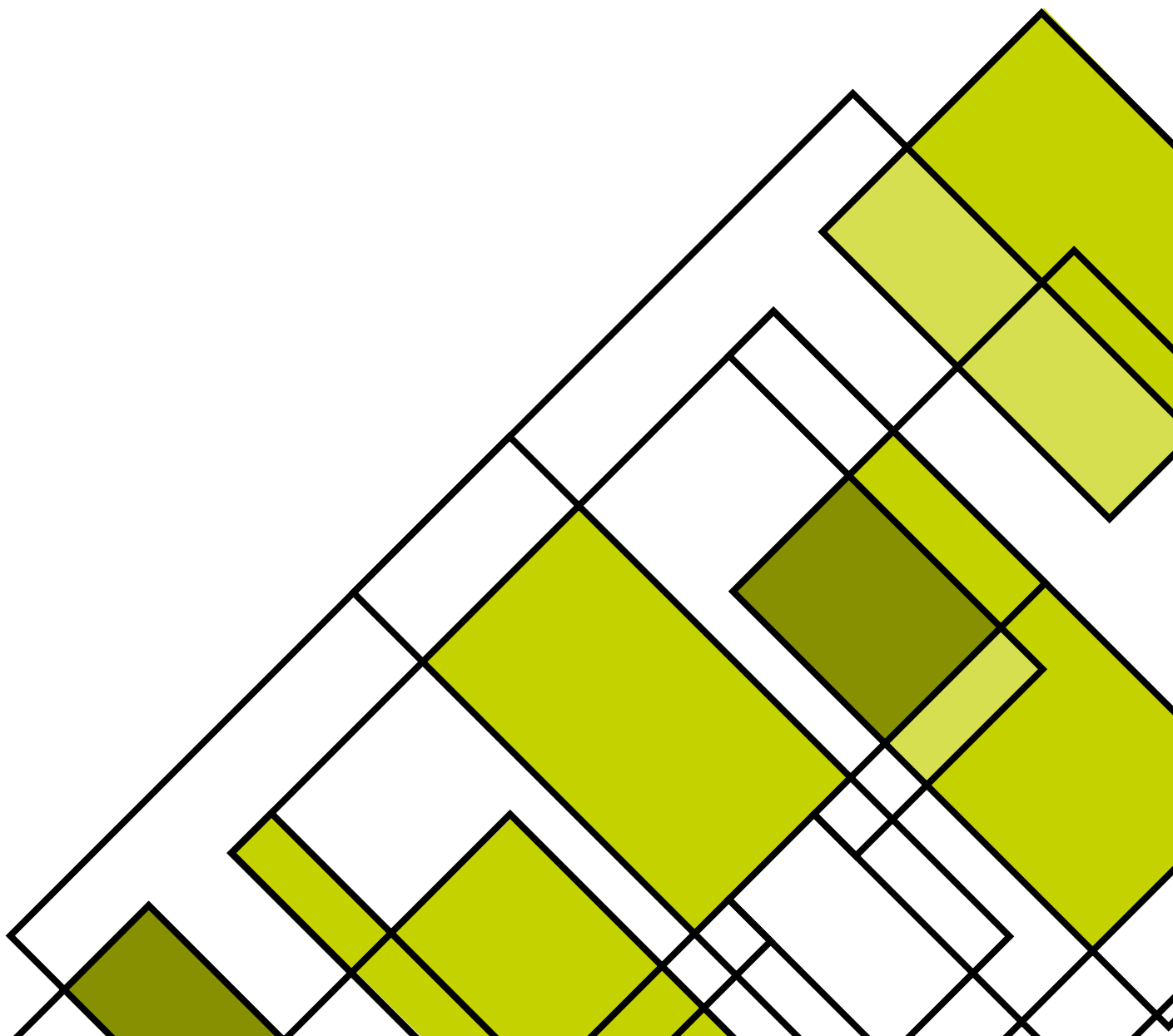


System for ventilated facades

DOLCKER

DOL-HC20



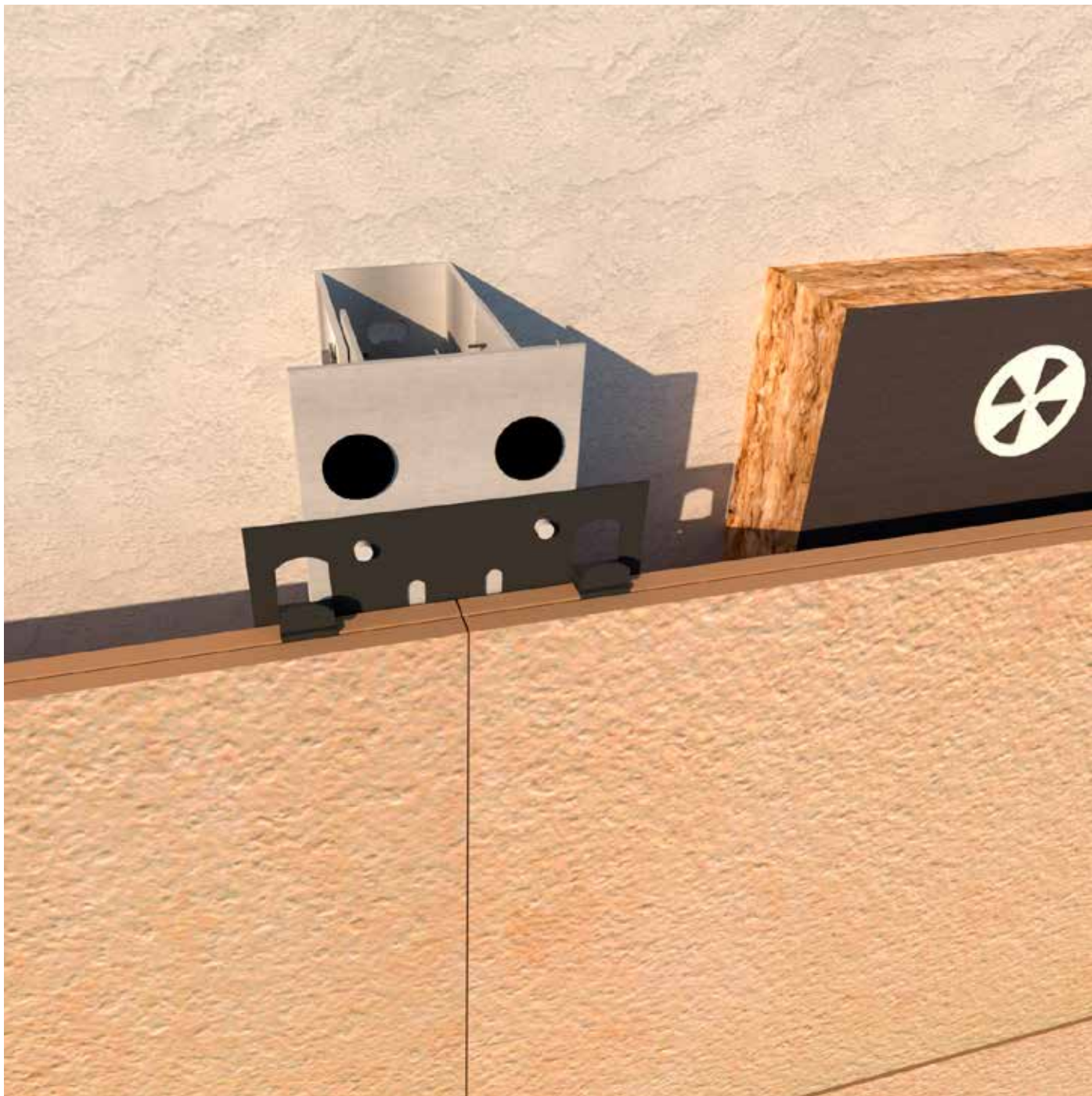
DOLCKER

S Y S T E M

DOL-HC20

SYSTEM DOL-HC20

System for 20 mm thick porcelain ceramic or stone ventilated facades with hidden staples and vertical T and L profiles



1. FACADE'S DESCRIPTION

El sistema DOL-HC20 para fachadas de cerámica o piedra de 20 mm con grapa oculta es un sistema seguro, fácil y sencillo de instalar. Todos y cada uno de los elementos que componen este sistema están fabricados con materias primas de máxima calidad.

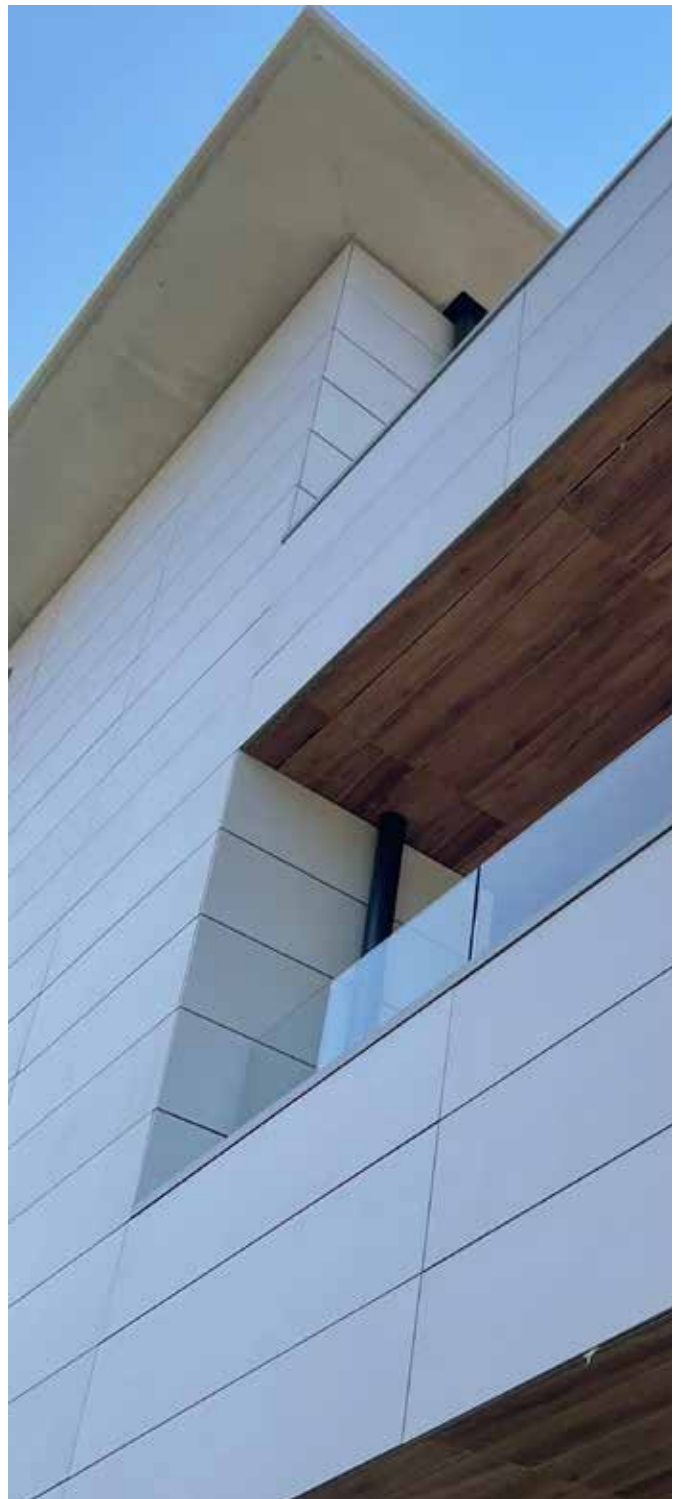
Se trata de un de fijación mecánica oculta mediante una subestructura que está compuesta por escuadras (ménsulas) regulables de aluminio de alta calidad de 3 mm de espesor con función de separadora, que también transmiten esfuerzos y que van fijadas a la estructura base del edificio (pared de ladrillo o forjado de hormigón)

Para evitar puentes térmicos DolceStone puede suministrar como opción ménsulas con sistema DolceCor (proyectado de corcho en la escuadra) o DolceThermic (consistente funda que envuelve la escuadra evitando el puente térmico)

Sobre estas ménsulas se fijan mediante tornillos autorroscantes de acero inoxidable los montantes verticales de aluminio extruidos en forma de "T" y "L" de 2 mm de espesor.

A los perfiles verticales "T" se atornillan las grapas de acero inoxidable de 1 mm de espesor. Estas grapas retienen a la pieza cerámica o la piedra mediante la introducción de sus uñas de 12 mm de salida en las ranuras practicadas en el canto de las piezas cerámicas o de la piedra, consiguiendo así una fachada de estética pura y limpia.

Finalmente entre el acabado final y el perfil se aplica una fijación química mediante un cordón de masilla de poliuretano, logrando así una absorción de las vibraciones de la cerámica o la piedra a causa de vientos o dilataciones.



2. DESCRIPTIVE MEMORY

El sistema DOL-TC20 está compuesto por:

MÉNSULAS U (de salida 60-110 x 105 x 62 mm), ménsulas dobles regulables L (de salida 60-160 x 160 x 40 mm) y ménsulas simples regulables L de (salida 60-160 x (80 x 40 mm) de aluminio AWAl MgSi (6060-T6 o 6063-T5) y 3 mm de espesor atornillados mediante un anclaje expansivo en caso de forjados de hormigón y anclaje de taco de nylon con tornillo de cabeza hexagonal de retención de acero inoxidable AISI 304 (AISI 316 si es ambiente marino) en caso de pared de ladrillo.

PERFILES VERTICALES TT (100 x 57 mm) y T (100 x 50 mm) de aluminio AW-Al MgSi (6060-T6 o 6063-T5) y 3 mm de espesor atornillados mediante 4 tornillos autotaladrantes nº3 de 5,5 x 22 con arandela de EPDM de acero inoxidable AISI 304 (AISI 316 si es ambiente marino) a las ménsulas.

GRAPAS ocultas intermedias, arranque y laterales (150 x 75 mm) de acero inoxidable AISI 304 (AISI 316 si es ambiente marino) y 1 mm de grosor con salida de 8 mm y junta de 5 mm atornillados mediante 2 tornillos autotaladrante nº 2 de 4,2 x 14 de cabeza plana de acero inoxidable AISI 304 a los perfiles verticales. A estas grapas se le añade una lámina de polipropileno de color negro mate.

Placa porcelánica DOLCKER, de baja absorción de espesor 20 mm con ranuras slop mecanizada según diseño con un valor de fuerza de rotura alto. Las cerámicas son diseñadas longitudinalmente por los cantos con sujeción mediante grapas de arranque en la zona inicial y la final de la fachada, y mediante grapas intermedias en las zonas intermedias de la fachada.

Fijador de masilla dulce-elastic (supera la prueba de envejecimiento), para evitar vibraciones de las piezas y absorber las dilataciones del sistema así como la caída de pieza en caso de rotura. Se aplicara un mínimo de 4 fijaciones químicas por pieza.



3. MATERIALS AND COMPONENTS OF THE SYSTEM

CORBELS

"L"-shaped aluminum fixings that function as adjustable spacers for the transmission of loads from the façade substructure to the base structure of the building (vertical wall of the building) by means of anchors.

To avoid thermal bridges, DolceStone can supply, as an option, brackets with the DolceCor system (cork projected on the bracket) or DolceThermic (consistent cover that surrounds the bracket avoiding thermal bridge)

PHYSICAL AND MECHANICAL CHARACTERISTICS

The corbels are made of extruded aluminum EN AW-ALMgSi (6005A) with T6 treatment.

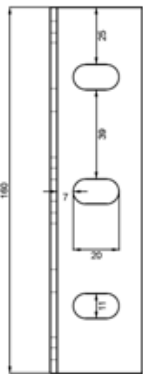
ALUMINUM FACTS	
Designation	
Symbolic	EN AW-Al MgSi
Numeric	AW 6005 ^a
Treatment	T6
Rule	UNE-EN 755-2
	UNE-EN 12020-1
Physical properties	
Specific weight	2,70g/cm ³
Linear thermal expansion coeff.	23,6·10e-6 K-1 (20/100)°C
Modulus of elasticity	70.000 MPa
Poisson's ratio	0,33
Mechanical properties	
Tensile strength (Rm)	≥ 270 N/mm ²
Elastic limit (Rp0,2)	≥ 225 N/mm ²
Elongation (A)	≥ 8%
Elongation (A50 mm)	≥ 6%
Brinell Hardness 90	90

CORBEL U VARIABLE OUTLET 60 – 110 MM SUPPORT

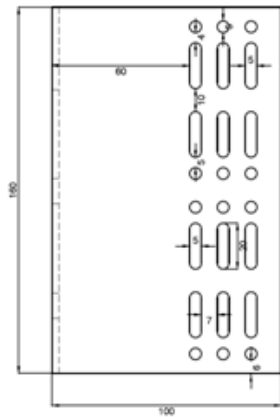
DIMENSIONAL CHARACTERISTICS

There are three types of bracket: simple, double and U bracket. These can act as support or retention brackets and have different dimensions as detailed in the following table:

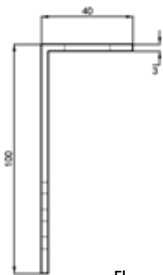
Corbel Double variable exit 60 – 120 mm of Support



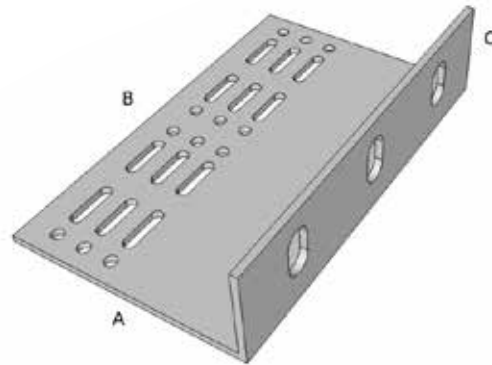
Front elevation view



Side elevation view



Floor elevation view

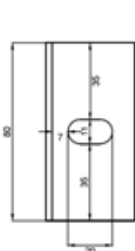


Standard measures Double corbel

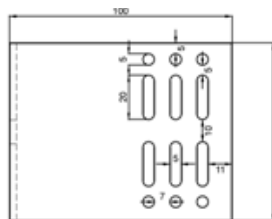
A	B	C
60	160	40
80	160	40
100	160	40
120	160	40

**Measures in mm.*

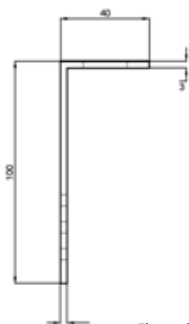
Simple variable output corbel 60 – 120 mm Retention



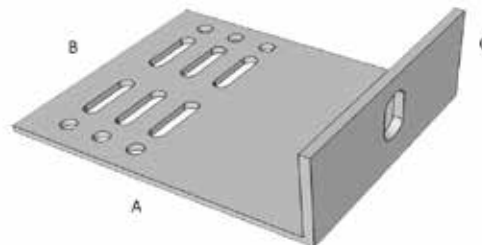
Front elevation view



Side elevation view



Floor elevation view

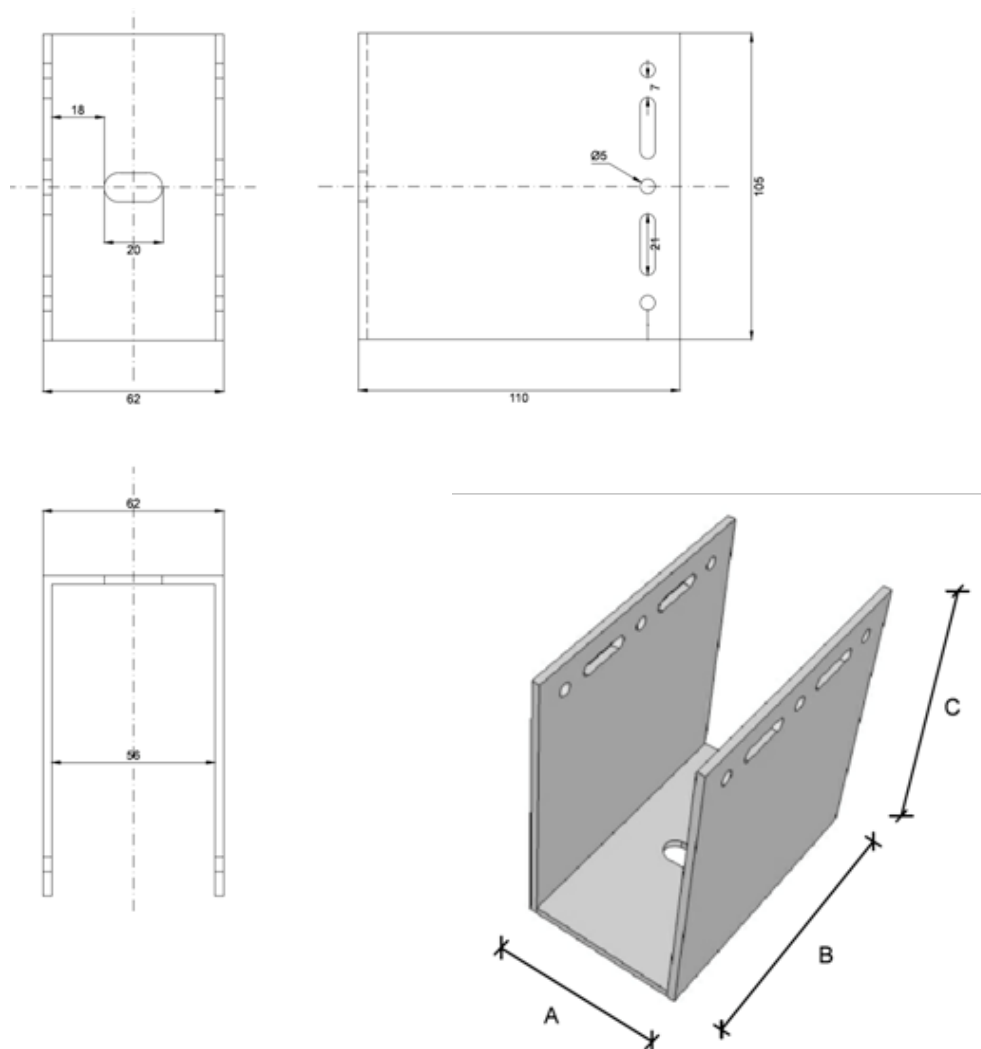


Standard measures Double corbel

A	B	C
60	160	40
80	160	40
100	160	40
120	160	40

**Measures in mm.*

Cobel U variable output 60 – 110 mm Support



Standard measures U corbel		
A	B	C
62	105	60
62	105	80
62	105	110

**Measures in mm.*

To avoid thermal bridges, DolceStone can supply, as an option, brackets with the DolceCor system (cork projected on the bracket) or DolceThermic (consisting of a cover that surrounds the bracket, avoiding thermal bridge).

DolceCor

Projected cork on the bracket



DolceThermic

Consistent cover that surrounds the bracket avoiding thermal bridge



Advantages of sprayed cork

- Impervious to water and other liquids: thanks to the aforementioned air cells, which also do not have a capillary structure makes it practically impossible for water or oil to enter.
- Low specific weight.
- Low thermal conductivity: which makes it an excellent insulator.
- Vibration absorption: quality that is applied for acoustic insulation.
- High coefficient of friction: useful when the architect seeks non-slippery solutions.
- In addition, cork offers interesting chemical properties that give it stability over time and resistance to sun exposure.

PROFILE

Perfiles verticales de aluminio extrusionado. Habitualmente el perfil se fabrica en lacado negro en forma de "L", "T" y "TT" que van unidos a las ménsulas por medio de tornillos autorroscantes de acero inoxidable.

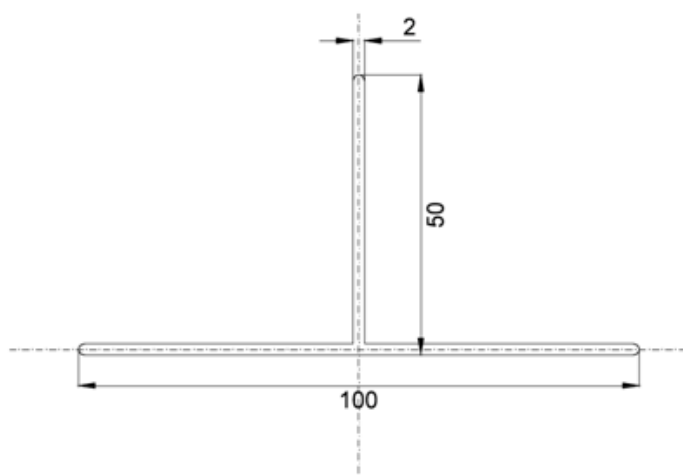
CARACTERÍSTICAS FÍSICAS Y MECÁNICAS

Los perfiles son de aluminio extruido EN AW-ALMgSi (6005A) con tratamiento T6.

ALUMINUM FACTS	
Designation	
Symbolic	EN AW-Al MgSi
Numeric	AW 6005 ^a
Treatment	T6
Rule	UNE-EN 755-2
	UNE-EN 12020-1
Physical properties	
Specific weight	2,70g/cm ³
Linear thermal expansion coeff.	23,6·10 ⁻⁶ K ⁻¹ (20/100)°C
Modulus of elasticity	70.000 MPa
Poisson's ratio	0,33
Mechanical properties	
Tensile strength (Rm)	≥ 270 N/mm ²
Elastic limit (Rp0,2)	≥ 225 N/mm ²
Elongation (A)	≥ 8%
Elongation (A50 mm)	≥ 6%
Brinell Hardness 90	90

DIMENSIONAL CHARACTERISTICS

Aluminum "T" profile for shared ceramics

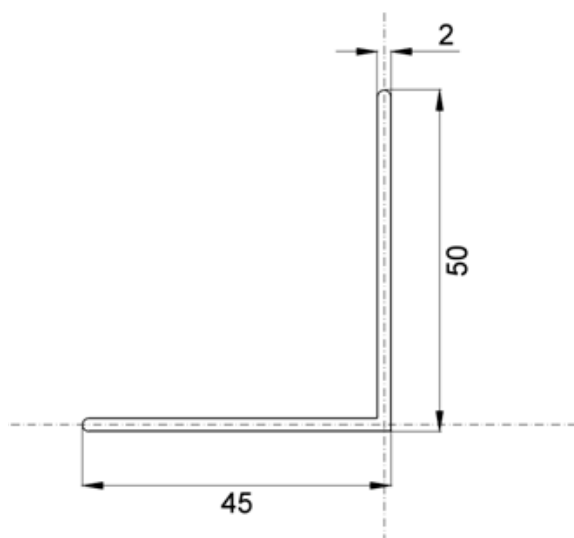


PROFILE T DATA	
Section	280,220 mm ²
Theoretical weight	0,757 Kg/m
Alloy	6063
Treatment	T-5
Moment of inertia	$I_x = 15,330 \text{ cm}^4$
	$I_y = 5,704 \text{ cm}^4$
Perimeter	0,337 m
Tolerances	UNE-EN 755-9



**The profiles are usually lacquered in black, with the possibility of lacquering in the color desired by the architect*

Aluminum "L" profile for corners or window joints

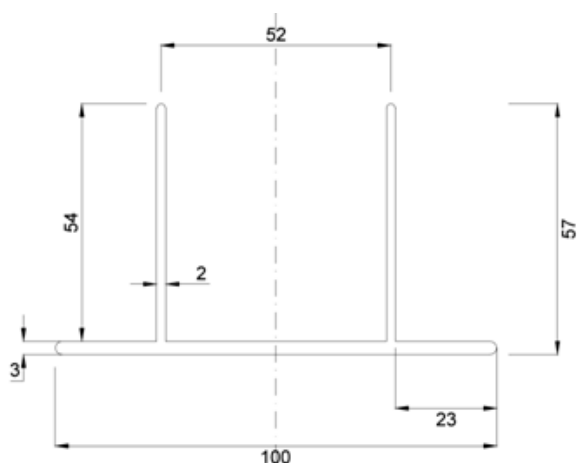


PROFILE L DATA	
Section	186 mm ²
Theoretical weight	0,502 Kg/m
Alloy	6063
Treatment	T-5
Moment of inertia	$I_x = 3,66 \text{ cm}^4$
	$I_y = 4,74 \text{ cm}^4$
Perimeter	0,189 m
Tolerances	UNE-EN 755-9

**The profiles are usually lacquered in black, with the possibility of lacquering in the color desired by the architect*

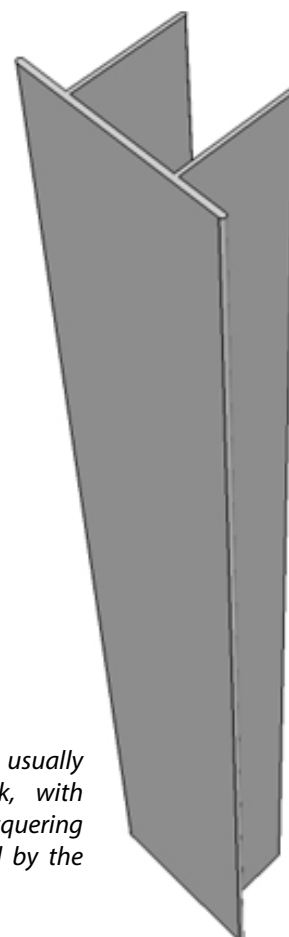


Aluminum "TT" profile for shared ceramics:



PROFILE TT DATA	
Section	516 mm ²
Theoretical weight	0,393 Kg/m
Alloy	EN AW 6063 T6
Treatment	T-5
Moment of inertia	$I_x = 15,37 \text{ cm}^4$
	$I_y = 39,50 \text{ cm}^4$
Perimeter	0,418 m
Tolerances	UNE-EN 755-9

**The profiles are usually lacquered in black, with the possibility of lacquering in the color desired by the architect*



DOL-F PROFILE

Aluminum fixings in the form of "F" that work to finish the encounters with the windows such as the jambs or lintels.

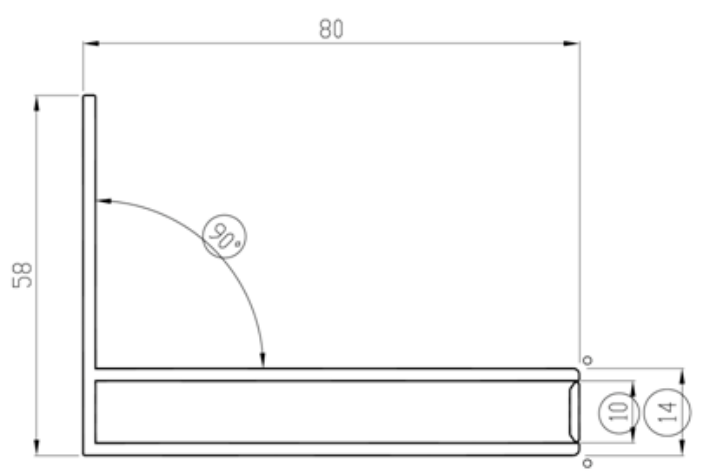
They are screwed with self-drilling screws to the sub-frames of the windows and with the possibility of lacquering the desired color.

PHYSICAL AND MECHANICAL CHARACTERISTICS

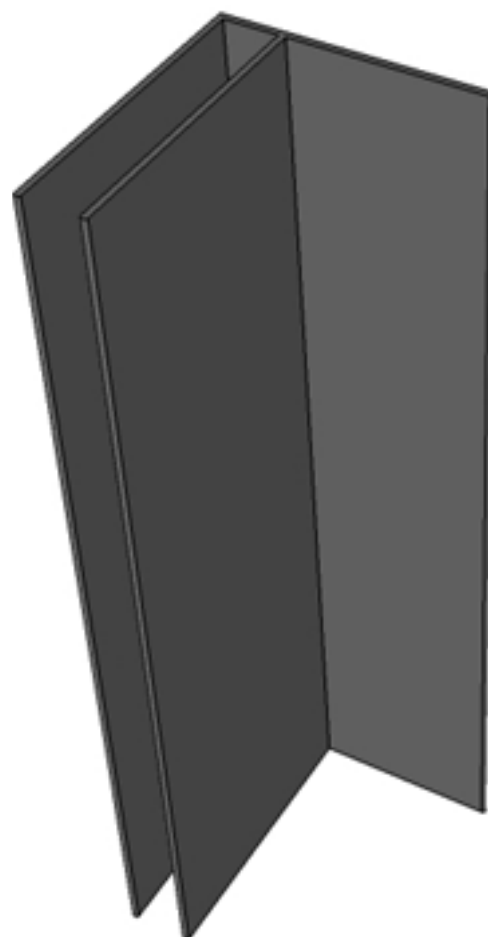
DOL-F profiles are made of extruded aluminium.

ALUMINUM FACTS	
Physical properties	
Specific weight	2,70g/cm ³
Linear thermal expansion coeff.	23,6•10e-6 K-1 (20/100)°C
Modulus of elasticity	70.000 MPa
Poisson's ratio	0,33
Mechanical properties	
Tensile strength (Rm)	≥ 270 N/mm ²
Elastic limit (Rp0,2)	≥ 225 N/mm ²
Elongation (A)	≥ 8%
Elongation (A 50 mm)	≥ 6%
Brinell Hardness	90

DIMENSIONAL CHARACTERISTICS



PROFILE F DATA	
Section	444 mm ²
Theoretical weight	0,199 Kg/m
Alloy	6063
Treatment	T-5
Approximate perimeter	0,454 m
Tolerances	UNE-12020-2



STAPLES

They are responsible for holding each plate that forms the exterior cladding. In each plate, the upper fixings are for retention and the lower ones are for support.

PHYSICAL AND MECHANICAL CHARACTERISTICS

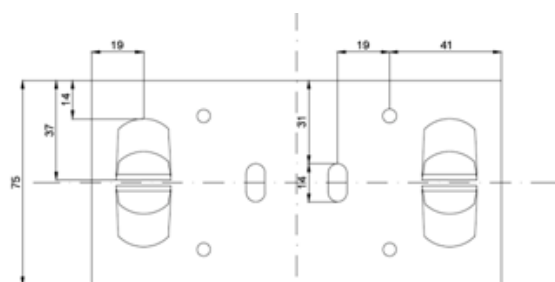
The clips are made of AISI 304 stainless steel.

ALUMINUM FACTS	
Designation	
ASMT	AISI 304
Numeric	1.4301
Symbolic	X5CrNi18-10
Rule	UNE-EN 10088-2
Physical properties	
Specific weight	7,93g/cm ³
Linear thermal expansion coeff.	17,3•10e-6 K-1 (20/100)°C
Modulus of elasticity (to 20°C)	190.000 MPa
Poisson's ratio	0,33
Mechanical properties	
Tensile strength (Rm)	540 – 750 N/mm ²
Elastic limit (Rp0,2)	≥ 230 N/mm ²
Elongation (A)Brinell	≤ 45%
Hardness	183

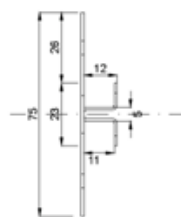
DIMENSIONAL CHARACTERISTICS

There are 3 types of staples:

Concealed center staple with 12 mm exit with 6 mm joint



Front elevation view



Side elevation view

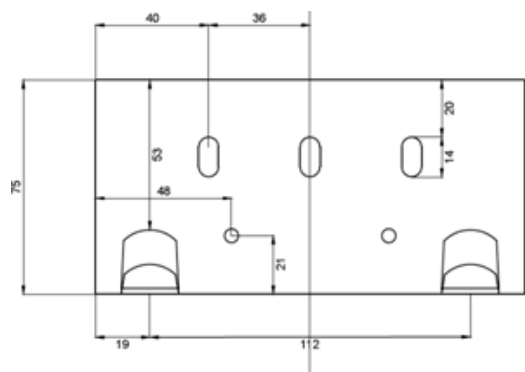


Floor elevation view

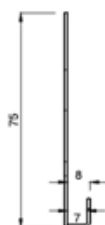


The staples usually come lacquered in black, with the possibility of lacquering in the color desired by the architect.

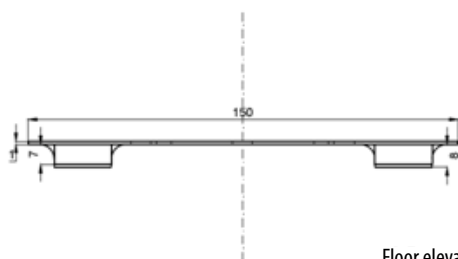
Concealed 12 mm Exit Starter Staple



Front elevation view



Side elevation view

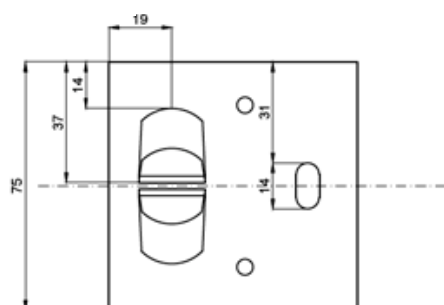


Floor elevation view

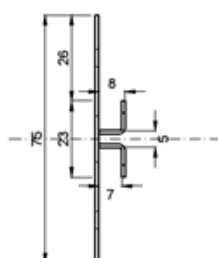


The staples usually come lacquered in black, with the possibility of lacquering in the color desired by the architect.

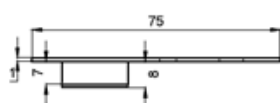
Concealed lateral clamp with 12 mm exit with 6 mm joint



Front elevation view



Side elevation view



Floor elevation view



The staples usually come lacquered in black, with the possibility of lacquering in the color desired by the architect.

ANCHORS

The anchors used between the bracket and the vertical wall are the following:

- For slabs: Stainless expansive support anchor



ARTICLE Metal anchor I X
MATERIAL Stainless Steel A2
DIAMETER 8 and 10 mm.
LENGTH 75 - 80 - 120

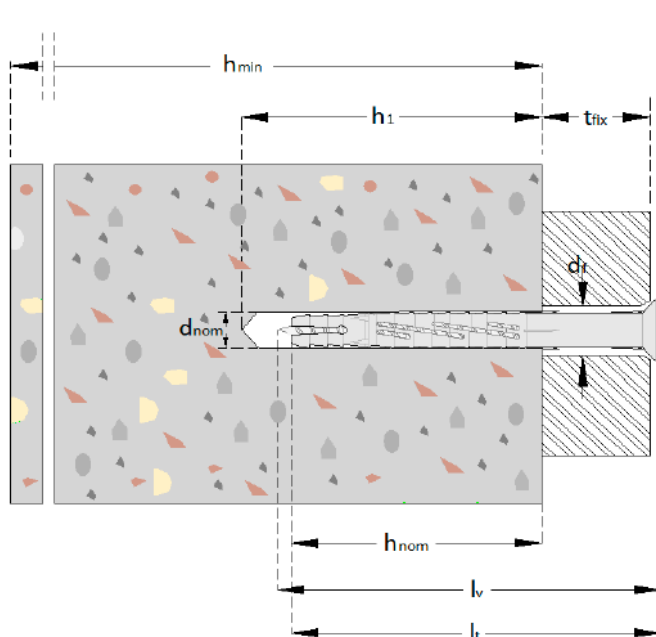
CHARACTERISTICS / PLACEMENT DATA

Metallic expansion anchor by thread for medium loads.
 Composed by: anchor body, expansion plate, nut and A2 stainless washer

Tightening torque for diameter 8: Minimum: 20 Nm - Maximum: 25 Nm

Tightening torque for diameter 10: Minimum: 40 Nm - Maximum: 45 Nm

- For brickwork: Nylon plug anchor with retaining hexagonal head screw



d_{nom} : Anchor diameter

l_t : Anchor length

d_v : Screw diameter

l_v : screw length

t_{fix} : Maximum thickness to set

d_0 : Drill hole diameter

h_1 : Minimum depth of the hole to be drilled

h^* : Minimum thickness must be equal to the thickness of the face of the block plus the thickness of the element to be fixed

h_{min} : Minimum thickness of masonry

h_{nom} : Anchor Depth Minimum Length

h_{ef} : Minimum effective anchor depth

d_f : Drill diameter

T: 6 lobes (torx)

C_{min} : Minimum Allowable Edge Distance

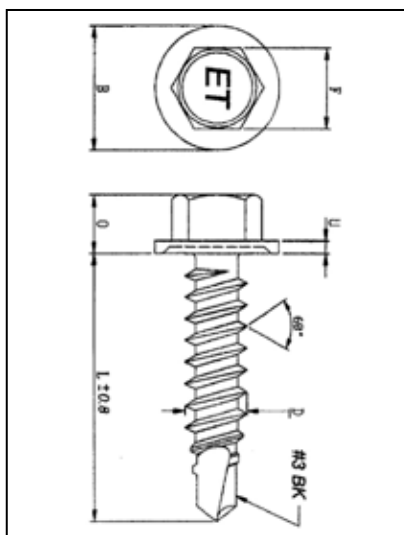
S_{min} : Minimum spacing between anchors

Material Code	Anchor Size	Size Screw	t_{fix}	$d_0^{1)}$	h_1	h_{min}	$h^*^{2)}$	h_{nom}	h_{ef}	d_f	T	$C_{min}^{3)}$	$S_{min}^{3)}$
	$d_{nom} \times l_t$ (mm)	$d_v \times l_v$ (mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)
VS8108080	8 x 80	6 x 85	10	8	90	120	25	70	70	9	30	90	90
VS8108100	8 x 100	6 x 105	30				45						
VS8108120	8 x 120	6 x 125	50				65						
VS8108140	8 x 140	6 x 145	70				85						
VS8110080	10 x 80	7 x 85	10	10	90	120	25	70	70	11	40	100	100
VS8110100	10 x 100	7 x 105	30				45						
VS8110120	10 x 120	7 x 125	50				65						
VS8110140	10 x 140	7 x 145	70				85						
VS8110160	10 x 160	7 x 175	90				105						
VS8110200	10 x 200	7 x 205	130				145						
VS8110230	10 x 230	7 x 235	160				175						

SCREWS

The screws used between vertical profiles-cantilevers and vertical profile-horizontal profile are as follows:

- 5.5 x 22 stainless steel self-drilling screw with EPDM washer

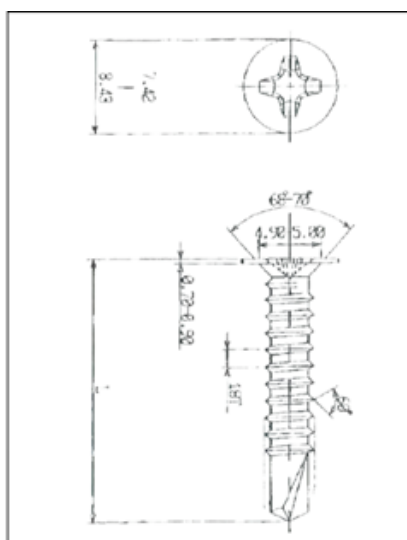


ARTICLE	Self-drilling screw tip nº3
FAMILY CODE	DKH-5
MATERIAL	INOXA2
COVERING	According to the requirement
NOMINAL DIAMETER	5.5 mm.
STANDARD OF MANUFACTURING	DIN 7604K
LENGTH	From 18 to 60mm.

FEATURES

PULLING RESISTANCE (1) (A) (Depending on the thickness of the aluminum sheet for Ø 5,5 mm.)	2,0 mm	2,0 kN	(A) (B)
	3,0 mm	2,7 kN	
	4,0 mm	6,8 kN	
TORSION RESISTANCE		10,4 N-m	
SHEAR STRENGTH (1) (B) (According to screw Ø)	4,8 mm	9,3 kN	
	5,5 mm	11,1 kN	
	6,3 mm	14,1 kN	
SELF DRILLING TIMES (2)		1,8 s	

-Staples-Profiles: Flat head lacquered stainless steel self-drilling screw 4.2 x 14



ARTICLE	Self-drilling screw point nº 2 of 4.2 x 14
FAMILY CODE	DXP361
MATERIAL	INOX A2
COVERING	_____
NOMINAL DIAMETER	4,2 mm.
STANDARD OF MANUFACTURING	CABEZA ESPECIAL
LENGTH	14 mm.

CARACTERÍSTICAS			
PULLING RESISTANCE (1) (A) (Depending on the thickness of the aluminum sheet for Ø 4,2 mm.)	2,0 mm	1,44 kN	
	2,5 mm	1,60 kN	
	3,0 mm	1,84 kN	
TORSION RESISTANCE		8,30 N·m	
SHEAR STRENGTH (1) (B) (According to screw Ø)	4,2 mm	7,62 kN	
SELF DRILLING TIMES		1,6 s	



POLYURETHANE PUTTY

4 chemical fixing points will be added per piece unit to improve and reinforce the fixing and gluing of the piece to the horizontal profile. The chemical fixation prevents the piece from moving as a result of the action of the wind, allows the sliding clips to absorb the expansion of the façade, and serves as a damper for possible noise between the profile and the plate.

Sikaflex-111 Stick & Seal neutral polyurethane adhesive putty or similar is used.




CERAMIC PIECE









According to documentation provided by DolceStone S.L., the cladding pieces are made of porcelain ceramic of nominal dimensions.




CERAMIC PIECE




PHYSICAL AND MECHANICAL CHARACTERISTICS

Ceramic pieces are classified as dry-pressed ceramic tiles with low water absorption according to the UNE-EN 14411 standard, with the following characteristics declared by the manufacturer:

CARACTERÍSTICAS DIMENSIONALES DIMENSIONAL CHARACTERISTICS		UNE- EN-ISO 10545 Test Nº	UNE-EN- 14411(1) ISO 13006 Anexo G ISO 13006 Annexe G	DOLCKER Valores 1ª Calidad / Values 1st Quality RUSTIC 60X120 20MM Calibre: 5 600,4x1200,4
	LONGITUD Y ANCHURA LENGHT AND WIDTH	2	0,6%	±0,2%
	ESPESOR THICKNESS	2	5,0%	±5,0%
	RECTITUD DE LOS LADOS WARPAGE OF EDGES	2	0,5%	±0,2%
	ORTOGONALIDAD WEDGING	2	0,5%	±0,25%
	CURVATURA CENTRAL Y LATERAL CENTRAL AND EDGE CURVATURE	2	0,5%	±0,2%
	ALABEO WARPAGE	2	0,5%	±0,2%
	ABSORCIÓN DE AGUA WATER ABSORPTION	3	0,5% máx 0,6%	≤0,1%

CARACTERÍSTICAS MECÁNICAS MECHANICAL CHARACTERISTICS		UNE- EN-ISO 10545 Test Nº	UNE-EN- 14411(1) ISO 13006 Anexo G ISO 13006 Annexe G	DOLCKER Valores 1ª Calidad / Values 1st Quality RUSTIC 60X120 20MM Calibre: 5 600,4x1200,4
	FUERZA DE ROTURA BREAKING STRENGHT	4	≥1300N	≥12000N
	RESISTENCIA A LA FLEXIÓN FLEXURAL STRENGHT	4	Media 35/min 32 Average 35/min 32	≥50 N/mm ³
	RESISTENCIA AL IMPACTO IMPACT RESISTANCE	5	MD	0,85
	RESISTENCIA A LA ABRASIÓN PROFUNDA DEEP ABRASION RESISTANCE	6	< 175 mm ³	< 145 mm ³
	DILATACIÓN TÉRMICA LINEAL LINEAR THERMAL EXPASION	8	MD	<7,5 x10 ⁻⁶ °C ⁻¹
	CHOQUE TÉRMICO THERMAL SHOCK	9	MD	Resiste Resists
	RESISTENCIA A LA HELADA FROST RESISTANCE	12	Exigido Required	Resiste Resists
	REACCIÓN AL FUEGO REACTION TO FIRE	No Exigido No Required	No Exigido No Required	A1/A1fl
	DILATACIÓN POR HUMEDAD MOISTURE EXPANSION	No Exigido No Required	Valor Declarado Declared Value	-----

CARACTERÍSTICAS HIGIÉNICAS HYGIENIC CHARACTERISTICS			UNE- EN-ISO 10545 Test Nº	UNE-EN- 14411(1) ISO 13006 Anexo G ISO 13006 Annexe G	DOLCKER Valores 1ª Calidad / Values 1st Quality
					RUSTIC 60X120 20MM Calibre: 5 600,4x1 200,4
	RESISTENCIA QUÍMICA CHEMICAL RESISTANCE	ÁCIDOS BAJA CONCENTRACIÓN LOW CONCENTRATION ACIDS	13	MD	CLASE LA
		ÁCIDOS ALTA CONCENTRACIÓN HIGH CONCENTRATION ACIDS	13	MD	CLASE HA
		BASES BAJA CONCENTRACIÓN LOW CONCENTRATION ALKALI	13	MD	CLASE LA
		BASES ALTA CONCENTRACIÓN HIGH CONCENTRATION ALKALI	13	MD	CLASE HA
	RESISTENCIA A LAS MANCHAS STAINS RESISTANCE		14	MD	4
	PRODUCTOS DOMÉSTICOS DE LIMPIEZA Y SALES DE PISCINA HOUSEHOLD DETERGENTS AND ADDITIVES FOR SWIMMING-POOLS		13	Mínimo UB Minimun UB	CLASE LA

NORMAS COMPLEMENTARIAS ADDITIONAL NORMS		UNE- EN-ISO 10545 Test Nº	UNE-EN- 14411(1) ISO 13006 Anexo G ISO 13006 Annexe G	DOLCKER Valores 1ª Calidad / Values 1st Quality
				RUSTIC 60X120 20MM Calibre: 5 600,4x1 200,4
	DESIZAMIENTO (Péndulo) ANTISLIP	UNE-ENV 12633	Clase 1/2/3	CLASE 3 Rd>45
	DESIZAMIENTO (Pies calzados) ANTISLIP	DIN 51130	R9/R10 R11/R12	R11
	DESIZAMIENTO (Pies descalzos) ANTISLIP	DIN 51097	A/B/C	C
	DESIZAMIENTO (DCOF) ANTISLIP	ANSI A137.1 Apdo. 9.6	MD	-----
	MATERIAL RECICLADO RECYCLED MATERIAL	ISO 14021	MD	Según Modelo Depending Model
	RESISTENCIA DE LOS COLORES A LA LUZ COLOR RESISTANCE TO LIGHT	DIN 51094	No Exigido No Required	Resiste Resists

DIMENSIONAL CHARACTERISTICS

The standard manufacturing dimensions of ceramic pieces are defined in the following table:

600 mm x 1200 mm
 500 mm x 1200 mm
 300 mm x 1200 mm
 500 mm x 1000 mm
 450 mm x 900 mm
 800 mm x 800 mm
 600 mm x 900 mm
 600 mm x 600 mm
 600 mm x 300 mm

* For specific designs, other plate dimensions smaller than those described can be obtained by machining, with equivalent tolerances and with the same thicknesses, as long as the stresses to which they are going to be subjected are less than those defined in this document.

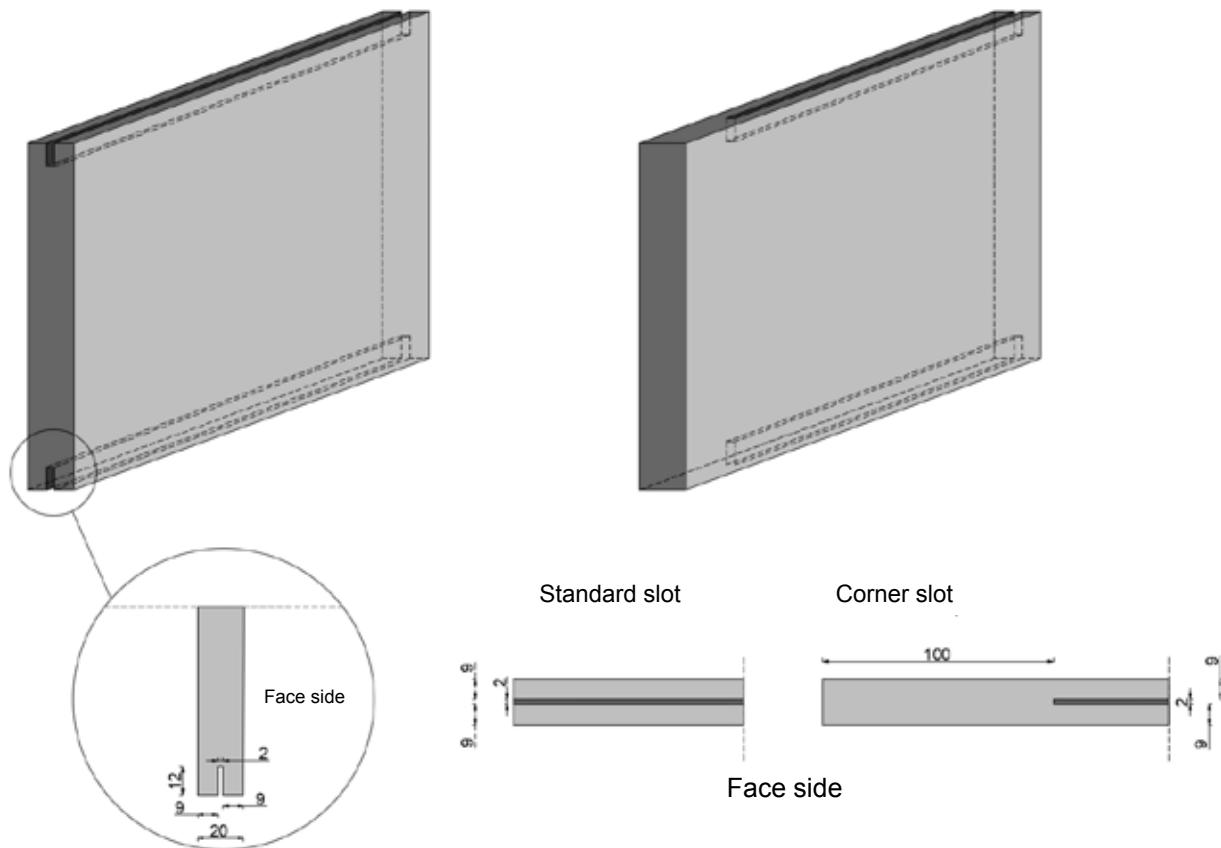
FIBERGLASS MESH

The ceramic has the option of being supplied with a safety mesh on the back of the piece. This mesh prevents pieces of the piece from coming off in the event of any blow.

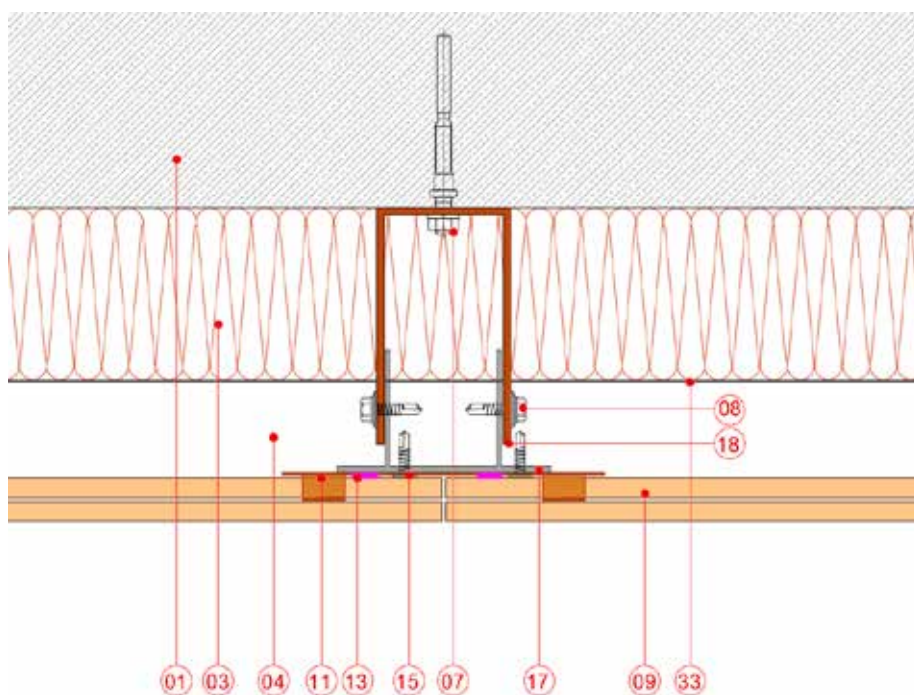
- Composition:	Fiberglass
- Weight:	98 g/m ² ± 5%
- Distance to thread axes:	12,5 x 11,8 mm
- Tensile breaking load:	
• Longitudinal:	1.650 N / 5 cm
• Transversal:	1.400 N / 5 cm

One-component polyurethane adhesive is used to fix the mesh.

STUDY SLOTS

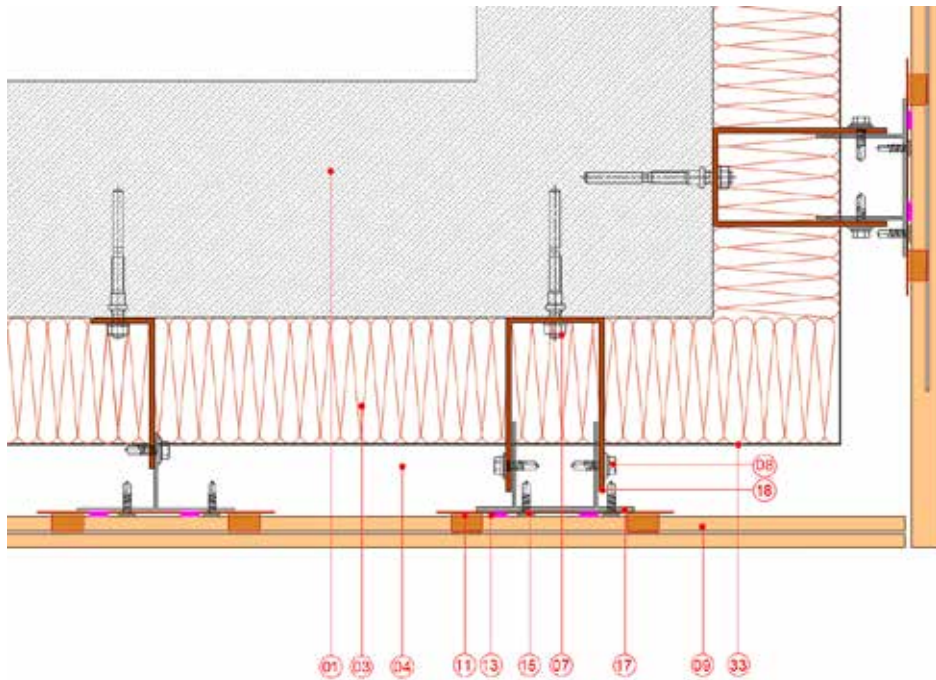


TYPE DETAILS - System DOL-HC20

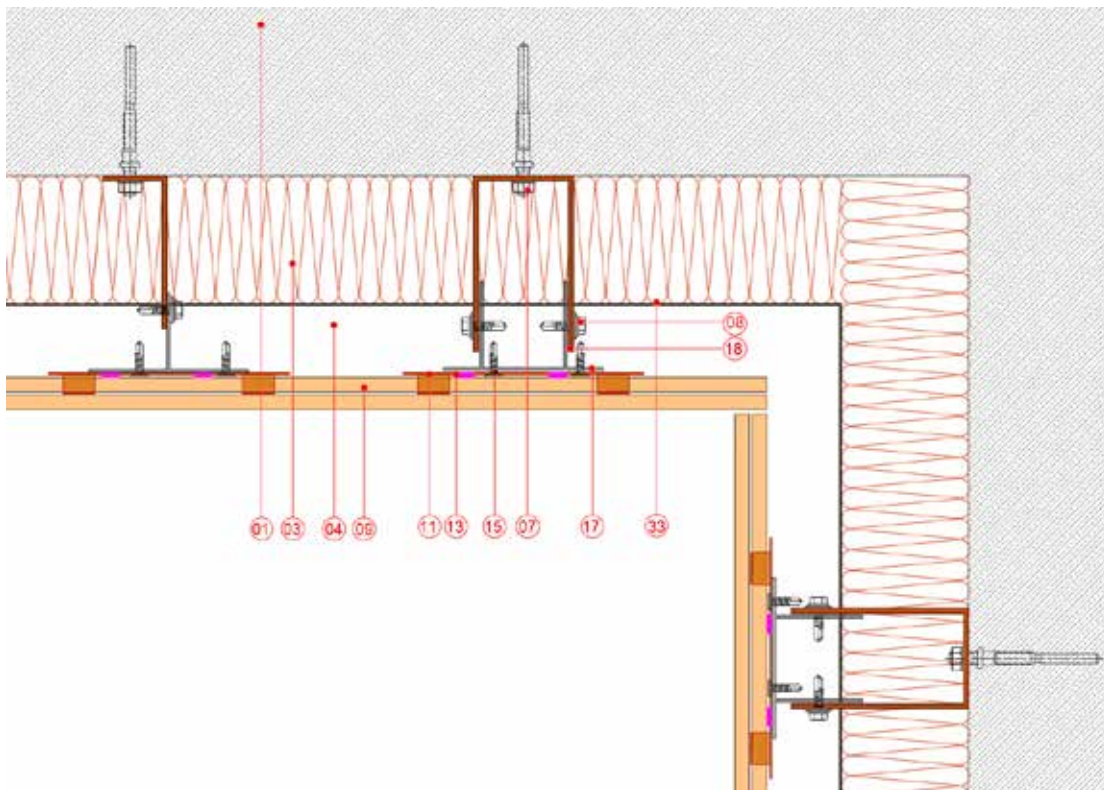


- 01 Masonry or concrete wall
- 02 L-profile
- 03 Isolation
- 04 ventilated air chamber
- 05 Vertical T-profile
- 06 simple corbel
- 07 Nylon stud
- 08 Self Drilling Screw
- 09 TC10 Ceramic
- 10 Starter Staple
- 11 Center Staple
- 12 Side Staple
- 13 chemical fixation
- 14 INOX expansive anchor
- 15 Flat Head Self Drilling Screw
- 16 Kerdi print
- 17 Waterproofing Membrane
- 18 U-Corbel
- 19 Sikatack Panel
- 20 Double-sided tape
- 21 Angular
- 22 Nail Taco
- 23 extruded
- 24 Sealed Window
- 25 Perforated Aluminum Grill
- 26 Waterproofing Sheet
- 27 Lacquered Folded Aluminum Sheet
- 28 Extruded F Profile
- 29 Separator
- 30 Expanded Polystyrene
- 31 Washer
- 32 Composite panel

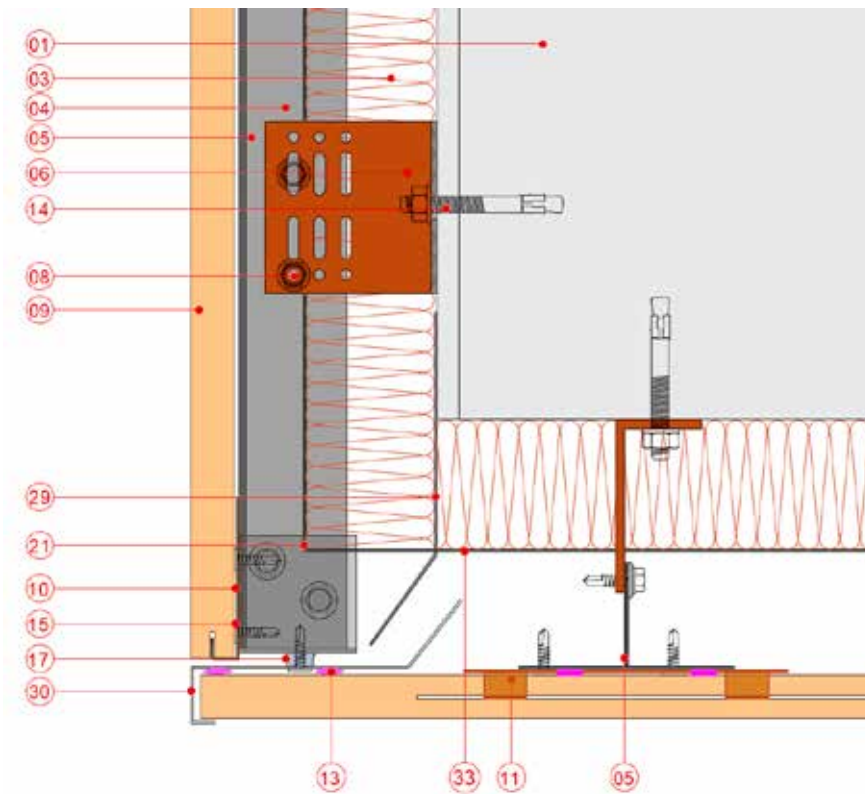
- Corner details:



- 01 Masonry or concrete wall
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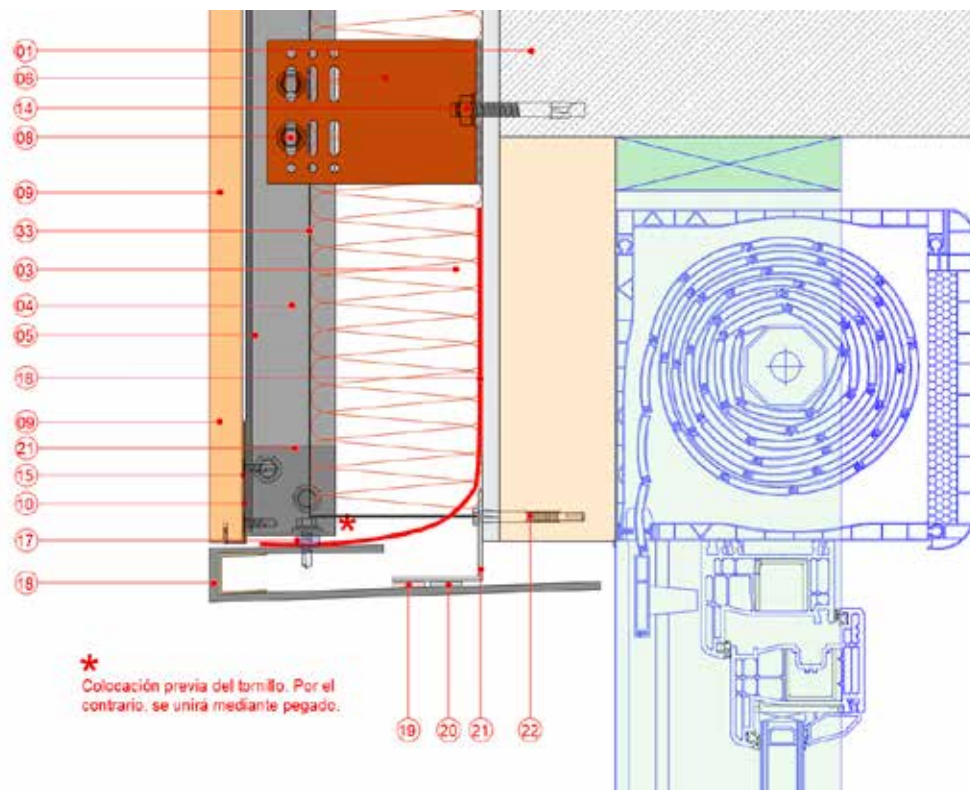


- Ceramic ceiling placement detail



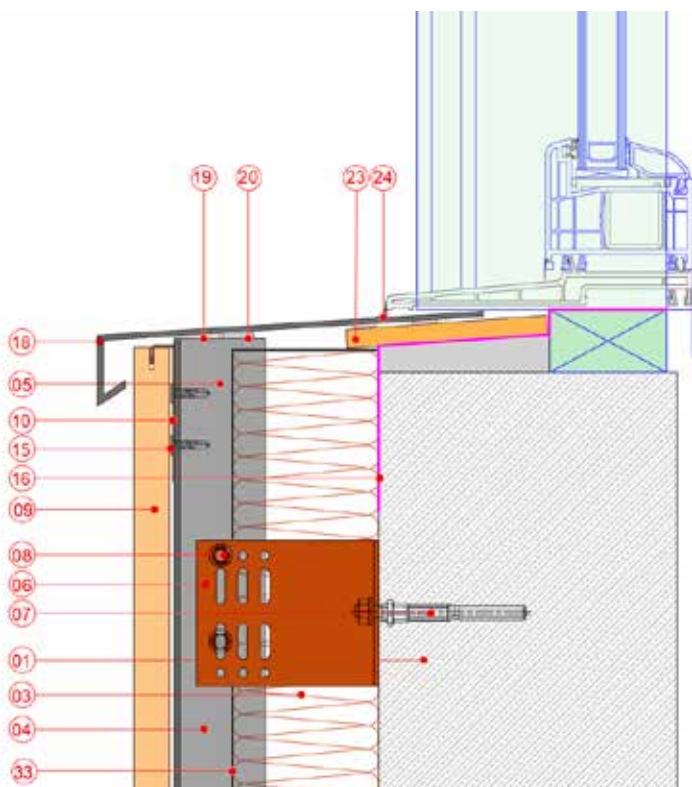
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- Lintel detail:

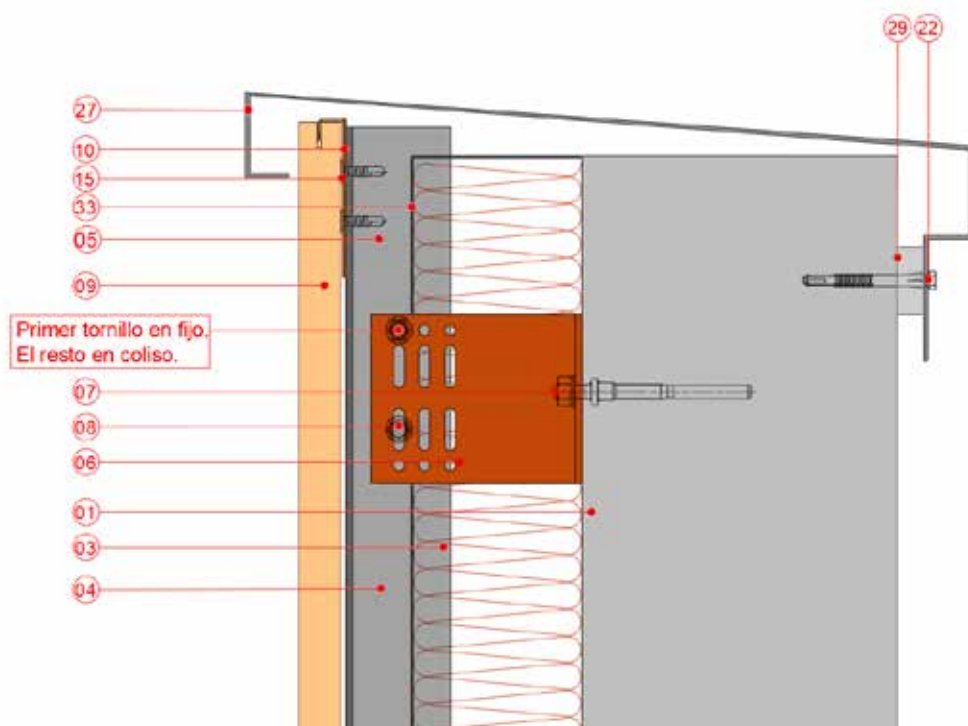
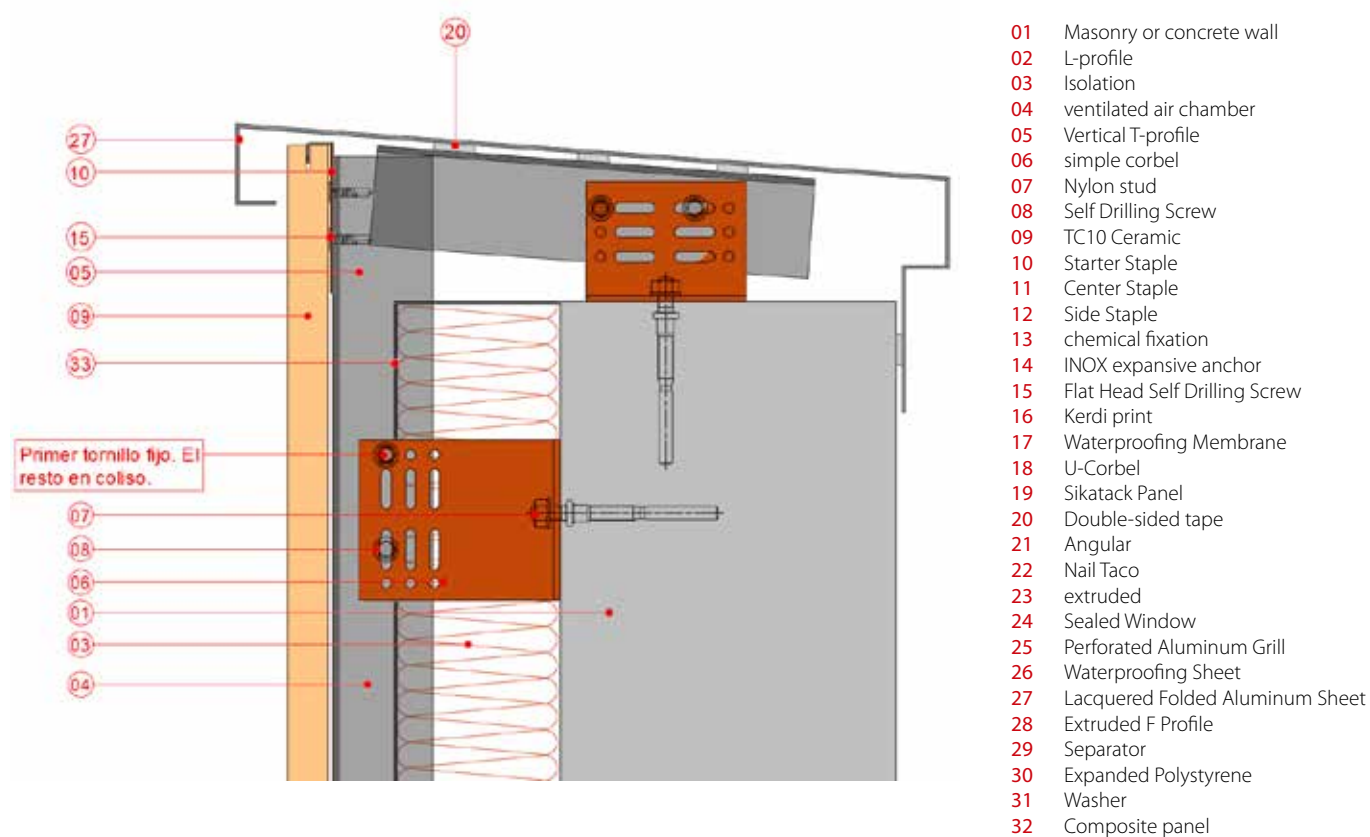


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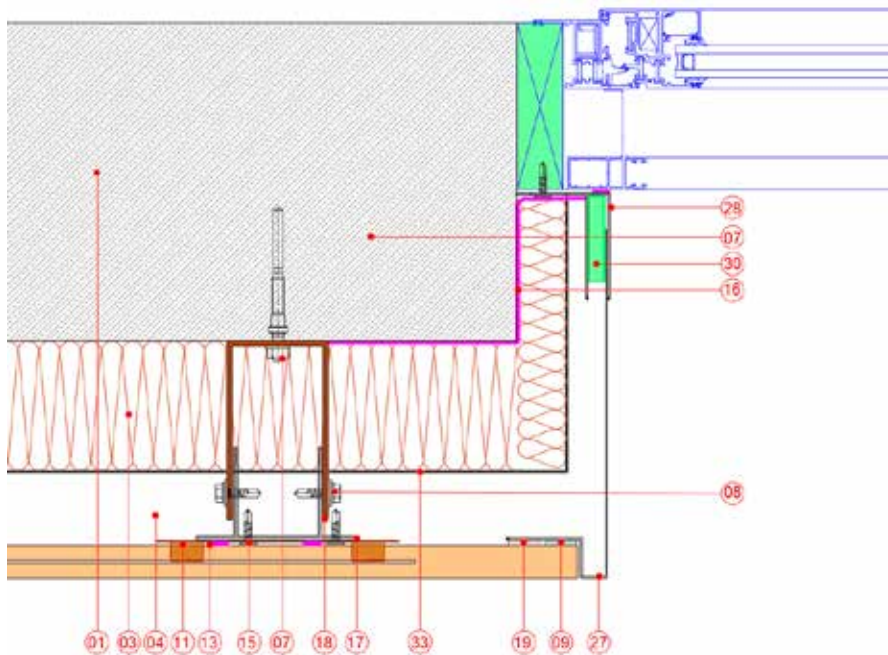
- Detalle alfeizar:



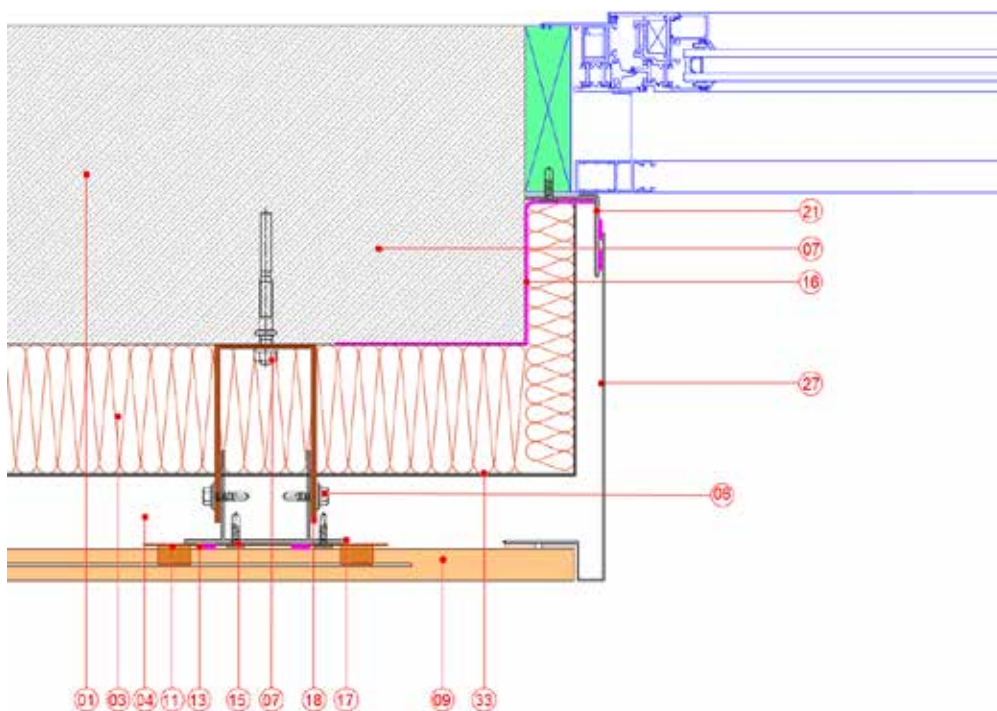
- Cover details:



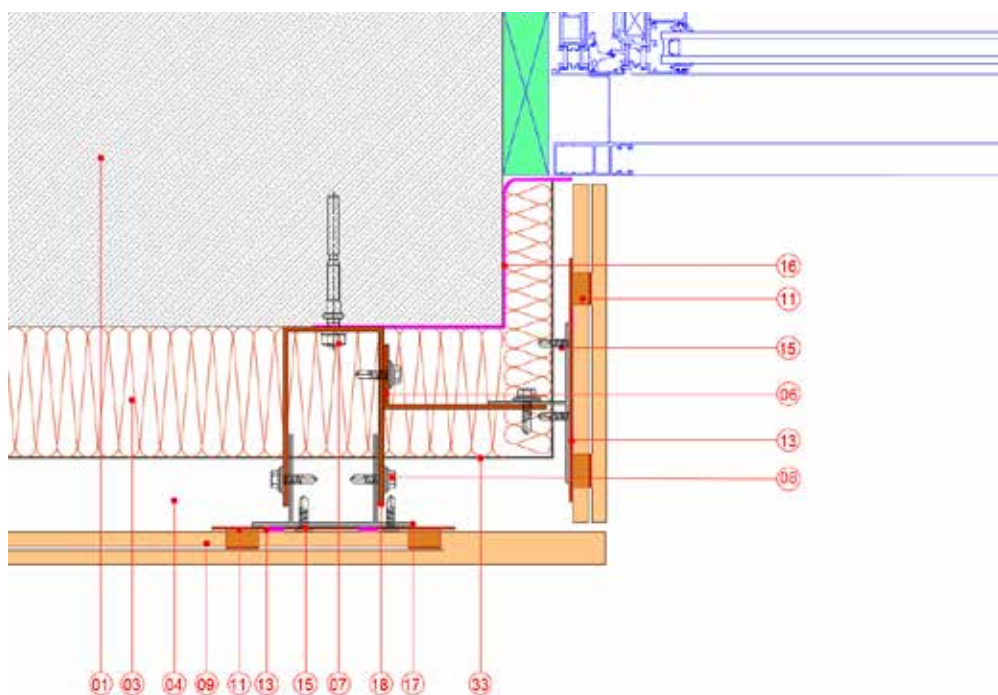
- Trim details



- 01 Masonry or concrete wall
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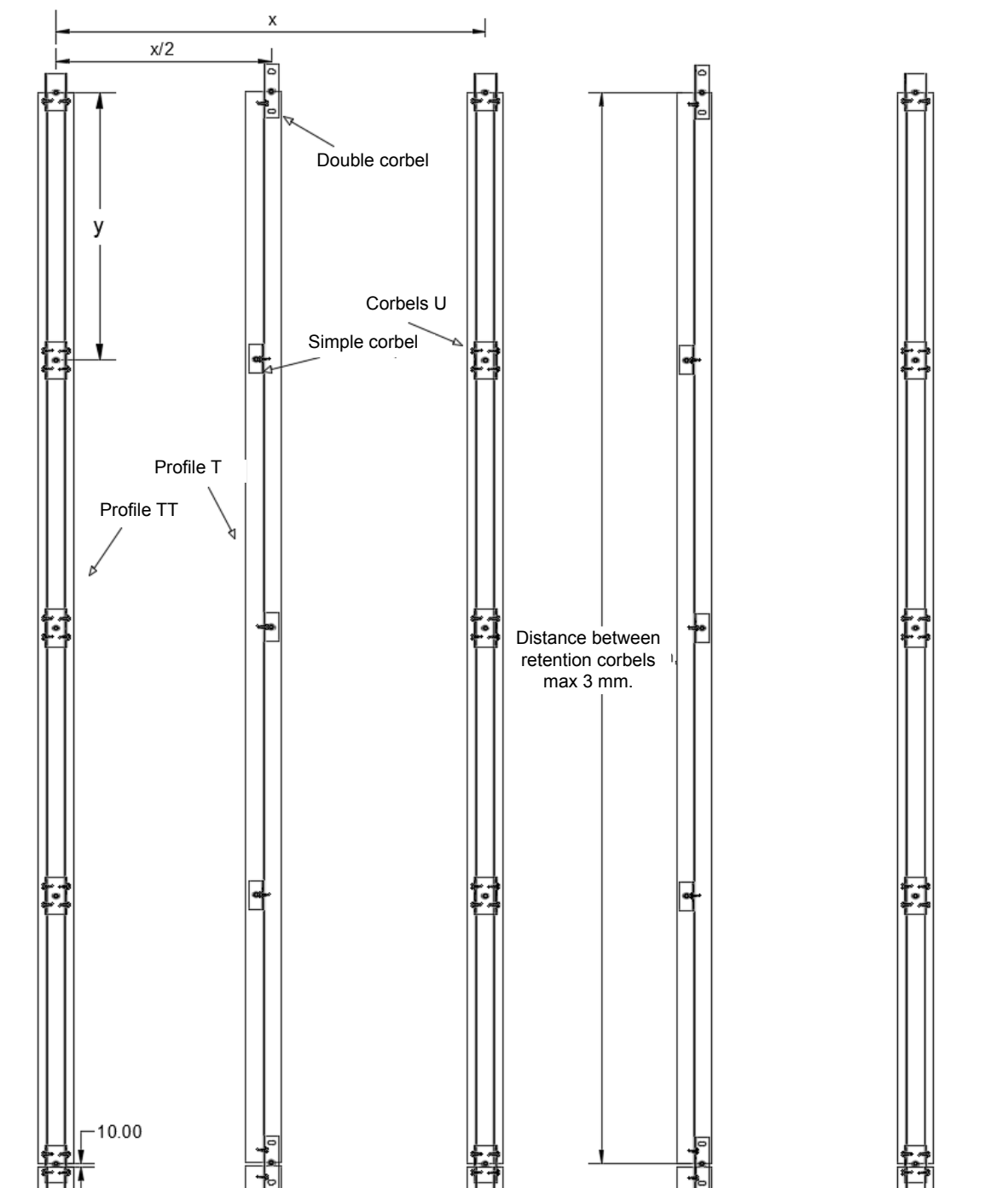


- Trim details



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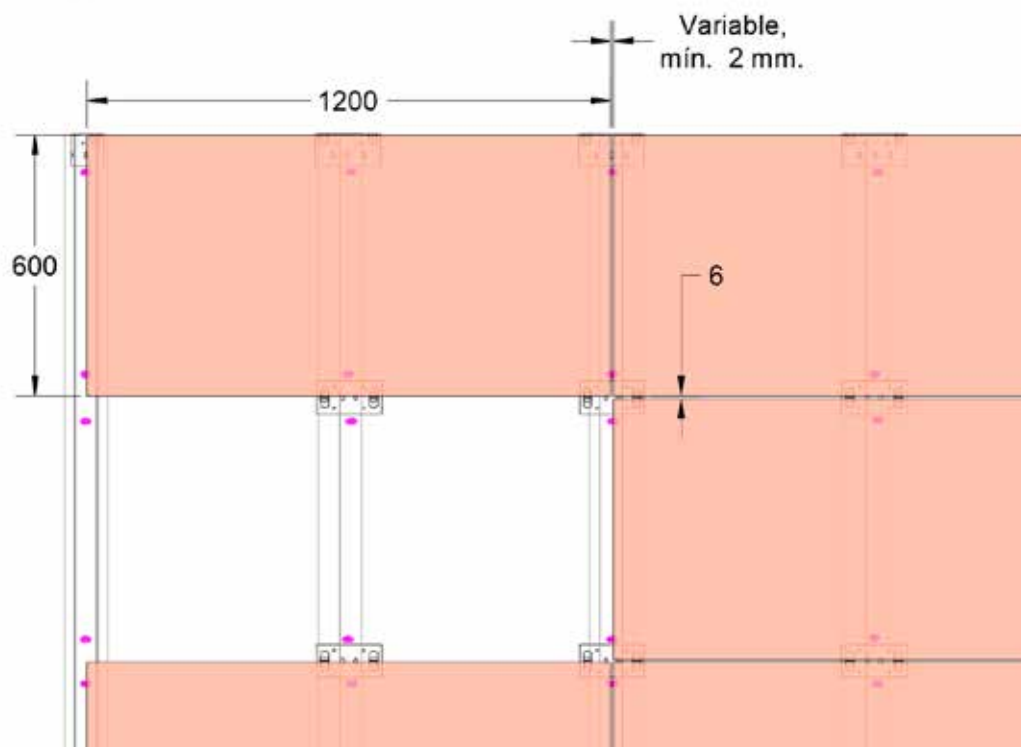
PLACEMENT OF THE VENTILATED FACADE



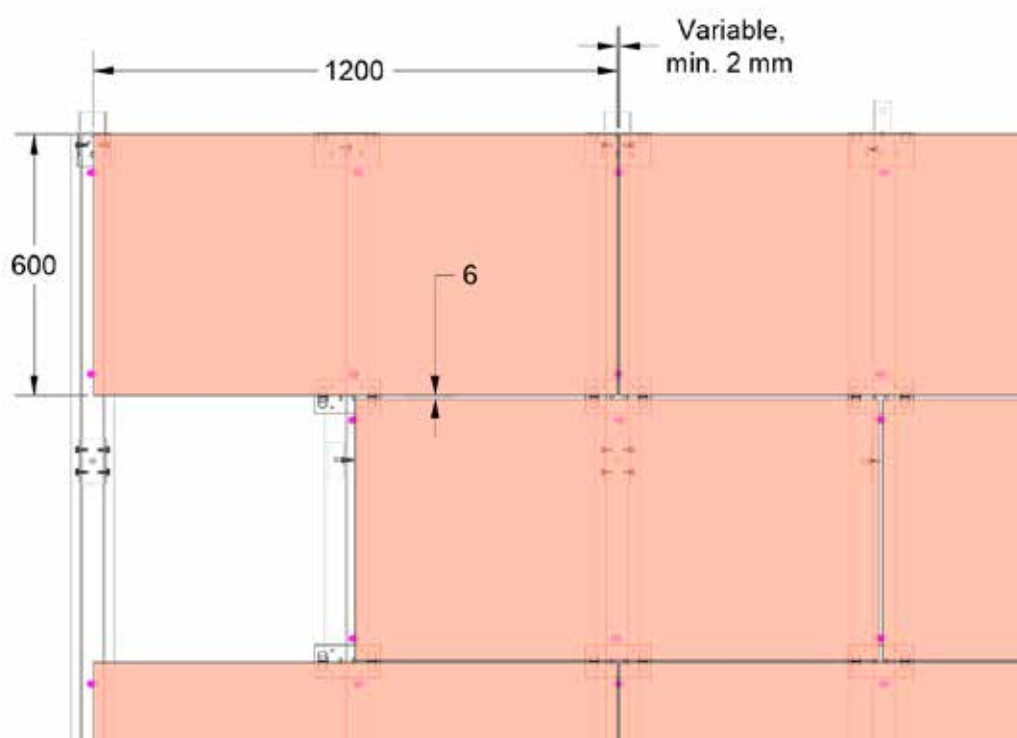
x: Depending on the length of the ceramic.

y: Depending on the characteristics of the work. Never higher than 0.75 m..

Running joint installation



Matajunta installation



4. START-UP

GENERAL SPECIFICATIONS

For each work and in view of the architectural project, a technical project of the ventilated façade will be carried out in which the elements to be used and their layout will be calculated and determined.

Said project will include the plans and construction details necessary for the correct understanding and subsequent installation of the system by the construction personnel.

In any case, DolceStone, S.L., provides all the necessary data to carry out the project and the execution of the ventilated façade; must provide, if requested, technical assistance during the project and execution phases, including the resolution of singular points.

The assembly of the DOL HC20 ventilated façade system must be carried out by specialized personnel authorized by DolceStone, S.L., under its control and technical assistance, using the previously described fixing elements.

The ceramics already placed must not be under tension and must have sufficient freedom of movement. For these purposes, sufficient margin must be provided in the holes when making the joints, thus enabling expansion due to humidity and temperature.

PREPARATION OF THE SUPPORT AND SYSTEM OF FIXATION

On site, before assembling the system, the stability and bearing capacity of the support must be checked and whether the anchors provided for in the technical project are adequate for it, by means of the proper pull-out tests according to the work control plan, supervised by the optional address.

In the event that the planned anchorage is not adequate, it must be replaced with the approval of the Project Management, taking the necessary precautions in terms of position and number of anchorages.

The installer of the façade will give his prior consent to the support before placing the system. The substructure must be properly aligned in order to guarantee the flatness of the cladding system.

The fixing system must anticipate the expansion of the plates and be defined according to:

- Wind loads
- Maximum distances between fixing points of the panels
- Format and dimensions of the panels
- Expansion joints of the building and the components

VENTILATED AIR CHAMBER

The existence of a continuous air chamber, between 3 and 10 cm thick, ventilated by ascending natural convection behind the cladding, must be taken into account.

5. ASSEMBLY

Los pasos del montaje de la fachada ventilada debe ser la siguiente:

1. Replanteo
2. Colocación de ménsulas
3. Colocación de perfiles
4. Colocación de aislamiento térmico
5. Colocación de grapas
6. Colocación de las piezas cerámicas, con establecimiento de juntas y aplicación de masilla adhesiva
7. Colocación de las piezas cerámicas en la franja inferior de la fachada

REPLANTEO

Se replanteará la fachada comprobando la planimetría del soporte a revestir, verificando el plano para una buena elección del anclaje.

Los ejes de los perfiles verticales se colocarán en función de las dimensiones de la baldosa de revestimiento, a una distancia igual o menor a 120 cm, dependiendo del formato de la baldosa, conforme a lo definido en el proyecto y justificado por cálculo.

Las características del soporte, tanto en desplome como en planeidad, deberán cumplir las condiciones fijadas en el CTE, así como en las correspondientes normas y disposiciones vigentes.

COLOCACIÓN DE LAS MENSULAS

En primer lugar se fijarán sobre el muro soporte o las vigas y/o cantos del forjado los perfiles separadores "L" mediante anclajes adecuados.

Se realizará una colocación y distribución de los separadores alineados en sentido vertical, distribuidos entre cantos de forjado. La distancia en vertical dependerá del tipo y estado del soporte y a su vez de las cargas que tenga que transmitir al mismo, siendo siempre que lo permita el soporte, inferior a 1 metro.

COLOCACIÓN DE LOS PERFILES VERTICALES

Los perfiles verticales en "T" o en "L" se colocarán, fijándolos a las ménsulas en "L" con los tornillos descritos anteriores, con una distancia máxima entre

ellos de 120 cm dependiendo de la dimensión de la pieza cerámica.

La planeidad de los entramados de perfiles verticales de aluminio extruido debe quedar garantizada a través del adecuado sistema de anclaje, con objeto de asegurar la planeidad del sistema de revestimiento.

Los perfiles verticales, perfectamente alineados, quedarán fijados con agujeros fijos y colisos a las ménsulas, de forma que garanticen el adecuado movimiento de la subestructura y una buena planimetría. Para ello se fijan a un agujero fijo en su extremo superior, siendo colisos los inferiores.

La junta horizontal mínima entre perfiles verticales será de 2 mm por cada metro lineal de perfil.

COLOCACIÓN DE AISLAMINETO

Siempre que se aplique, se cubrirá toda la cara exterior del muro vertical y la estructura resistente del edificio según las especificaciones del proyecto.

COLOCACIÓN DE LAS GRAPAS

Sobre el perfil vertical en "T" o en "L" se colocan las grapas, comenzando por las inferiores y a una distancia entre ellas que vendrá determinada por el formato de baldosa que se esté colocando y su posición.

Antes de la colocación de las piezas cerámicas se le aplica un cordón de masilla adhesiva de poliuretano sobre los perfiles verticales por las zonas donde tocarán con las piezas de cerámica.

COLOCACIÓN DE PIEZAS CERÁMICAS

Como se trata de una fijación con grapas ocultas, se coloca de la siguiente manera: sobre las grapas inferiores se acopla la pieza de cerámica, encajando perfectamente las patillas superiores de las grapas en las ranuras inferiores de la pieza cerámica. Acto seguido se colocan las grapas superiores, encajando perfectamente sobre las ranuras superiores. Las piezas quedan así estabilizadas.

Las piezas cerámicas, usualmente, se fijarán a grapas dispuestas en sus cuatro esquinas. En el caso que por cálculo se necesite, las piezas se fijarán en sus cuatro esquinas y en el punto medio de su dimensión horizontal, por medio de dos grapas adicionales fijadas a un perfil vertical intermedio.

JUNTAS

Las juntas entre las piezas cerámicas deben ser siempre abiertas.

La junta vertical tiene que ser ≥ 1 mm y máximo 3 mm y la junta horizontal será de 5 mm.

Colocación de las piezas cerámicas en la franja inferior de la fachada

Finalmente se colocan la fila inferior de las piezas cerámicas junto con las grapas de arranque.

6. MAINTENANCE

For the cleaning of the ceramic pieces, the recommendations of the manufacturer of the same will be followed, being its cleaning similar to that of the usual ceramic tiles.

In case of replacement of parts, the difference in tone with respect to those previously placed must be taken into account.

7. COMPLIANCE WITH NATIONAL REGULATIONS

SE – STRUCTURAL SAFETY

The DOLCKER & CLIP System for cladding ventilated facades with ceramics does not contribute to the stability of the building, and therefore the Basic Structural Safety Requirements do not apply to it.

However, it must be taken into account that the structural behavior of the ventilated facade must be such that it does not compromise compliance with the rest of the Basic Requirements, and in particular those of Safety of Use and Habitability, as indicated in the Law of Ordinance of the building: Safety of use in such a way that the normal use of the building does not pose a risk of accident for people (article 3.1.b.3), and other functional aspects of the construction elements or facilities that allow satisfactory use of the building (article 3.1.c.4).

The use of the **DOL-HC20** System for cladding ventilated facades with ceramics requires the development of a technical project in accordance with current regulations.

In the project, the stability, resistance and admissible deformations will be verified, justifying the adequate composition of the system to withstand the mechanical stresses that may derive from the actions

corresponding to the ultimate limit states and service.

The calculation will be specified based on the location and height of the building and the characteristic resistance values of the panel. Likewise, special attention will be paid to the localized instability phenomena that the wind can produce in certain parts of buildings, especially in tall buildings.

The support of the ventilated facade system, usually constituted by an enclosing wall, must comply with the essential structural safety requirements that are inherent to it, considering the actions and stresses that the ventilated facade system transmits to it.

The joint between the substructure of the system and the rear enclosure must be planned so that during the period of use the extreme limit stresses or the durability limit values are not exceeded.

SI- SAFETY IN CASE OF FIRE

The composition of the enclosure, including the insulation, must comply with the CTE, Basic Fire Safety Document (DB-SI), in regard to fire stability, as well as the reaction to fire of the materials that comprise it.

In accordance with Decision 96/603/CE of the

Commission of October 4, 1996, fired clay products obtain a class A1 reaction to fire classification (without contribution to fire) without the need for tests.

The cladding material meets the requirement demanded in CTE-DB-SI (SI-2 point 1.4) regarding exterior propagation, for the exterior cladding materials of the façade and the interior surfaces of the ventilated chambers of the façade.

As in all ventilated façade systems, in the event of a fire, propagation by the chimney effect may occur, for which reason the fire behavior specifications of the materials must be respected and, where appropriate, provide for fire break zones.

SU - SAFETY OF USE

The CTE does not specify requirements related to the safety of use for ventilated facade systems. However, it is recommended that for the lower areas of buildings, in accessible areas for public use, an intermediate vertical profile should be placed.

HS - HEALTH

The complete enclosure solution must guarantee the minimum degree of impermeability required for the building to which it is incorporated, as described in the CTE-DB-HS, in order to satisfy the basic requirement of protection against moisture (HS 1).

As the System is described in the Technical Report, the ventilated air chamber may be considered a "very high resistance barrier to filtration" (B3) as described in the CTE-DB-HS, HS 1, section 2.3 .2, provided that:

- The dimensions of the air chamber are respected, joints and amount of ventilation openings described above.
- The insulating material must be non-hydrophilic and be located between the air chamber and the vertical wall.

There is, in the lower part of the chamber and when it is interrupted, a system for collecting and evacuating the water filtered into it (as described in section 2.3.3.5 of the CTE-DB-HS, HS-1). In any case, special attention must be paid, in the design

of the facades, to the incorporation of windows and lighting elements, as well as the correct solution of singular points, exterior fixings, etc., to achieve adequate watertightness. at these points, avoiding the accumulation and filtration of water.

The verification of the limitation of surface and interstitial condensation humidity must be carried out in accordance with the provisions of section HE-1 (Limitation of energy demand) of the CTE-DB-HE (HE-1, point 3.2.3).

The components of the system, as declared by its manufacturer, do not contain or release dangerous substances in accordance with national and European legislation.

HR - PROTECTION AGAINST NOISE

The complete enclosure solution, and fundamentally the support wall plus the insulation, must comply with the requirements of the CTE-DB-HR in terms of protection against noise.

The constructive solution of the meeting of the facade with the vertical separation elements will be studied, so as to avoid the transmission of noise by flanks.

HE - ENERGY SAVING

The complete construction solution for the enclosure must meet the requirements of the CTE-DB-HE in terms of hygrothermal behaviour.

The System, as described in the Technical Report, for the purposes of calculating the thermal transmittance, as described in Appendix E of the CTE-DB-HE, the air chamber will be considered a "highly ventilated air chamber", and the total thermal resistance of the enclosure will be obtained by neglecting the thermal resistance of the air chamber and of the other layers between the air chamber and the outside environment, and including an external surface resistance corresponding to still air, equal to the resistance inner surface of the same element (HE-1, Appendix E).

8. POINTS TO CONSIDER

USE OF THE PRODUCT. START-UP

In the execution of singular points such as sills, lintels, jambs, breastplates, etc., the tightness of the same, and its previous waterproofing if necessary, as well as the correct evacuation of water avoiding its accumulation must be taken into account.

LIMITATIONS OF USE

For those cases that are outside the field of application of said Basic Document, or when wind actions higher than those considered in the CTE-DB-SE-AE are foreseen, it will be necessary to carry out a specific study to determine the wind actions.

WASTE MANAGEMENT

The specifications of Royal Decree 105/2008, which regulates the Production and Management of Construction and Demolition Waste, as well as the applicable regional and local regulations, will be followed.

TERMS OF SERVICE

According to the durability tests carried out and the site visits, it is considered that the System behaves satisfactorily in accordance with the requirements related to durability; provided that the facade, installed as described in this document, is subject to proper use and maintenance, in accordance with the provisions of the CTE.



DOLCESYSTEM
QUALITY

DOLCESYSTEM ✓
GUARANTEED

9. ANNEX

EXTRACTION RESISTANCE TEST OF DIFFERENT ANCHORS FOR VENTILATED FAÇADE

The tested systems are:



NYLTX set consisting of expansion and compression nylon plug with anti-rotation wings and hexagonal screw with ring and torx footprint.



Expansion anchor with ring 10x90 Zinc-plated steel

The test method consists of the following steps:

- 1.- Drill with hammer and 10mm bit, for the Nyltx plug, and 10mm drill for the anchor expansive 10x90
- 2.-The assembly is fixed with the help of a suitable screwdriver and nozzle
- 3.-The dynamometer is mounted, the red marker of maximum tension or starting point is set to zero and the extraction is started.

With the following significant results:

EXPANSIVE ANCHORAGE 10x90



3 equal values of 1,400 Kg

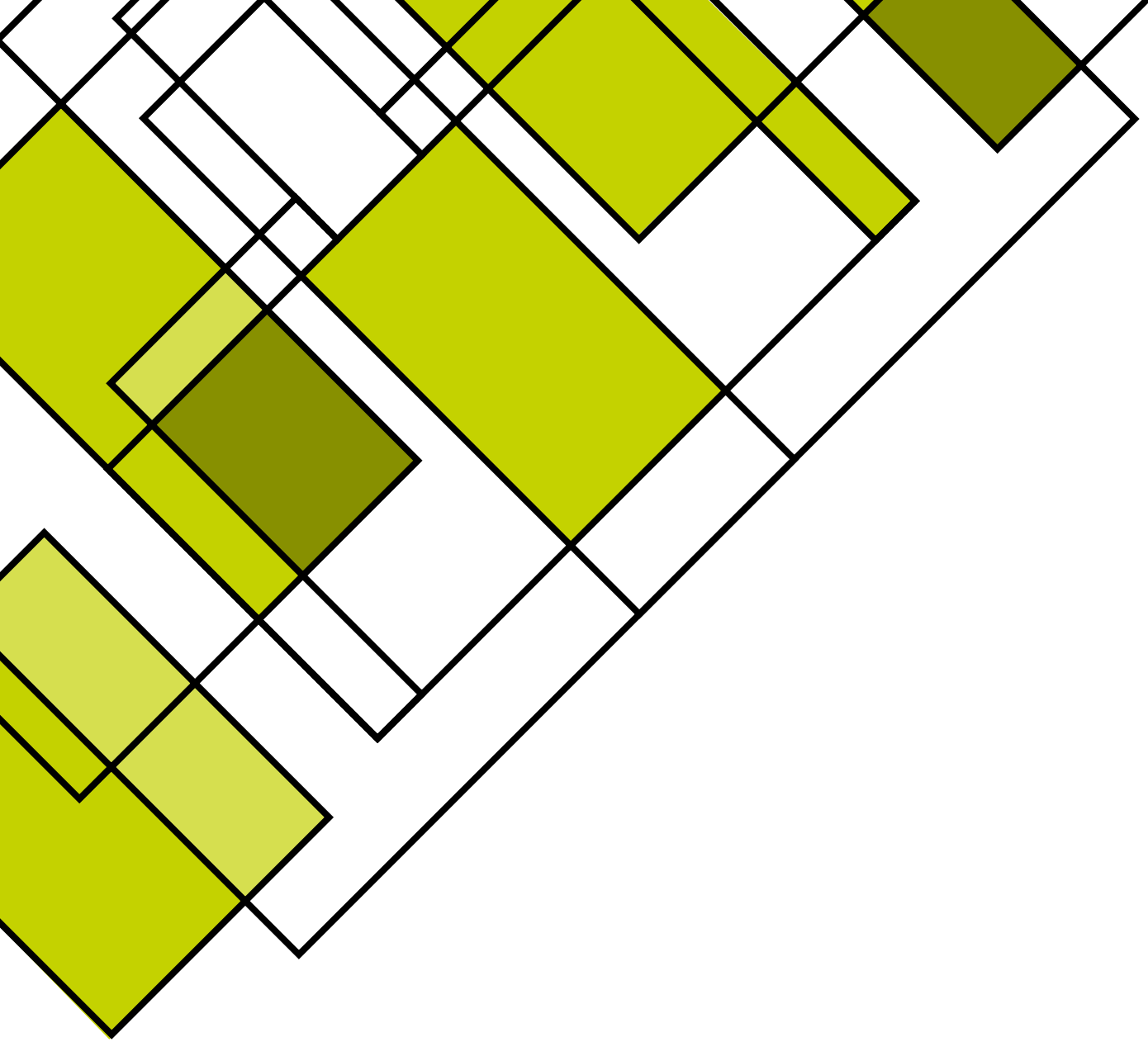
HIGH PERFORMANCE 10X80 NYLON ANCHORAGE

The plug has been tested in various situations of the closing wall:



With the following values: 700 Kg - 450 kg - 400 Kg.

ETANCO, S.A.
May 12, 2017



DOLCKER

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28051 Madrid - SPAIN

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