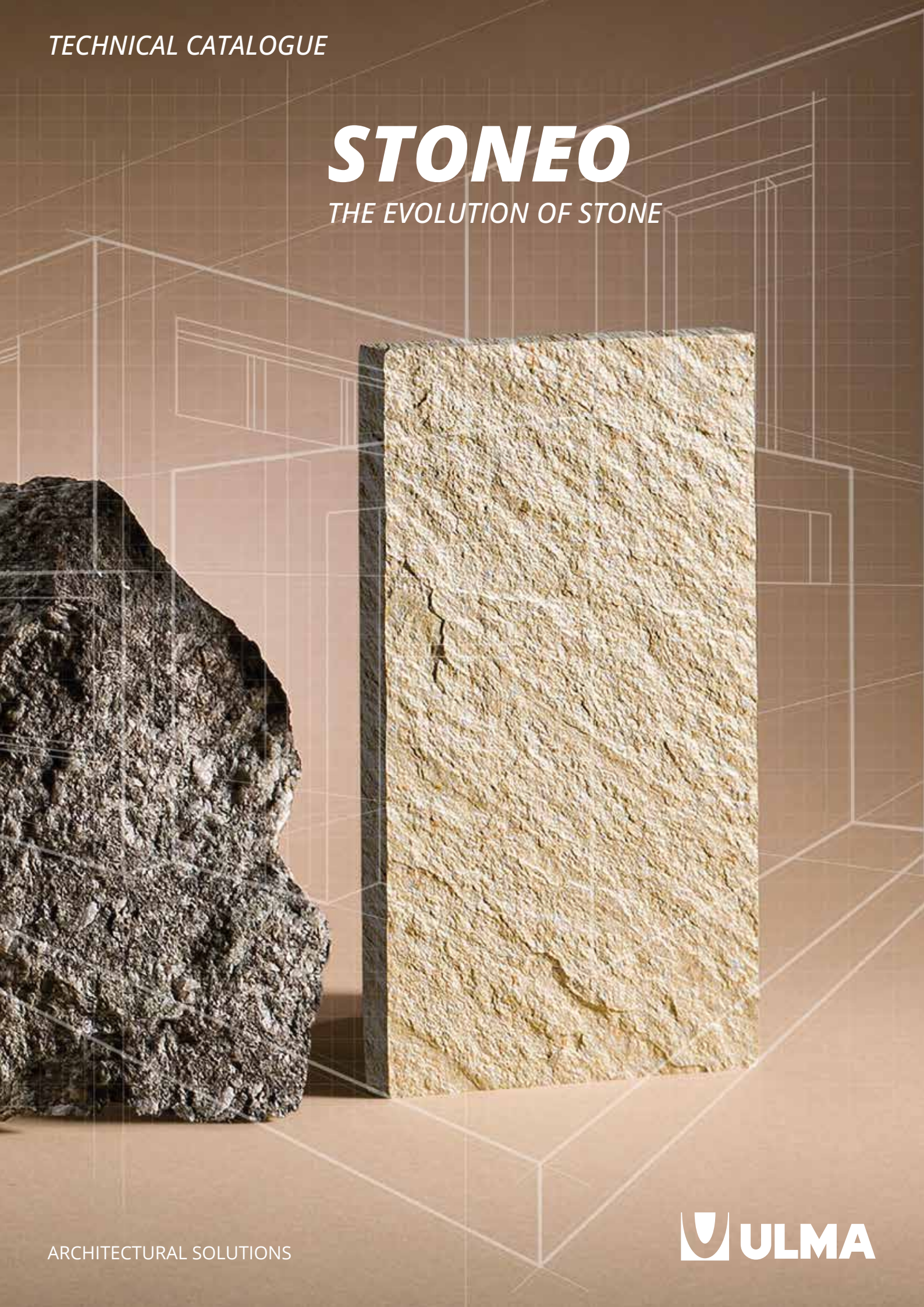
TECHNICAL CATALOGUE

STONEO

THE EVOLUTION OF STONE



ARCHITECTURAL SOLUTIONS

ULMA

CONTENTS

THE **STRENGTH** OF A **GREAT TEAM**

We have been manufacturers since 1990. All these years have allowed us to develop innovative, sustainable products and solutions.

We offer **Drainage and Architecture** solutions. In the latter:

- **Ventilated facades**
- **Industrialised rainscreen systems**
- **Custom precasts**
- **Street furniture**

We have a horizontal culture. We are committed to our business project, and we feel like a big family.

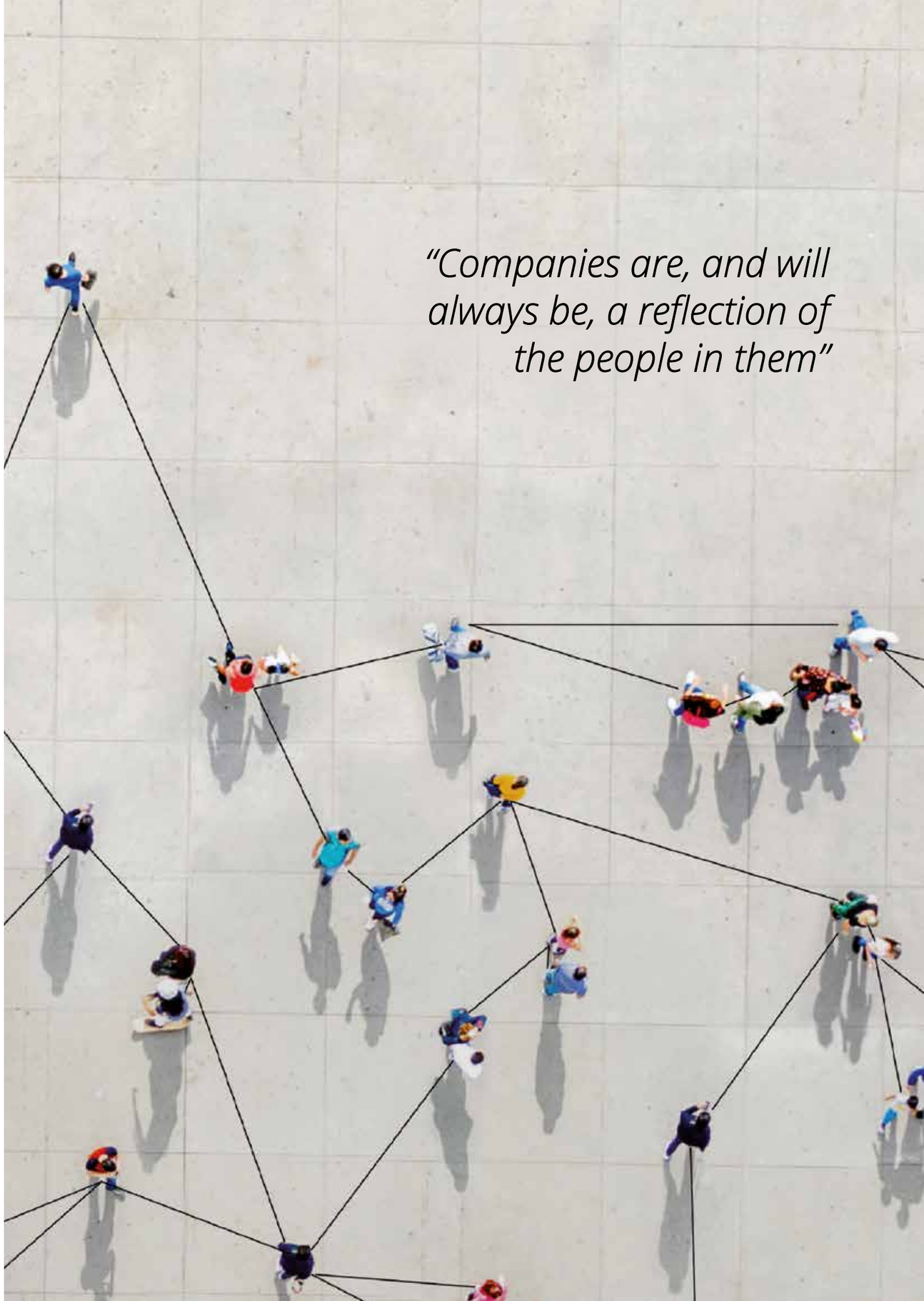
How does this benefit you?

We are excited to be involved in our clients' projects. Because when you feel the company is your own, you are more motivated and driven to provide a good service.

Professionals who are committed to **sustainability** and opt for highly durable, **natural and recyclable** materials, and companies that invest in local industry with a view to cutting CO_2 emissions.

Yes. We are one of those companies that pays attention to details, seeking to improve their impact on the world. And we do this both internally and externally.

Perhaps we are in tune with your work philosophy.



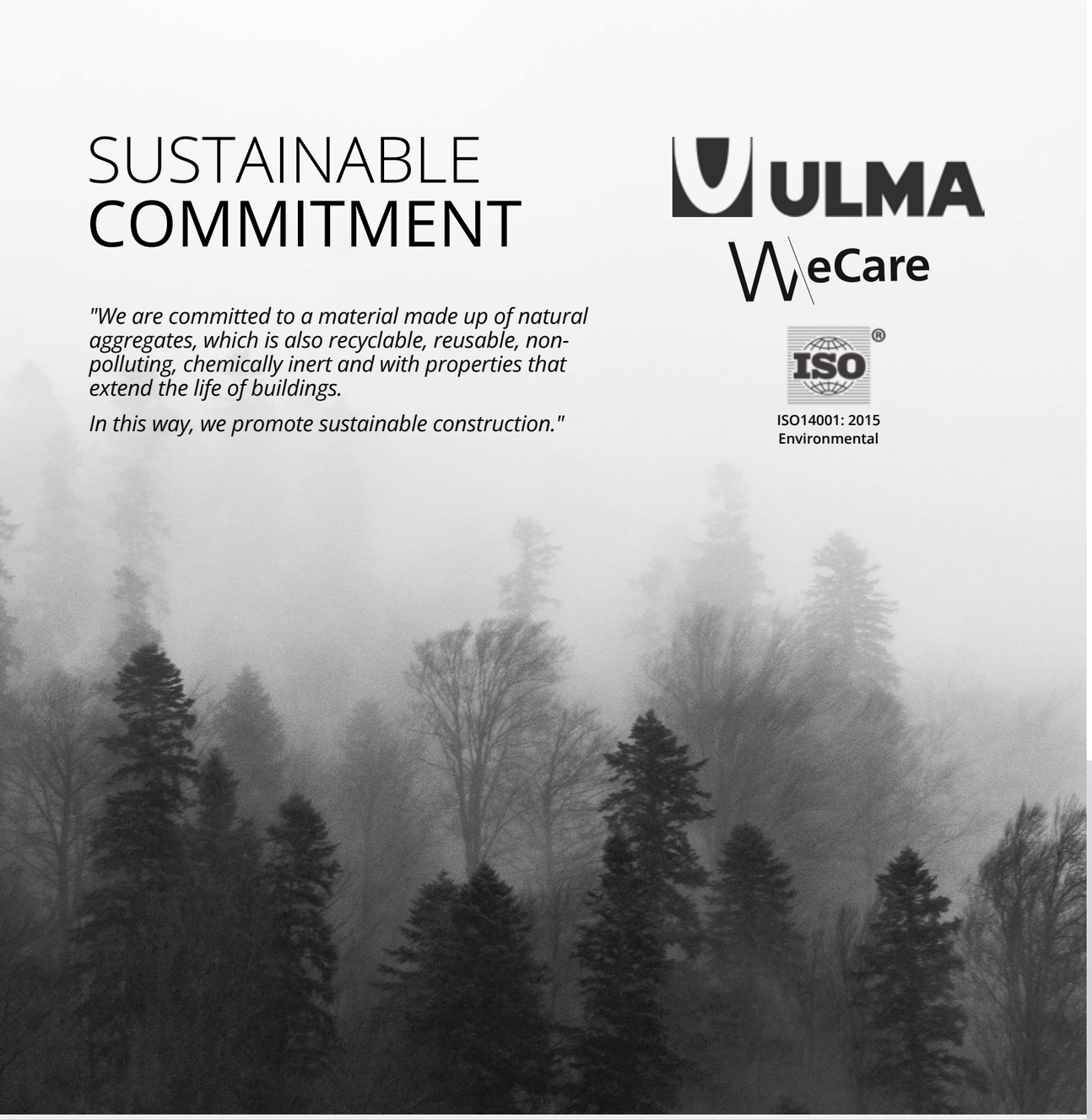
SUSTAINABLE COMMITMENT

"We are committed to a material made up of natural aggregates, which is also recyclable, reusable, non-polluting, chemically inert and with properties that extend the life of buildings.

In this way, we promote sustainable construction."

ULMA WeCare

ISO14001: 2015
Environmental



Our model has an Environmental Product Declaration - DAP/EPD

The ULMA Ventilated Facade system contributes to **LEED ® v3** Certification in **1 prerequisite and 12 credits**, reaching up to a **maximum of 32 points**, depending on the particular characteristics of each project.

LEED
CERTIFICATION

OUR MATERIAL: *Stoneo*

We are pleased to present ***Stoneo***, an evolved, improved material that we have been innovating for over 30 years. Its name is from bringing two concepts together: Stone + Neo = Stone + New.

A material consisting of natural (aggregate) and recycled components. All controlled through rigorous **quality protocols**. A material with almost zero water absorption (0.1%) and excellent behaviour against atmospheric agents: thaw, rain or wind.

Likewise, its high **resistance** to most chemical products and thermal shock, and its minimum wear due to abrasion, are other characteristics that make it a high-quality material.

Its exceptional mechanical strength allows the production of **light elements with reduced dimensions**, and, along with its prefabricated status, it offers unmatched **ease of installation and handling**.

- Lightweight
- Waterproof
- Heat-resistant
- Strong
- Recyclable
- Abrasion-resistant
- Anti-corrosive
- ISO 9001: 2015

RAINSCREEN SYSTEMS

COMPREHENSIVE SERVICE
WITH YOU ALL THE WAY

From analysing your needs through to completing the work, we are on hand to advise you throughout the process, providing the best overall solution for your Facade, Rainscreen System or Prefab Solution.

1
ADVICE / COLLABORATION IN THE DESIGN PHASE

We help you modulate the facade in line with the designer's aesthetic/ economic criteria.

We produce and design the details of the singular elements.

We provide exploded views, construction reports, units and detailed descriptions.

We conduct pull-out tests to characterise the substrate wall and verify the suitability of the system using calculation software.

Facade scan.

Initial rendering of the entire facade to assess the visual result using our COFABIM tool.

2
WE MANUFACTURE

As a national manufacturer, we are close and therefore responsive, which allows us to shorten delivery times for material on site as much as possible. Because we have an industrialised cutting process, we deliver panels cut to size to expedite subsequent assembly, avoiding unnecessary handling on site.

We manufacture in accordance with the highest quality standards according to Standard ISO 9001. We also have the Compliance system, a set of common standards that includes best practices established by the organisation based on our values.

3
WE INSTALL*

To ensure the correct assembly of our Wall Systems, we have site teams that act at all times as a link between the site and the factory.

Each project will have a project manager, on-site assembly coordinator and approved installation teams with the aim of meeting the quality and deadline commitments set.

We also offer additional training through our ULMA School programme. We provide training and advisory services to installers and other professionals in the sector through our architecture and engineering team. Likewise, we offer training sessions and technical talks at universities to train future architects.

*Also optionally supplied.

WHAT IS AN ULMA VENTILATED FACADE?

A Ventilated Facade is an exterior cladding system for the building's walls that leaves a ventilated chamber between the cladding and the insulation.

In European academic circles, it is considered to be the most effective system for improving the insulation of the building, minimising thermal bridges, as well as condensation problems, obtaining excellent thermal-hygrometric behaviour of the building.

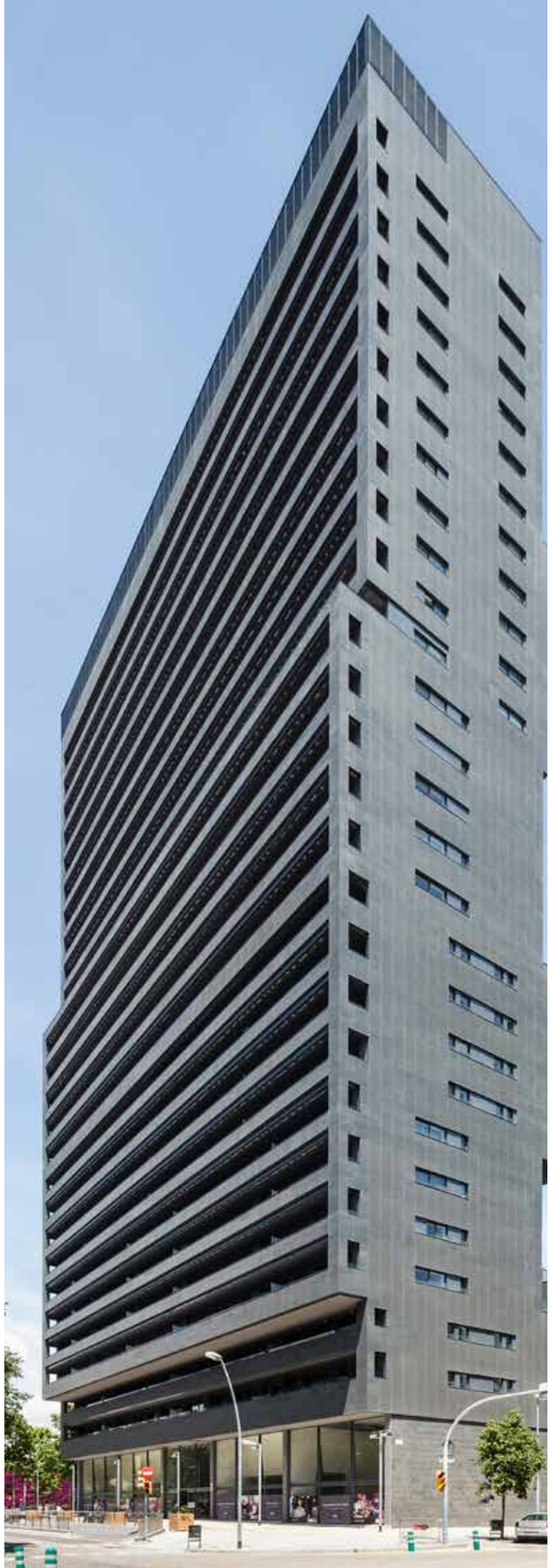
EXTERNAL CLADDING OF VENTILATED FACADE

This system allows continuous insulation on the outside of the building, protecting the interior sheet, as well as the edges of the floor structures. The so-called **"chimney effect"** occurs in the ventilated chamber due to the heating of the air layer of the interspace relative to the ambient air, generating **continuous ventilation in the chamber**.

A constant discharge of water vapour from both the interior and exterior of the building is achieved by properly sizing the air inlet and outlet, keeping the insulation dry and obtaining better performance, as well as great savings in energy consumption.

The Ventilated Facade, in addition to boosting savings in the building's energy consumption, avoids the effects of direct radiation or inclement weather on walls and floor structures, protecting them from the disorders that affect buildings built with traditional systems.

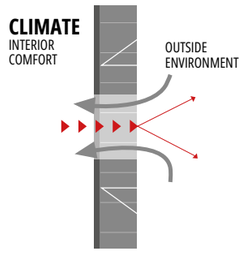
The construction system we have developed at ULMA Architectural Solutions **increases the usable area of your project**. In addition, **it creates a new plane** capable of correcting any flatness defects in traditional and structural walls. It is a **safe, lightweight system** that distributes its loads on the strong elements of the building, rather than on the walls.



+ WHAT DOES A VENTILATED FACADE ACHIEVE?

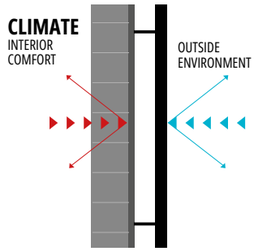
INNER INSULATION
Traditional facade

Possible thermal bridges



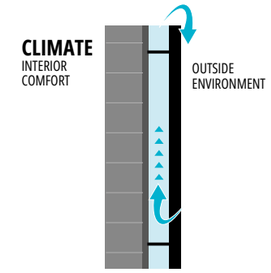
EXTERNAL INSULATION
Ventilated facade

Elimination of thermal bridges



CHIMNEY EFFECT
Energy efficiency

Air flow



+ ADVANTAGES

ENERGY SAVINGS

Thermal insulation. Reduced heat dispersion. Less heat absorption in the hot months. Lower conditioning costs.

THERMAL INSULATION

Protection of walls and floor structures against the ingress of rainwater and frost. Corrosion-resistant material in the primary and secondary structure.

TECHNICAL AND AESTHETIC DURABILITY

Unbeatable results against corrosion or deterioration due to pollution. Simple maintenance with soap and water. Encourages the dispersion of moisture. Colour stability against atmospheric agents.

HEALTHIER ENVIRONMENT

Increased user comfort, in accordance with basic health requirements around hygiene, health and environmental protection.

+ IDEAL FOR RESTORATION

Our system offers outstanding advantages for conducting facade restorations: The lightness, flexibility and adjustability of the material on site allows for a multitude of adaptations by applying panels of different formats. In addition, the ventilated facade can be installed without having to remove the existing wall.

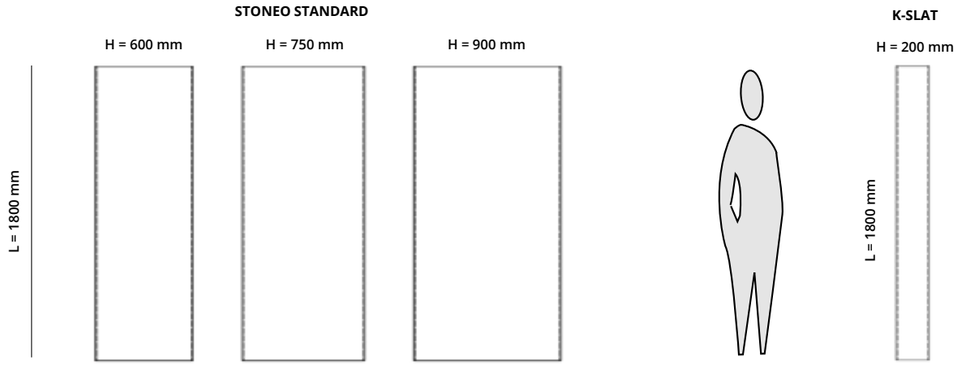
Revamp. We have a wide range of shapes, colours and textures that will revamp the appearance of your building, bringing a spectacular transformation.

Increased value. After restoring the facade, your property value will be much higher than the cost of the work. Restoring the facade of your building will significantly increase the value of your assets, not only transforming the appearance of the home, but also enhancing the urban environment.

FORMATS & THICKNESSES

HEIGHT (H):
From 200 mm, in standard sizes of 600 mm, 750 mm and 900 mm.

LENGTH (L):
From 900 mm, in standard sizes of 1200 mm, 1400 mm, 1600 mm and 1800 mm.
Cuts to any size.

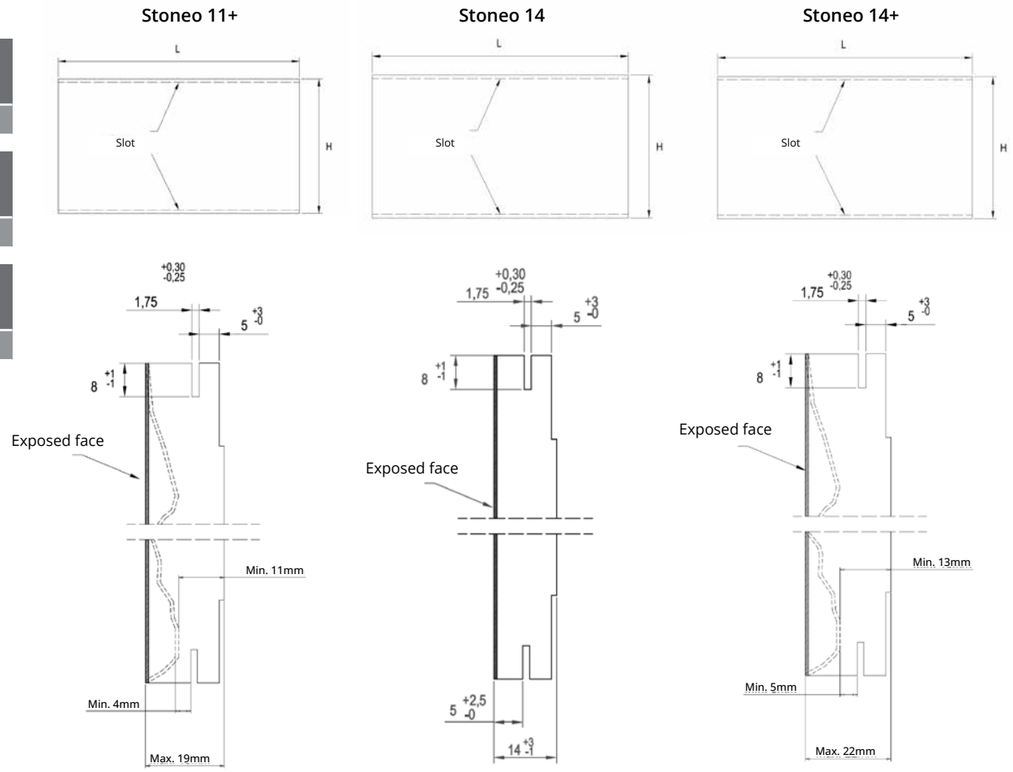


PANEL THICKNESS

Longitudinal tolerances
L + 2 mm

Panel weight
33 kg/m²

Height tolerances
H + 1 mm



PROPERTIES OF OUR *Stoneo* MATERIAL

Standard	Test	Value
APPARENT DENSITY		
EN 14617-1	Agglomerated stone. Test methods. Part 1: Determination of apparent density and water absorption.	2300 ± 100 kg/m³
WATER ABSORPTION		
EN 14617-1	Agglomerated stone. Test methods. Part 1: Determination of apparent density and water absorption.	< 0,3 %
FLEXURAL STRENGTH		
EN 14617-2	Agglomerated stone. Test methods. Part 2: Determination of flexural strength.	> 18 Mpa
FREEZE AND THAW RESISTANCE		
EN 14617-5	Agglomerated stone. Test methods. Part 5: Determination of freeze and thaw resistance.	> 75 %
THERMAL SHOCK RESISTANCE		
EN 14617-6	Agglomerated stone. Test methods. Part 6: Determination of thermal shock resistance.	> 75 %
GROOVING RESISTANCE		
EAD 090020-00-0404	Resistance of the grooved cladding element.	> 1300 N
THERMAL EXPANSION		
EN 14617-11	Agglomerated stone. Test methods. Part 11: Determination of linear thermal expansion coefficient.	23,5 10^{-6} °C^{-1}
REACTION TO FIRE		
EN 13823	Reaction to fire tests for building products. Building products excluding floorings exposed to the thermal attack by a single burning item.	B-s2,d0
EN 13501-1	Fire classification of construction products and building elements. Part 1: Classification using data from reaction to fire tests.	

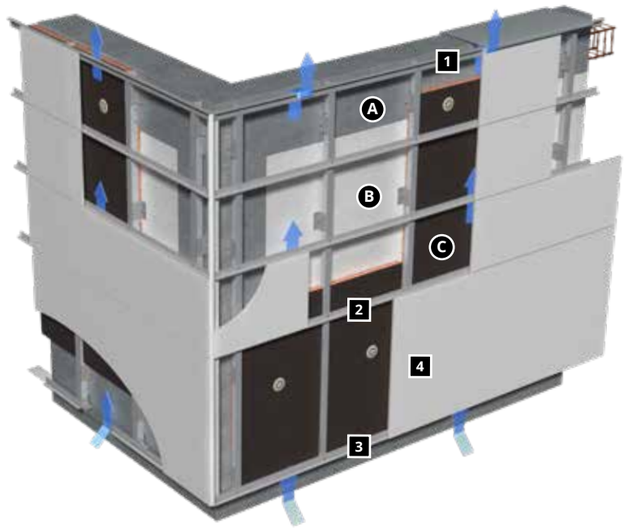
TESTS CARRIED OUT BY:

INSTALLATION SYSTEMS

1. CONCEALED SYSTEM

It has 2 installation systems: Horizontal System and Vertical System.

HORIZONTAL SYSTEM



A **FLOOR STRUCTURES**

B **BASE WALL**

C **THERMAL INSULATION**

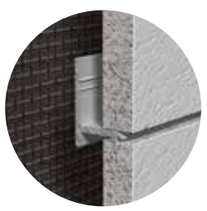
1 Continuous inverted starter rail profile

2 Continuous intermediate rail profile

3 Continuous starter rail profile

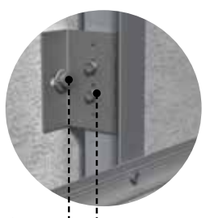
4 Stoneo panel

Starter rail profile and anti-rodent grid



Rail profile detail

Y-shaped corner



Connection at floor slab and base wall

Sliding point bracket

Fixed point bracket

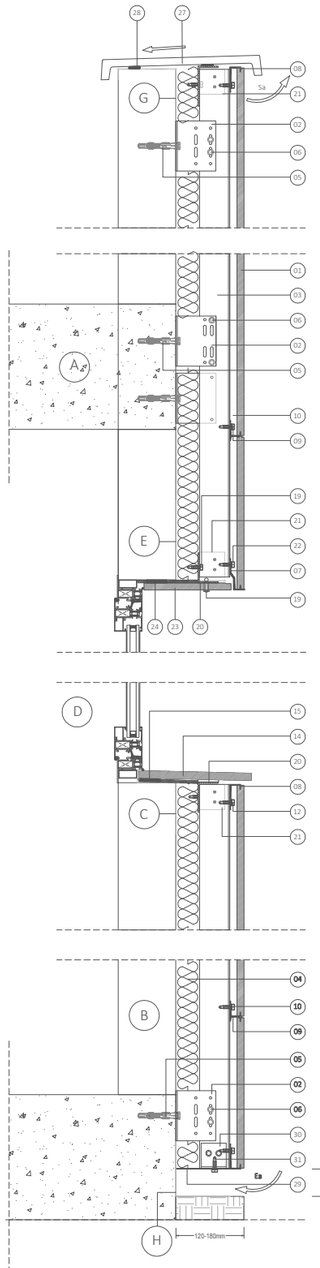
Air output from chamber

Watch the video of the assembly process

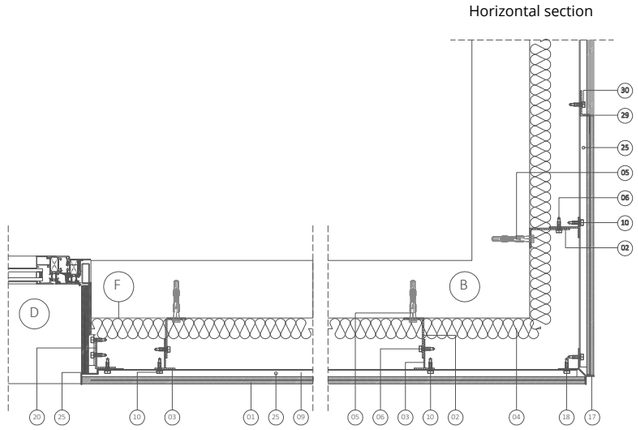
+ TECHNICAL DETAILS

VENTILATED FACADE HORIZONTAL SYSTEM

Vertical section



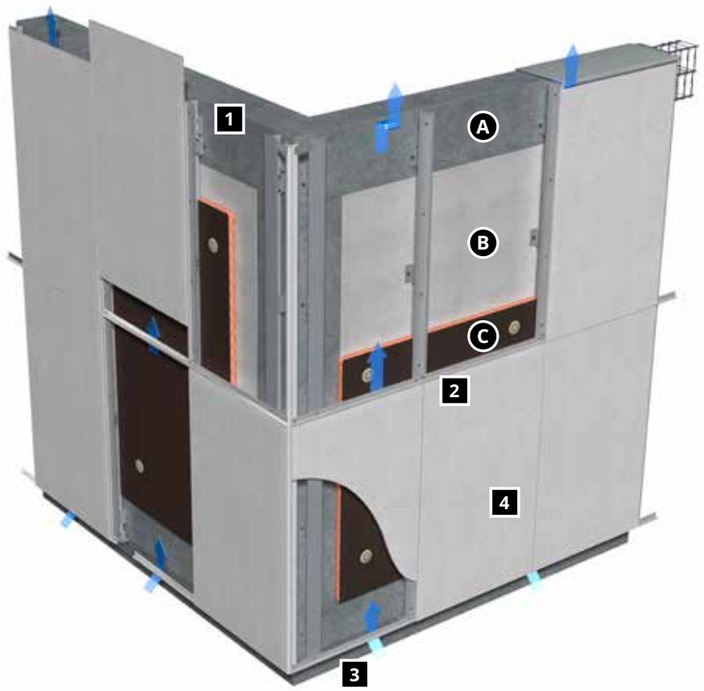
Horizontal section



A) FLOOR SLAB
B) BASE WALL
C) SILL WATERPROOFING
D) FRAMES
E) LINTEL WATERPROOFING
F) JAMB WATERPROOFING
G) ROOF COPING WATERPROOFING
H) STARTER WATERPROOFING

01) ULMA STONEO facade panel.
02) Bracket for base wall and floor structure.
03) Vertical T-rail.
04) Thermal insulation.
05) Support angle for securing to floor structure and base wall.
06) Self-drilling screw for upright connection to bracket.
07) Lintel starter rail profile.
08) Inverted starter rail profile.
09) Continuous intermediate rail profile.
10) Self-drilling screw for rail profile connection to upright.
11) Self-drilling screw for support angle connection to starter rail profile.
12) Self-drilling screw for support angle connection to inverted starter rail profile.
13) Support angle for inverted starter rail profile connection to upright.
14) ULMA STONEO window sill.
15) Silicone adhesive for window sills.
16) Mechanical block in corner panel against gap.
17) Y-shaped corner finish.
18) Self-drilling screw for corner profile connection to rail profile.
19) Rivet.
20) L profile.
21) Bracket for L profile connection to upright.
22) Self-drilling screw for L profile connection to support angle.
23) ULMA STONEO lintel.
24) Silicone adhesive for lintel.
25) Weep hole.
26) ULMA STONEO jamb.
27) ULMA STONEO prefabricated coping.
28) Silicone adhesive for coping.
29) Anti-rodent grid.
30) Bracket for anti-rodent grid connection to upright.
31) Self-drilling screw for anti-rodent grid connection to support angle.
Sa) Air outlet.
Ea) Air inlet.

VERTICAL SYSTEM



A **FLOOR STRUCTURES**

B **BASE WALL**

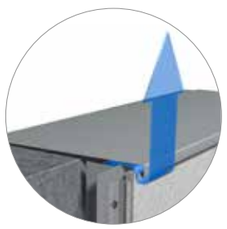
C **THERMAL INSULATION**

1 Continuous inverted starter rail profile

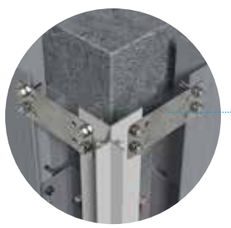
2 Continuous intermediate rail profile

3 Continuous starter rail profile

4 Stoneo panel



Air output from chamber



Double support angle

Fixed point bracket

Anti-rodent grid

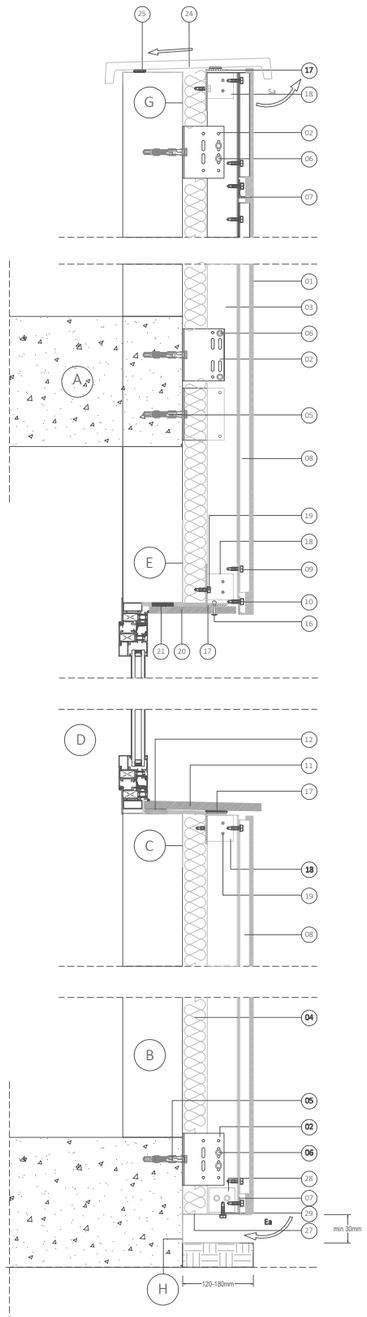
Y-shaped corner

Watch the video of the assembly process

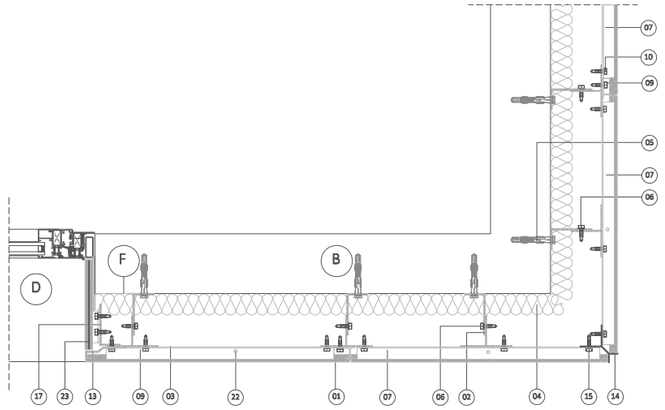
+ TECHNICAL DETAILS

VENTILATED FACADE VERTICAL SYSTEM

Vertical section



Horizontal section



A) FLOOR SLAB
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C) SILL WATERPROOFING
D) FRAMES
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F) JAMB WATERPROOFING
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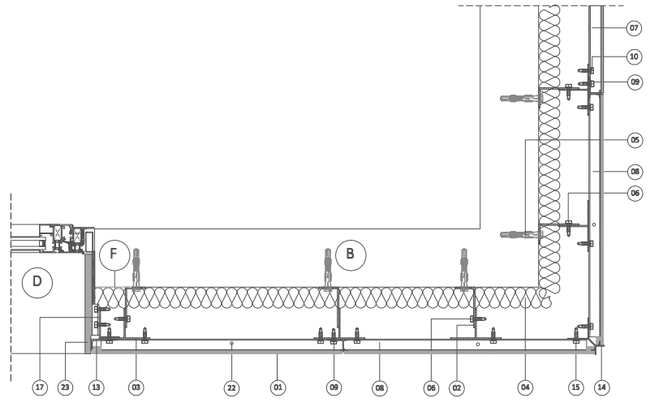
H) STARTER WATERPROOFING

01) ULMA STONEO facade panel.
02) Bracket for base wall and floor structure.
03) Vertical T-rail.
04) Thermal insulation.
05) Support angle for securing to floor structure and base wall.
06) Self-drilling screw for upright connection to bracket.
07) Support profile.
08) Continuous intermediate rail profile.
09) Self-drilling screw for rail profile connection to vertical T-rail.
10) Self-drilling screw for support profile connection to vertical T-rail.
11) ULMA STONEO window sill.
12) Silicone adhesive for window sills.
13) Starter rail profile.
14) Y-shaped corner finish.
15) Self-drilling screw for corner profile connection to rail profile.
16) Rivet.
17) L profile.
18) Bracket for L profile connection to upright.
19) Self-drilling screw for L profile connection to bracket.
20) ULMA STONEO lintel.
21) Silicone adhesive for lintel.
22) Weep hole.
23) ULMA STONEO jamb.
24) ULMA STONEO prefabricated coping.
25) Silicone adhesive for coping.
26) Locking piece.
27) Self-drilling screw for locking piece connection to rail profile.
28) Anti-rodent grid.
29) Bracket for anti-rodent grid connection to upright.
30) Self-drilling screw for anti-rodent grid connection to bracket.
Sa) Air outlet.
Ea) Air inlet.

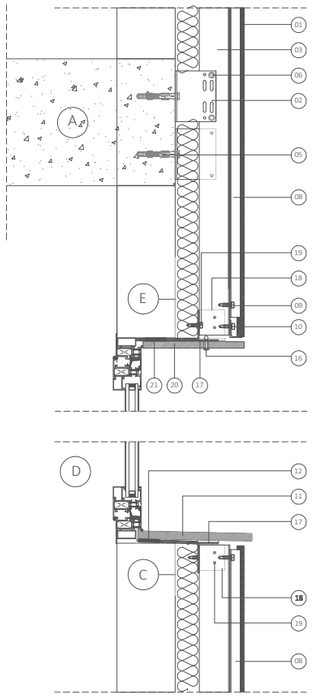
WINDOW SURROUNDS
HORIZONTAL SYSTEM

HORIZONTAL SYSTEM 1

Horizontal section



Vertical section



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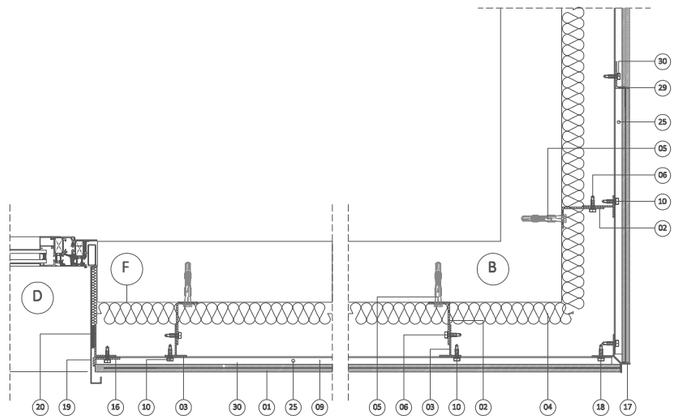
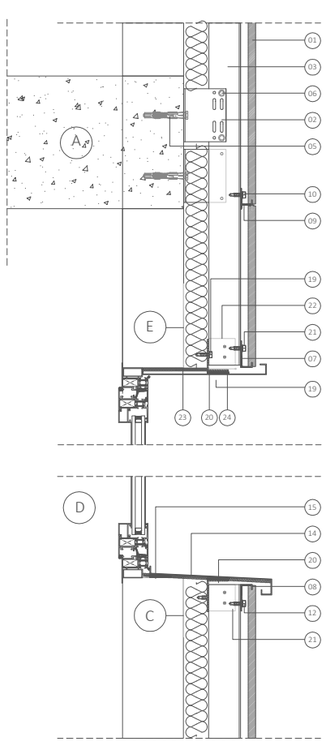
08) Inverted starter rail profile.
09) Continuous intermediate rail profile.
10) Self-drilling screw for rail profile connection to upright.
11) Self-drilling screw for support angle connection to starter rail profile.
12) Self-drilling screw for support angle connection to inverted starter rail profile.
13) Support angle for inverted starter rail profile connection to upright.
14) ULMA STONEO window sill.
15) Silicone adhesive for window sills.
16) Mechanical block in corner panel against gap.
17) Y-shaped corner finish.
18) Self-drilling screw for corner profile connection to rail profile.
19) Rivet.
20) L profile.
21) Bracket for L profile connection to upright.
22) Self-drilling screw for L profile connection to support angle.
23) ULMA STONEO lintel.
24) Silicone adhesive for lintel.
25) Weep hole.
26) ULMA STONEO jamb.

HORIZONTAL SYSTEM 2

Horizontal section



Vertical section



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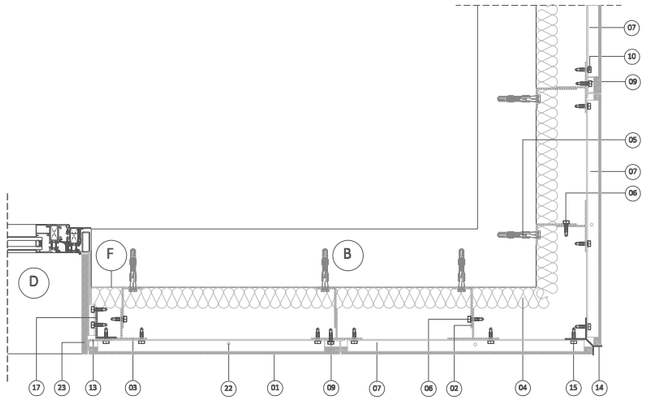
08) Inverted starter rail profile.
09) Continuous intermediate rail profile.
10) Self-drilling screw for rail profile connection to upright.
11) Self-drilling screw for support angle connection to starter rail profile.
12) Self-drilling screw for support angle connection to inverted starter rail profile.
13) Support angle for inverted starter rail profile connection to upright.
14) Metallic window sill.
15) Silicone adhesive for window sills.
16) Mechanical block in corner panel against gap.
17) Y-shaped corner finish.
18) Self-drilling screw for corner profile connection to rail profile.
19) Metallic jamb.
20) L profile.
21) Bracket for L profile connection to upright.
22) Self-drilling screw for L profile connection to support angle.
23) Metallic lintel.
24) Silicone adhesive for lintel.
25) Weep hole.

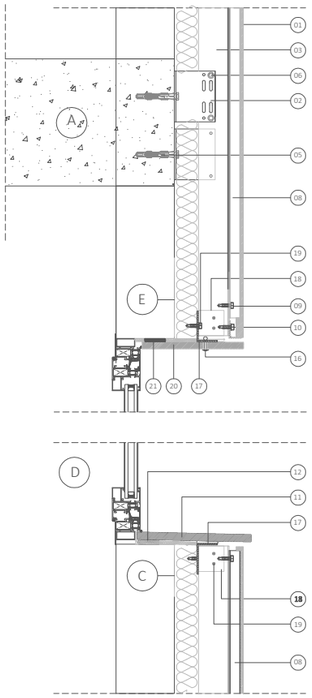
WINDOW SURROUNDS
VERTICAL SYSTEM

VERTICAL SYSTEM 1

Horizontal section



Vertical section



A) FLOOR SLAB
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C) SILL WATERPROOFING
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E) LINTEL WATERPROOFING
F) JAMB WATERPROOFING
G) ROOF COPING WATERPROOFING
H) STARTER WATERPROOFING

01) ULMA STONEO facade panel.
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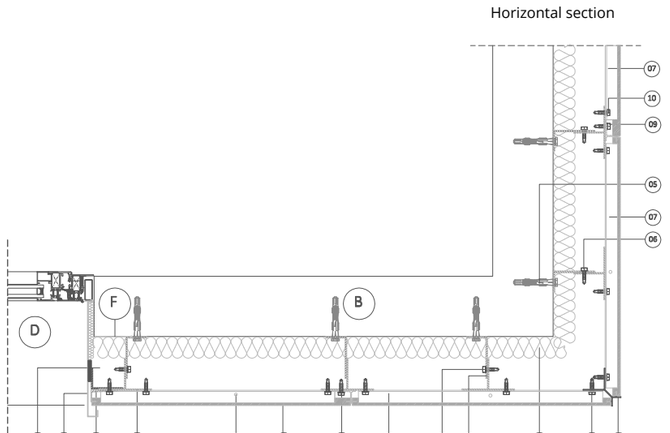
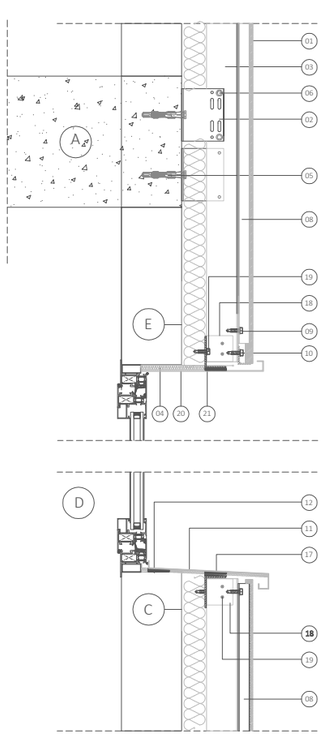
03) Vertical T-rail.
04) Thermal insulation.
05) Support angle for securing to floor structure and base wall.
06) Self-drilling screw for upright connection to bracket.
07) Support profile.
08) Continuous intermediate rail profile.
09) Self-drilling screw for rail profile connection to vertical T-rail.
10) Self-drilling screw for support profile connection to vertical T-rail.
11) ULMA STONEO window sill.
12) Silicone adhesive for window sills.
13) Starter rail profile.
14) Y-shaped corner finish.
15) Self-drilling screw for corner profile connection to rail profile.
16) Rivet.
17) L profile.
18) Bracket for L profile connection to upright.
19) Self-drilling screw for L profile connection to bracket.
20) ULMA STONEO lintel.
21) Silicone adhesive for lintel.
22) Weep hole.
23) ULMA STONEO jamb.

VERTICAL SYSTEM 2

Horizontal section



Vertical section

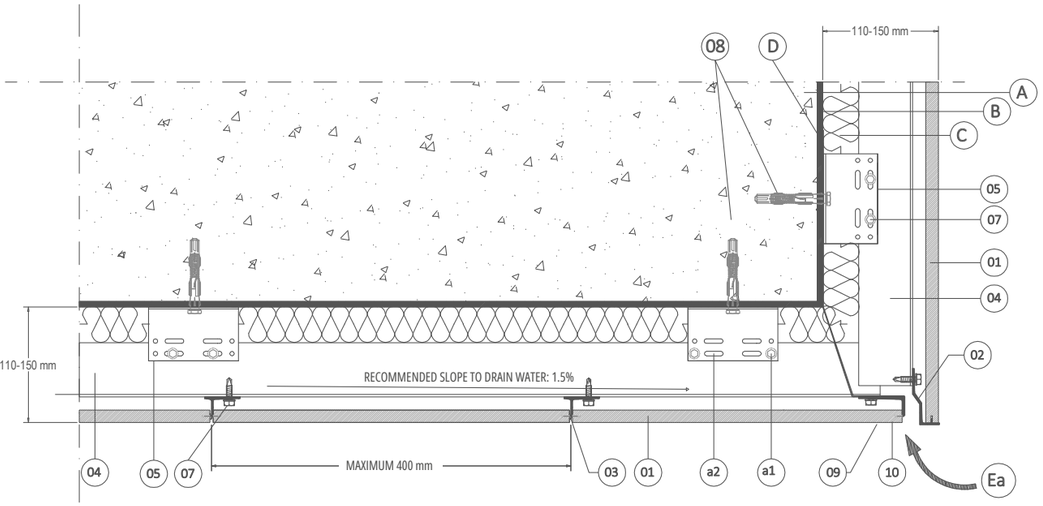


A) FLOOR SLAB
B) BASE WALL
C) SILL WATERPROOFING
D) FRAMES
E) LINTEL WATERPROOFING
F) JAMB WATERPROOFING
G) ROOF COPING WATERPROOFING
H) STARTER WATERPROOFING

01) ULMA STONEO facade panel.
02) Bracket for base wall and floor structure.
03) Vertical T-rail.
04) Thermal insulation.
05) Support angle for securing to floor structure and base wall.
06) Self-drilling screw for upright connection to bracket.
07) Support profile.
08) Continuous intermediate rail profile.
09) Self-drilling screw for rail profile connection to vertical T-rail.
10) Self-drilling screw for support profile connection to vertical T-rail.
11) Metallic window sill.
12) Silicone adhesive for window sills.
13) Starter rail profile.
14) Y-shaped corner finish.
15) Self-drilling screw for corner profile connection to rail profile.
16) Metallic jamb.
17) L profile.
18) Bracket for L profile connection to upright.
19) Self-drilling screw for L profile connection to bracket.
20) Metallic lintel.
21) Silicone adhesive for lintel.
22) Weep hole.

CEILING

CEILING



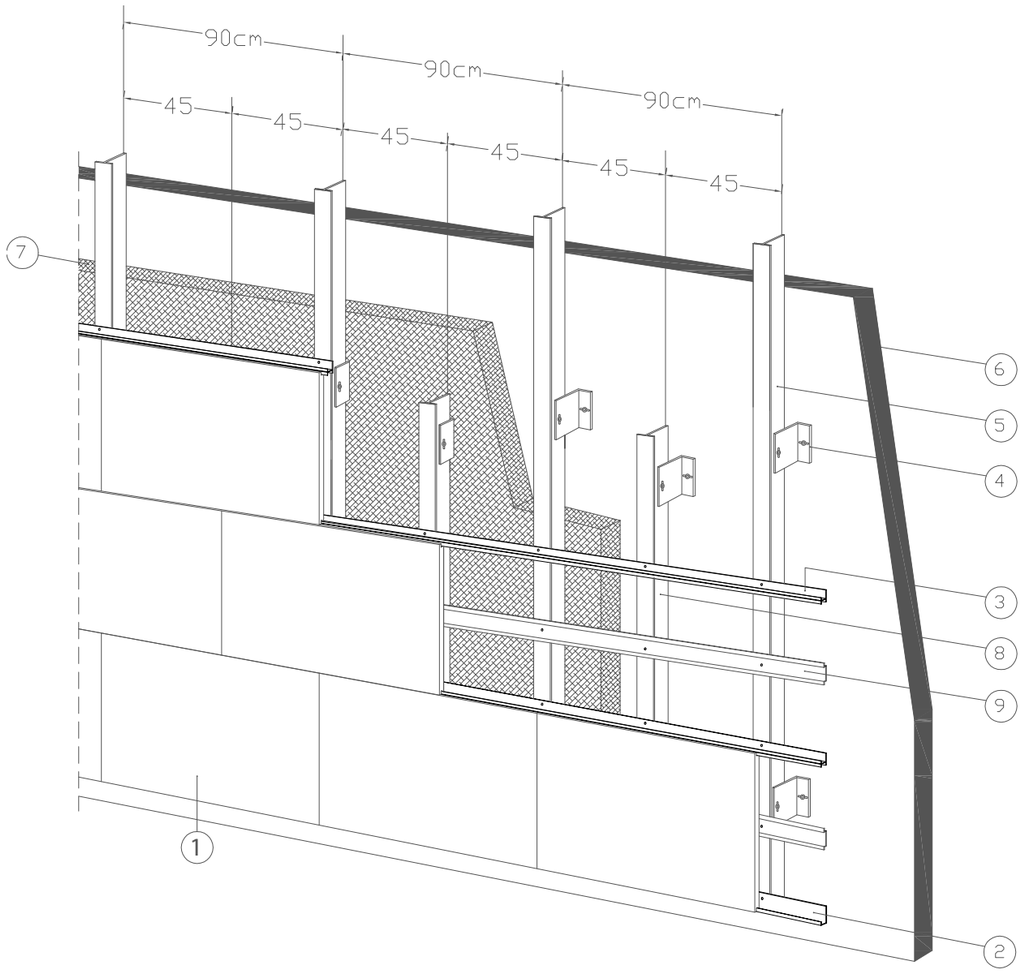
A) BASE WALL
B) WATERPROOF MORTAR
C) THERMAL INSULATION
D) WATERPROOFING (WATER OUTLET)

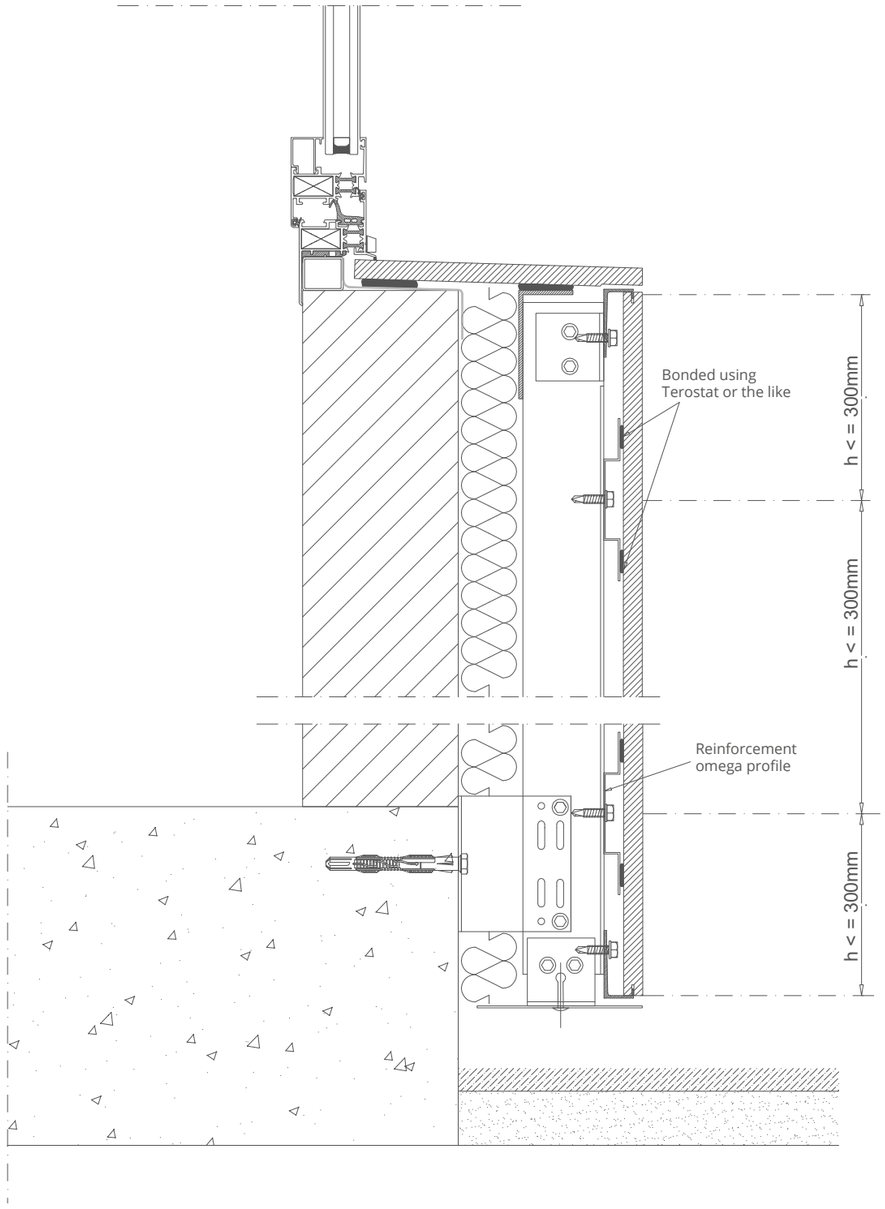
Ea) AIR INLET TO THE VENTILATION CHAMBER

a1) Fixed Point Bracket
a2) Sliding Point Bracket

1) ULMA STONEO facade panel
2) Continuous lintel starter rail profile
3) Continuous intermediate rail profile
4) 40X60-mm vertical T-rail
5) Support angle on base wall (double in floor structures)
6) 50X50 auxiliary L angle bracket
7) Self-drilling screw
8) Base wall plugs

GROUND FLOOR REINFORCEMENT
HORIZONTAL SYSTEM

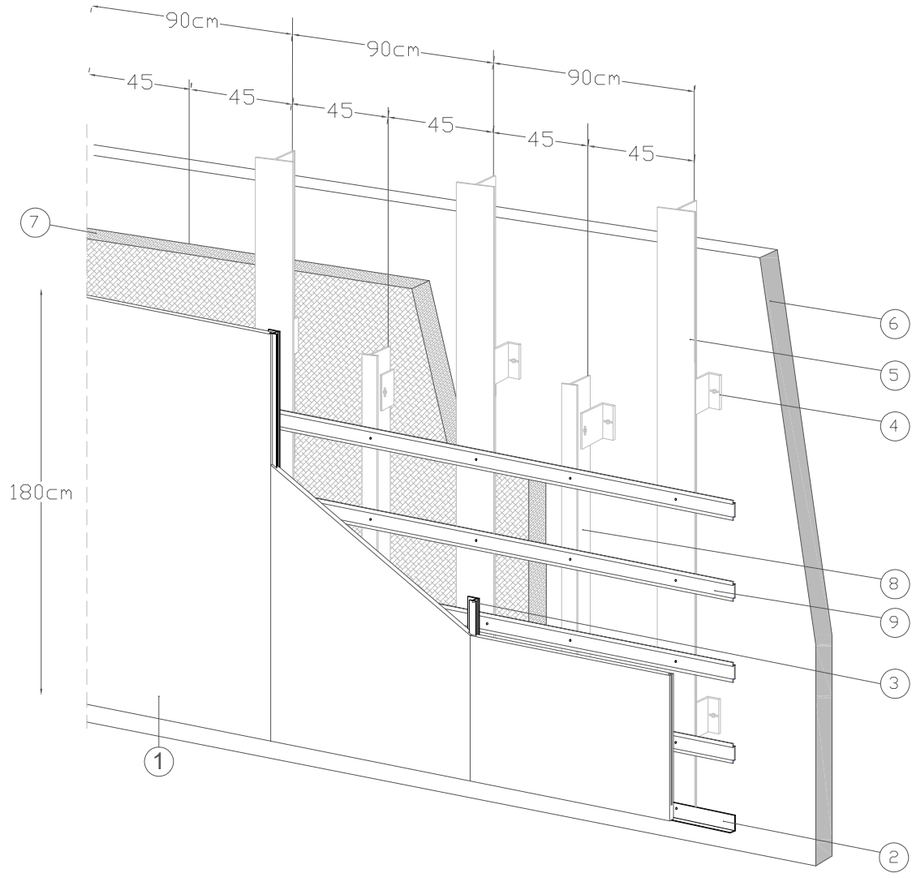




1) ULMA STONEO facade panel
2) Starter rail profile
3) Continuous intermediate rail profile
4) Anchoring to base wall
5) Vertical T-rail
6) Base wall
7) Insulation
8) Intermediate reinforcement upright
9) Reinforcement omega profile

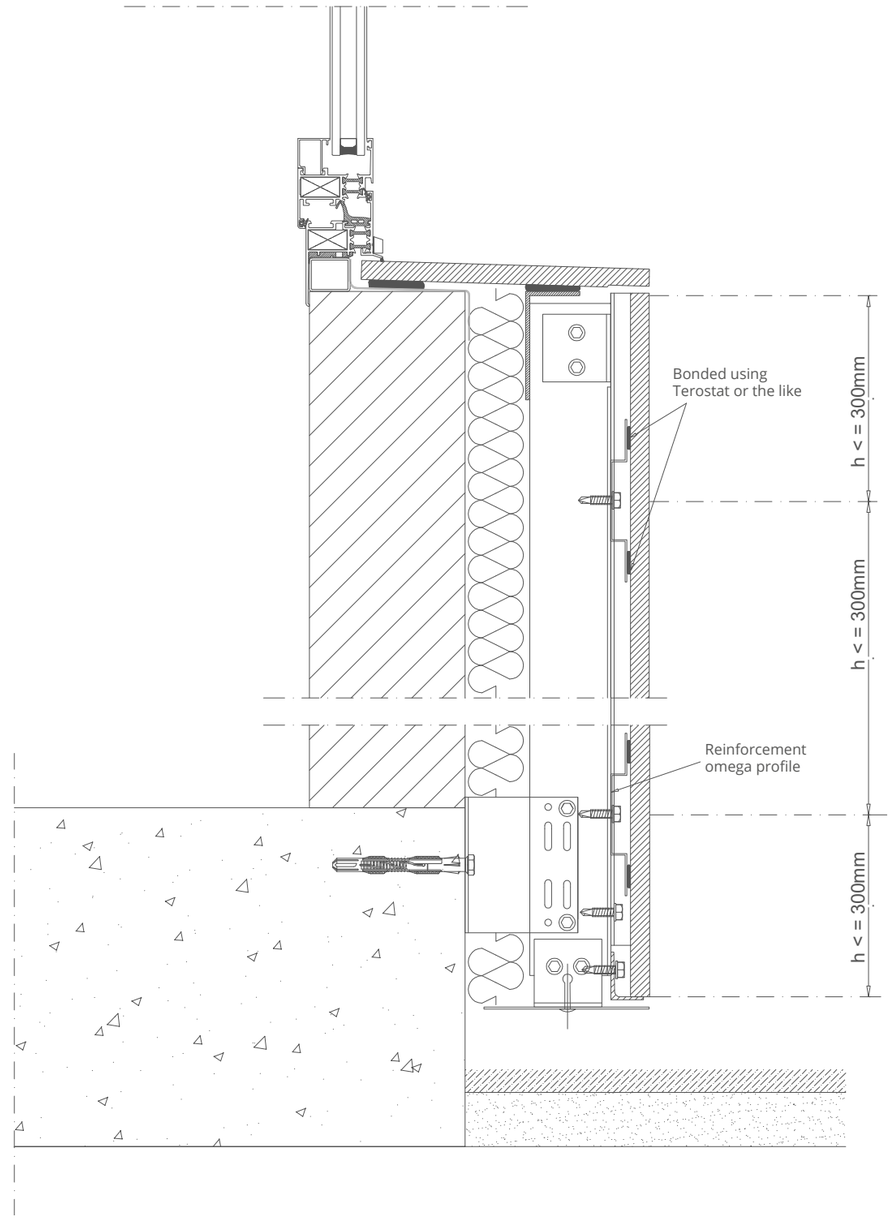
** Omega profiles will be installed according to the panel format:
- Panels with height less than 60 cm = 1 omega at 1/2 height
- Panel with height greater than 60 cm = 2 omegas distributed at 1/3 height

GROUND FLOOR REINFORCEMENT
VERTICAL SYSTEM



** Omega profiles will be installed according to the panel format:
- Panels with height less than 90 cm = 2 omegas distributed at 1/3 height
- Panel with height greater than 120 cm = 3 omegas distributed at 1/4 height
- Panel with height greater than 180 cm = 4 omegas distributed at 1/5 height

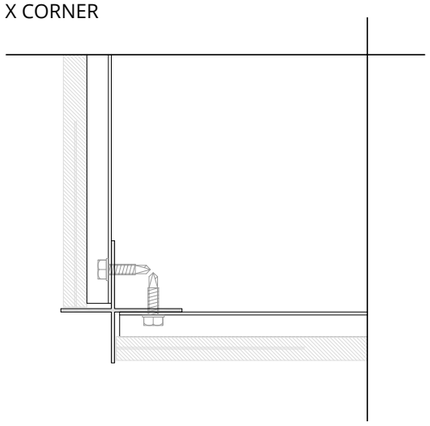
1) ULMA STONEO facade panel
2) Support profile
3) Continuous intermediate rail profile
4) Anchoring to base wall
5) Vertical T-rail
6) Base wall
7) Insulation
8) Intermediate reinforcement upright
9) Reinforcement omega profile



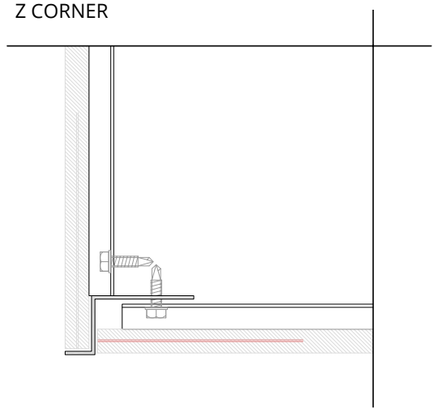
CORNER TYPES

4 OPTIONS (X, Y, Z profile and 45° panel with reinforcement profile)

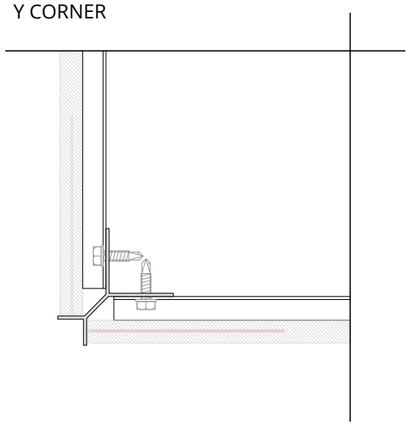
X CORNER



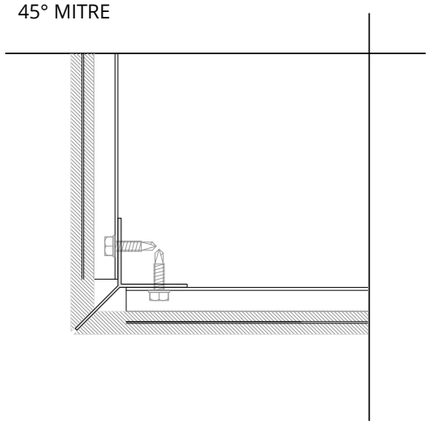
Z CORNER



Y CORNER



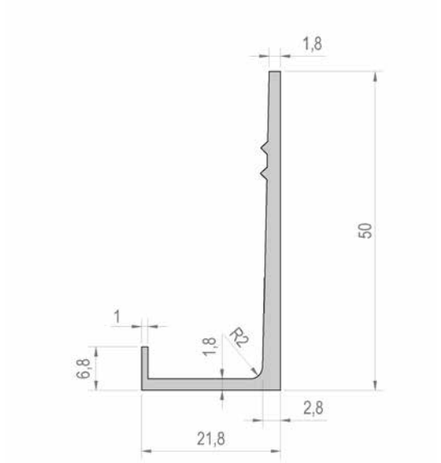
45° MITRE

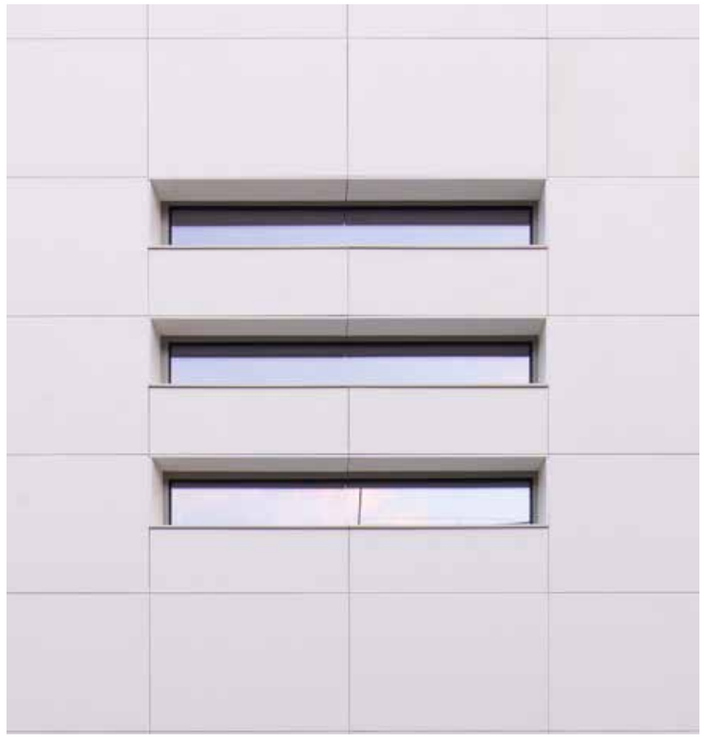


TYPES OF PROFILES

CONTINUOUS PROFILES WITH CONCEALED JOINT

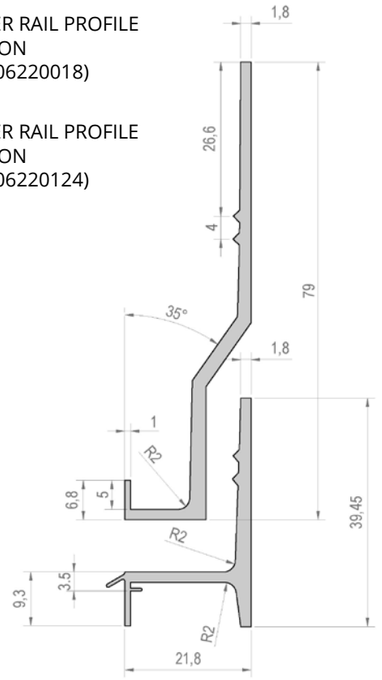
3.5-MM STARTER RAIL/CROWN
(REF. 906220001)



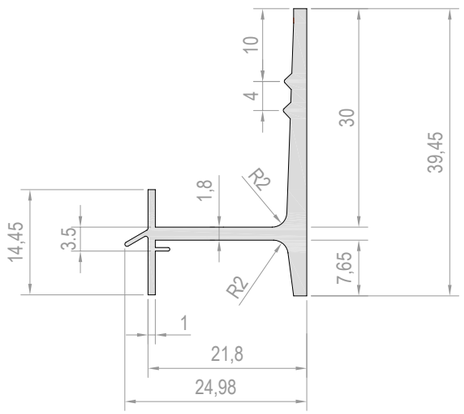


STARTER RAIL PROFILE
FRACTION
(REF. 906220018)

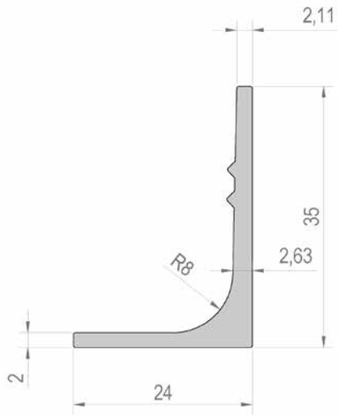
STARTER RAIL PROFILE
FRACTION
(REF. 906220124)



3.5-MM JOINT RAIL PROFILE
(REF. 906220002)



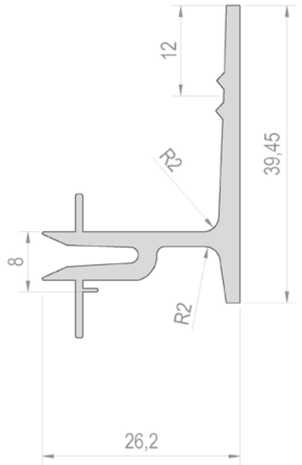
3.5-MM SUPPORT RAIL PROFILE
(REF. 906220093)



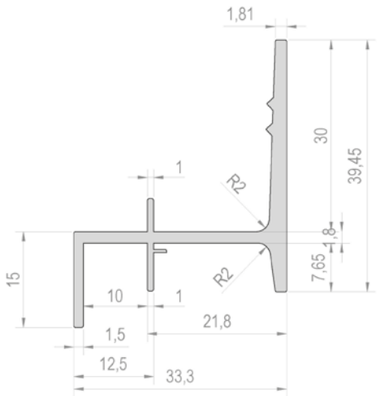
TYPES OF PROFILES

EXPOSED JOINT CONTINUOUS RAIL PROFILES

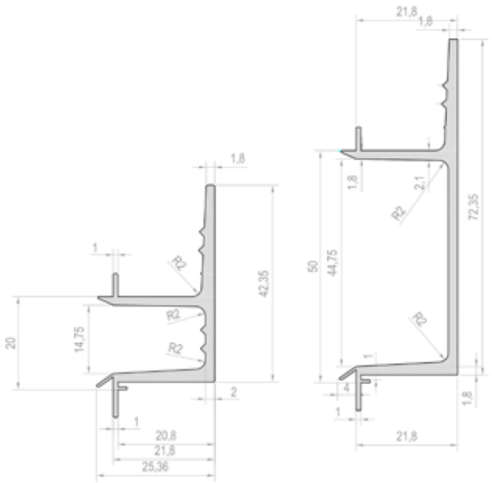
8-MM DEEP RAIL PROFILE
(REF. 906220136)



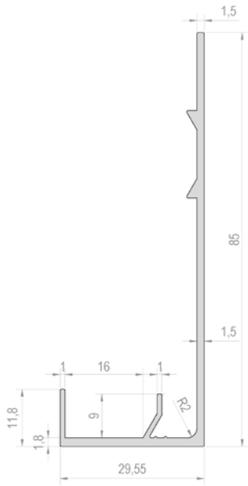
15-MM EXPOSED RAIL PROFILE
(REF. 906220018)



20-50 MM DEEP RAIL PROFILE
(REF. 906220092)

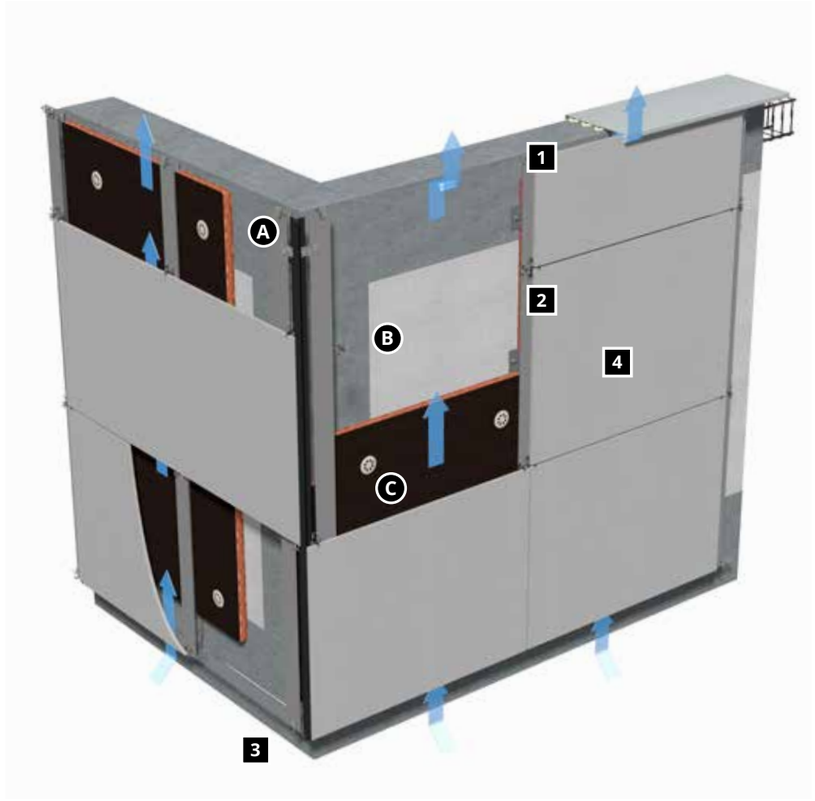


10-MM EXPOSED STARTER RAIL
(REF. 906220152)



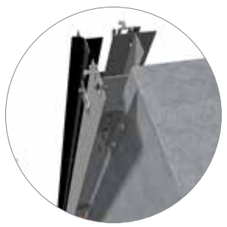
INSTALLATION SYSTEMS

2. EXPOSED SYSTEM



A **FLOOR STRUCTURES**
B **BASE WALL**
C **THERMAL INSULATION**

1 Crown point staple
2 Point staple
3 Starter point staple
4 Stoneo panel



Corner profile

Detail of point staple

Corner staple

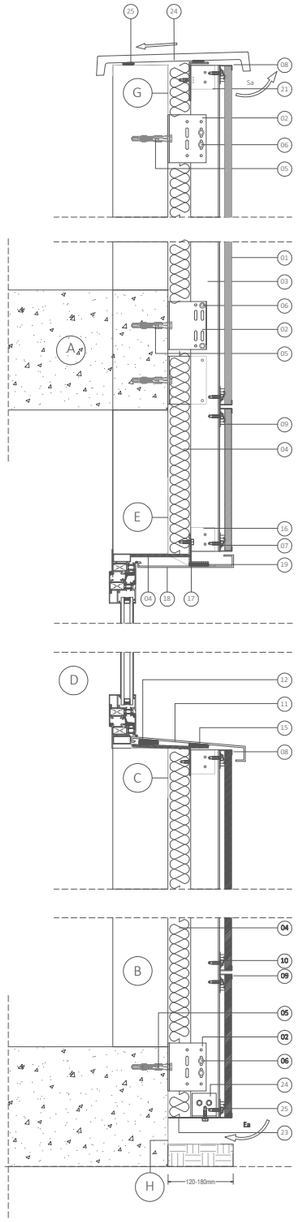
Crown staple

Starter staple

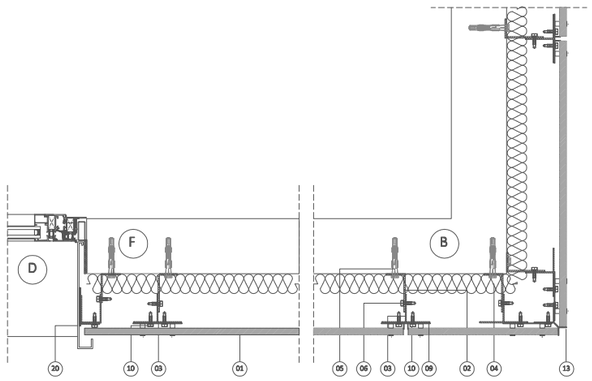
+ TECHNICAL DETAILS

VENTILATED FACADE EXPOSED SYSTEM

Vertical section



Horizontal section



A) FLOOR SLAB
B) BASE WALL
C) SILL WATERPROOFING
D) FRAMES
E) LINTEL WATERPROOFING
F) JAMB WATERPROOFING
G) ROOF COPING WATERPROOFING
H) STARTER WATERPROOFING

01) ULMA STONEO facade panel.
02) Bracket for base wall and floor structure.
03) 100x60 vertical T-rail.
04) Thermal insulation.
05) Support angle for securing to floor structure and base wall.
06) Self-drilling screw for upright connection to bracket.
07) Starter staple.
08) Crown staple.
09) Intermediate staple.
10) Self-drilling screw for staple connection to upright.
11) Metallic window sill.
12) Silicone adhesive for window sills.
13) Y-shaped corner finish.
14) Self-drilling screw for corner profile connection to rail profile.
15) L profile.
16) Bracket for L profile connection to upright.
17) Self-drilling screw for L profile connection to support angle.
18) Metallic lintel.
19) Silicone adhesive for lintel.
20) Metallic jamb.
21) ULMA STONE prefab coping
22) Silicone adhesive for coping.
23) Anti-rodent grid.
24) Bracket for anti-rodent grid connection to upright.
25) Self-drilling screw for anti-rodent grid connection to support angle.
Sa) Air outlet.
Ea) Air inlet.

CERTIFICATIONS

DIT certificate

The Eduardo Torroja Institute of Construction Sciences grants the TECHNICAL APPROVAL DOCUMENT to the ULMA Ventilated Facade Cladding System with Stoneo panels.

Our system complies with the TECHNICAL BUILDING CODE and also has the CE European Declaration of Conformity.

ULMA Architectural Solutions guarantees its ventilated facade product for up to 10 years.

Guarantee up to 10 years

ETA certificate

The Institute of Construction Technology of Catalonia, ITec, issues the European Technical Evaluation ETA 16/0519 for the ULMA exterior facade cladding systems.

PDO certificate

PANEL HANDLING

+ DELIVERY OF MATERIAL ON SITE

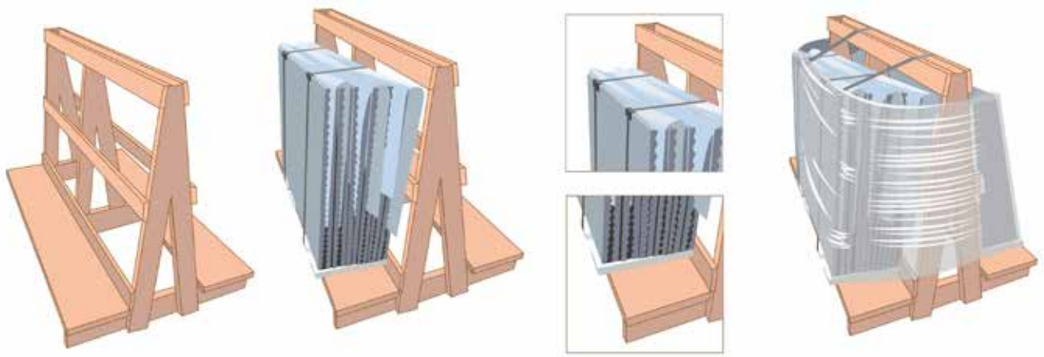
The panels are supplied on wooden **trestle type pallets**, and each of them is identified with its measurements.

They are **placed on their longest edge**, lengthwise, and supported on pieces of polystyrene to avoid damage during transport.

The panels are supported one against the other, exposed surface on exposed surface, and separated by a sheet of polyethylene in the case of light-coloured panels and with spacers in the case of dark-coloured panels.

The panels are fastened to the pallet with straps, and with a wraparound to ensure they are secure during transport.

All the elements used for palletising the panels can be separated and are entirely recyclable.



+ UNPACKING THE PALLET

Make sure the pallet is horizontal before removing the plastic wrapping and cutting the straps, so that the panels do not fall to the floor.

Once the straps have been removed, **always leave the panels tied to the pallet** with a sling or rope.

+ HANDLING THE PANELS ON SITE

It is advisable for **two people** to work together when **moving** the panels around the site.

Any panels that do not fit on the pallet and are not installed must always be supported on the longest edge (lengthwise) and on the pieces of polystyrene that come on the pallet. Ensure they are placed with the exposed face on the exposed face and separated by the polyethylene sheet,. In the same way as they are delivered from the factory.

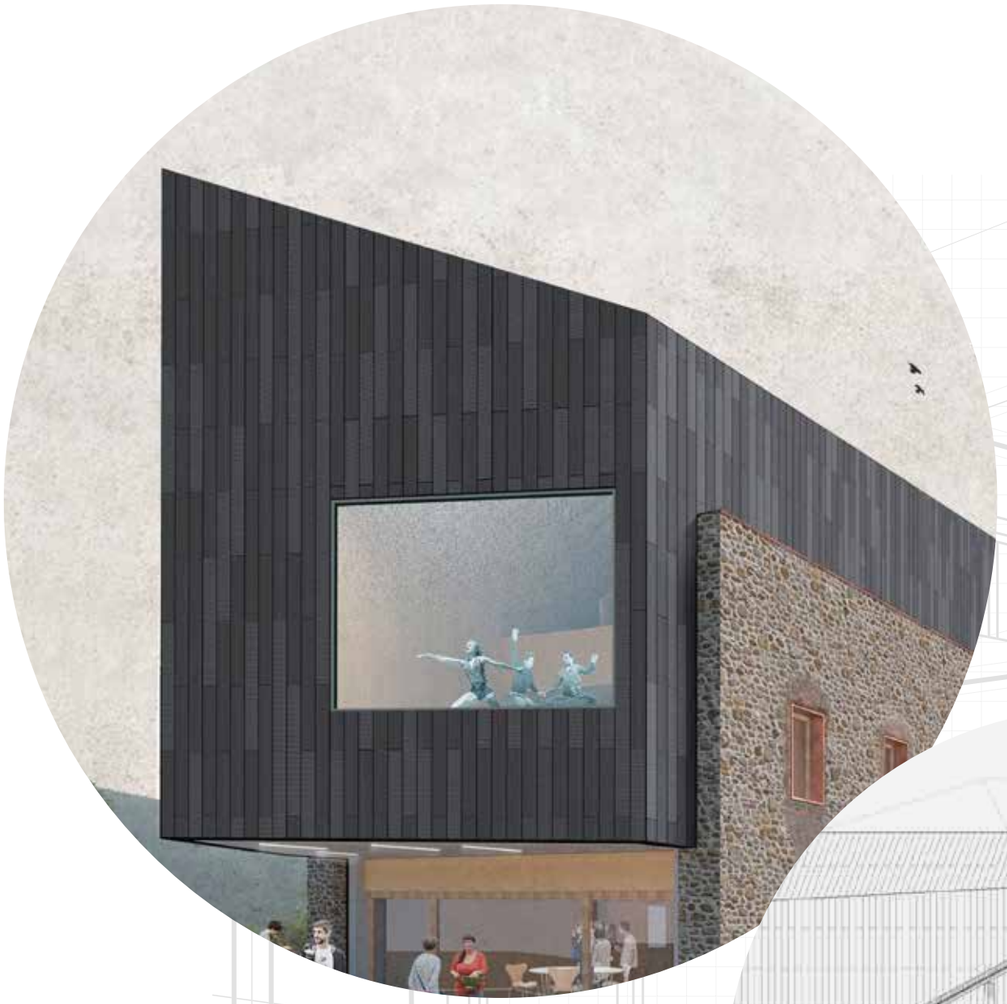
MAINTENANCE AND CLEANING

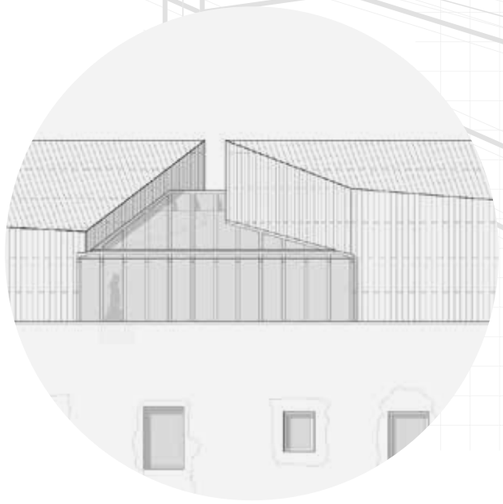
The lack of porosity of the Stoneo panels reduces the maintenance of the ULMA facade to **periodic cleaning with soap and water**.

In order for the facade to be maintained over time as it was on the first day, some minimum maintenance advice must be followed.

We recommend cleaning the panels after their installation on site.

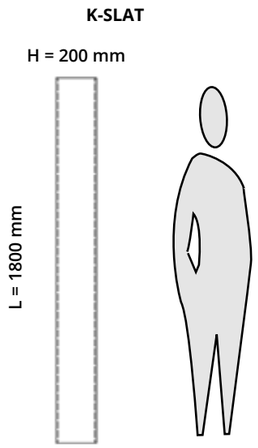
We have a detailed document on facade maintenance on our website:





K-SLAT SYSTEM

K-SLAT FORMATS & THICKNESSES



Longitudinal tolerances

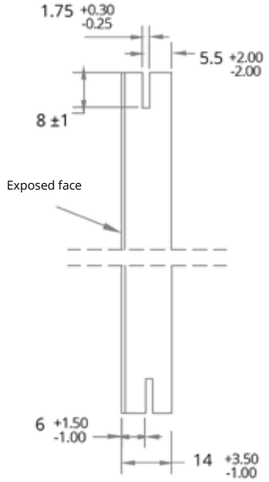
L + 2 mm

Panel weight

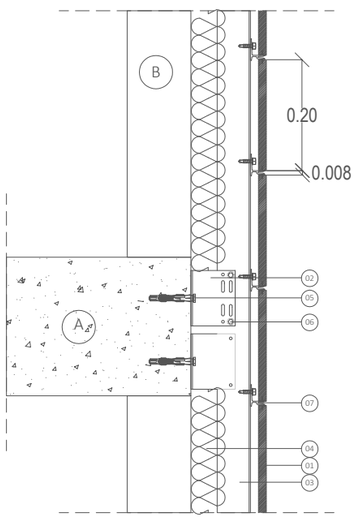
11,8 kg / pieza

Height tolerances

H + 1 mm



DETAIL OF K-SLAT HORIZONTAL SYSTEM

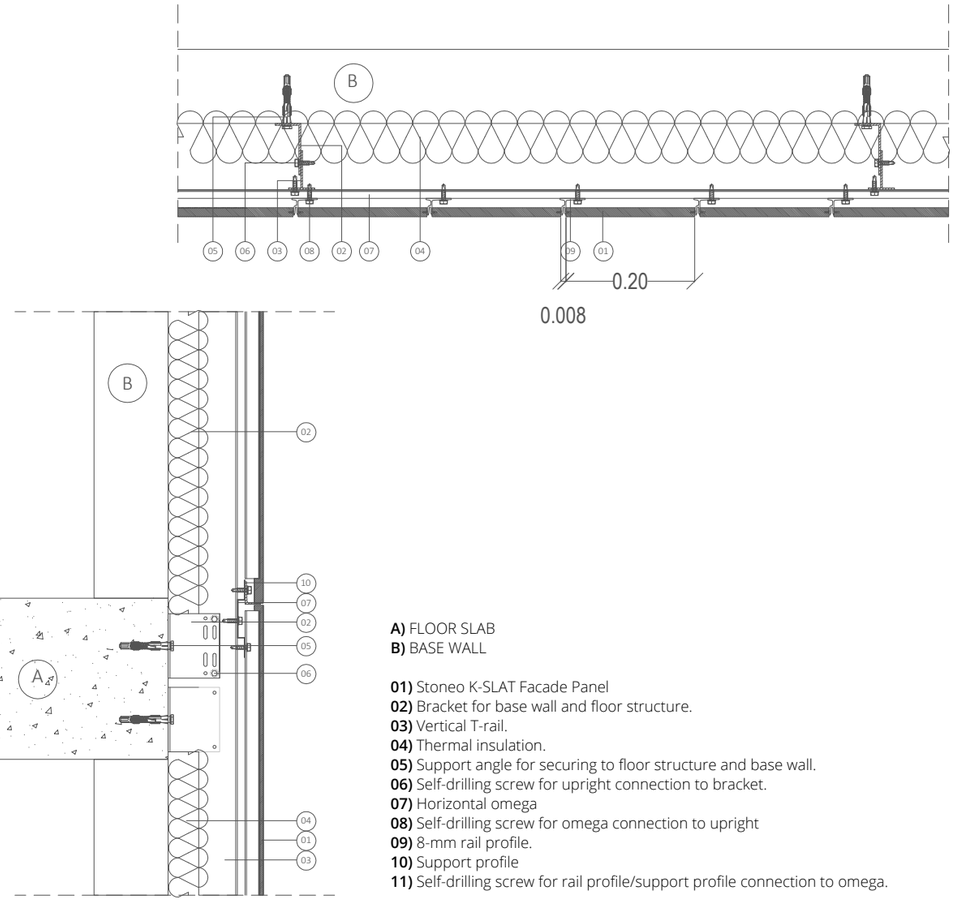


A: FLOOR SLAB
B: BASE WALL

01: Stoneo K-SLAT Facade Panel
02: Bracket for base wall and floor structure.
03: Vertical T-rail.
04: Thermal insulation.
05: Support angle for securing to floor structure and base wall.
06: Self-drilling screw for upright connection to bracket.
07: 8-mm rail profile.
08: Self-drilling screw for rail profile connection to upright.

HS / VS INSTALLATION SYSTEMS

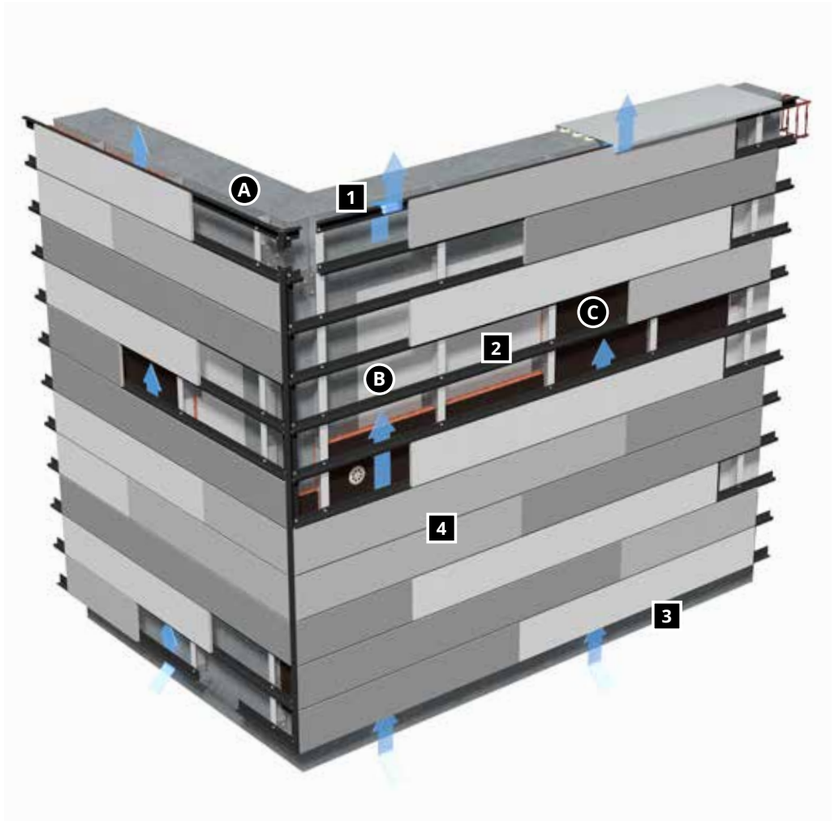
DETAIL OF K-SLAT VERTICAL SYSTEM



A) FLOOR SLAB
B) BASE WALL

01) Stoneo K-SLAT Facade Panel
02) Bracket for base wall and floor structure.
03) Vertical T-rail.
04) Thermal insulation.
05) Support angle for securing to floor structure and base wall.
06) Self-drilling screw for upright connection to bracket.
07) Horizontal omega
08) Self-drilling screw for omega connection to upright
09) 8-mm rail profile.
10) Support profile
11) Self-drilling screw for rail profile/support profile connection to omega.

K-SLAT INSTALLATION SYSTEM



A FLOOR STRUCTURES
B BASE WALL
C THERMAL INSULATION

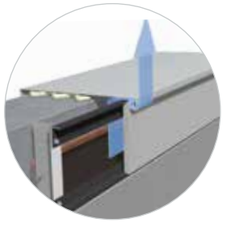
1. Continuous inverted starter rail profile
2. 8-mm continuous intermediate rail profile
3. Starter rail profile
4. Stoneo K-Slat panel

Starter rail profile and anti-rodent grid

8-mm rail profile detail

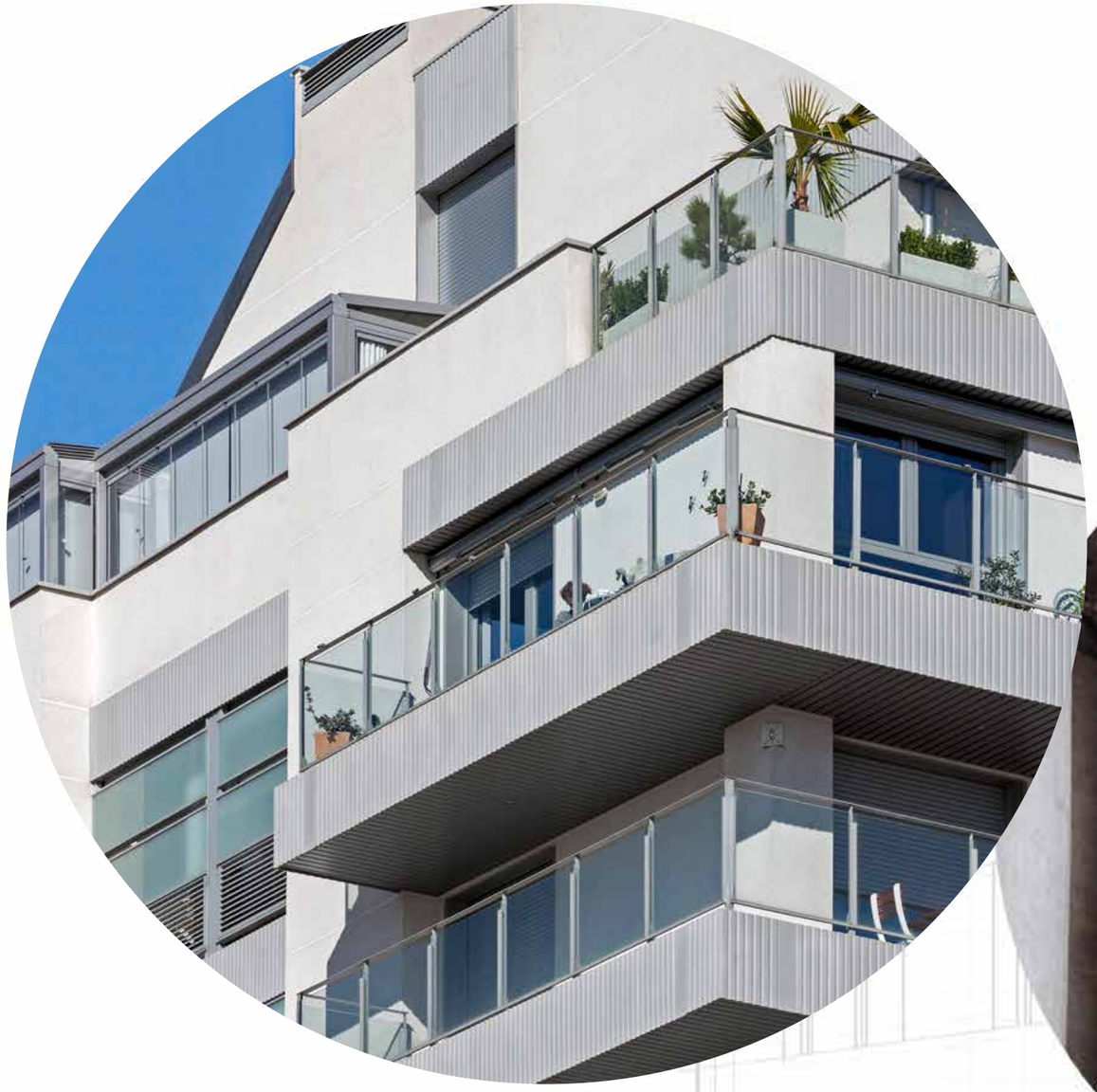
Y-shaped corner detail

8-mm rail profile upright detail



Coronation profile detail

CUSTOM PRECASTS

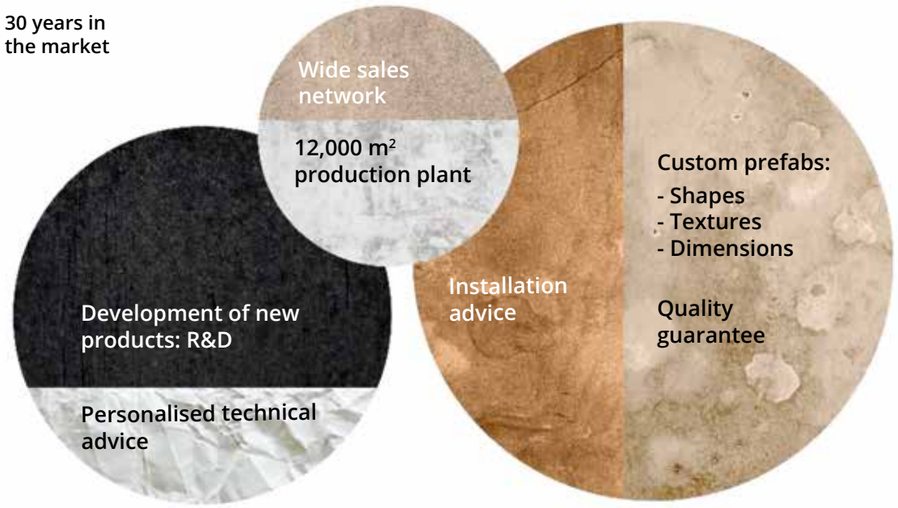


ADVANTAGES THAT SET US APART

- **With over 30 years of experience in the market** our goal is to be at the service of your needs.
- **We have our own sales network**, close and working full time to offer you the best personalised attention.
- **We develop new products** in the R&D department, since innovation is part of our DNA.
- **We offer personalised technical advice** through our technical team, which offers solutions for each project.
- The versatility of our material allows us to offer solutions with **customised textures, shapes and dimensions**, that adapt to any project.
- **We have a large production capacity** in our 12,000 m^2 production plant.
- **We offer quality guarantees** endorsed by tests carried out by independent laboratories.

TO GIVE YOU THE BEST SERVICE, WE HAVE THE BEST PEOPLE.

For people by people



Stoneo FORMS

WE OFFER **CUSTOM SOLUTIONS** THAT ADAPT TO THE ORIGINAL SHAPE OF THE BUILDING OR TO THE SHAPE DEFINED IN THE PROJECT

Architectural precast pieces add a finishing touch to building projects. These elements **help to give building facades personality**, as a carefully chosen combination can drastically change the aesthetic finish of the property.

Thanks to the lightness and versatility of our material, we are able to replicate pieces that need to be renovated, maintaining the original aesthetic.

We can create entirely new pieces or customise standard pieces in terms of:

- **Shapes**
- **Dimensions**
- **Textures**

CHARACTERISTICS	STANDARD	CERTIFIED VALUE
Part 1: DETERMINATION OF FLEXURAL STRENGTH AGGLOMERATED STONE. Test methods.	EN 14617-2	› 18 MPa
Part 5: DETERMINATION OF COMPRESSIVE STRENGTH AGGLOMERATED STONE. Test methods.	EN 14617-15	› 80 MPa
Part 4: DETERMINATION OF ABRASION RESISTANCE Agglomerated stone. Test methods.	EN 14617-4	‹ 40 mm
Part 1: DETERMINATION OF WATER ABSORPTION Agglomerated stone. Test methods.	EN 14617-1	‹ 0,3%
Part 1: DETERMINATION OF APPARENT DENSITY Agglomerated stone. Test methods.	EN 14617-1	≈2.1 g/cm^3
LINEAR THERMAL EXPANSION COEFFICIENT	-	≈2.15 -10^{-5} °C^{-1}

BALCONIES WITH CUSTOMISABLE DESIGNS

ULMA prefabricated balcony cantilevers are suitable for both new work construction and restorations where the old ones are replaced or incorporated into new buildings without balconies.

- **Customisable**
  The balconies are fully customisable:
  - Dimensions: maximum overhang length 2 m and width 0.75 m.
  - Shape: straight, curved, polyhedral, etc.
  - Ornaments can be included or incorporated.
  - They can be made in different colours and textures.

- **No rebars**
  The piece has no inner metal frame, thus avoiding any rusting and damage that can cause the cantilever to break and detach.

- **Meeting slipperiness criteria**
  The cantilevers meet the slipperiness criteria according to the requirements of CTE.DB-SUA.1 (Safety against the risk of falls - level III, Rd>45). No finishing or flooring is required.

- **No need for paving**
  This solution does away with the need to pave the balcony. This avoids connections between the paving and the facade, which cause problems. They also incorporate a gutter that prevents the ingress of water.

- **Using the original handrail**
  The original handrail, in the case of a restoration, can be recovered and screwed to the prefab base. The cantilever will be adapted to the type of handrail chosen and the support angles necessary for its installation. Another option is to make the actual handrail with our Stoneo FORMS material, integral with the balcony.

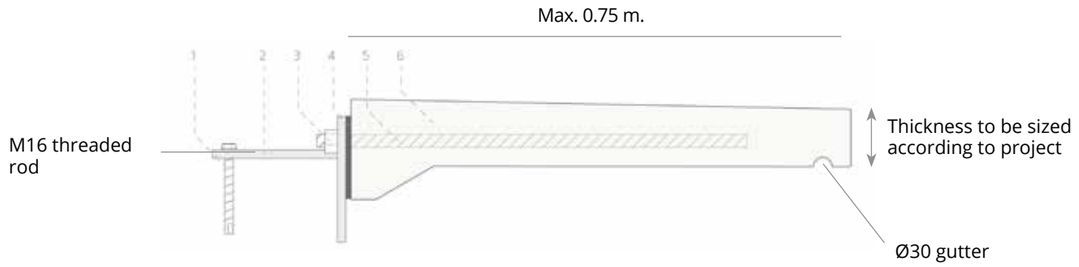
- **Durable material**
  Stoneo, a material with which we have been innovating for more than 30 years, is a non-porous (waterproof) material and its low level of absorption (0.1%) guarantees complete sealing and minimal wear against the action of atmospheric phenomena: such as thaw, rain, wind, abrasion or pollution.

- **Lightweight, to make it easier to handle**
  Additionally, its composition makes it extremely lightweight, making it far easier to handle during installation, compared with materials like stone and concrete.

- **We advise you on installation**
  To avoid any problems during the installation phase, ULMA' technical team is always by your side to determine and define the necessary details.

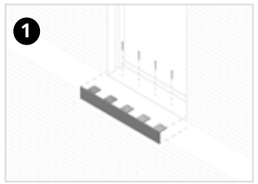
*The existing structure must be checked by a competent technician, with the reinforced concrete band having a minimum admissible quality of HA-175.

+ TECHNICAL INFORMATION



1) M10 self-drilling galvanised screw.
2) Galvanised-steel support angle profile.
3) M16 nut threaded to rod 5).
4) Expansion joint. Neoprene sheet.
5) M16 galvanised threaded rod.
6) ULMA ***Stoneo*** **FORMS** prefabricated balcony, colour to choose.

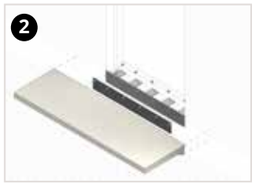
+ INSTRUCTIONS FOR INSTALLATION AND PIECES



PLACE FITTING

After cutting the flooring on the threshold until the floor structure is clean for the placement of the fitting, create the support gap for the balcony piece on the sides.

Present the fitting against the floor structure and mark the holes to be made. Drill and screw the fitting to the floor structure using M10 self-drilling screws for firm tightening.



BALCONY CONNECTION TO FITTING

Using the threaded rods embedded in the prefabricated piece, connect the balcony to the fitting. Place a neoprene sheet between the two in order to support the expansions and break the thermal bridge. The sheet must be drilled following the position of the fitting holes. The balcony rods are inserted through the neoprene and then through the fitting holes, and to ensure the connection, it is secured using threaded nuts.

FLOOR SCREED

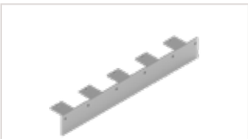
Once the balcony is secured, the area is covered and protected by a screed, subsequently using the desired finish on the threshold.

HANDRAIL INSTALLATION

The handrail will be placed following the manufacturer's instructions. For this, the prefabricated piece will be made including fittings for fastening, which will be designed for each project depending on the type of handrail.

Prefabricated balcony

Material: Stoneo reinforced with M16 galvanised-steel threaded rods.
Function: Prefabricated balcony with final finish, without the need to pave.
Dimensions: Personalised for each site, up to 1 X 2 m overhang.



Fitting

Material: S235JR galvanised steel
Function: Fitting for connecting prefab piece to floor structure.
Dimensions: Customised for each site, with connection to the upper or lateral face of the floor structure.

Hardware

Material: Galvanised carbon steel.
Function: Self-drilling screw for fitting connection to floor structure
Dimensions: M10, with variable length according to balcony dimensions.

+ STRUCTURAL CONSIDERATIONS

The entire kit has been designed and calculated in collaboration with LKS engineering. The solution has been developed in accordance with the provisions of CTE.DB-SE (Basic Document on Structural Safety) and the EHE-08 standard (Structural Concrete Instruction). The fittings are designed according to method A of the ETAG guide (European Technical Approval Guide) for metallic fittings - Annex C. In the embedding between the balcony and the floor structure, a wedge is added that reduces the stresses on the existing structure.

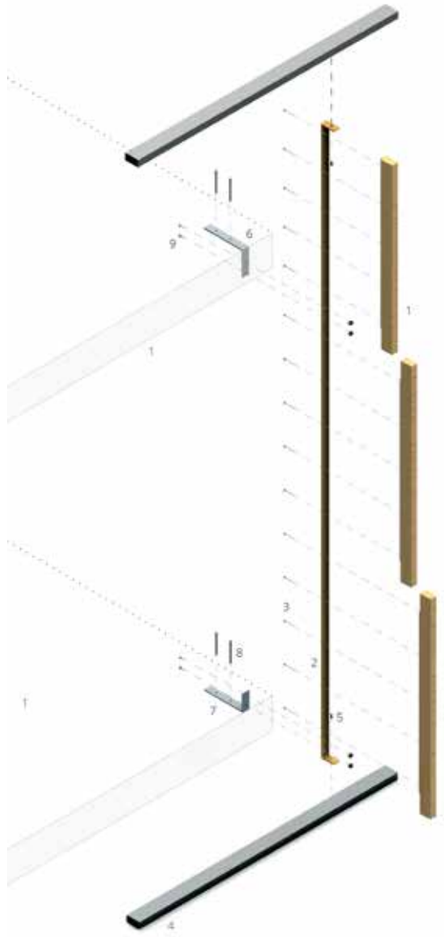
+ MECHANICAL CHARACTERISTICS

Slipperiness (Rd) > 45 (Level III). Based on the DA DB-SUA / 3 test and the UNE 41901:2017 standard. Surfaces for pedestrian traffic. Determination of slip resistance by the friction pendulum method. Wet test.

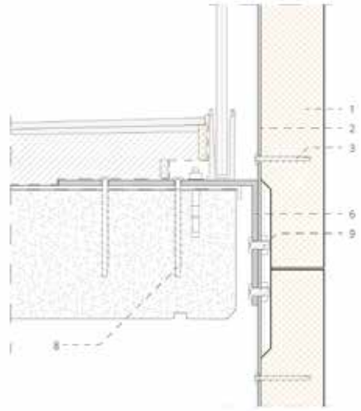
CUSTOMISABLE SLATS

Development of slats in ventilated facade projects

Project designed by GCT Arquitectes.



Upper intermediate detail



1) ULMA ***Stoneo*** **FORMS** vertical slat with 100x50 mm cross-section, textured imitation wood finish, surface treatment in RAL colour to be defined.

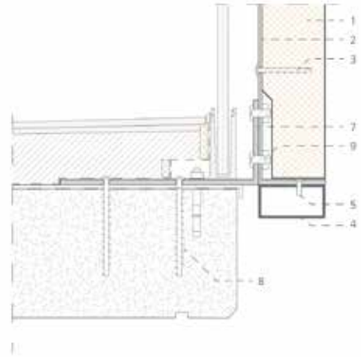
2) U 50 profile in S235 steel with anti-rust primer and painted in a RAL colour to be defined. It incorporates two welded end caps at each end, with a countersunk hole for horizontal profile screwing.

3) HILTI HUS 3 P-6X60 galvanised-steel pan-head self-drilling screw with possibility of painting.

4) S 275 JOH steel 100 x 50 mm rectangular tube with 3 mm thickness, with anti-rust primer and painted, received with hardware.

5) HILTI galvanised-steel countersunk-head self-drilling sheet-metal screw.

Bottom detail



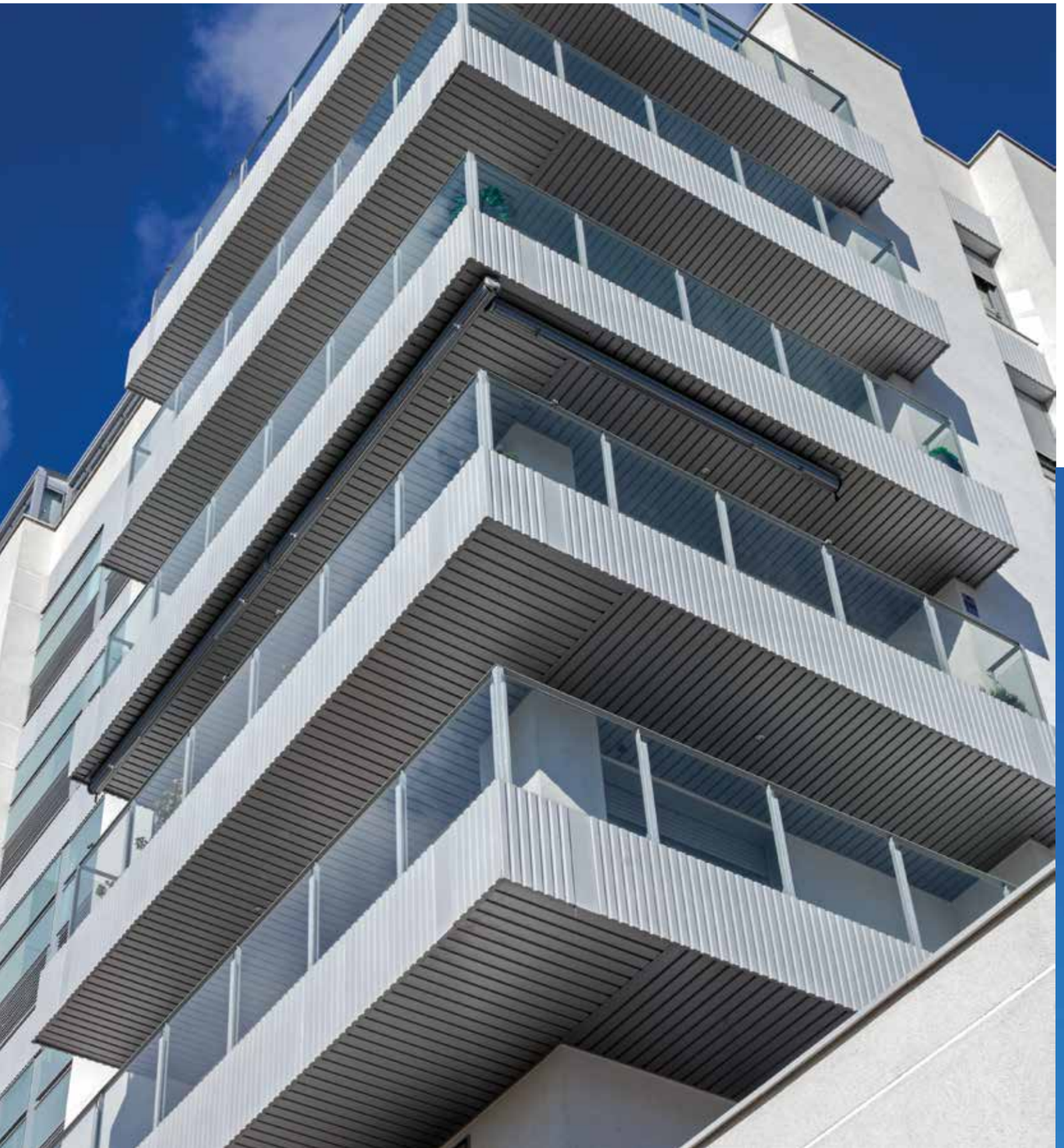
6) L profile in S235 steel, dimensions 300x200x50 mm, 8 mm thick, with anti-rust primer and painted in RAL colour, to be defined, for upper/intermediate securing of upright to floor structure.

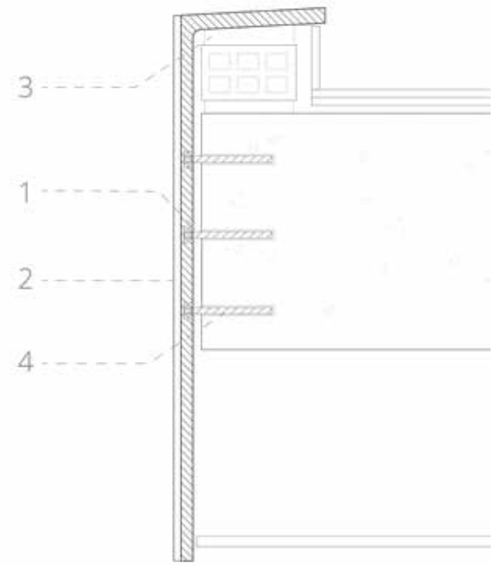
7) L profile in S235 steel, dimensions 300x128x50 mm, 8 mm thick, with anti-rust primer and painted in RAL colour, to be defined, for upper/intermediate securing of upright to floor structure.

8) HILTI HUS3 H-8X150 galvanised-steel hexagonal-head self-drilling screw for securing fitting to floor structure.

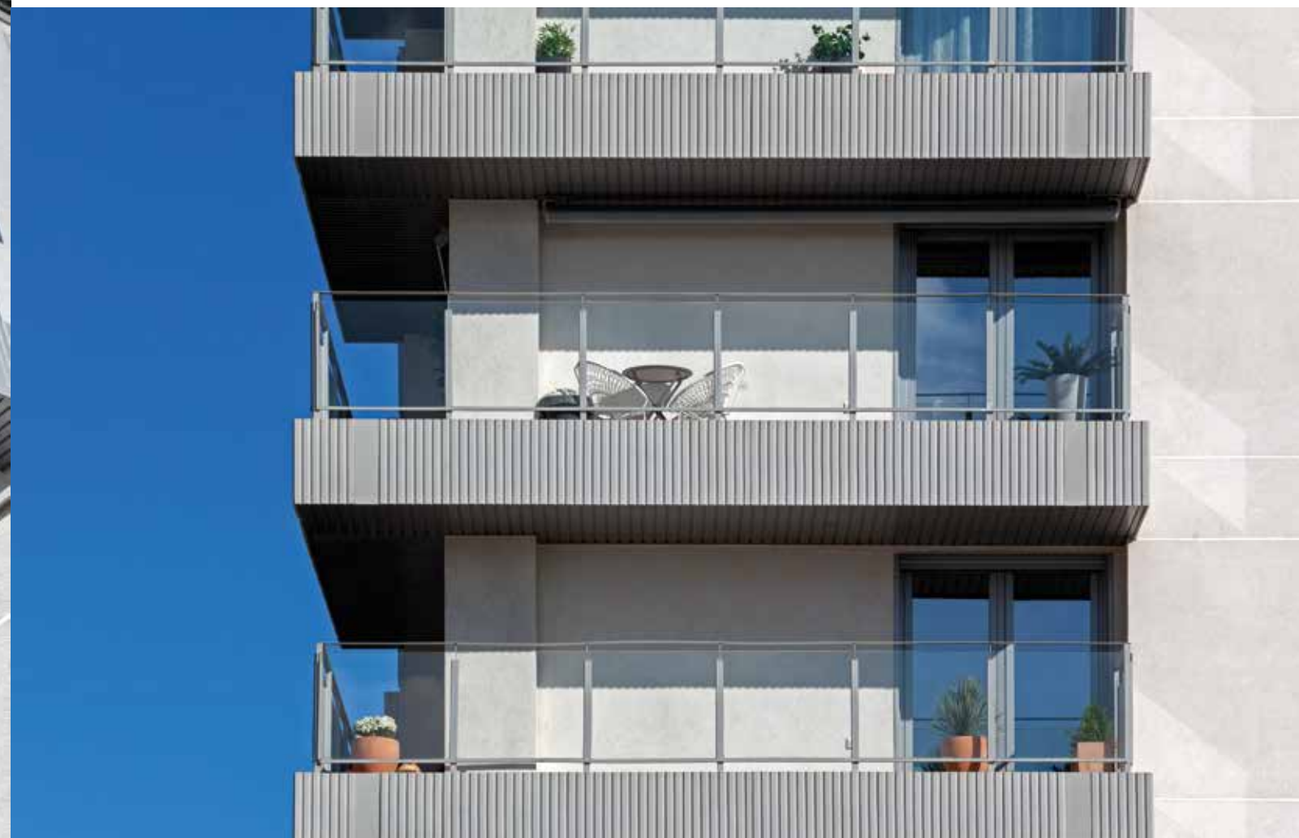
9) M12 bolt and nut.

BATTENED FRONTS

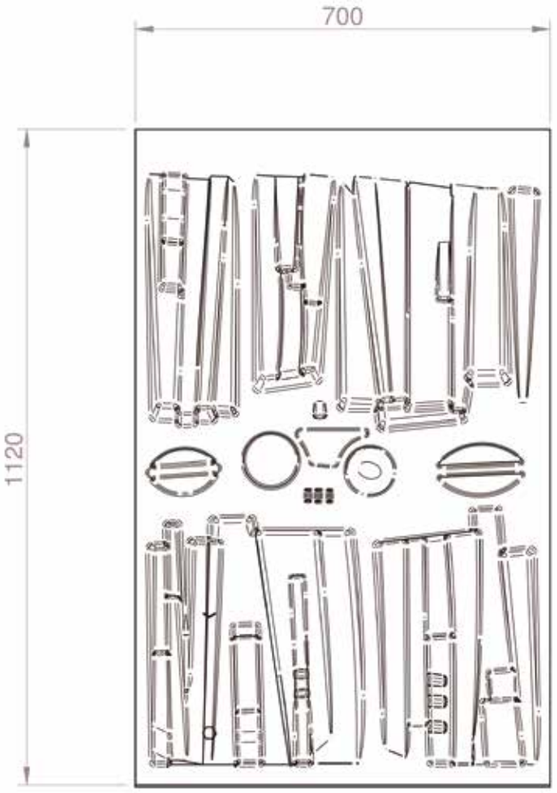


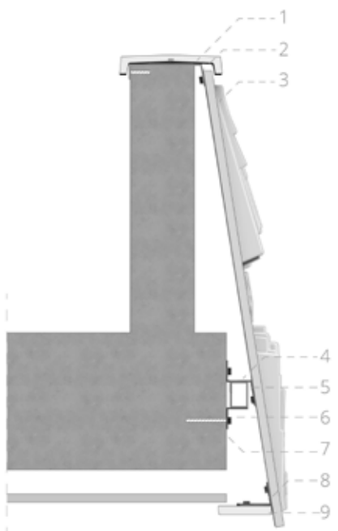


1) ***Stoneo*** **FORMS** by ULMA FB slab face.
2) Sealing of joints made of flexible material, high adherence and resistant to UV rays.
3) C2S2 type elastic adhesive mortar.
4) Rod of length >5 cm threaded in the nuts embedded in 1).



CUSTOM FRONT





1) ***Stoneo*** **FORMS** custom MA19 coping.
2) ***Stoneo*** **FORMS** 1100x700 customised balcony front.
3) Aluminium U profile of upper fitting.
4) Aluminium profile clamp for hanging 2).
5) 60x60 tubular aluminium upright screwed to 5) with self-drilling screw.
6) Aluminium L profile of bracket for connection to floor structure.
7) Anchor to floor structure.
8) Aluminium profile of bracket for hanging 9).
9) JC250 jamb with nuts.

MAINTENANCE AND CLEANING OF ***Stoneo*** FORMS

The origin of the dirt deposited on the prefab can be diverse.

- It can be dirt generated during the construction phase: dust, cement, metal particles, etc.
- It can be dirt generated during the useful life of the building: pollution, pollen, graffiti, etc.

The actual location or morphology of the buildings can have an effect on the amount of dirt.

But the low porosity of our material endows ULMA architectural precasts with characteristics that limit their maintenance to periodic cleaning with soap and water.

Here are some tips for the maintenance and cleaning of our pieces:

+ INITIAL CLEANING

Once the work is finished, ULMA recommends cleaning the prefab elements. This is done using a sponge of variable hardness depending on the degree of dirt, using only water and neutral soap. After rubbing, once the patches have disappeared, rinse with plenty of clean water.

+ PERIODIC CLEANING

ULMA recommends periodic cleaning of the prefab elements, following the procedure described above. Failure to carry out periodic cleaning can cause dirt to adhere to the prefab elements, making it more expensive to remove, and it may even be impossible to remove it completely.

+ SPECIFIC CLEANING

The sealing **joints** between pieces must be checked, maintained and replaced. To do this, follow the instructions of the sealing material supplier. For any questions about any other type of cleaning, please contact our Technical Department. Never use cleaning products that contain **acids or abrasive products** as they could deteriorate the surface of the prefabs.

DRAINAGE AND ARCHITECTURE

- for people by people -

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9666111002 July 2023