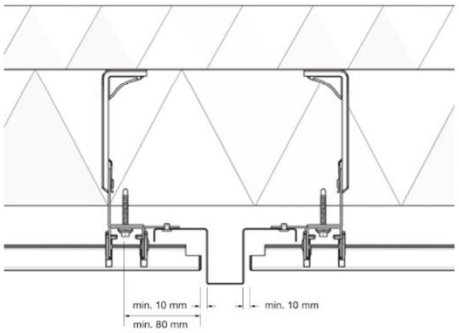


Panel joints with flashings
For vertical joints which include flashings separating the edges of adjacent panels, the minimum gap width should be 10 mm either side of the flashing.

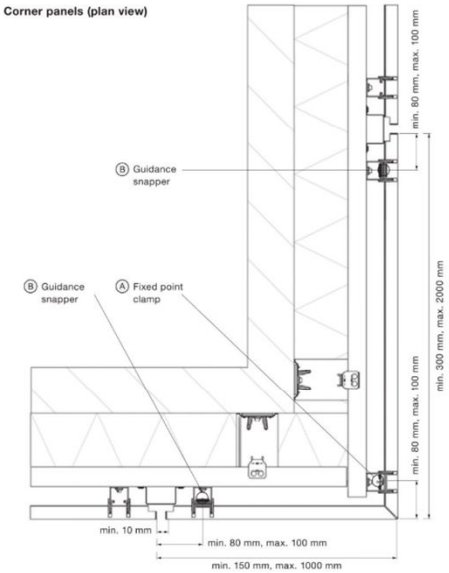
Stop

A single mono-click bracket or modular click rail must **never** be used to support two FC panels.



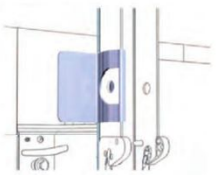


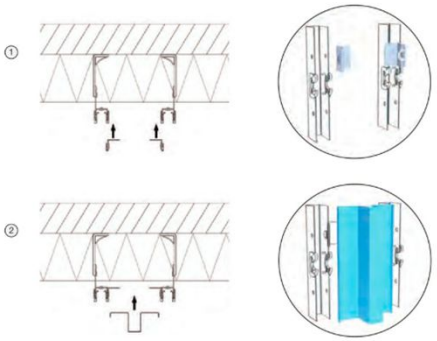
Corner panels (plan view)



7.0 Flashing installation

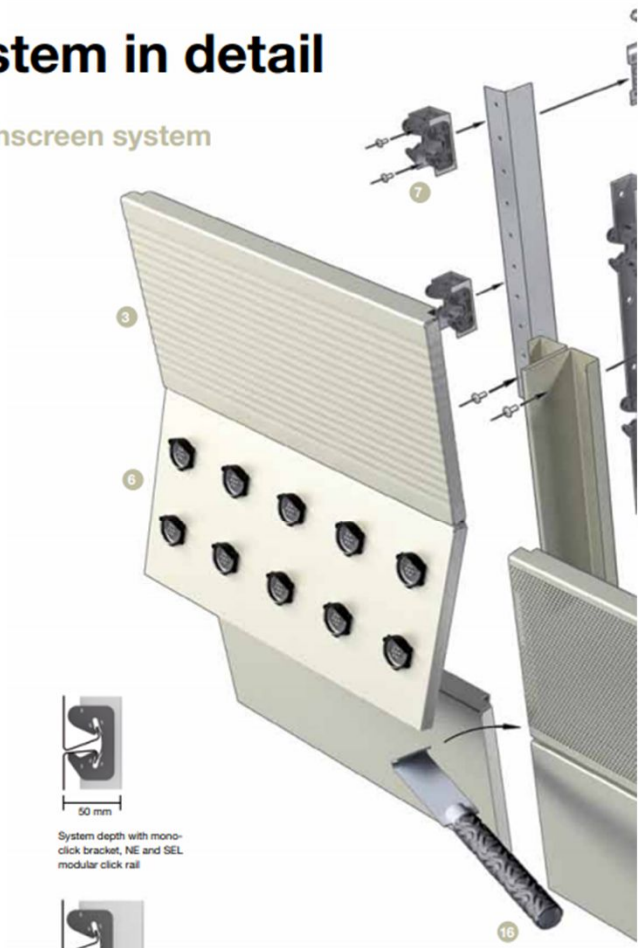
Fixing flashings between panels is made fast and easy using the proprietary flashing support accessory. This component clicks into pre-punched holes in the modular click rails without the need for any additional fixings and provides a flat self-aligned surface to which flashings can be screwed or riveted.





The system in detail

Kalzip FC rainscreen system



Panels

Delivery options

1 FC panel
2 FC corner panel
3 Micro-rib surface (FC 30/400 only)
4 Perforation Rv 3-5
5 Perforation Rv 6-8
6 FC panel luminaire

System sub-construction

Variants

7 Mono click bracket
8 SEL modular click rail
9 NE modular click rail
10 SE modular click rail

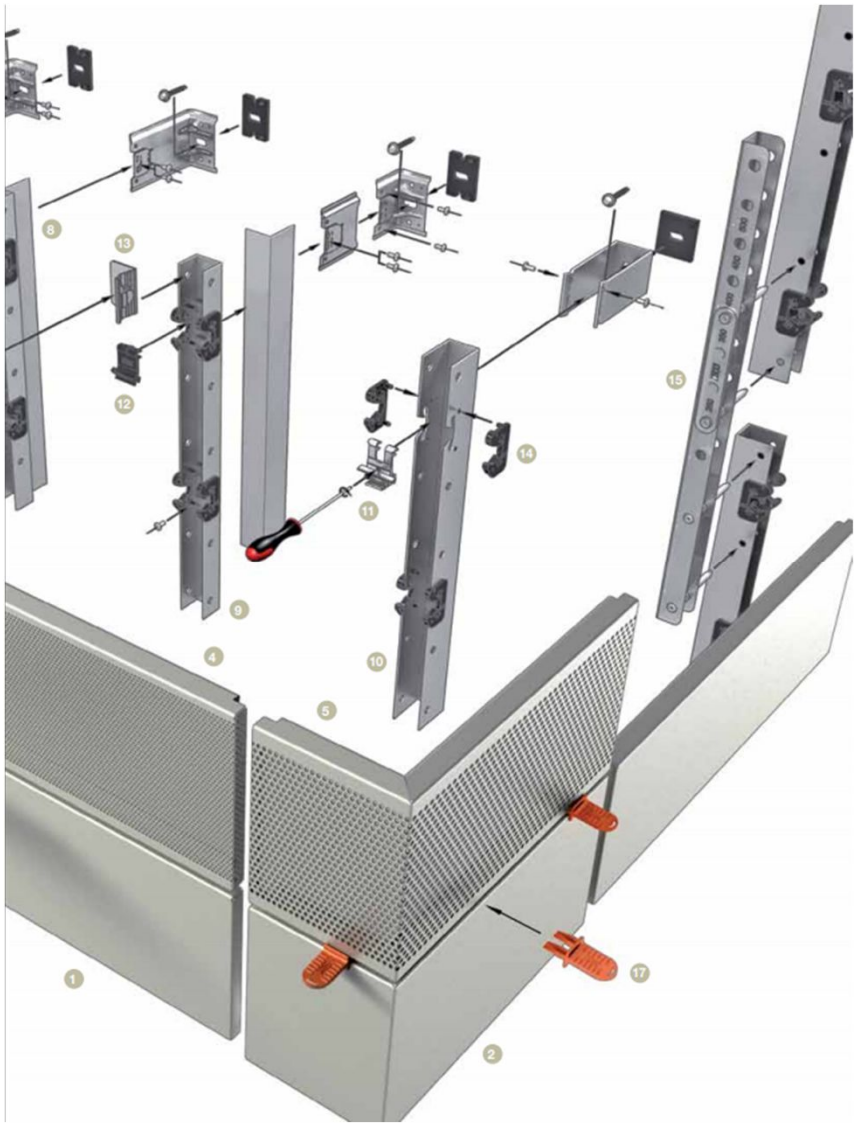
System accessories

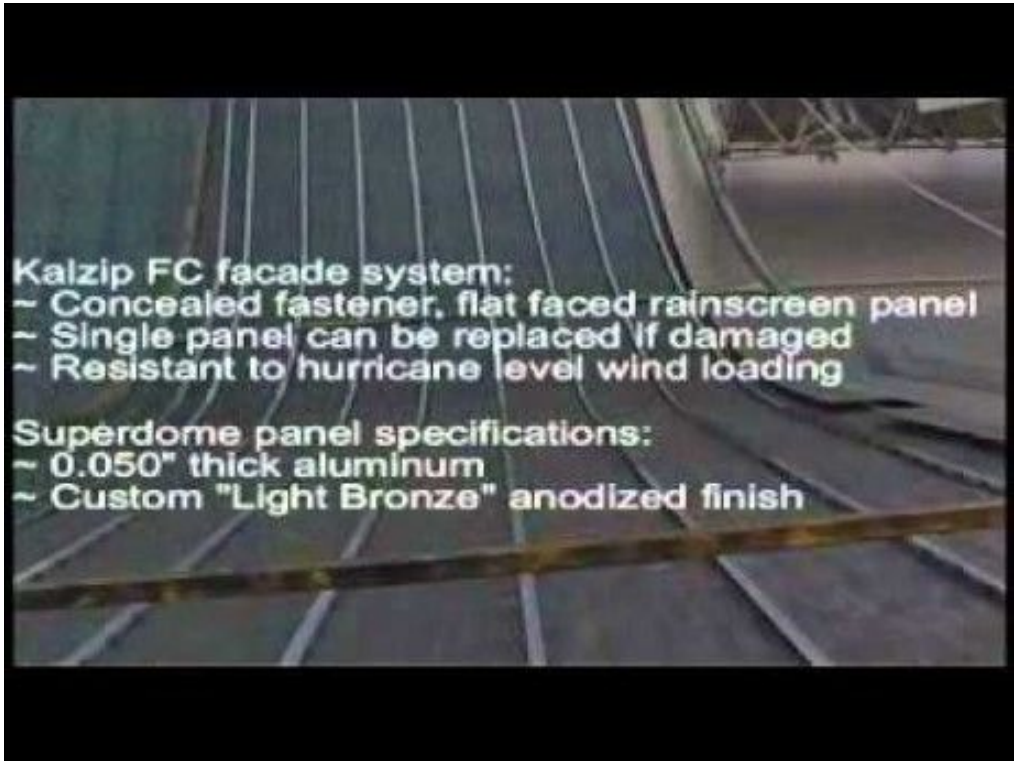
Parts and components

11 Fixed point clamp
12 Guidance snapper
13 Flashing support
14 Plastic inlays
15 Setting out tool
16 Panel removal tool
17 Plastic wedges

System depth with mono-click bracket, NE and SEL modular click rail

System depth with SE modular click rail




Kalzip FC facade system:
~ Concealed fastener, flat faced rainscreen panel
~ Single panel can be replaced if damaged
~ Resistant to hurricane level wind loading
Superdome panel specifications:
~ 0.050" thick aluminum
~ Custom "Light Bronze" anodized finish

Glass Curtain Wall Material: Hybrid Wall Curtain wall system

Case Study : 1269 Lexington Avenue

HYBRID-WALL®

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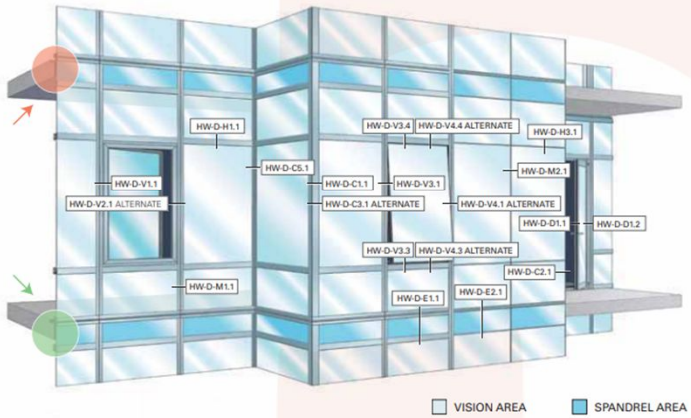
HYBRID-WALL® by Sota was developed as an alternative to traditional window wall systems. Window walls are typically limited in their architectural aesthetic and performance capabilities. **HYBRID-WALL®** has greater flexibility in design to allow for larger expanses of glazing, flush external appearance (capless framing), and a variety of features and infill materials.

In addition to design versatility, **HYBRID-WALL®** provides the exceptional weather and seismic performance of a pressure equalized, unitized rain screen curtain wall. The distinguishing feature of Sota's **HYBRID-WALL®** is its ability to install between floor slabs like a standard window wall, while maintaining the superior performance of a pre-glazed, unitized curtain wall.

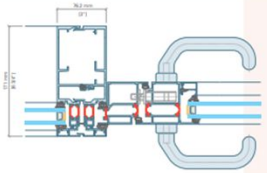
HYBRID-WALL® is notched around the floor slabs, and allows the use of glass spandrels at the slab edge in lieu of metal panel covers. Because it is a true unitized curtain wall system, it employs a horizontal expansion assembly incorporating silicone gaskets. This renders the typical sealant joints between floor slabs and a window wall system obsolete.

HYBRID-WALL® has fully integrated fixed and sliding anchors incorporated into the slab edge design. This insures ease of installation while allowing for construction slab tolerances and vertical live load movement between floor levels.

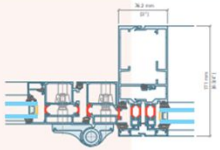
Superior product. Superior performance.



HW-D-D1.1
JAMB DETAIL AT BALCONY DOOR

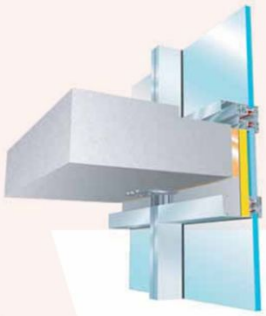


HW-D-D1.2
JAMB DETAIL AT BALCONY DOOR

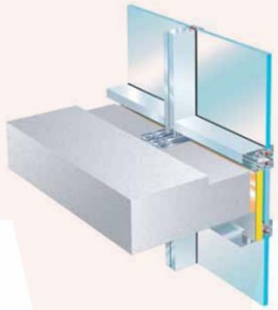


SOTAWALL

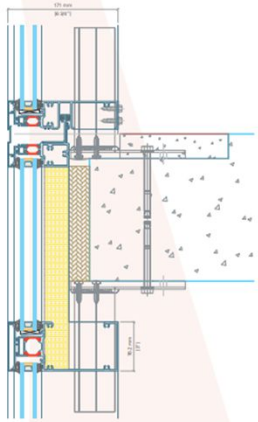
3D IMAGE OF SLAB EDGE ANCHOR DETAIL
HYBRID-WALL® UNDERSIDE OF SLAB



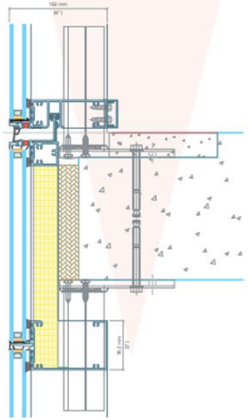
3D IMAGE OF SLAB EDGE ANCHOR DETAIL
HYBRID-WALL®TOP OF SLAB



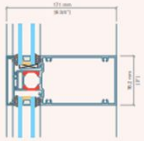
HW-D-E1.1
EXP. JOINT / ANCHOR DETAIL CAPPED MULLIONS



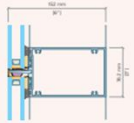
HW-D-E2.1
EXP. JOINT / ANCHOR DETAIL 4 SIDED SILICONE MULLIONS



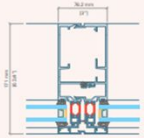
HW-D-H1.1
4 SIDED CAPPED HORIZONTAL AT VISION



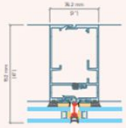
HW-D-H3.1
4 SIDED SILICONE HORIZONTAL AT VISION



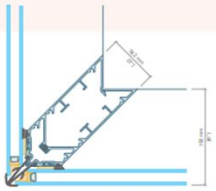
HW-D-M1.1
4 SIDED CAPPED MULLION AT VISION



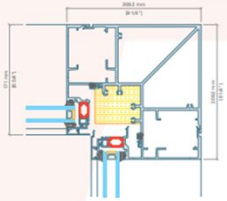
HW-D-M2.1
4 SIDED SILICONE MULLION AT VISION



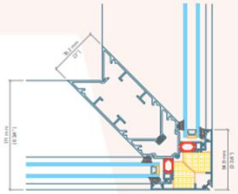
HW-D-C2.1
SILICONE CORNER MULLION



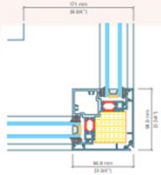
HW-D-C5.1
CAPPED INSIDE CORNER MULLION



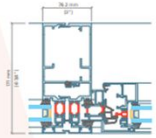
HW-D-C1.1
CAPPED CORNER MULLION



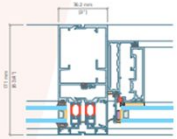
HW-D-C3.1
CAPPED CORNER



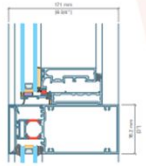
HW-D-V1.1
VENT JAMB DETAIL (OPENING TO INSIDE)



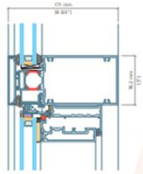
HW-D-V3.1
VENT JAMB DETAIL



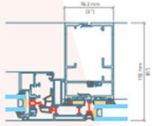
HW-D-V3.3
VENT SILL DETAIL



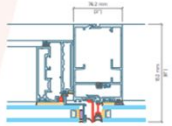
HW-D-V3.4
VENT HEAD DETAIL (WITH CONT. TOP HINGE)



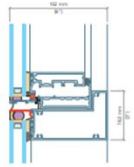
HW-D-V2.1
VENT JAMB DETAIL (OPENING TO INSIDE)



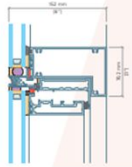
HW-D-V4.1
VENT JAMB DETAIL



HW-D-V4.3
VENT SILL DETAIL



HW-D-V4.4
VENT HEAD DETAIL (WITH CONT. TOP HINGE)



Thank You