

DIM Design & Installation Manual - North America

Largo | Carat, Avera, Vintago, Reflex, Nobilis, Terra, Planea, Zenor



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Remarks

This DIM (Design + Installation Manual) provides technical information regarding design and installation. Refer to area manager and local distributor for further information such as:

- Terms of delivery
- Pricing
- Products and colors
- Lead time, etc.

More general information available on swisspearl.com

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Validity of DIM

Please consult your local distributor and/or the Technical Advisor prior to the commencement of shop drawings or installation for the most current DIM guide. The current DIM can always be found at swisspearl.com. All previous DIM guides should be disregarded and are no longer valid

Product warranty

Warranty conditions are available on request from your local Swisspearl office or dealer.

Maritime conditions

Maritime conditions call the use for stainless steel rivets. Those may be used on steel or anodized aluminum subframe. Maritime conditions are considered up to 0.6 miles from the sea. Material specification for subframe, fasteners and accessories to cater for maritime conditions according to local standards.

Advantages of fiber cement products

- Maximum protection against weather
- Excellent longevity
- Easy installation in any climate
- Almost no maintenance required
- Proven details
- No cracks, paint or sealant problems
- High sustainability
- Noncombustible

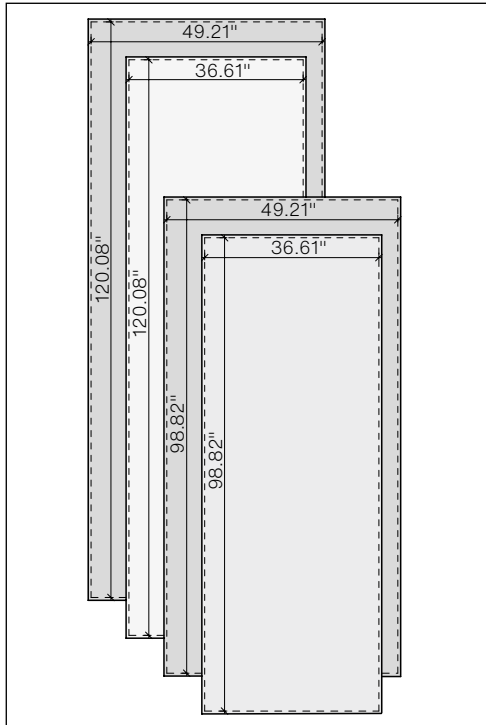
Project specific ordering

Subtle visual differences may occur between product batches. Therefore we recommend ordering by job or specific elevation if ordering in phases.

Disclaimer

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Overview panel sizes



0.31" (8 mm) & 0.47" (12 mm) thick panels - max. net panel sizes

Overview

Largo		Nobilis Terra Planea	Zenor	Carat Reflex Vintago Avera	Carat Reflex
Thickness	Inches (mm)	0.31"/0.47" (8 mm/12 mm)	0.31" (8 mm)	0.31" (8 mm)	0.47" (12 mm)
Weight	Pounds per sf	3.21/5.04	3.21	3.21	5.0
Format	Inches (mm)				
Untrimmed panels	max.net panel sizes				
120.87" × 50" (3070 × 1270 mm)	120.08" × 49.21" (3050 × 1250 mm)	■*	■	■	■
99.60" × 50" (2530 × 1270 mm)	98.82" × 49.21" (2510 × 1250 mm)	■	■	■	■
120.87" × 37.40" (3070 × 950 mm)	120.08" × 36.61" (3050 × 930 mm)	■			
99.60" × 37.40" (2530 × 950 mm)	98.82" × 36.61" (2510 × 930 mm)	■			

* Nobilis and Terra 0.47" panels are only available in size 98.82" × 49.21".

Product data

- Density > 1.75g/cm3
- Modulus of elasticity ca. 15'000 MPa
- Design resistance for bending ca. 8.0 MPa
- Thermal expansion coefficient 0.01 mm / m / °K
- Fire Classification: EN 13501-1 (A2-s1,d0) ASTM E136, ASTM E84
- Frost resistance and durability under EN 12467
- Thermal range - 40°F to 176°F

HR coating

Special coating with increased scratch and UV resistance that allows removal of graffiti using Acetone. Availability as per Program and Colors.

F-coating for facade

For inclined cladding, panels with F-coating for increased exposure to weathering. It is opaque and matched to standard finishes, and has higher UV resistance.

R-coating for roof

Roofing panels must have minimum (min.) fall of 6° (10.5%). R-coating is opaque and matched to standard finishes, and has higher UV resistance. The panels in the color ranges Amber and Onyx are supplied with standard grey panel core.

Application

Swisspearl Largo panels can be attached to vertical timber or metal profiles. Suitable for new facades or existing cladding renovations.

Untrimmed Full-Size Panels

Untrimmed panels will be provided only to approved fabricators. Untrimmed Largo Panels must be trimmed by a min. of 3/8" on all four sides. When trimming the board, it is crucial to ensure a precise 90-degree angle between the side edge cut and the corresponding end edge cut before proceeding with the final two cuts.

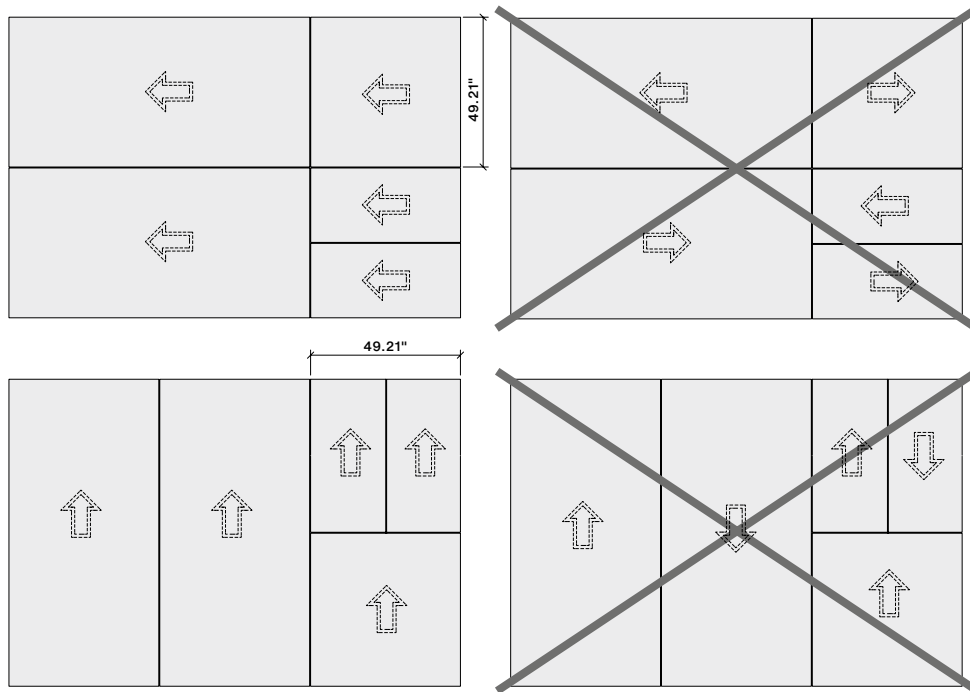
Signage, light fittings, etc.

Provide structural attachment points behind the panel as required. Leave min. 1/4" free gap between panel edge and installation - so as not to constrain panel movement.

Sealed cut edges

All panel edges cut on site or at fabricator workshops must be sealed by LUKO sealer, provided by Swisspearl.

Installation Reflex, Vintago



When installed, all the arrows on the backside of the Reflex and Vintago panels must point in the same direction.

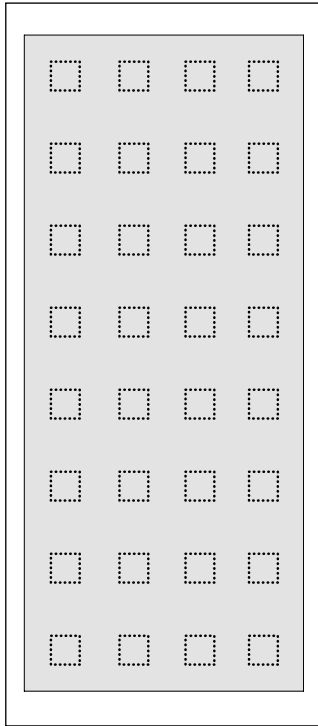
Landscape orientation
All arrows to the left

Portrait orientation
All arrows up

Cutting CAD drawing
 Regarding panel fabrication at the factory based upon CAD drawings as for odd panel shapes, perforations etc.:
 Arrows must be indicated on the drawings to all panels.
 Panels always shown as seen on building elevation (finished face).

Panels are shown as on building elevation (finished face).

Adhesive application



Adhesive technology

Specially ordered ARSB panels are signified by printed squares on the backside of the panel. Please consult with your adhesive manufacturer prior to installation. Zenor panels are available for an adhesive application with the exception of white cement panels, Zenor 11006, 11115, 15015, 23048, 23057, 41054 and 41055 which are only available for face fastened system.

General requirements

Adhesive manufacturer's instructions for use must be strictly followed including:

- Cleanliness of panels and support profiles
- Panel and air temperature
- Air moisture content

Support profiles

- For exterior application the panels may be adhered to Aluminum supports only.
- Subframing to be approved by adhesive manufacturer prior to starting the installation.

Panel ordering

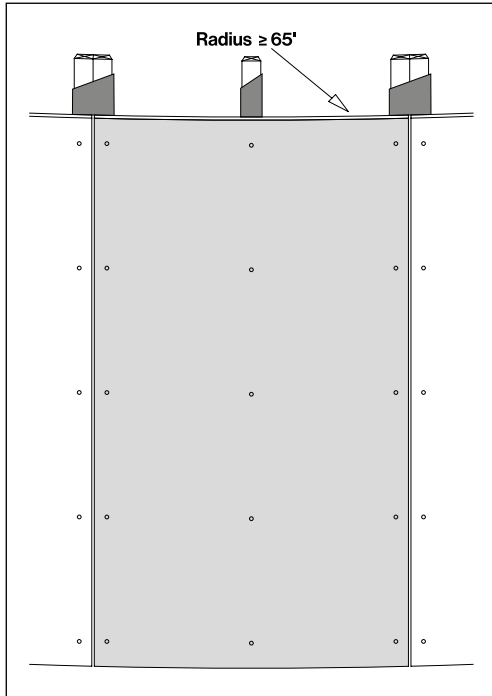
Panels ordered for adhesive application are called ARSB and are available upon request at time of order.

Standard Swisspearl panels cannot be used for adhesive application.

Warranty

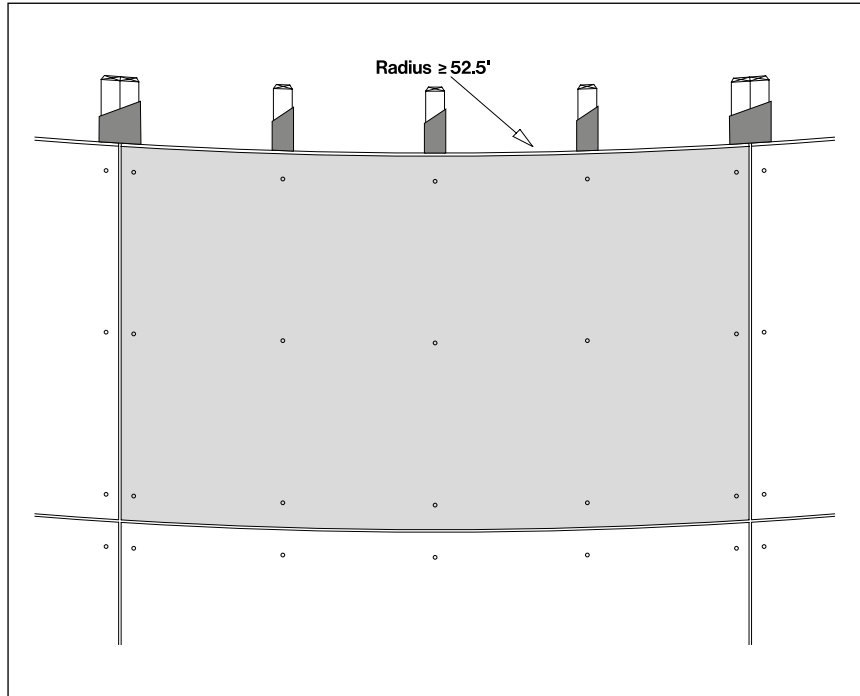
Panel manufacturer provides functional warranty for the panels only. Warranty for the attachment of the panels to be obtained by adhesive manufacturer. Warranty for the panels cannot exceed that of the adhesive.

Swisspearl Largo 8 mm portrait



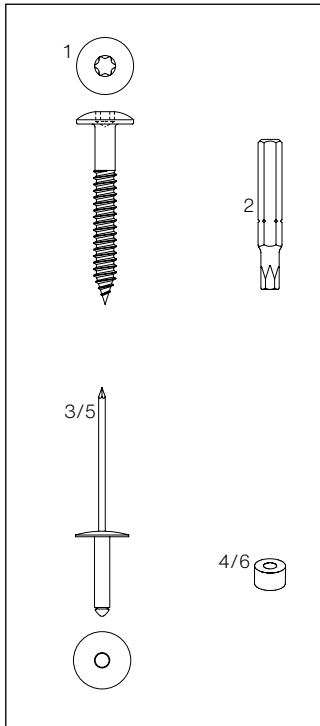
Portrait panels, attached to vertical supports.
Min. radius = 65'

Swisspearl Largo 8 mm landscape



Landscape panels, attached to vertical supports at max. 24" centers.
Min. radius = 52.5'

Fasteners



To timber battens

1. Swisspearl Screw, inox, saucer head Ø 12 mm, T20 drive, blank or powder coated (Red Horse)
4.8 × 30 mm
4.8 × 38 mm
4.8 × 44 mm
4.8 × 60 mm

Screws, inox, saucer head Ø 12 mm, T20 drive, blank or powder coated

- 4.5 × 30 mm SCR-W 4.5 × 30 mm A2
- 4.5 × 36 mm SCR-W 4.5 × 36 mm A2
- 4.5 × 41 mm SCR-W 4.5 × 41 mm A2
- 4.9 × 38 mm SCR-W 4.5 × 38 mm A2DC
- 4.8 × 40 mm SCR-W 4.5 × 40 mm A4

2. Torx bit T 20 W

To aluminum profiles

3. Swisspearl aluminum rivet head Ø 15 mm, blank or powder coated (SFS and MBE)
 - 4.0 × 18-K15, 8-13 mm grip range
 - 4.0 × 24-K15, 13-18 mm grip range
 - 4.0 × 30-K15, 18-23 mm grip range
 Rivets, head Ø14 mm, RIV-A EPDM washer 4.0 × 20 mm, 10-14 mm grip range (Red Horse)
4. Fixed point sleeve aluminum type 8

To steel profiles

5. Swisspearl stainless steel rivet for Planea and Zenor panels, head Ø 15 mm, blank or powder coated (MBE)
 - 4.0 × 16-K15, 10-12 mm grip range
 - 4.0 × 18-K15, 12-14 mm grip range
 - 4.0 × 20-K15, 14-16 mm grip range
 - 4.0 × 22-K15, 16-18 mm grip range

Swisspearl stainless steel rivet all Swisspearl panels except Planea and Zenor panels head Ø 15 mm, blank or powder coated (SFS)

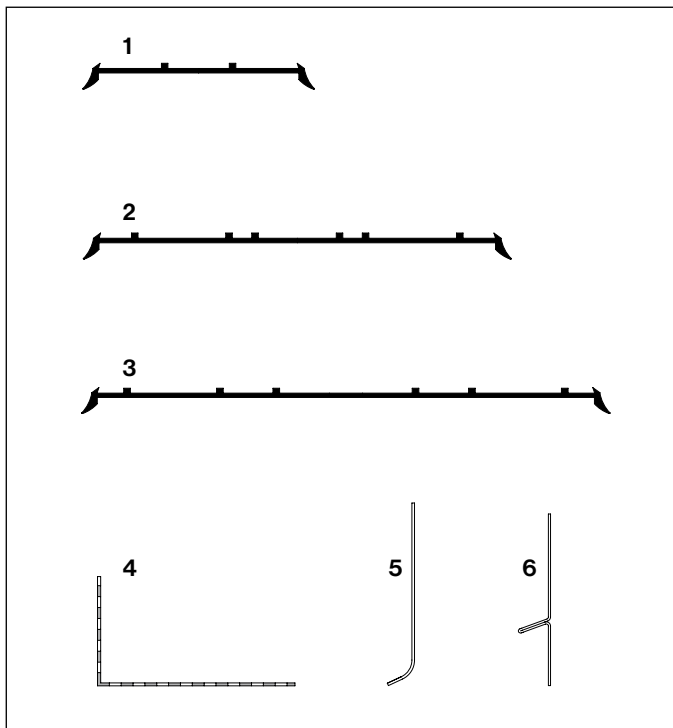
- 4.0 × 18-K15, 9-14 mm grip range
- 4.0 × 23-K15, 14-19 mm grip range

Rivets, head Ø 14 mm, RIV-S EPDM washer 4.8 × 20 mm, 9-13 mm grip range (Red Horse)

6. Fixed point sleeve aluminum type 8

Maritime conditions

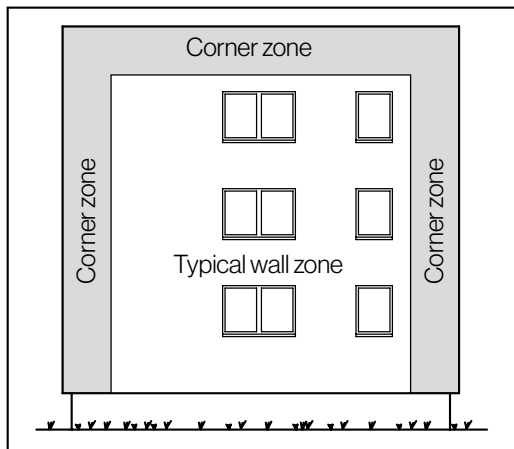
Maritime conditions call the use for stainless steel rivets. Those may be used on steel or anodized aluminum sub-frame. Maritime conditions are considered within a distance of 0.6 miles from the sea. Material specification for subframe, fasteners and accessories to cater for maritime conditions according to local standards. Ensure that the performance of the support system and accessories used, complies with country-specific standards, approvals and regulations.

Joint material

1. EPDM band, black, 60 mm wide for intermediate supports with side lips, in 50 m rolls;
Local alternative version 50 mm
2. EPDM band, black, 120 mm wide for butt joints with side lips, in 50m rolls;
Local alternative version 100 mm
3. EPDM band, black, 150 mm wide for inner and outer corners with side lips, in 25m rolls
4. Ventilation profile, raw aluminum or standard colors, 50x30 mm, 70x30 mm, 100x40 mm. 2500 mm long, 0.6 mm thick
5. L-flashing, stainless steel, powder coated, 0.5 mm thick 2510 / 3050 mm long
6. Horizontal joint flashing, aluminum, powder coated black, 0.5 mm thick 2510 / 3050 mm long

Profiles are just for illustration purposes. Differences in the local profile portfolio will occur.

Corner zone



Wind load zones
 As per scheme there are two wind load zones: The corner zones generally are subject to increased negative wind load (suction) due to turbulence at the edges of the building. The applicable wind load values must be determined in the cladding specification.

Min. manufacturer cavity depth:

Cladding height	min. cavity
< 20'	3/4"
20' - 99'	1"
> 99'	1 3/4"

Mandatory for issuance of the warranty letter.

Application

Swisspearl cladding panels can be attached to vertical supports made of timber, aluminum or steel.

Wind load

Always use local standards when determining panel fastener differences. This is especially important for tall buildings, for buildings with special shapes and for high wind exposure areas.

Ventilation cavity

Building tolerances must be allowed for. The cavity may not be reduced by horizontal profiles or any stray objects such as loose insulation and other materials.

Building expansion joints

The building's structural expansion joints should be considered when designing subframe systems. Structural expansion joints must be applied to subframe and cladding as provided to the building structure.

Ventilation cavity

Min. airflow at the backside of the panels should be 100% free of obstructions with no less than 9.45 in² per linear foot of vertical airflow (Min 3/4" System depth) behind panels. Min. airflow at base and top of walls is required to have at least 60% unobstructed ventilation if using ventilated profiles.

Ventilation cavity with perforated horizontal subframe components

Min. ventilation gap to be 1 1/2". Horizontal profiles should allow min. 75% airflow. In advance please contact your Technical Service for approval.

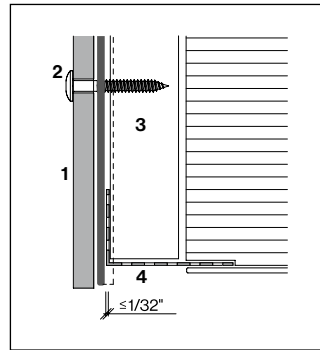
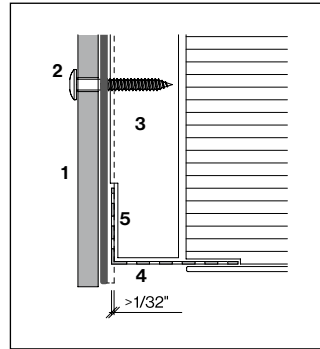
Ventilation Cavity and Panel Support

Panels must be supported on an even surface. If perforated angles are installed between the panel and the vertical batten profile, the closure piece must not exceed 1/32".

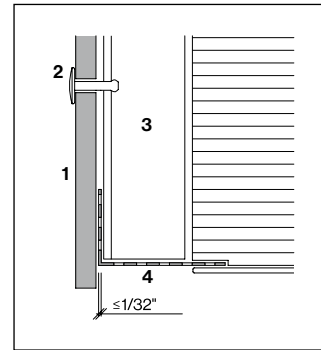
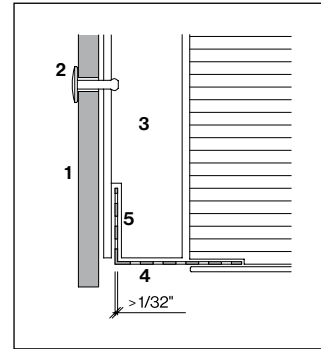
Perforated profiles must provide at least 60% ventilation. Mineral wool behind panels must be covered with a UV-resistant wrap to prevent clogging and blocked airflow or drainage. Where falling insulation may occur, ventilation grilles must not be used. Aluminum mesh may be used. It provides high ventilation, is thin, and easy to install.

- 1 Largo
- 2 Fastener
- 3 Panel support
- 4 Perforated angle
- 5 Recess

Timber battens



Metal profile



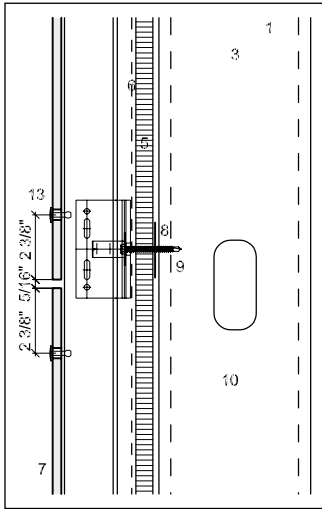
Material compatibility

Untreated aluminum material such as Window sills, frames, etc. is not compatible with cement and must be protected against dust from drilling panels, etc. Aluminum components are to be used in anodized or powder-coated or Kynar Coated for exterior applications with protective films.

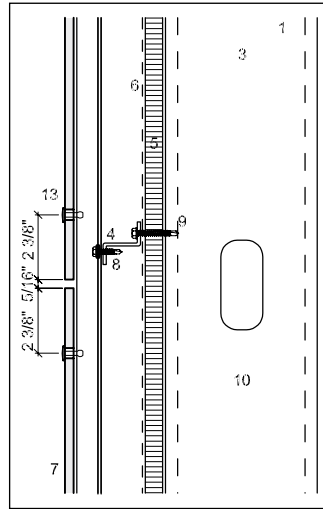
Sealant material

To keep the cladding low-maintenance, it is recommended to avoid the use of sealants. Where the use of sealant is unavoidable, Polyurethane, Acrylic or Hybrid Polymer products would be most suitable. Before applying any sealant to fiber cement material the compatibility must be checked as certain materials leave permanent staining on panel surface.

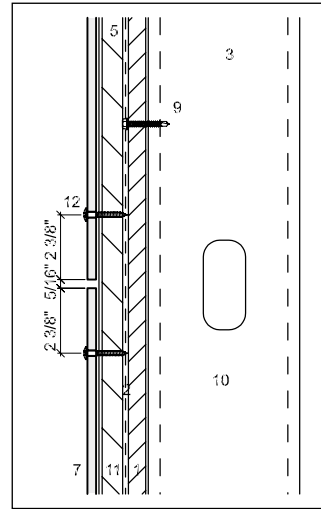
Subframe types



Metal / metal



Metal / metal

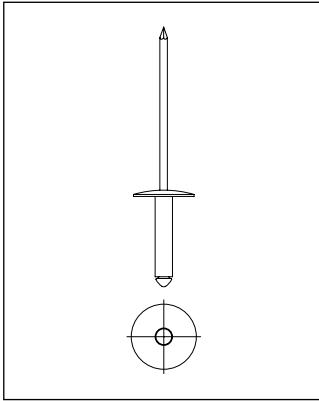


Timber / timber

Typical wall construction for wood batten use:
 3/4" exterior grade plywood sheathing, UV Resistant WRB, 2x4 wood battens screwed into the plywood, EDPM strips, and the panel.

- 1 Substrate
- 2 Vapor Air Barrier
- 3 Thermal Insulation
- 4 Horizontal batten
- 5 Vertical batten
- 6 Vent cavity
- 7 Largo panel
- 8 Bracket
- 9 Engineered Screw by Others
- 10 Wall Cavity
- 11 Vertical Wood Battens
- 12 Screw by Swisspearl for Timber Applications
- 13 Rivet by Swisspearl for Metal Applications

Swisspearl rivet



Swisspearl rivet 4.0x18 K15mm

Holes in panel for rivets

Diameter 9.5 mm

Standard edge distances

Horizontally 1 1/4"

Vertically 3 1/8"

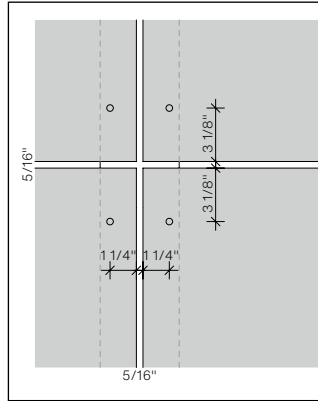
Minimum edge distances

Horizontally 1 1/4"

Vertically 2 3/8"

Maximum edge distance

Horizontally and vertically 4"



Panel edge distances

Panel joints

Typical panel joint is 5/16", this allows panel scraps to be used as spacers. Wider joints will make any inaccuracies in the installation less noticeable.

Fixed, sliding points

Each panel must be fastened by 2 fixed points in the panel's center to support the panels dead load. All other rivets are sliding points.

Drill holes Ø 4.1 mm to metal profiles

Use centering drill gauge so the holes will be concentric to the 9.5 mm hole in the panel. Use drill bit type A for aluminum profiles and type S for steel.

The sliding point connection is **NOT** meant to accommodate building drift or seismic movement.

Subframe engineering

Engineer / contractor is responsible for the design and installation of all subframe parts including all associated fasteners.

Aluminum profiles

Aluminum thickness should be a min. of 2 mm. Profiles should not exceed 10' and profile breaks should coincide with panel joints.

Aluminum rivet

4.0 x 18 - K15 rivet, head Ø 15 mm, powder coated or blank.

Staggered Horizontal Joints

The profiles must be installed separately at vertical panel joints. These must be adjusted independently of each other to the respective panel height in order to enable stress-free panel installation.

Black panel joints

Panel joints read as shadow lines. It is recommended to blacken the metal where visible, with paint or PVC paint tape.

Steel profiles

Steel panel supports to be min. 18 gauge to obtain nominal pull out value. Profiles should not be longer than 20'.

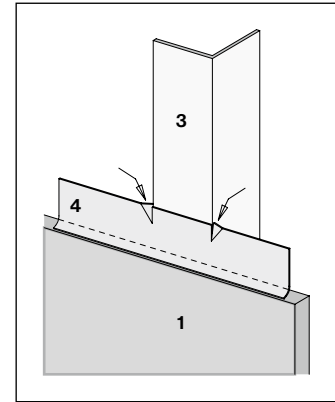
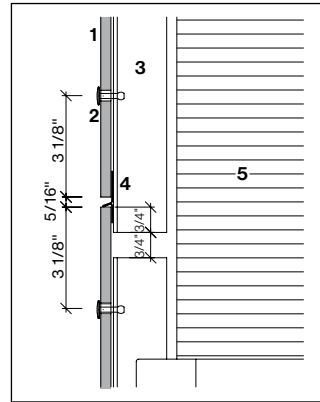
Stainless steel rivet

4.0 x 18 - K15 rivet, head Ø 15 mm, powder coated or blank.

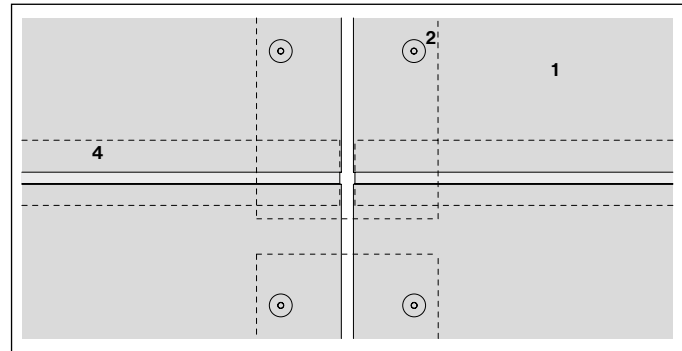
Subframe engineering

Engineer / contractor is responsible for the design and installation of all subframe parts including all pertaining fasteners.

Horizontal joint

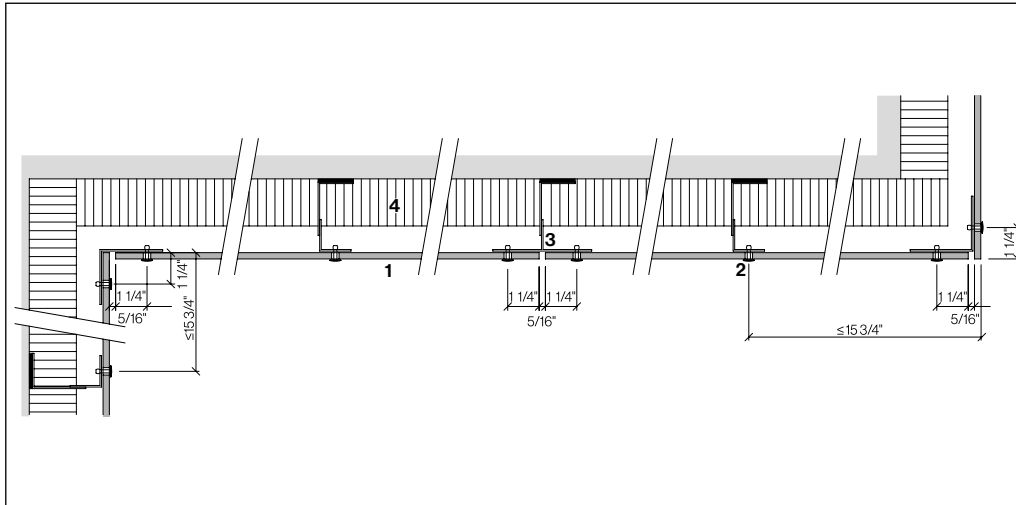


- 1 Largo 8 mm
- 2 Rivet
- 3 Panel support profile
- 4 Joint flashing (optional); length = panel width - 1/16"
- 5 Thermal insulation



Any breaks to panel support profiles must be located at panel joints as shown. Flashing cut at one vertical as shown to prevent lateral dislocation of flashing.

Horizontal section



Panel may be cantilevered max.
 $15 \frac{3}{4}''$.

- 1 Largo 8 mm
- 2 Rivet
- 3 Aluminum profile
- 4 Thermal insulation

Rivet installation

Use rivet gun GESIPA ACCU-BIRD or similar. Do not use pneumatic equipment. Use centering drill gauge with drill bit $\varnothing 4.1$ mm to obtain concentric hole [A/3].

Fixed point for Aluminum Subframe

Fixed point for Aluminum, Type 8 $\varnothing 9.4$ mm [B/4]
 • Rivet head $\varnothing 15$ mm 4.0×18 -K15, blank or powder coated.

Fixed point for Steel Subframe

Fixed point steel A2, Type 8, $\varnothing 9.4$ mm [B/4]
 • SS Rivet, head $\varnothing 15$ mm 4.0×18 -K15, blank or powder coated.

Each panel must be fastened by 2 fixed fastening points in the panel center, installed first. All the others are sliding points.

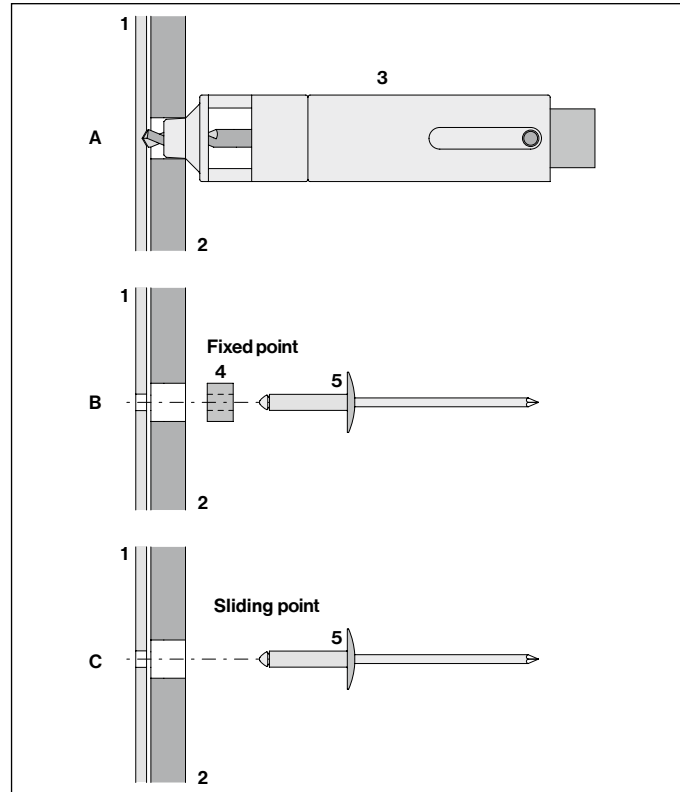
Sliding points for Aluminum Subframe

Use centering drill gauge with drill bit $\varnothing 4.1$ mm to obtain concentric hole [C/5]
 • Aluminum Rivet, head $\varnothing 15$ mm, 4.0×18 -K15 blank or powder coated. Sliding points for aluminum subframe use centering drill gauge with drill bit $\varnothing 0.16''$ (4.1 mm) to obtain concentric hole [C/5]

Sliding points for Steel Subframe

• Use centering drill gauge with drill bit $\varnothing 4.1$ mm to obtain concentric hole [C/5]
 • SS Rivet, head $\varnothing 15$ mm 4.0×18 -K15, blank or powder coated.

- 1 Support profile
- 2 Largo 8 mm
- 3 Centering drill gauge
- 4 Fixed point sleeve, type 8
- 5 Rivet



Metal subframe - 8 mm & 12 mm facade panels - rivet distances

Characteristic value of wind suction (according to European standards)		Design value of wind suction (including a chosen safety coefficient of 1.5)		Recommendation for maximal spacing d (spacing between rivets / screws)			
kN/m ²	psf	kN/m ²	psf	Vertical panel (portrait)		Horizontal panel (landscape)	
				horizontally in	vertically in	horizontally in	vertically in
-0.7	-13.9	-1.0	-20.9	23 5/8"	28 9/16"	28 9/16"	20 7/8"
-1.0	-20.9	-1.5	-31.3	23 5/8"	23 1/4"	26 9/16"	20 7/8"
-1.3	-26.5	-1.9	-39.7	23 5/8"	19 5/16"	20 7/16"	20 7/8"
-1.8	-37.6	-2.7	-56.4	15 3/4"	19 5/16"	16 15/16"	14 9/16"
-2.3	-48.7	-3.5	-73.1	15 3/4"	16 1/2"	15 3/4"	14 9/16"
-2.7	-55.7	-4.0	-83.5	15 3/4"	13"	14 9/16"	14 9/16"
-3.3	-69.6	-5.0	-104.4	11 13/16"	14 9/16"	14 9/16"	11"
-4.0	-83.5	-6.0	-125.3	11 13/16"	13"	13"	8 5/8"

Above table is a guideline for 2 or more fasteners in vertical and horizontal direction. The spacings originate from 49.21" × 120.08" (1250 × 3050 mm) full size panels with equal distances between rivets. Data may be interpolated.

Metal subframe - 8 mm & 12 mm facade panels - rivet distances

Engineering responsibility

For the cladding design, a locally licensed engineer shall assume responsibility for calculation and verification of all subframe components.

Panel data

- Modulus of elasticity
MOE ca. 15,000 MPa
- Modulus of rupture
(characteristic)
MOR (average) > 22 MPa
- Design value bending
resistance 8.0 MPa
(2.5 safety factor)
- Density > 1.75g/cm³

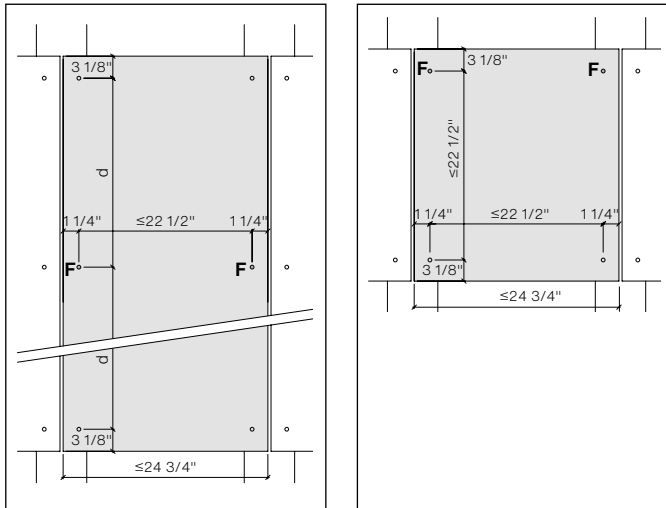
Characteristic values

Resistance of aluminum and steel rivets 4.0 × 18 K15

Position	Distance between fasteners (spacing)
	23 5/8"
Middle	2000 N
Edge	1200 N
Corner	950 N

The data was evaluated according to ETAG 034 using 8 mm panel, and includes no safety factor. Diameter of panel hole must be 9.5 mm, and rivet head must be 15 mm. Min. thickness for steel profiles to be 18-gauge, and 2 mm for aluminum. Edge distances 1 1/4" horizontally, 3 1/8" vertically. The data may be interpolated.

Single span no intermediate support



Single span

Fixed point Ø 9.5 mm [F]

Sliding points Ø 9.5 mm

Soffit panels

Fastener distances for soffit panels and suspended ceilings not to exceed 19 11/16".

- Fixed point Ø 9.5 mm [F]
- Sliding points Ø 9.5 mm

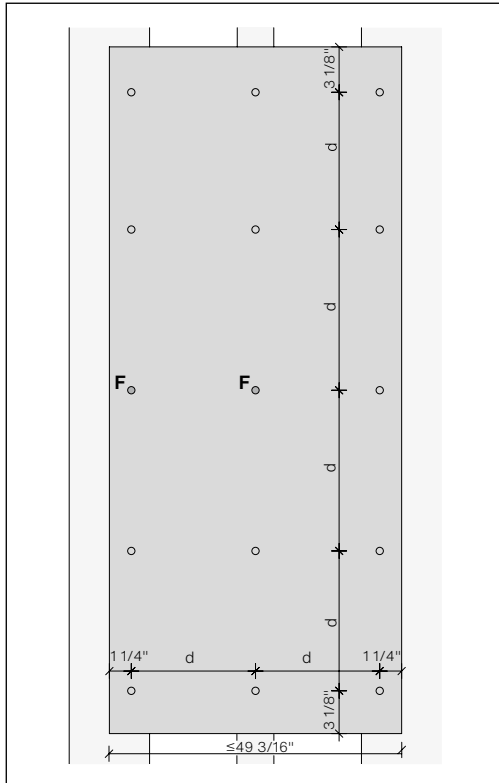
Max. distance between fasteners for single span panels 22 1/2", unless smaller distances are required by high wind load as per table of fastener distances.

Ensuring horizontal panel expansion: For facades with multiple single-field panels installed side by side, the vertical aluminum substructure must be structurally separated in the horizontal direction every 9' 10 1/8".

Consult with technical advisor.

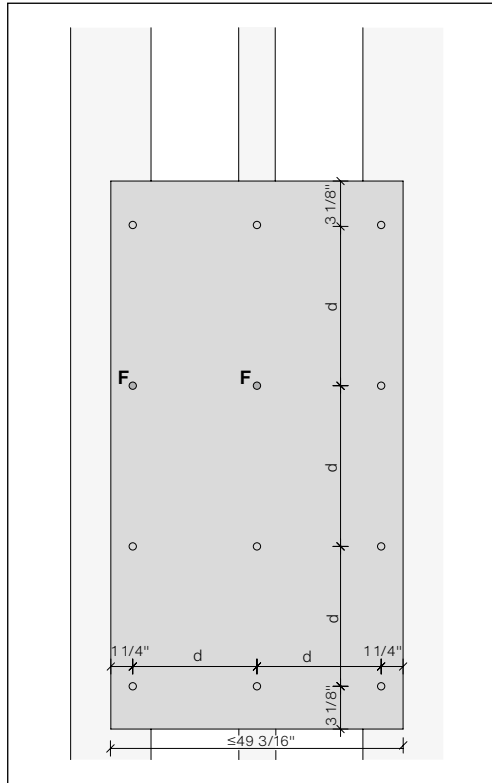
Sample rivet layouts, final layout to be determined by a local structural engineer.

Swisspearl Largo vertical panel (portrait)



Fixed points [F] center and left.

Swisspearl Largo vertical panel (portrait)



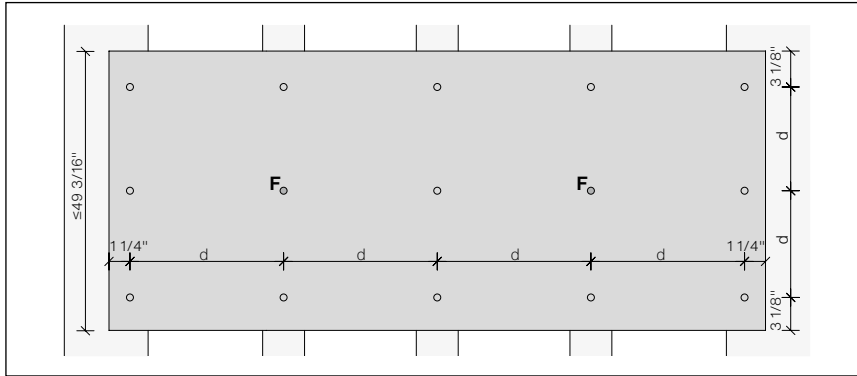
If no rivet at half height go with [F] to row above.

- Fixed point Ø 9.5 mm [F]
- Sliding points Ø 9.5 mm

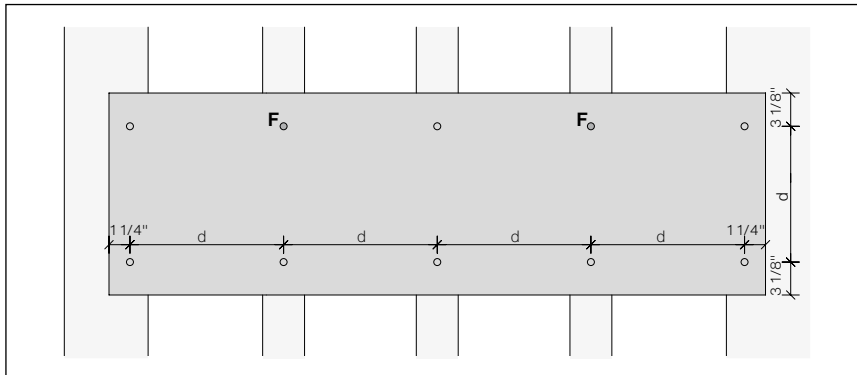
Sample rivet layouts, final layout to be determined by a local structural engineer.

Sample rivet layouts, final layout to be determined by a local structural engineer.

Swisspearl Largo horizontal panel for odd number of rivets



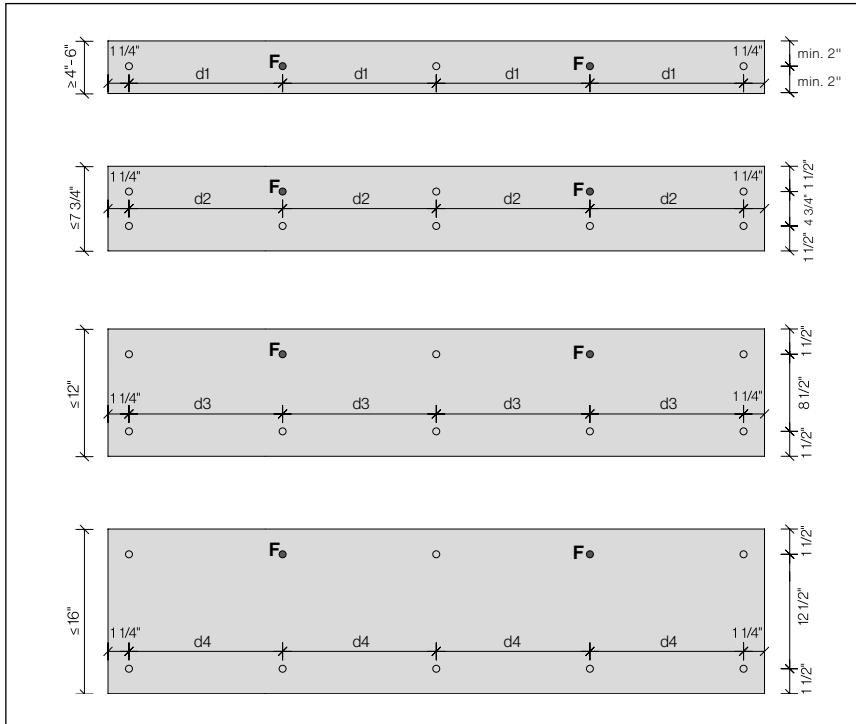
Between fixed points, the max. distance can be 1 sliding point



- Fixed point ● Ø 9.5 mm [F]
- Sliding points ○ Ø 9.5 mm

Sample rivet layouts, final layout to be determined by a local structural engineer.

Swisspearl Largo strips



Due to deformation of the panel the max. fastener distances not to exceed:

- d1: $16\frac{1}{8}''$
- d2: $19\frac{11}{16}''$
- d3: $22\frac{7}{16}''$
- d4: $24''$

- Fixed point $\varnothing 9.5\text{ mm [F]}$
- Sliding points $\varnothing 9.5\text{ mm}$

Panel height $\leq 15\frac{3}{4}''$, the vertical edge distance might be reduced to a min. $1\frac{9}{16}''$.

Holes in panel for rivets

Fastener holes to be done at the jobsite. Diameter 9.5 mm.

Installation Reflex and Vintago

When installed, all the arrows on the backside of the Reflex and Vintago panels must point in the same direction.

Fixed point for Aluminum Subframe

Fixed point for Aluminum, Type 8 diameter 9.4 mm [B/4]

- Rivet head diameter 15 mm, 4.0 × 18-K15 blank or powder coated.

Fixed point for Steel Subframe

Fixed point steel A2, Type 8, diameter 9.4 mm [B/4]

- SS Rivet, head diameter 15mm, 4.0 × 18-K15 blank or powder coated.

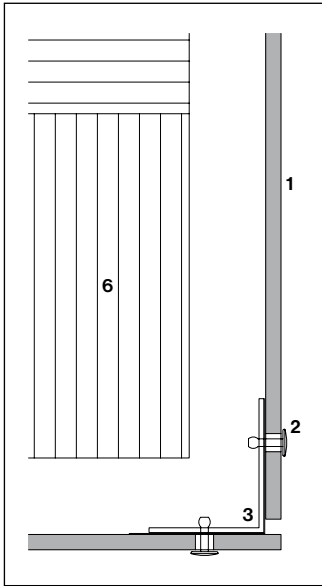
Drill holes diameter 4.1 mm to metal profiles

Use centering drill gauge so that the holes will be concentric to the diameter 9.5 mm hole in the panel. Use drill bit type A for aluminum profiles and type S for steel.

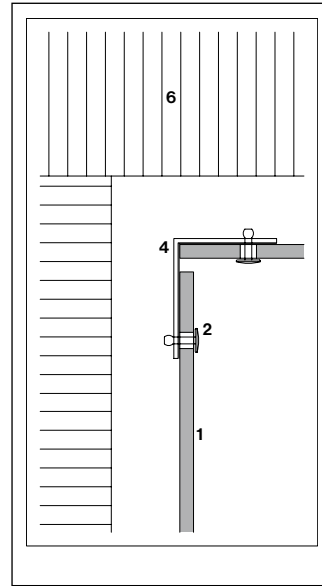
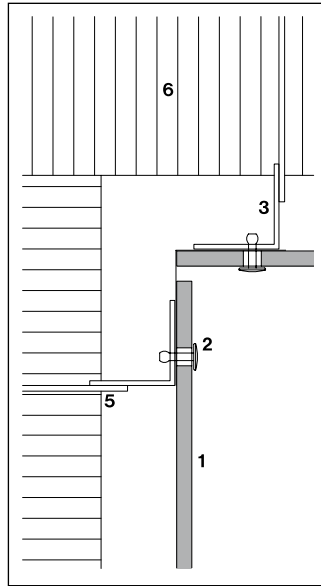
Details

Installation details as per this DIM apply.

Example outer corner



Example inner corner

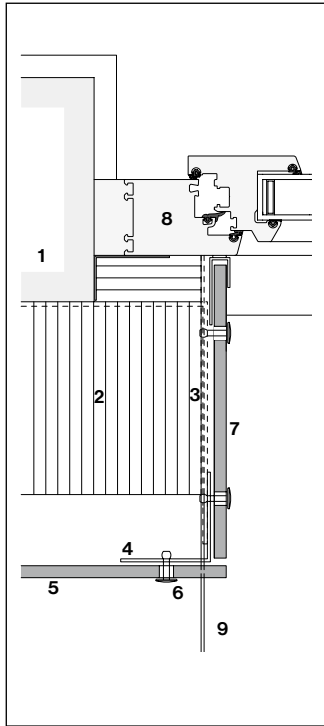


- 1 Largo 8 mm
- 2 Rivet 4.0 × 18-K15
- 3 Min. angle 2 1/4" × 2 1/4"
- 4 Min. angle 2 3/4" × 2 1/4"
- 5 Bracket
- 6 Thermal insulation

Corner angle not attached back to building as shown can be cantilevered up to 16".

Depending on structural calculations (wind loads), an extra support may be required at the corners.

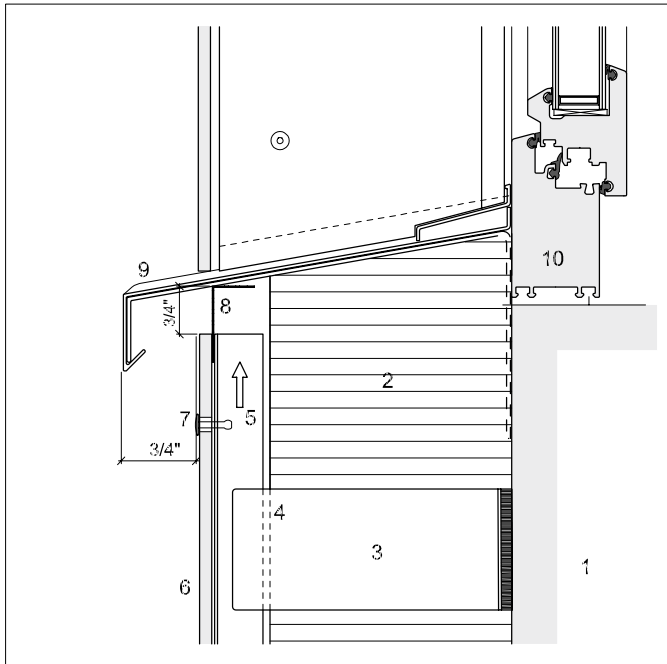
Example window jamb



- 1 Exterior wall
- 2 Thermal insulation
- 3 Horizontal support
- 4 Vertical support
- 5 Swisspearl Largo 8 mm
- 6 Rivet 4.5x18 K15
- 7 Swisspearl Largo
- 8 Window frame
- 9 Window sill

Jamb with 8 mm panel

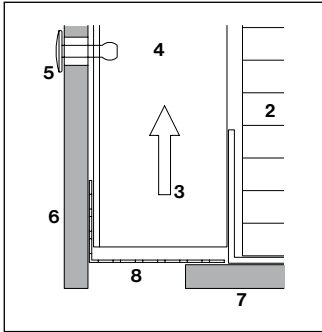
Example window sill



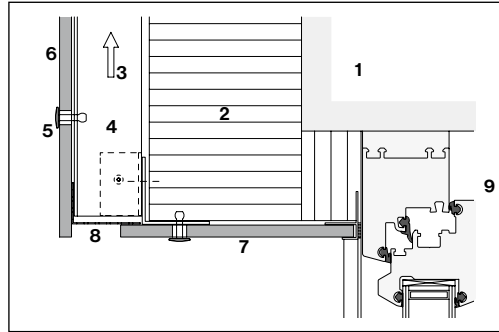
- 1 Exterior wall
- 2 Thermal insulation
- 3 Bracket
- 4 Vertical support
- 5 Ventilation cavity
- 6 Swisspearl Largo 8 mm
- 7 Rivet 4.0 × 18-K15
- 8 Perforated angle
- 9 Window sill
- 10 Window frame

Window sill made of metal

Example window head



Perforated angle

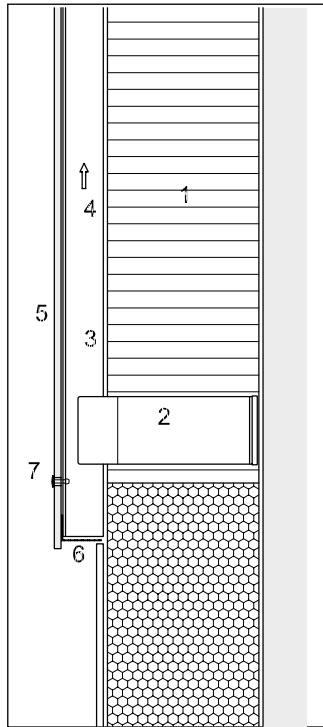


Metal framing around whole window

- 1 Exterior wall
- 2 Thermal insulation
- 3 Ventilation cavity
- 4 Vertical support
- 5 Rivet 4.0 × 18-K15
- 6 Largo 8 mm
- 7 Largo 8 mm

- 8 Perforated angle
- 9 Window frame

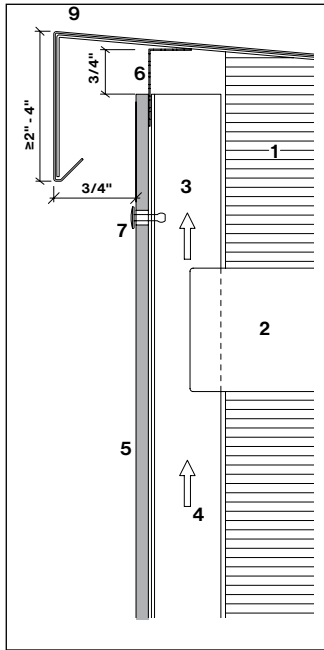
Example bottom detail



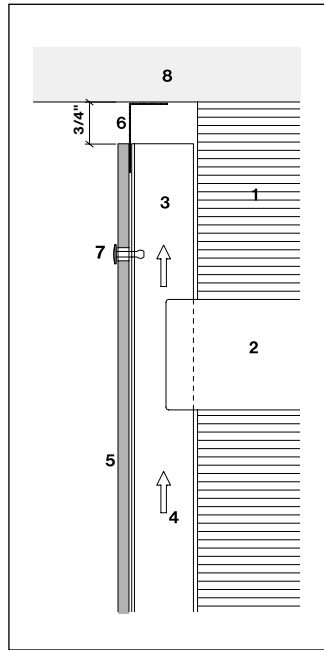
- 1 Thermal insulation
- 2 Bracket
- 3 Vertical support
- 4 Ventilated cavity
- 5 Swisspearl Largo 8 mm
- 6 Perforated angle
- 7 Rivet 4.0 × 18-K15

In order to avoid damage, it is advised to keep a min. distance of 8" from bottom of the panel to the ground

Example coping detail



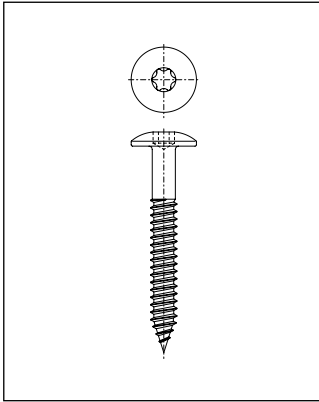
Coping detail



Details under slab

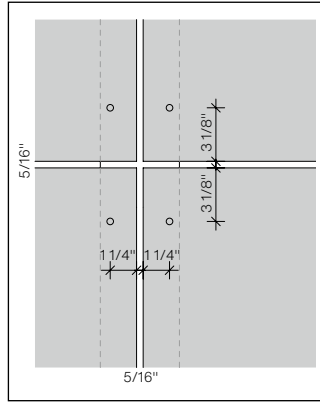
- 1 Thermal insulation
- 2 Bracket
- 3 Vertical support
- 4 Ventilated cavity
- 5 Swisspearl Largo 8 mm
- 6 Perforated angle
- 7 Rivet 4.0 × 18-K15
- 8 Soffit
- 9 Coping

Swisspearl screw



Swisspearl screw, stainless steel, saucer head \varnothing 12 mm, T20 drive, 4.8 x 38 mm.

Distances to panel edge



Panel hole

Diameter 5.5 mm

Standard edge distances

Horizontally 1 1/4"

Vertically 3 1/8"

Minimum edge distances

Horizontally 1 1/4"

Vertically 2 3/8"

Maximum edge distance

Horizontally and vertically max. 4"

Panel joints

Typical panel joint is 5/16", this allows panel scraps to be used as spacers. Wider joints will make any inaccuracies in the installation less noticeable.

Installation

The screws must be installed with depth stop at 90 degrees set to the panel. The screw head must rest flush to the panel.

Subframe engineering

Engineer / contractor is responsible for the design and installation of all sub framing parts including all pertaining fasteners.

Timber battens

Straight grown pine, dry (max. 20% moisture content). Grade No.2

Timber battens

Installation over timber battens is allowed provided the design meets local engineered codes and standards.

Timber quality

Battens must be thickness-gauged to 1 face:

- Thickness min. 3/4" (depending on the building height, the cavity will increase, see recommended cavity depth page 12) should the building be higher, the vent. cavity has to increase
- Always use planed surface timber
- Solidity class II (FK II/C24)
- It is recommended to use only kiln-dried lumber
- Moisture content max. 20%
- Timber must be of equal or higher quality

Min. vertical battens

At panel joints:
 2 pieces 3/4" x 2 1/2" or
 1 piece 3/4" x 5"

Intermediate supports:
 3/4" x 2 1/2"

Engineering

Battens including their attachment to be engineered per local standards.

Battens screw

Screw Ø min. 6 mm
 Head Ø min. 12 mm
 For battens wider than 2 1/2" use two screws per point of attachment. Rear ventilation, thermal insulation, moisture proofing, wind proofing layers. All local standards are applicable and must be complied with.

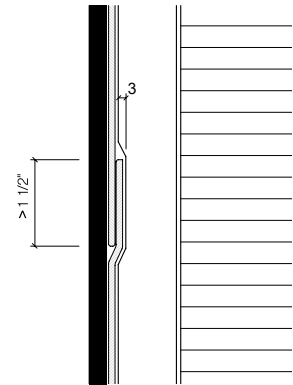
Joint flashing

Horizontal joint flashing and L-flashing should be fabricated 1/16" shorter than the panel width so that they are not visible at vertical joints. Where required, flashing pieces shall be butt-jointed over battens; do not overlap flashing.

L-flashings and horizontal joint flashing are not 100% waterproof! Therefore all timber battens must be fully covered by EPDM bands to protect them against moisture and to prevent rotting and the growth of fungi and mold.

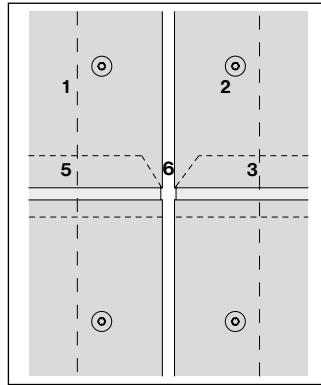
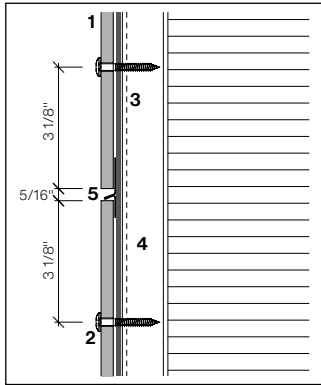
EPDM strips

All timber battens must be fully covered by EPDM backing strips stapled to the battens. Stapled at the edges of the bands. EPDM strips to be in one single piece top to bottom or overlapped as per diagram.



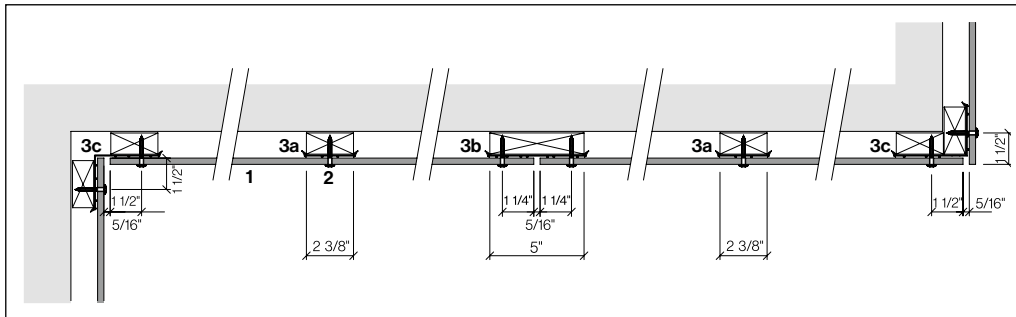
EPDM strip overlap

Horizontal panel joint

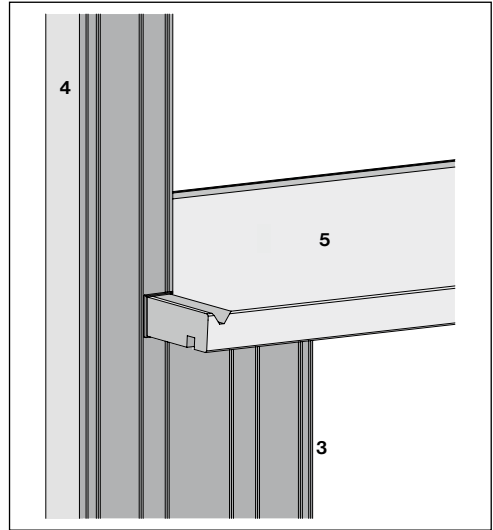
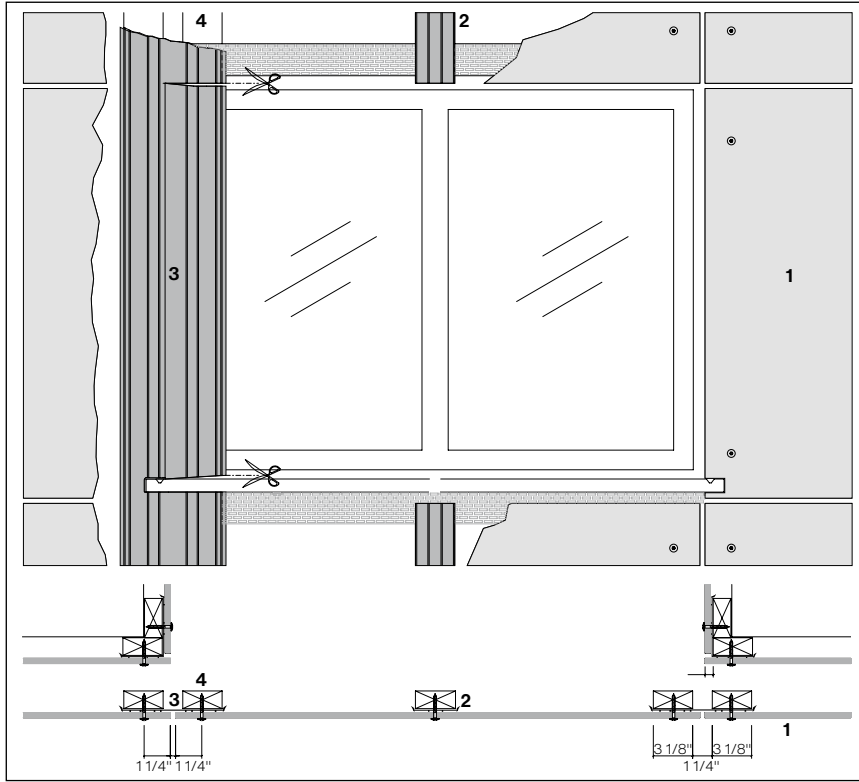


- 1 Largo 8 mm
- 2 Screw
- 3a EPDM band 60 mm
- 3b EPDM band 120 mm
- 3c EPDM band 150 mm
- 4 Batten
- 5 Joint flashing
- 6 Cut corners of panel joint profiles at 45° to help with moisture removal and cover with EPDM

Horizontal section through vertical battens



Vertical joint at window



- 1 Largo 8 mm
- 2 EPDM band 60 mm
- 3 EPDM band 150 mm
- 4 Batten

Timber battens – 8 & 12 mm facade panels – screw distances

Characteristic value of wind suction (according to European standards)		Design value of wind suction (including a chosen safety coefficient of 1.5)		Recommendation for maximal spacing d (spacing between rivets / screws)			
kN/m ²	psf	kN/m ²	psf	Vertical panel (portrait)		Horizontal panel (landscape)	
				horizontally in	vertically in	horizontally in	vertically in
-0.7	-13.9	-1.0	-20.9	23 5/8"	28 9/16"	28 9/16"	20 7/8"
-1.0	-20.9	-1.5	-31.3	23 5/8"	23 1/4"	26 9/16"	20 7/8"
-1.3	-26.5	-1.9	-39.7	23 5/8"	19 5/16"	20 7/16"	20 7/8"
-1.8	-37.6	-2.7	-56.4	15 3/4"	19 5/16"	16 15/16"	14 9/16"
-2.3	-48.7	-3.5	-73.1	15 3/4"	16 1/2"	15 3/4"	14 9/16"
-2.7	-55.7	-4.0	-83.5	15 3/4"	13"	14 9/16"	14 9/16"
-3.3	-69.6	-5.0	-104.4	11 13/16"	14 9/16"	14 9/16"	11"
-4.0	-83.5	-6.0	-125.3	11 13/16"	13"	13"	8 5/8"

Above table is a guide line for 2 or more fasteners in vertical and horizontal direction. The spacings originate from 49.21" × 120.08" (1250 × 3050 mm) full size panels with equal distances between screws. Data may be interpolated.

Timber subframe - 8 mm & 12 mm facade panels - screw distances**Engineering responsibility**

For the cladding design a locally licensed engineer shall assume responsibility for calculation and verification of all subframe components.

Panel data

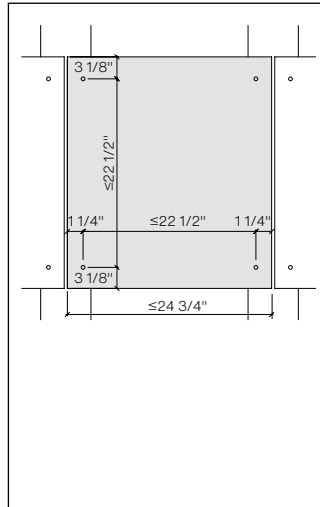
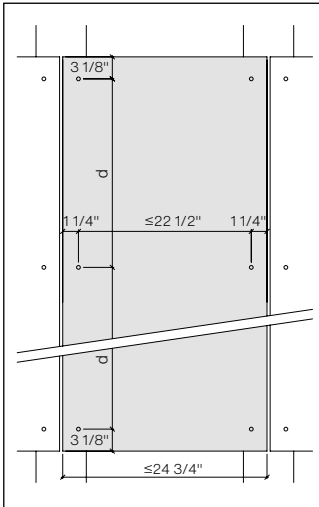
- Modulus of elasticity
MOE ca. 15,000 MPa
- Modulus of rupture
(characteristic)
MOR (average) > 22 MPa
- Design value bending
resistance 8.0 MPa
(2.5 safety factor)
- Density > 1.75g/cm³

Characteristic values**Resistance of screws 4.8 × 38 Ø 12 mm**

Position	Distance between fasteners (spacing)
	23 5/8"
Middle	2000 N
Edge	1100 N
Corner	700 N

The data was evaluated according to ETAG 034 using 8 mm panel, and includes no safety factor. Diameter of panel hole must be 5.5 mm, and screw head must be 12 mm. Min. screw engagement in timber to be 1 1/16". Edge distances 1 1/4" horizontally, 3 1/8" vertically. The data may be interpolated.

Single span panel (no intermediate support)



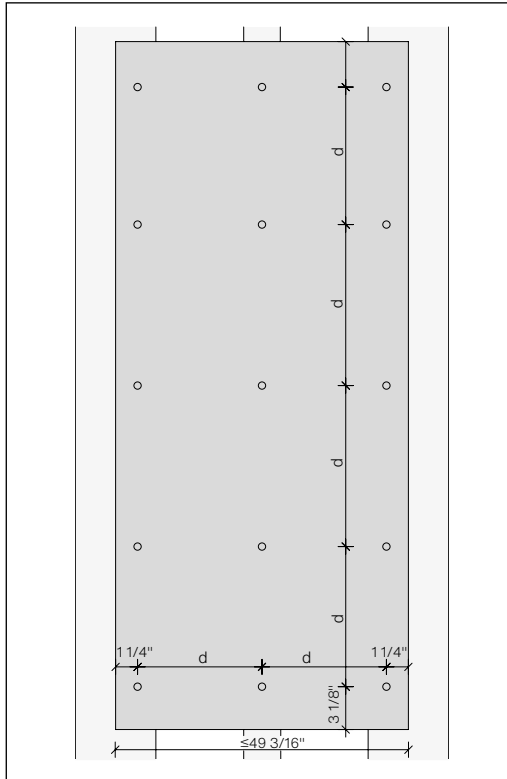
Soffit panels

Fastener distances for soffit panels and suspended ceilings not to exceed 19 11/16".

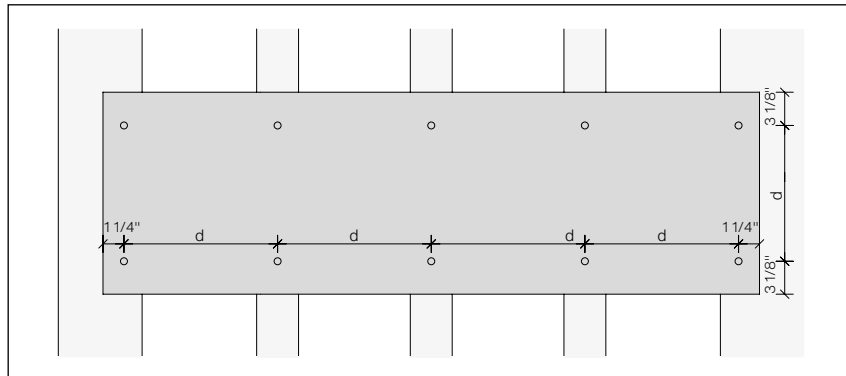
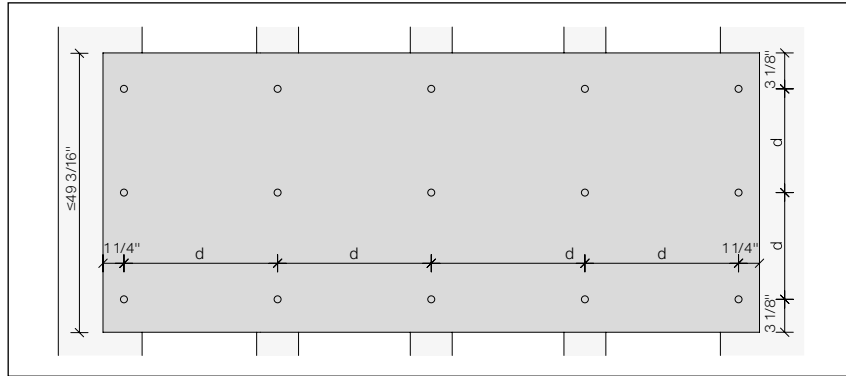
Max. distance between fasteners for single span panels 22 1/2", unless smaller distance is required by high wind load as per table of fastener distances.

Sample screw layouts, final layout to be determined by a local structural engineer.

Largo vertical panel (portrait)



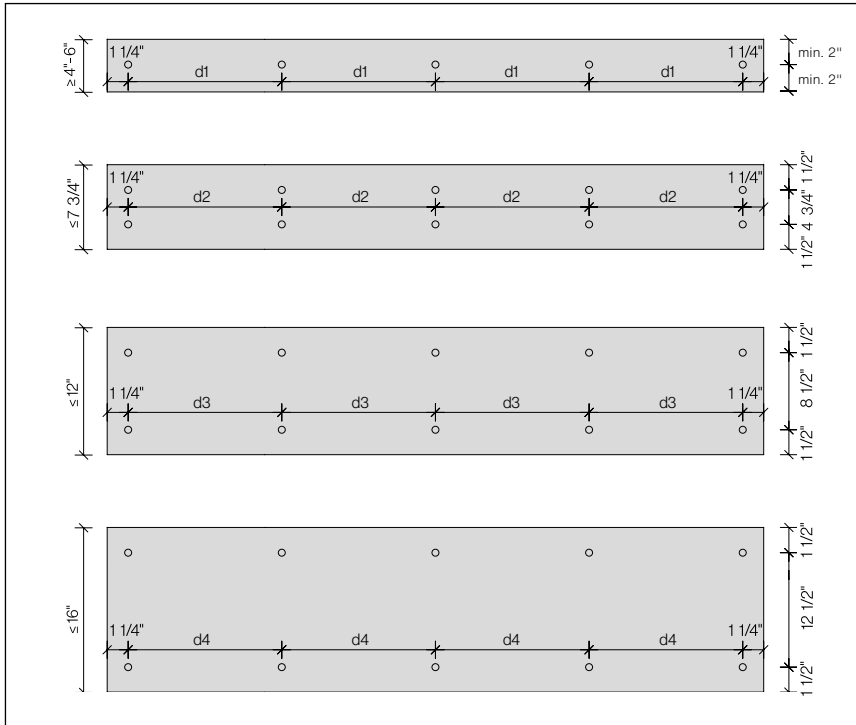
Largo horizontal panel (landscape)



Drill holes \varnothing 5.5 mm

Sample screw layouts, final layout to be determined by a local structural engineer.

Largo strips



Due to deformation of the panel the max. fastener distances not to exceed:

d_1 : $16\frac{1}{8}"$

d_2 : $19\frac{11}{16}"$

d_3 : $22\frac{7}{16}"$

d_4 : $24"$

Panel height $\leq 15\frac{3}{4}"$, the vertical edge distance might be reduced to a min. $1\frac{9}{16}"$.

Holes in panel for screws

Fastener holes to be done at the jobsite. Diameter 1/4".

Ventilation Cavity

The min. cavity depth is 3/4" with open joints. However, the required ventilation cavity depends on the height of the building. Refer to page 12 for further information.

Installation Reflex and Vintago

When installed, all the arrows on the backside of the Reflex and Vintago panels must point in the same direction.

Timber battens

Installation over timber battens is allowed provided the design meets local engineered codes and standards.

EPDM strips

All timber battens must be fully covered by EPDM backing strips stapled to the battens. Stapled at the edges of the bands. EPDM strips to be in one single piece top to bottom or overlapped.

The use of Swisspearl EPDM bands with side lips is mandatory.

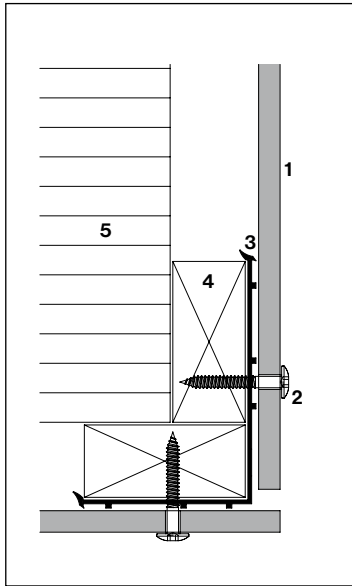
Vertical battens

Under butt joint 1 piece 3/4" x 5" or 2 pieces 3/4" x 2 1/2", one-sided planed. Intermediate support 3/4" x 2 1/2", one-sided planed.

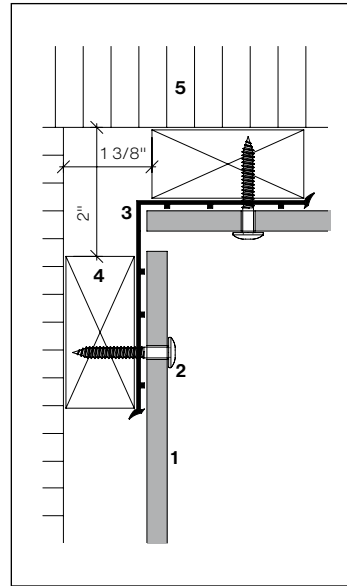
Details

Installation details as per this DIM are applicable.

Largo example outer corner



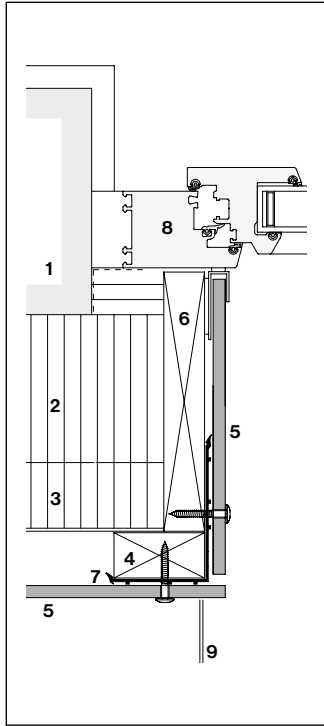
Largo example inner corner



- 1 Largo 8 mm
- 2 Swisspearl Screw 4.8 × 38 mm
- 3 EPDM band 150 mm
- 4 Batten 3/4" × 2 1/2"
- 5 Thermal insulation

Batten configuration to building corner as shown above with the use of 150 mm EPDM.

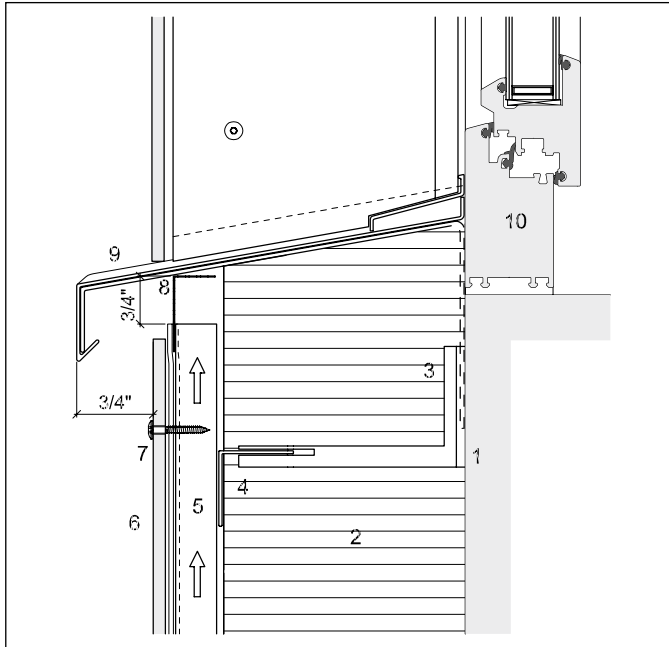
Largo example window jamb



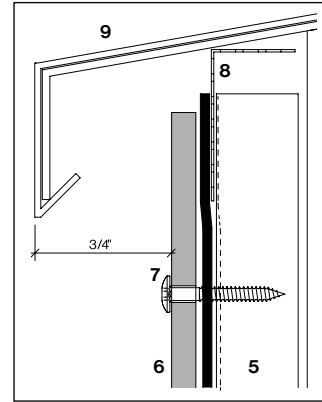
- 1 Exterior wall
- 2 Thermal insulation
- 3 Horizontal support
- 4 Vertical support
- 5 Largo 8 mm
- 6 Jamb board
- 7 EPDM band 150 mm
- 8 Window frame
- 9 Window sill

Jamb with 8 mm panels

Example window sill



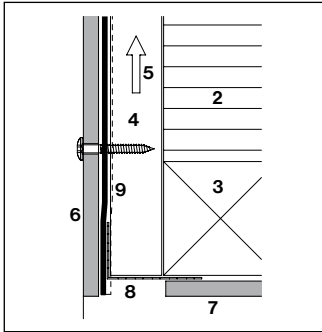
Window sill made of metal



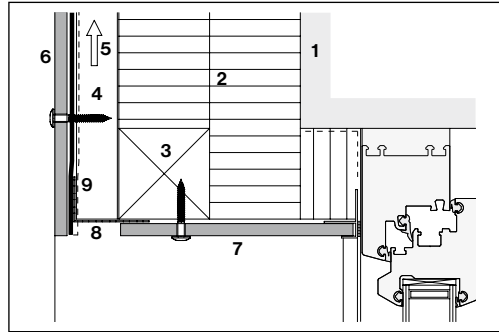
Sill detail

- 1 Exterior wall
- 2 Thermal insulation
- 3 Vertical support
- 4 Horizontal support
- 5 Vertical support
- 6 Swisspearl Largo 8 mm
- 7 Screw 4.8 × 38 mm
- 8 Perforated angle
- 9 Window sill
- 10 Window frame

Example window head



Perforated angle

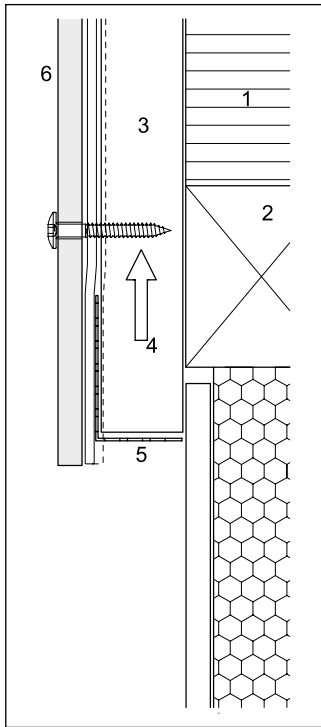


Metal framing around whole window

- 1 Exterior wall
- 2 Thermal insulation
- 3 Horizontal support
- 4 Vertical support
- 5 Ventilation cavity
- 6 Largo 8 mm
- 7 Largo 8 mm

- 8 Perforated angle
- 9 EPDM band

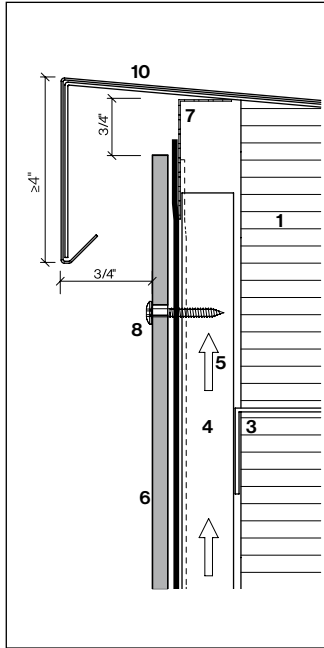
Example bottom detail



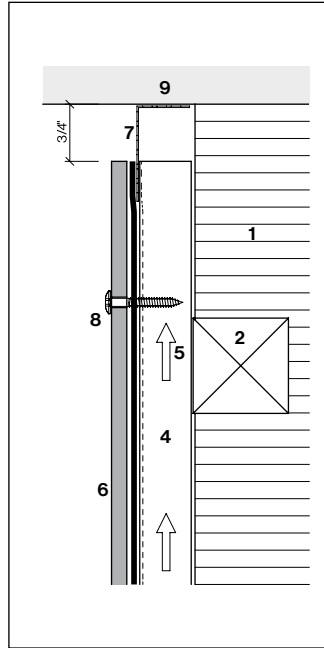
- 1 Thermal insulation
- 2 Horizontal batten
- 3 Vertical support
- 4 Ventilated cavity
- 5 Perforated angle
- 6 Largo 8 mm

Timber / timber

Example coping detail



Coping detail



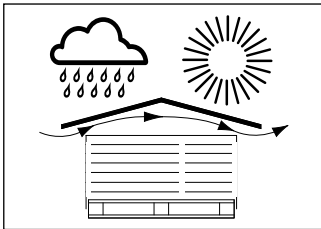
Detail under slab

- 1 Thermal insulation
- 2 Horizontal batten
- 3 Horizontal support
- 4 Vertical support
- 5 Ventilated cavity
- 6 Largo 8 mm
- 7 Perforated angle
- 8 Screw
- 9 Soffit
- 10 Coping

On-site storage

Pallets must be stored under cover i.e. out of the rain and direct sunlight. Where this is not possible, store under a tarp. Ingress of water into stacked panels will cause permanent staining to panel surface. Excess heat to stacked panels can cause damage to panel surface. Overseas pallets can be stacked 3 on top of each other.

Provisional roofing or tarp covers are to be used in a manner that allows cross ventilation as shown.



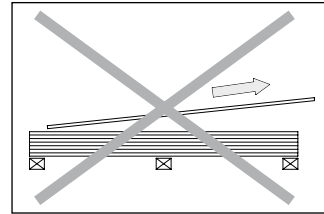
Fabricating panels at local fabricators or on site

Always work out of the weather. Cutting panels to size:

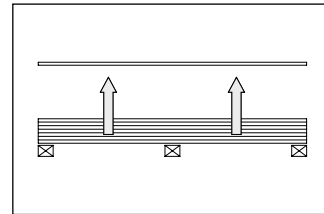
- Use industrial vertical panel saw for large quantities
- For small quantities use circular hand saw with straight edge and dust extraction
- Panel cut outs, etc. use jig saw
- Cutting blade supplied by factory or procured locally; considering cutting quality, performance, costs
- Dust from fabricating on site must be removed immediately
- Avoid tools which produce fine dust

Stacking panels on site

- Always stack the panels horizontally on pallet base
- Each stack should not be more than 20" high
- Use foam protection layer between the panels (as supplied by factory)
- 3 stacks on top of each other



Do not pull panel across...



...but lift up vertically

Pallet sequence

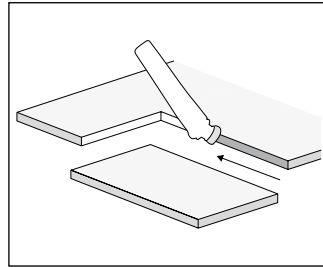
It is recommended to order the panels cut and pre-drilled according to their sequence in order to save time while installing.

Panel fabrication on site

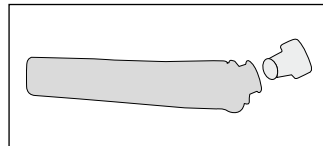
For long cuts use multifunction table with circular hand saw, guide rail and dust extractor. Saw blade supplied by panel manufacturer or at own choice.

Cut outs

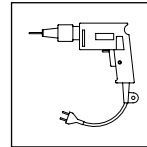
For smaller cut outs or odd shapes use pendular jig saw. For drilling use drill bits on site storage \varnothing 9.5 mm / \varnothing 5.5 mm (metal / timber supports) with carbide metal tips supplied by panel manufacturer or procured locally.

Sealer to cut edges

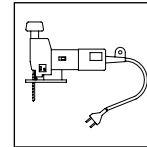
All cut edges must be sealed with impregnation liquid LUKO. Immediately wipe Luko off the face of the material.

LUKO hand applicator

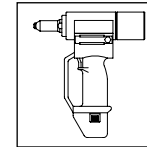
LUKO filled in hand applicators is frost proof to 18°F. LUKO supplied in 1 liter bottles is not frost proof but dries faster (for fabrication in workshop).

Tools

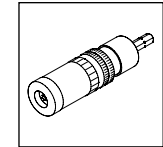
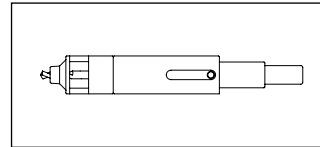
Drill



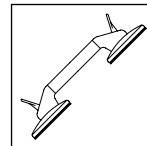
Jig saw



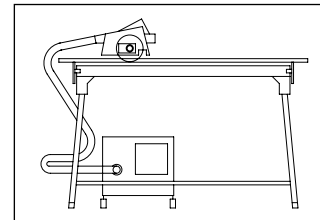
Rivet gun

Depth stop
(mandatory
for timber sub-
frame)

Centering drill gauge



Vacuum handle with silicone cups. (Keep silicone cups clean during installation to prevent scratching panels).

Circular hand saw with guide rail and
dust extraction

Swisspearl panels including

Carat, Avera, Reflex, Vintago, Nobilis, Terra, Planea and Zenor.

Including those panels with a special Facade or Roof coating.

Cleaning procedures

Remove dust immediately after fabricating panels.

Dry dust

To be removed with a vacuum cleaner, or with a clean, dry and soft cloth or brush.

Wet dust

Results in staining the panel surface. It must be removed immediately, using plenty of water and a sponge or soft brush.

Cleaning of completed claddings

Non-calcium based stains:

- Use high-pressure cold water at max. 1160 PSI (min. distance from panel 10"). Use flat fan spray nozzle, dirt blasters are not allowed. Test on inconspicuous part of cladding prior to complete cleaning.
- If required use mild soap or dishwashing liquid. Do not use abrasive or solvent containing cleaning agents.
- Do not use glass cleaning detergents!
- Never wash claddings in direct sunlight with alkaline or acid cleaners, as the detergent may cause irreversible stains.

Calcium based stains:

- Apply a mist spray of a solution of 9.5% acetic acid and water.
- Allow to react a few minutes but do not let dry out.
- Use high-pressure cold water to rinse cladding

Repeat steps 1 to 3 on difficult stains:

Cleaning during service life

Normally no cleaning will be needed since the rain will periodically wash away dust, environmental dirt, etc. However, if particular environmental conditions lead to a dirty surface, wash with garden hose or high-pressure cold water.

Cleaning of HR panels

Clean the surface with a soft cloth, remove stains with Acetone using a different soft cloth. Apply 2-3 times treatment if necessary. If the surface is not acceptable after the 3rd time, a change of the panel is recommended.

Do not clean the surface in direct sunlight, and always use appropriate safety equipment. For detailed specifications on HR panels please contact your Technical Advisor.

Organic growth

Remove algae / fungi with a 5% solution of hydrogen peroxide (H₂O₂) to eliminate all spores.

Masking tape

For the use of masking tape on panels it should be noted that most common masking tapes are not resistant to UV rays. Such tapes leave behind residues, that cannot be removed without causing damage to panel surface or detaching the panel surface directly. However the use of the following masking tapes is recommended:

- Masking tape 3M Blue 2090 for temporary application (1 - 2 weeks)
- Masking tape 3M Gold 244 for longer term application.



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