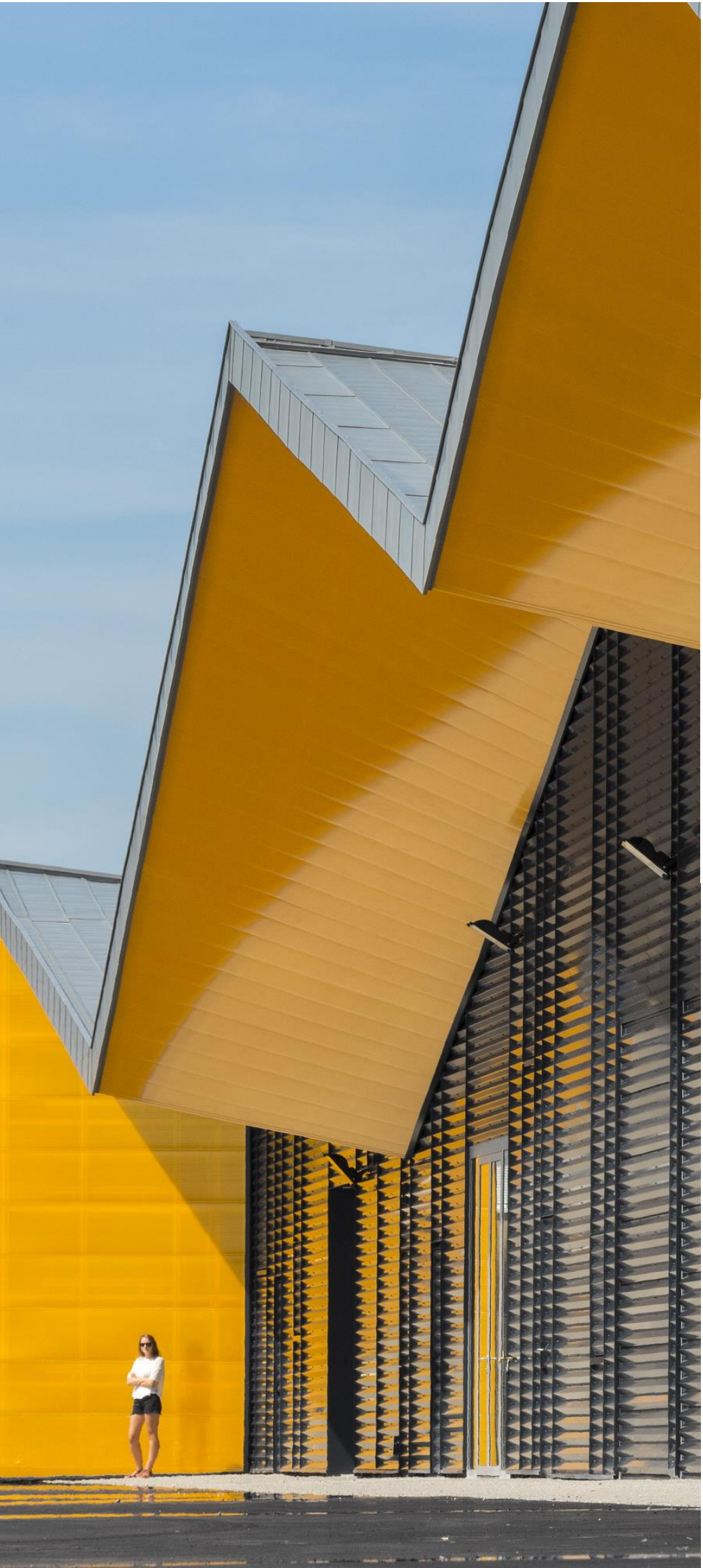
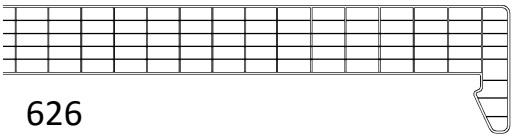


arcoplus® 684 6104 6124

arcoplus® 626

Technical book



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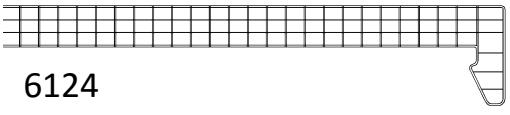

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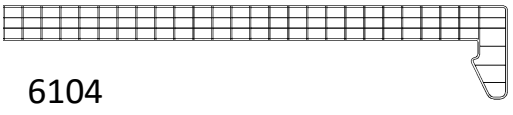

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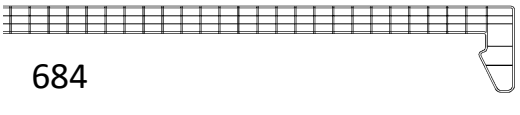


684

GALLINA USA

Polycarbonate systems and sheets

Introduction

This technical book has been developed by our Technical Sales Department, relying on our internal technical expertise.

Our Technical Sales Department department deals with two main responsibilities:

- To develop new innovative systems ;
- To bring its expertise to attend our customers and our technical and sales team in dealing with current complex projects.

Our Technical Sales Department has played a major role in providing the market with innovative polycarbonate systems solutions for over 10 years. For instance, its expertise led to such unprecedented polycarbonate applications as:

- Prada Foundation in Milano.
- Gorky Park Museum in Moscow.
- Multipurpose hall in Cluji.
- "Il Centro" Mall in Arese.
- Protoshop Lamborghini in Sant'Agata Bolognese.
- "Centro Sicilia" Mall in Catania.

Our Technical Sales Department team works in close connection with the various technical departments in CSTB, LNE and GINGER in order to finalise new systems and specific solutions to complex projects falling out from the Technical Certification perimeter.

Index

1 – System definition

ArcoPlus® connectable systems 626 / 6124 / 6104 / 684 are used to create lighting glazing for applications such as cladding or roof "saw tooth". They are made of cellular polycarbonate panels, anti-UV co-extruded on both sides and they can be used without any restriction of width or height. Those systems have specifically designed lateral edges allowing a single clip-on position for aluminium or polycarbonate connectors.

The 626 / 6124 / 6104 / 684 systems can be installed in two ways:

- Standard installation : internal aluminium connectors.
- Reverso installation: external connectors (aluminium or polycarbonate).

The connectable systems can be used for any building type (industrial, air-conditioned offices, schools, hospitals, sport centres, housing, swimming pool,…), would they be heated or not, however not refrigerated. They can be installed with a maximum slope of 15°, including for "saw tooth" application. They can also be installed in any humidity level (high or low) environments (ie: swimming pools).

The arcoPlus® connectable systems do not contribute to the functions of loads transmission, bracing and shock resistance for security purpose (railing function). Those functions are performed by the supporting structure.

Any application falling out from those criteria can be submitted to our technical department to be assessed within a specific analysis.

2 – Thermal expansion

The linear expansion coefficient is 0,065mm/ml/°C. The precise expansion of a panel can be calculated with the following expression: **ΔL= α x L x ΔT°**

ΔL: Thermal expansion;
α= 0.065 mm/m°C;
L= panel's lenght;
ΔT°= estimated temperature in Celsius degrees.

While installing the panels, it is essential to check on the polycarbonate panels covering section (R in mm) of the aluminium profile according to the following chart:

T° C Inst.	Panels' length in meters								
	1	3	5	7	8	10	12	14	16
0°c	20 mm	23 mm	25 mm	27 mm	29 mm	30 mm	31 mm	33 mm	37 mm
15°c	22 mm	26 mm	31 mm	35 mm	39 mm	41 mm	44 mm	47 mm	53 mm
30°c	23 mm	30 mm	36 mm	42 mm	48 mm	53 mm	56 mm	60 mm	70 mm

3 – Technical assistance

The technical assistance and the distribution in Italy and abroad is realized by dottor Gallina srl, based in La Loggia (TO). The company analyse the solution best suited to the project and develop a detailed list of panels, profiles and accessories required for the installation. Even though dottor Gallina does not install, the company can attend the beginning of the implementation and provide advices at customer request.

4 – Panels specifications/treatments

	626	6124	6104	684
Width (mm)	600±2	600±2	600±2	600±1
Thickness (mm)	20	12	10	8
AR	√	√	√	√
IR	√	√	√	√
Bi-coloured	√	√	√	√
UV Tech	√	√	√	√
UV Matt	√	√	√	√
AG	√	√	√	√

AR : Anti-glare treatment (visual comfort, prevent from neon effect)
IR : Infrared treatment (prevent from heat increase within the building)
UV Tech : Reinforced UV Protection – 15 years warranty.
UV Matt: Matt finishing treatment (prevent from surface glares, better distribution of the light)
AG: Anti-graffiti and anti-scratch treatment.

Panels are available in various colours, included in our "Caleido" range. Due to extrusion process constraints, a visual difference in colour shade is admitted as long as it does not interfere with the mechanical characteristics of the polycarbonate components. Some treatments like AR (anti-glare) and IR (infrared) can create some shade variations with colour range.

5 – Thermal specifications

	626	6124	6104	684
Uc (W/m².K)	1.7	2.7	3.0	3.3
ψi (W/m.K)	0.16	0.16	0.16	0.16
χk (W/k)	0.005	0.005	0.005	0.005

Uc : Thermal coefficient in the core part of the panel (in between connectors)
ψi et χk : Thermal coefficient alongside the connectors.

6 – Acoustic insulation values

Pannel	Interior	Exterior	Rw (C,Ctr)
626	18 dB(A)	16 dB(A)	19 (-1,-4) dB

Phonic Test according to norms ISO 140-4 and UNI ISO 10140

7 – Optical characteristics

Panel	Colour	Light Transmission (LT) in %	Solar Factor (SF) in %
626	Crystal	58	58
	Opal	33	45
	Green	55	58
	Red	11	49
	Purple	14	51
	Alu Grey	5	5
6124	Crystal	68	36
	Opal	36	48
6104	Crystal	69	66
	Opal	38	49
684	Crystal	70	67
	Opal	42	51

8 – Fire reaction according to EN 13501-1

	626	6124	6104	684
Fire classification	B,s1-d0	B,s1-d0	B,s1-d0	B,s1-d0
Combustible mass (MJ/m²)	80	74	70	58

9 – Resistance to chemical agents

The polycarbonate has good resistance to most chemicals with which it is likely to come into contact during normal use. Specific tests are recommended for applications where the material is likely to come into contact with aggressive chemicals. It is essential to verify their compatibility prior to use. Below some examples:

Chemical agents	Resistance
Diluted acids	Good
Concentrated acids	Average to good
Alkali	Low to average
Organic solvents – alcohol	Good
Chlorinated hydrocarbons	Low
Aromatic hydrocarbons	Low
Aliphatic polycarbons	Low
Lubricating oils	Good
Detergents	Good

10 - Storage

arcoPlus® systems should be stored avoiding exposure to direct sunlight and rain. Should storage be outside, it should not be directly in contact with the ground (a ventilation space must be kept) and should be protected with a light coloured non-transparent tarpaulin.

To avoid oxidation, untreated aluminium profiles should be unpacked straight away after unloading to avoid any contact with potential residual humidity within the package, and stored in a dry environment. In any case, untreated aluminium profiles should not be kept in contact of each other in a humid environment.

Do not store more than two pallets on top of each other.

In case of heavy wind, use straps.

11 - Maintenance

ArcoPlus® panels should be frequently cleaned with mild soapy water (neutral detergent) and thoroughly rinsed with clear water. Do not use warm water.

Do not use organic solvents, abrasive or alkaline products.

12 – How to replace a damaged panel?

12.1- Traditional installation cladding (connectors inside)

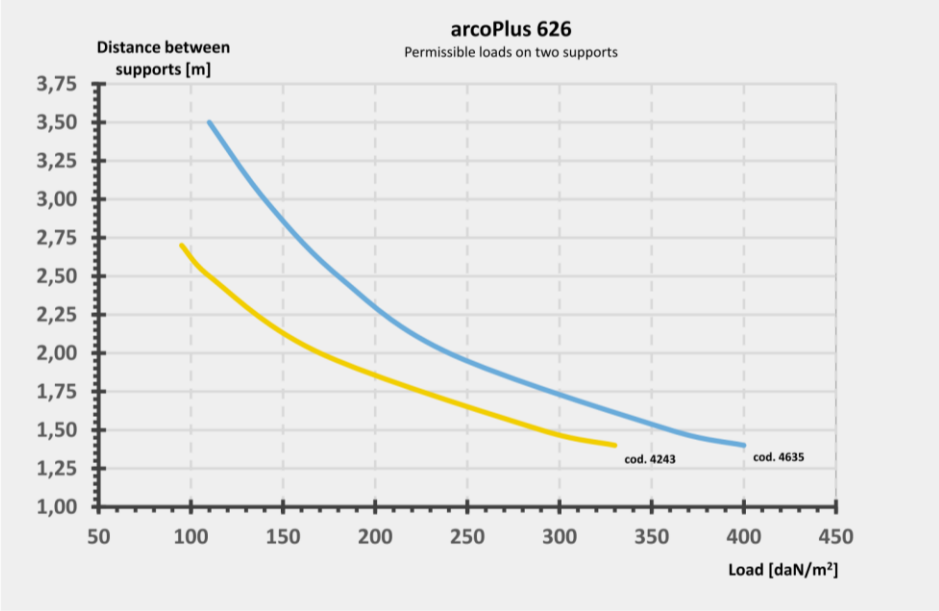
1. Remove the epdm gasket.
2. Unclip the frontal opening aluminium profile.
3. Using a portable grinder with a diamond disc, cut the damaged panel carefully, alongside the connector.
   A guide could be used in order to protect the other panels against any damage.
   Then unclip the weakened panel.
4. Starting from the bottom, install the replacement panel.
5. Put back in place the frontal opening aluminium profile, and finally clip back the epdm gasket on.

12.2 – Reversò installation cladding (connectors outside)

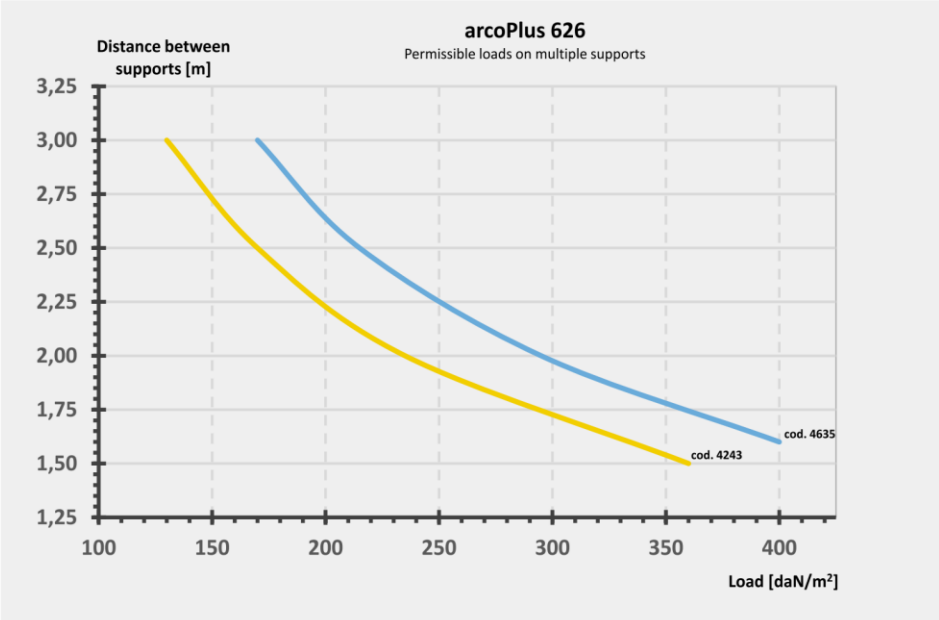
1. Starting from the bottom, unclip the connector.
2. Starting from the bottom, push the panel from the inside to the outside of the building in order to remove the panel from its fixing halters.
3. Slightly bend the edge of the fixing halters (cod. 4328, 4355, 4350 or 4326).
4. Put the new panel in place.
5. Put the fixing halters back in place using a hammer.
6. Clip the connector back on.

13 – Permissible loads.

626 – Permissible loads on two supports – standard installation.

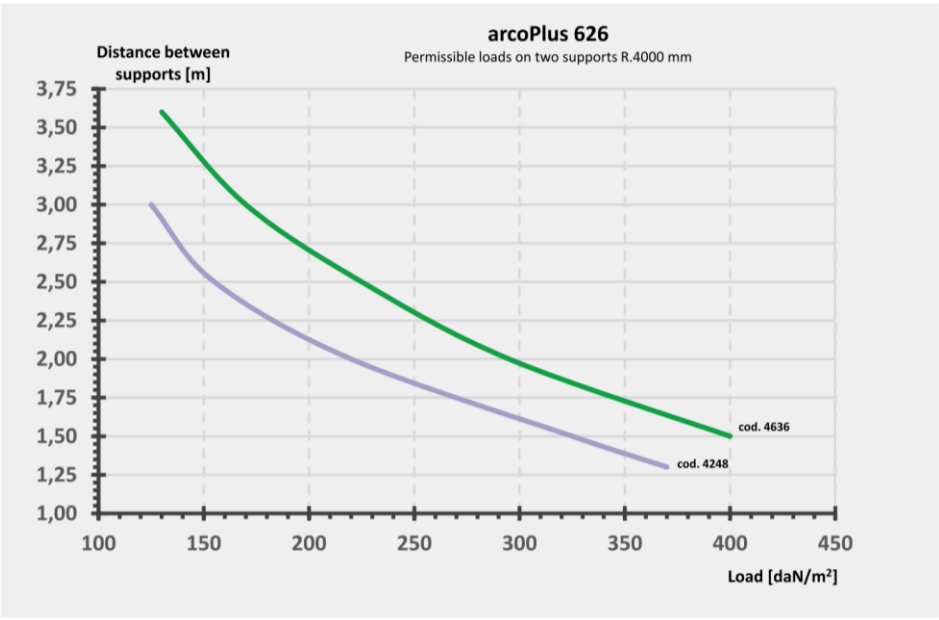


626 – Permissible loads on multiple supports – standard installation.



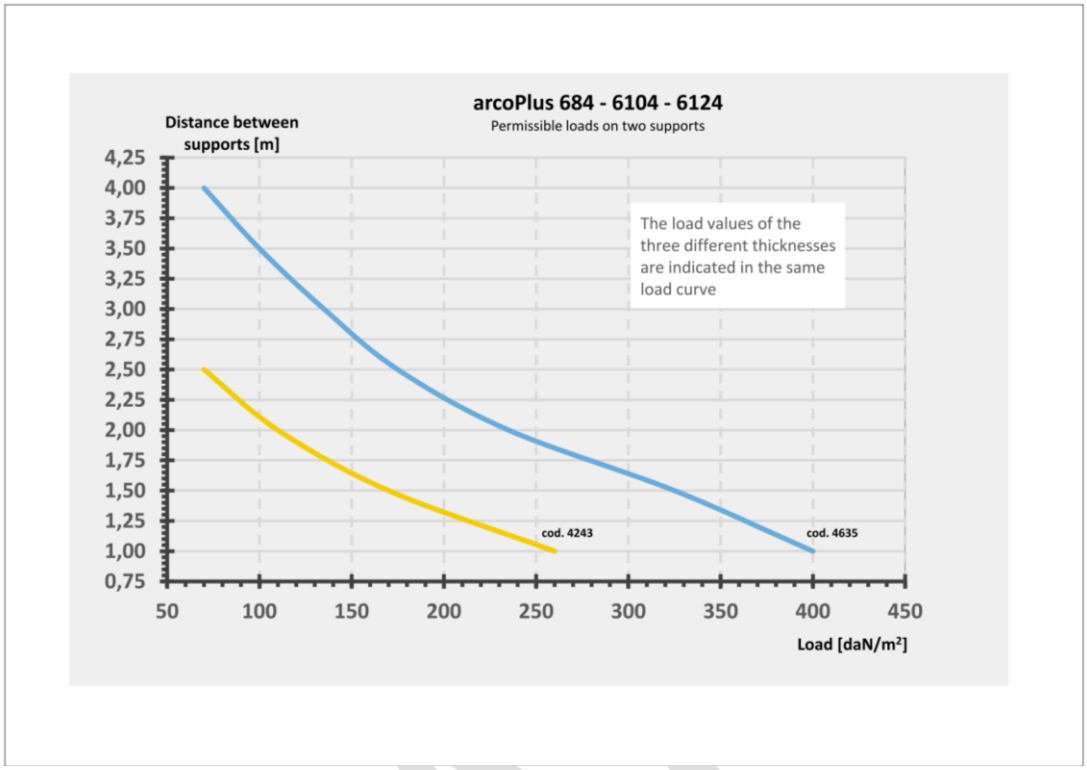
The permissible load for a specific distance between the supports can be calculated by interpolation between the x-axis value and the y-axis value.

626 curved – Permissible loads on two supports – R=4000 mm

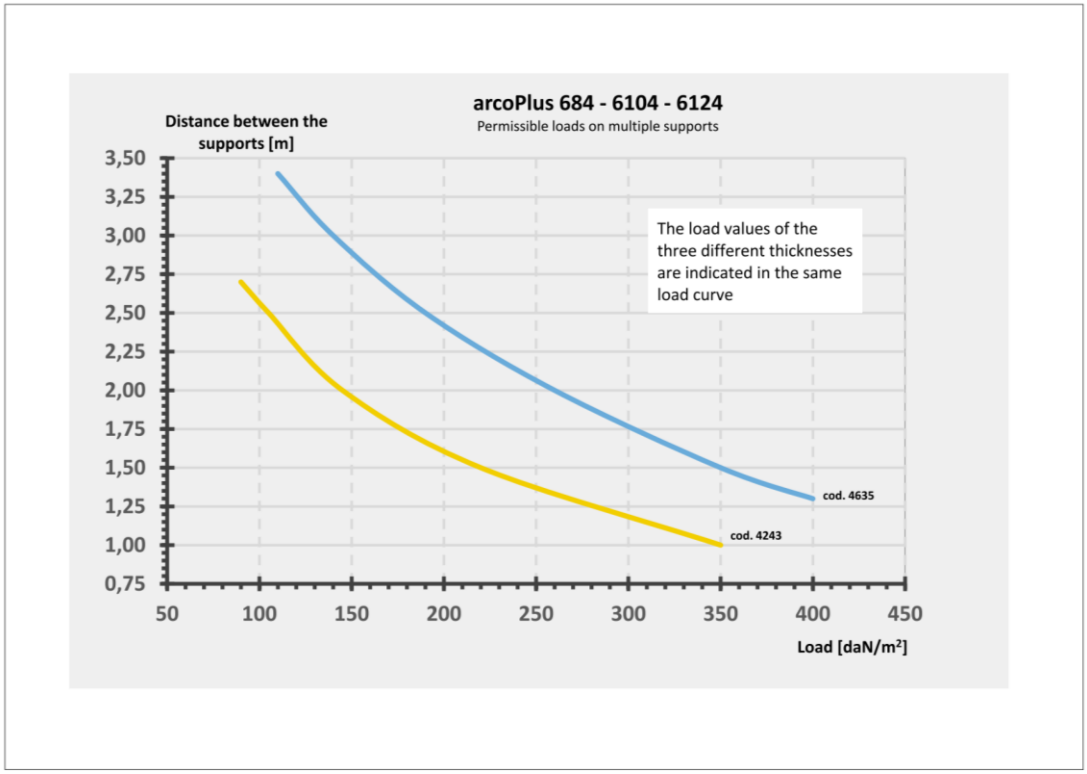


The permissible load for a specific distance between the supports can be calculated by interpolation between the x-axis value and the y-axis value.

684-6104-6124 – Permissible loads on two supports – standard installation.

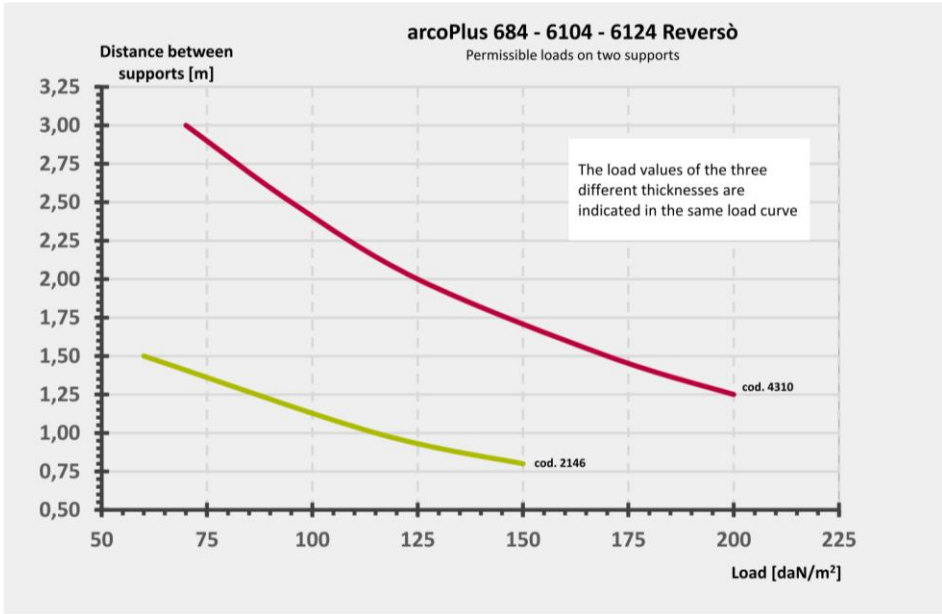


684-6104-6124 – Permissible loads on multiple supports – standard installation.

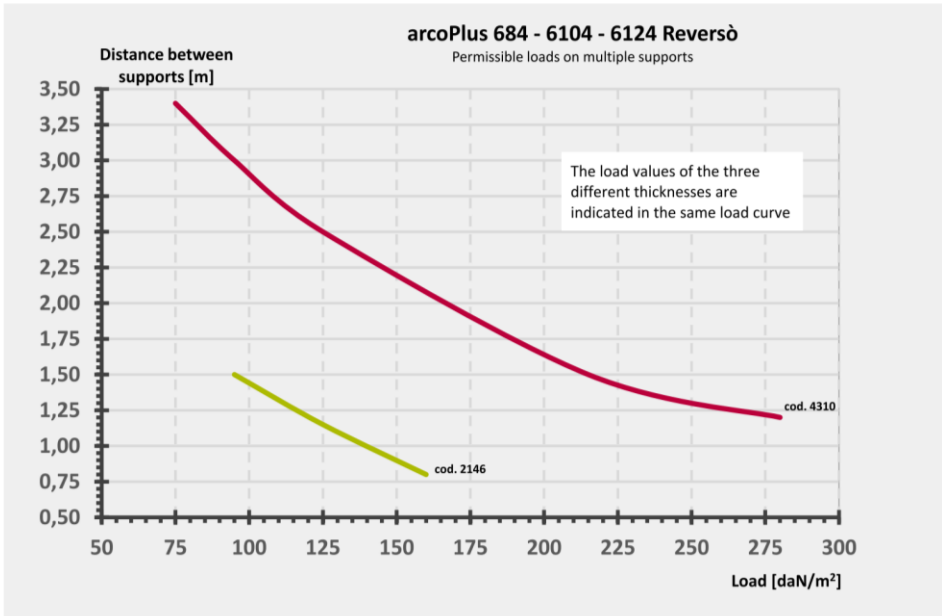


The permissible load for a specific distance between the supports can be calculated by interpolation between the x-axis value and the y-axis value.

684-6104-6124 – Permissible loads on two supports – Reversò installation.

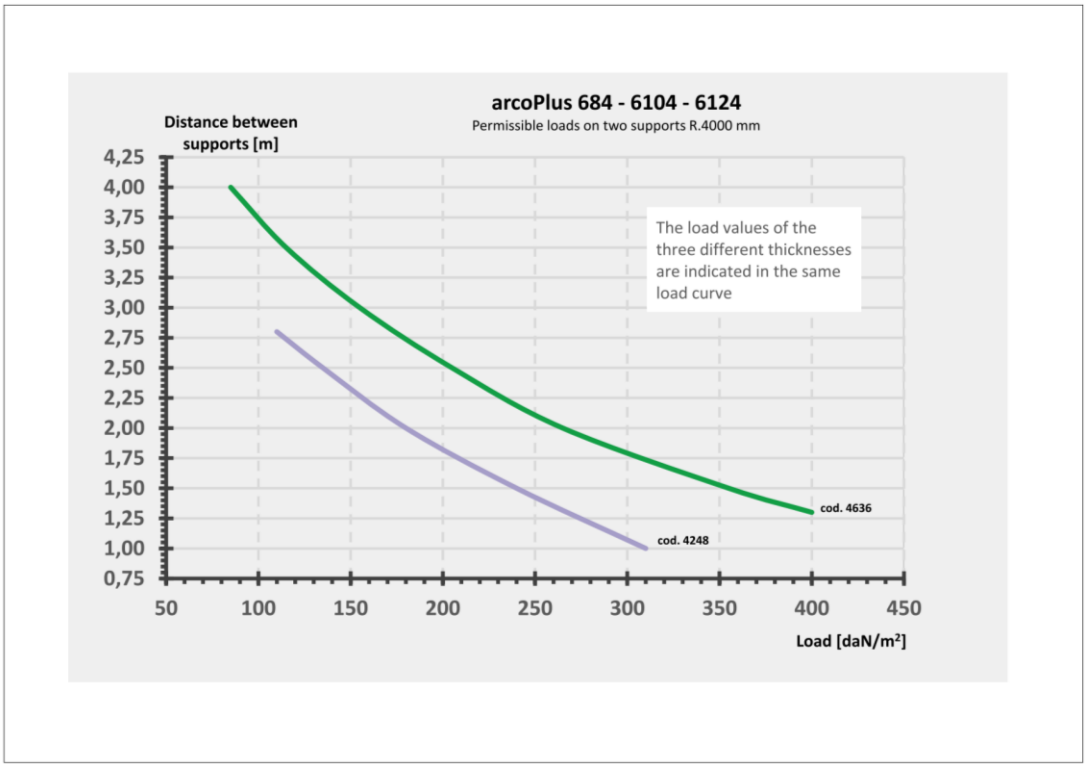


684-6104-6124 – Permissible loads on multiple supports – Reversò installation.



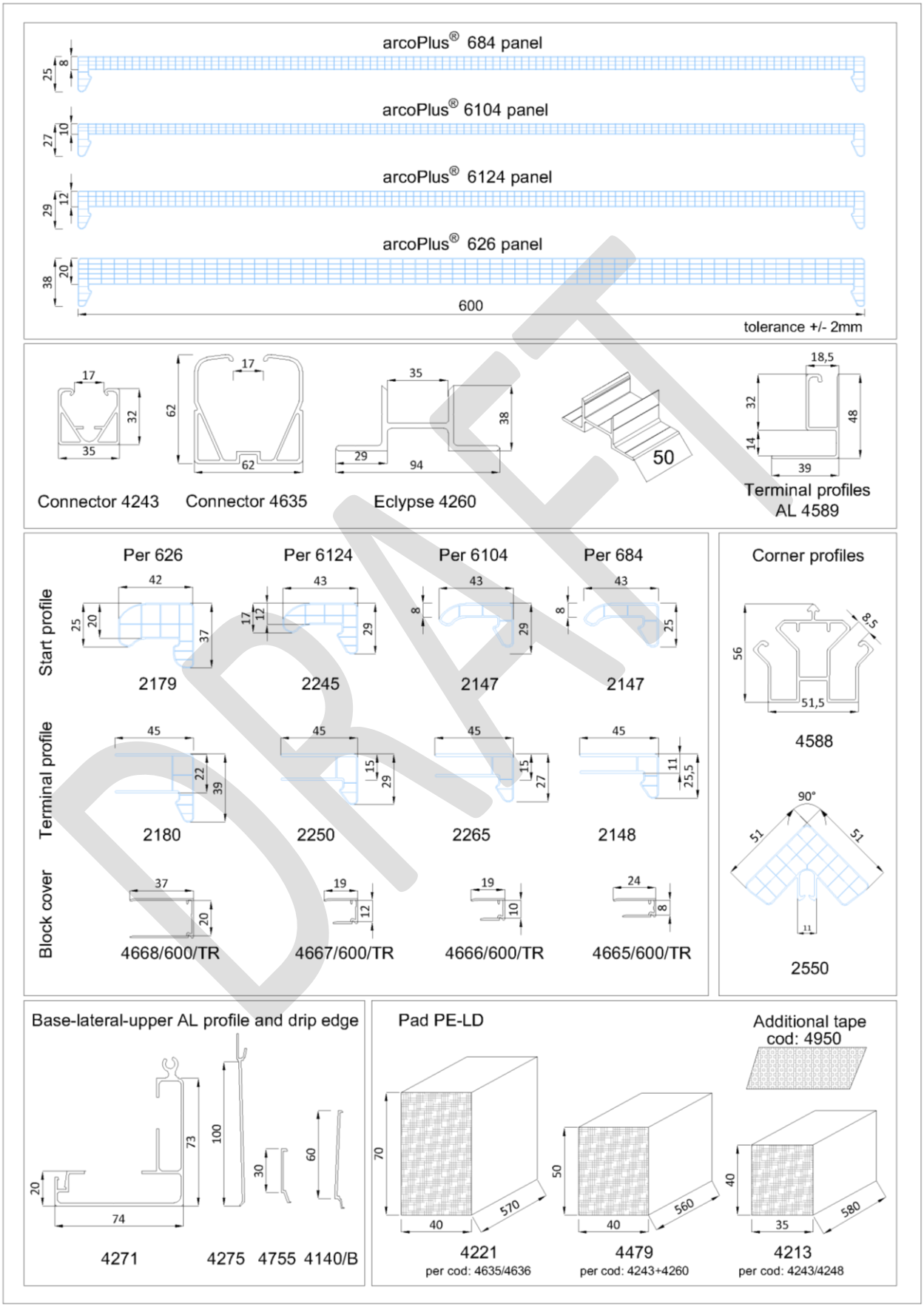
The permissible load for a specific distance between the supports can be calculated by interpolation between the x-axis value and the y-axis value.

684-6104-6124 – Permissible loads on two supports – R=4000 mm.

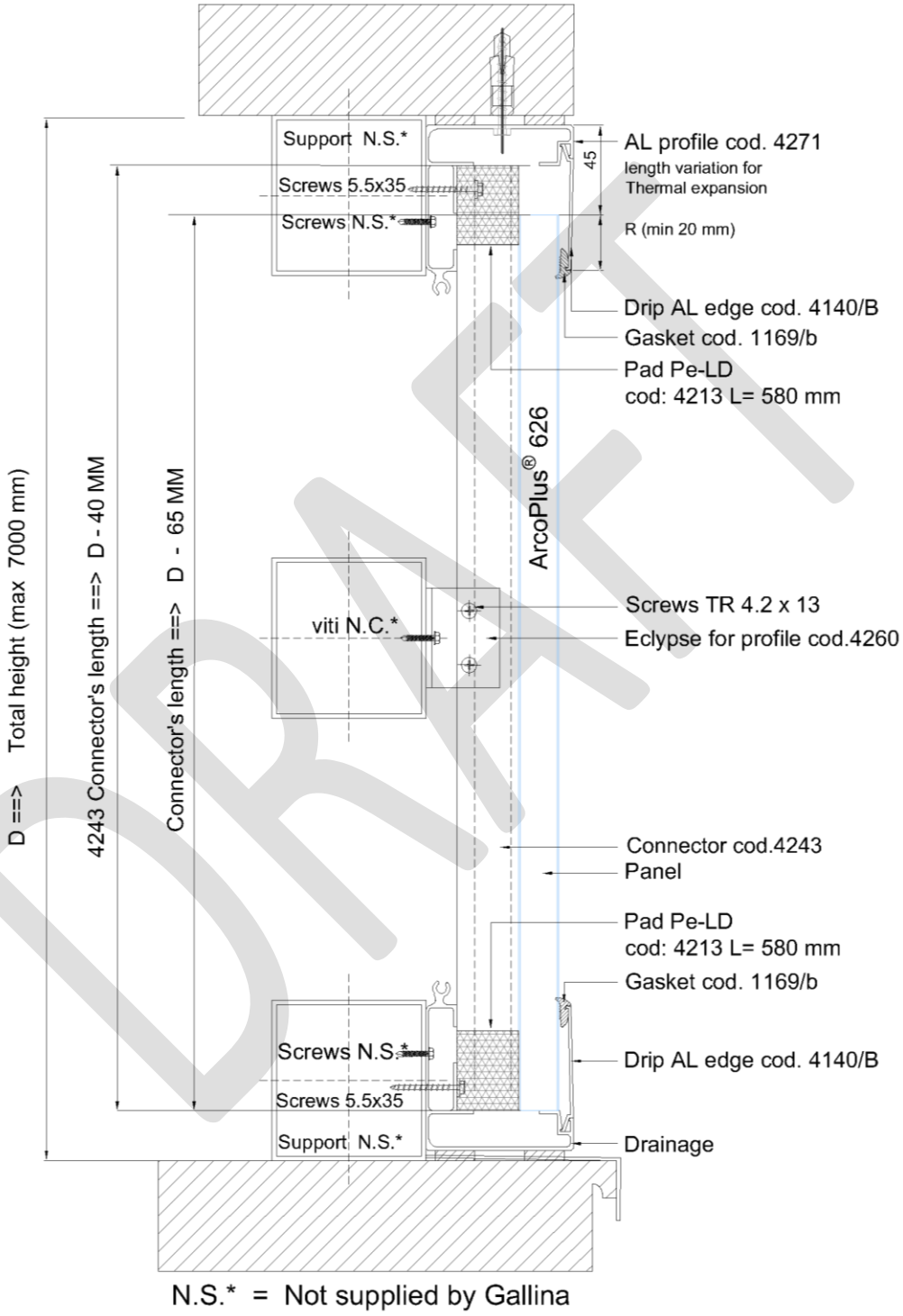


The permissible load for a specific distance between the supports can be calculated by interpolation between the x-axis value and the y-axis value.

arcoPlus® Panels , Connectors, Profiles and Accessories

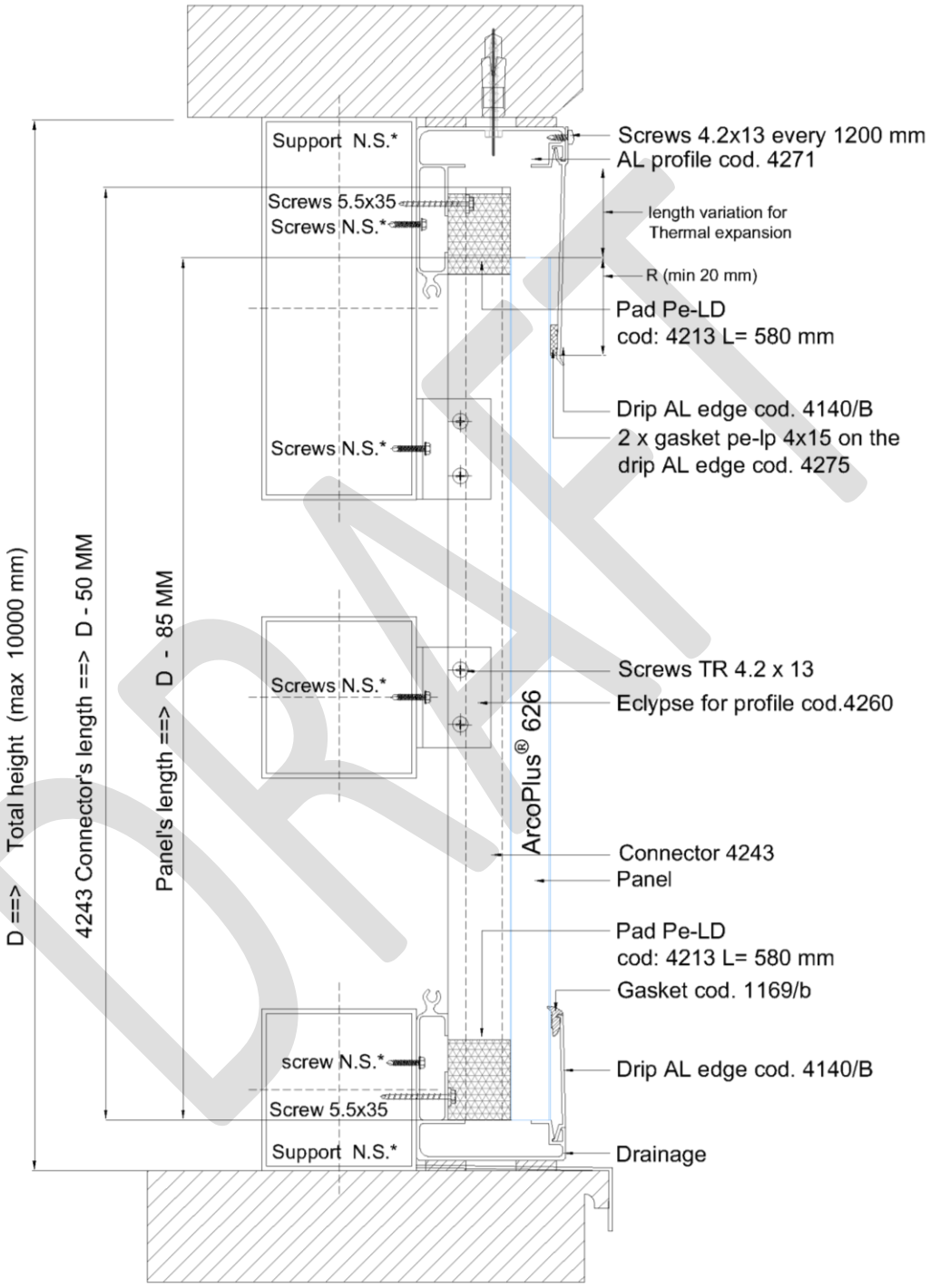


Vertical section with aluminium profiles cod. 4271 e 4140
Height from 0 to 7000 mm



N.S.* = Not supplied by Gallina

Vertical section with aluminium profiles cod. 4271 e 4140
Height from 0 to 10000 mm



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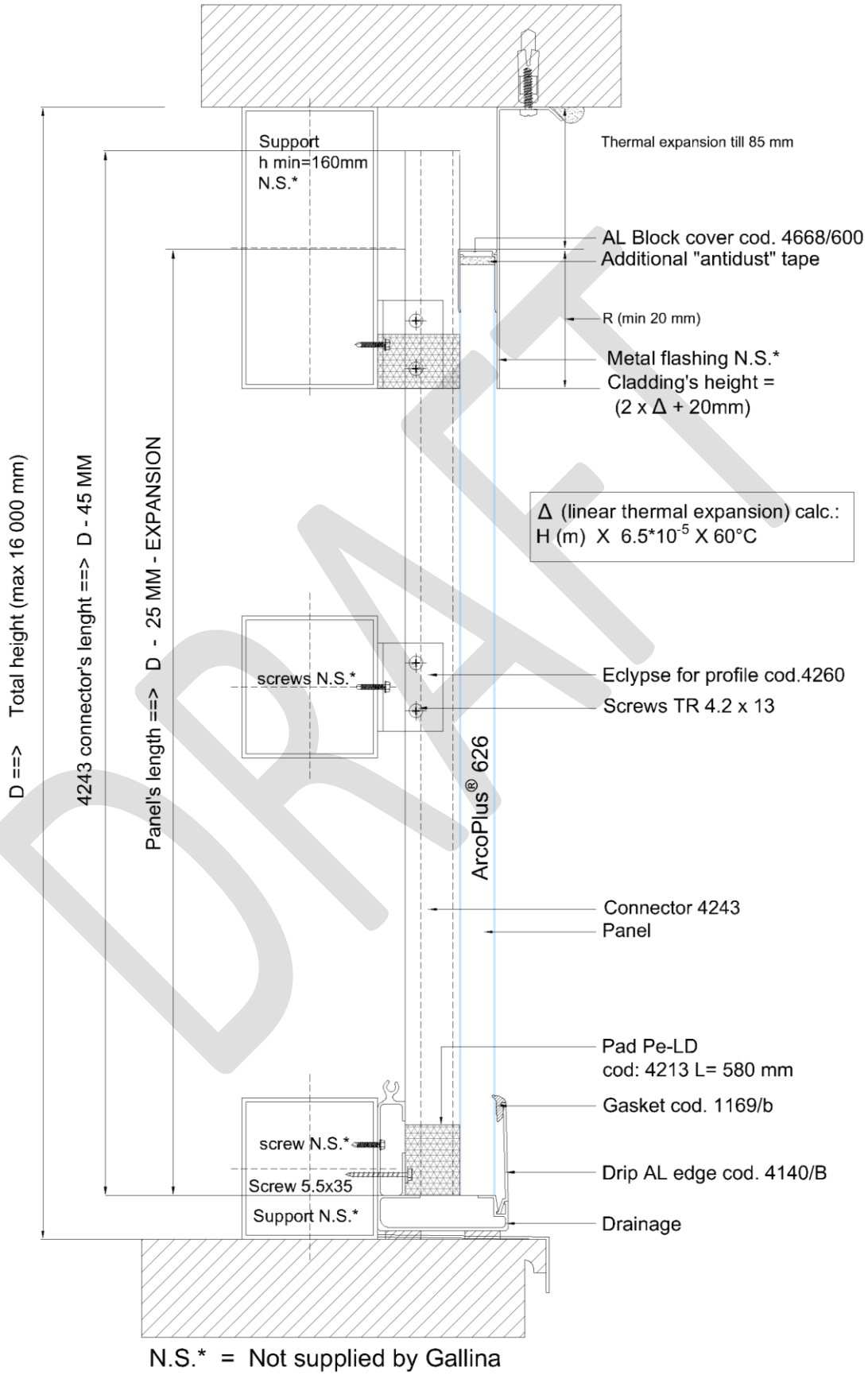
Vertical section with aluminium profiles cod. 4271 e 4140

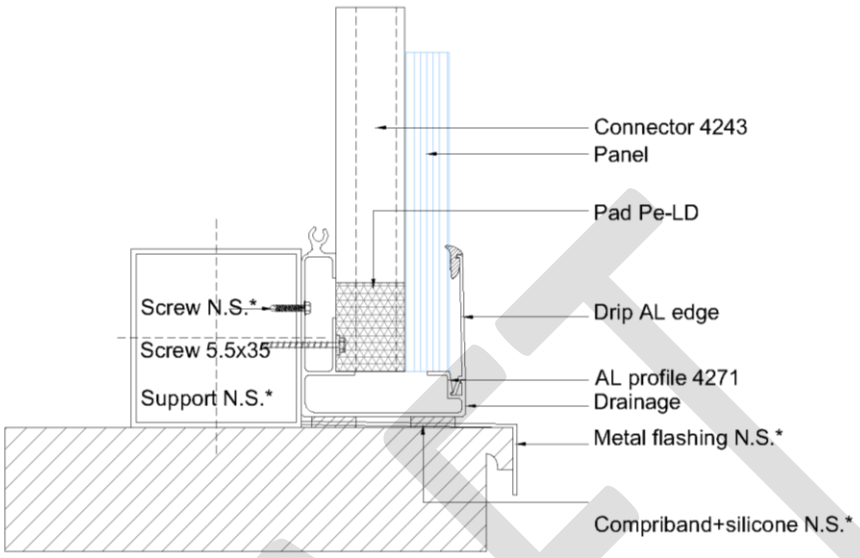
Height from 0 to 16000 mm



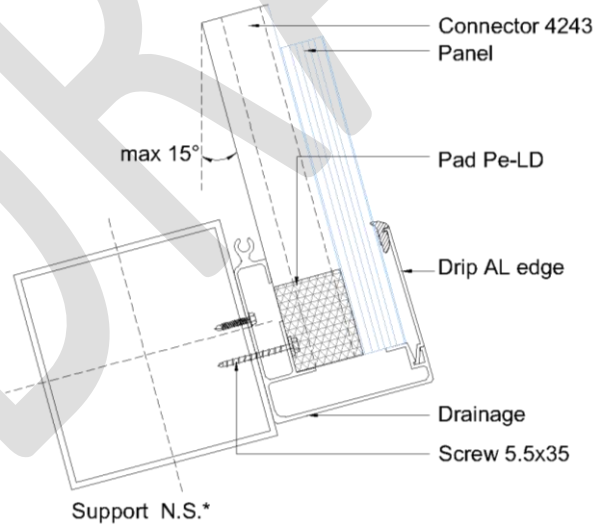
N.S.* = Not supplied by Gallina

Drainage hole's detail: diameter 8mm every 500 mm

Vertical cladding



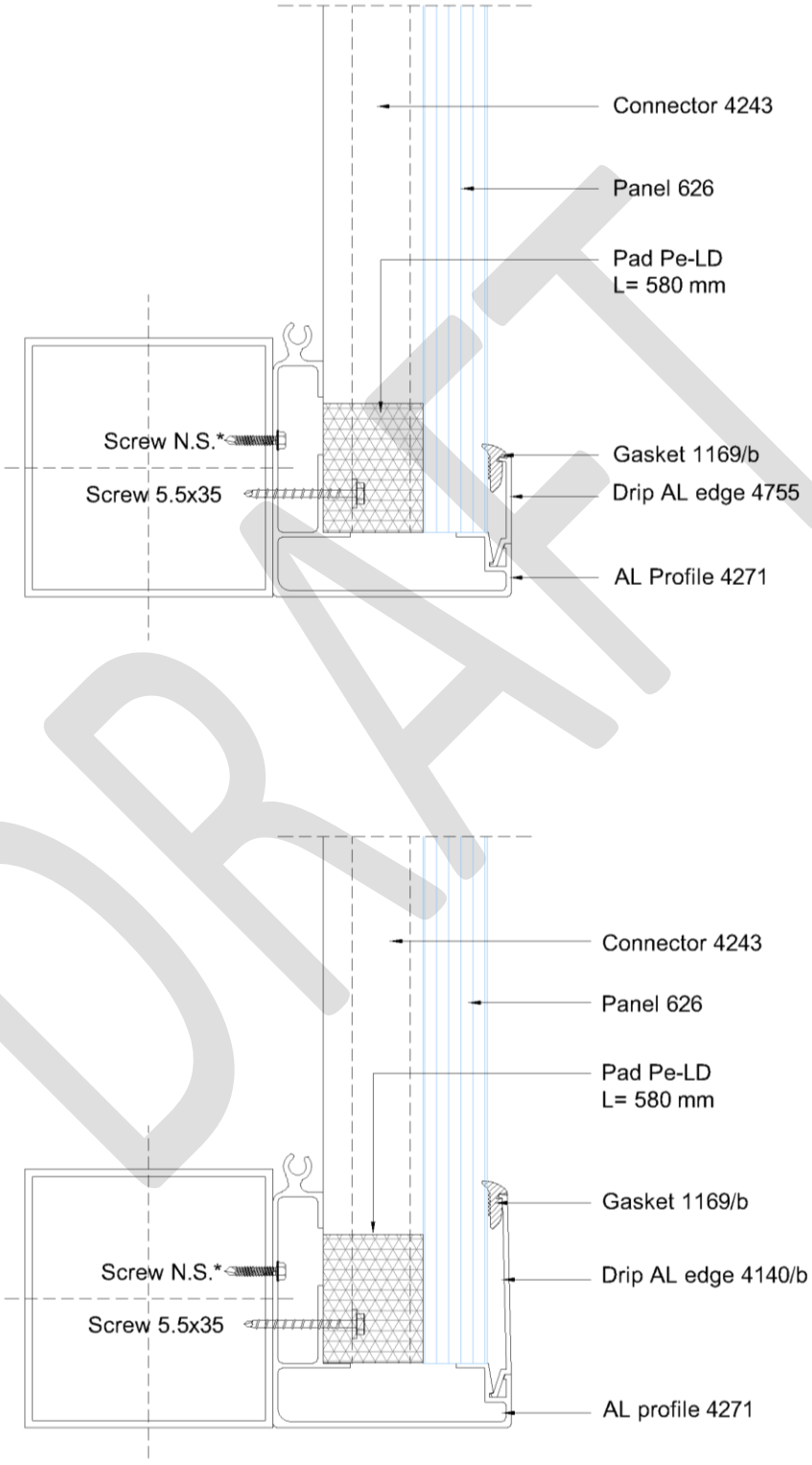
Inclined cladding



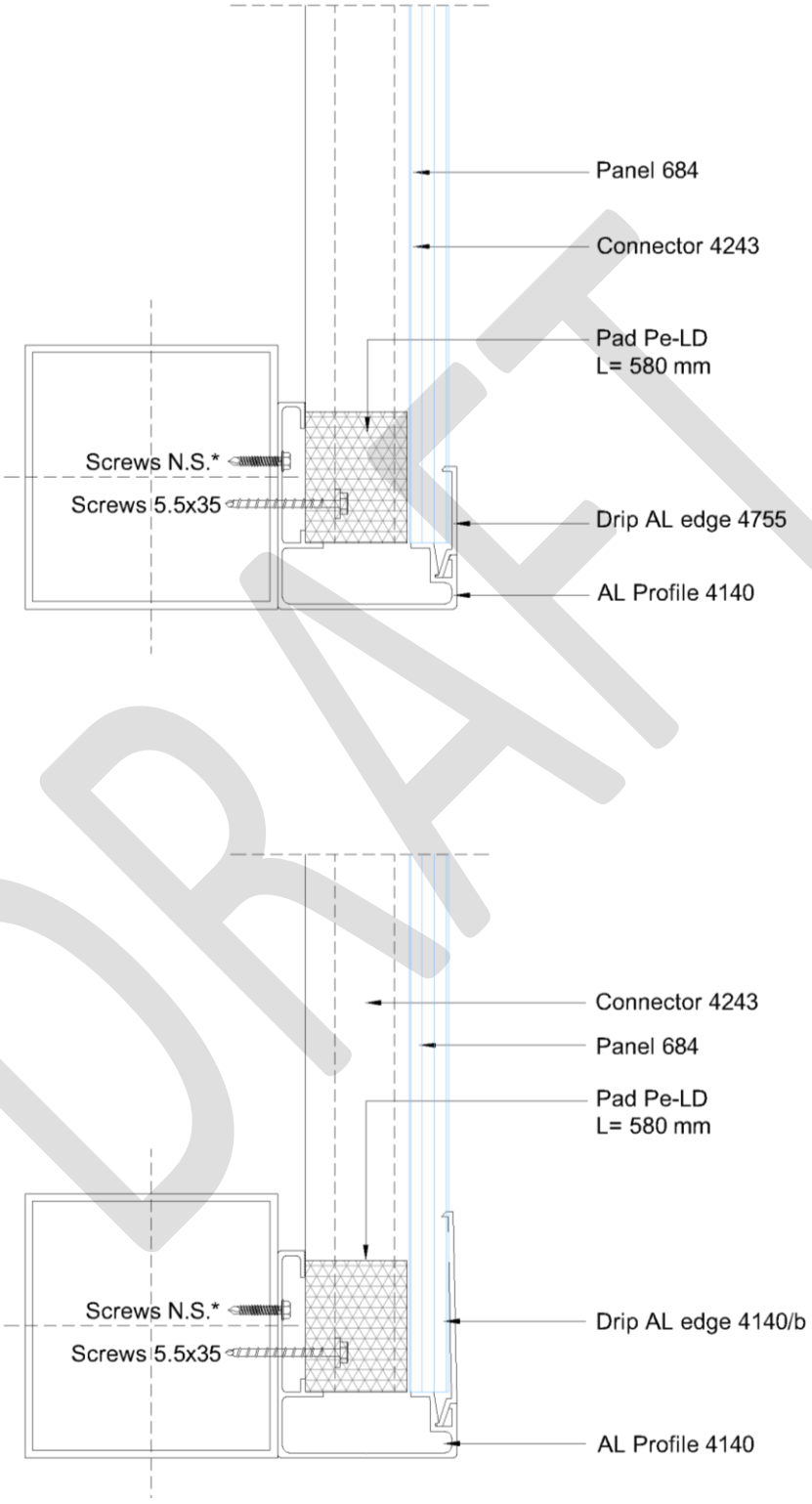
N.S.* = Not supplied by Gallina

Installation of the frontal opening aluminium bottom profiles

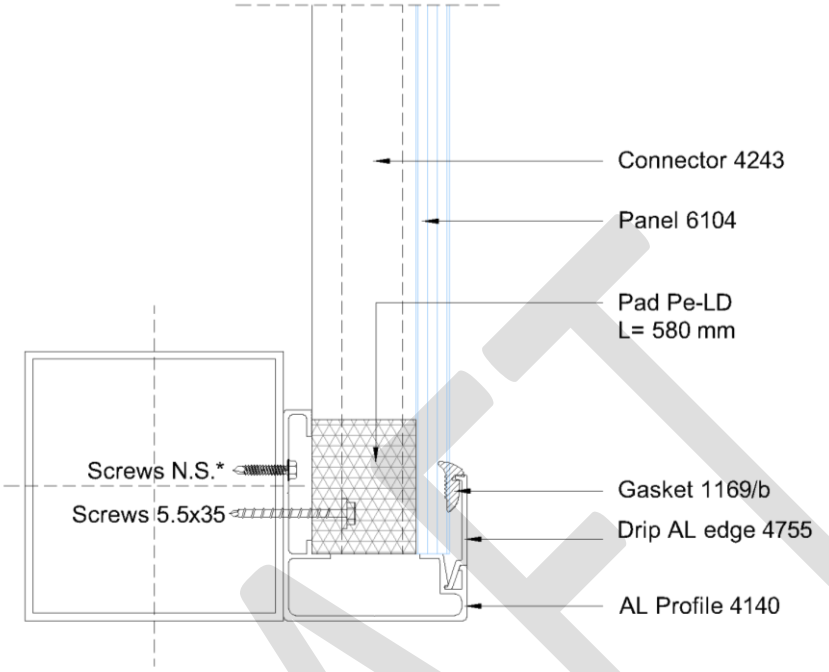
ArcoPlus® 626

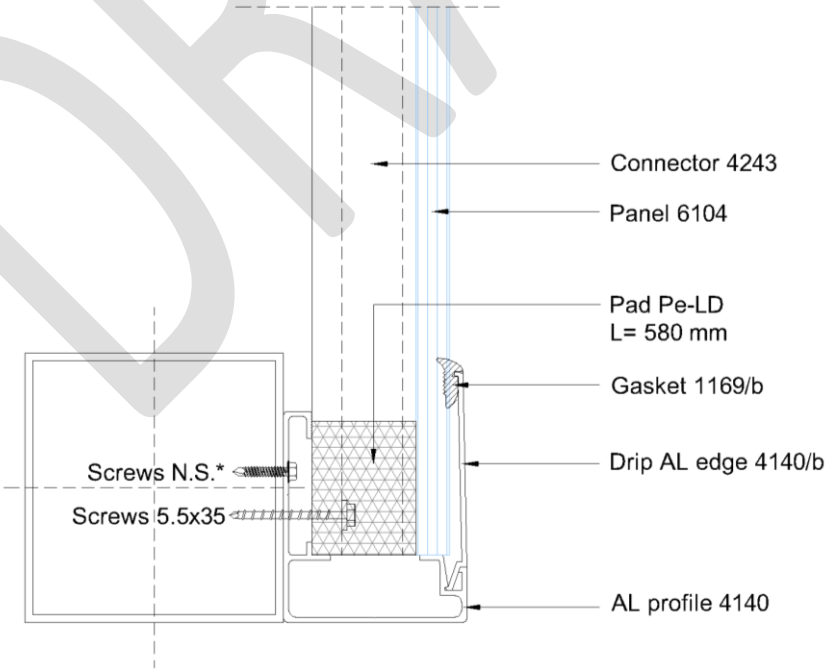


ArcoPlus® 6124

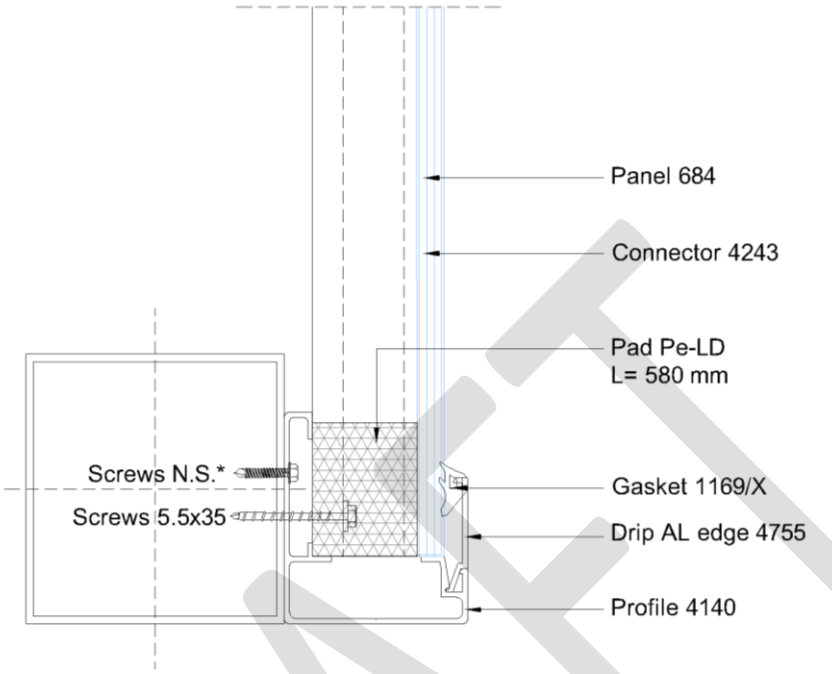


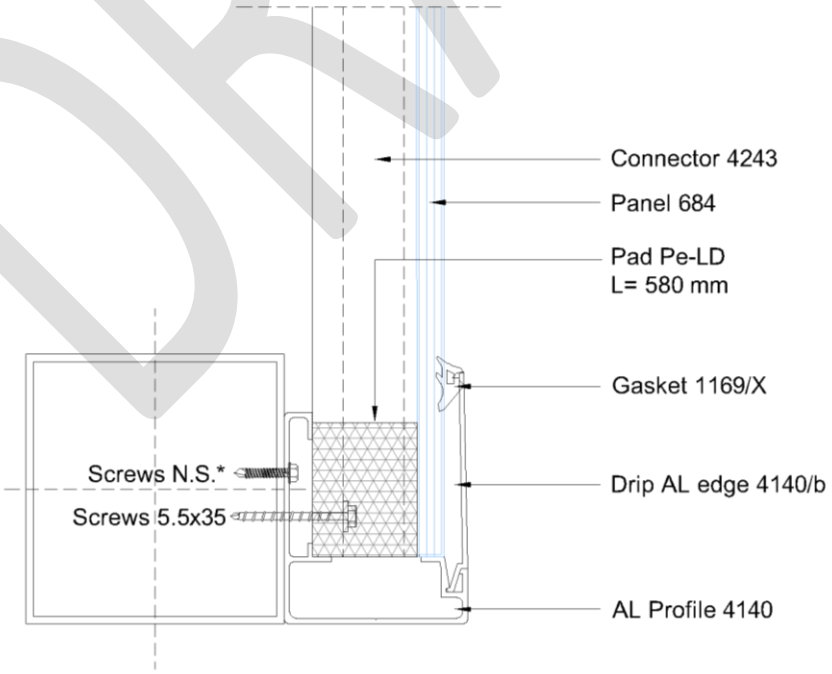
ArcoPlus® 6104





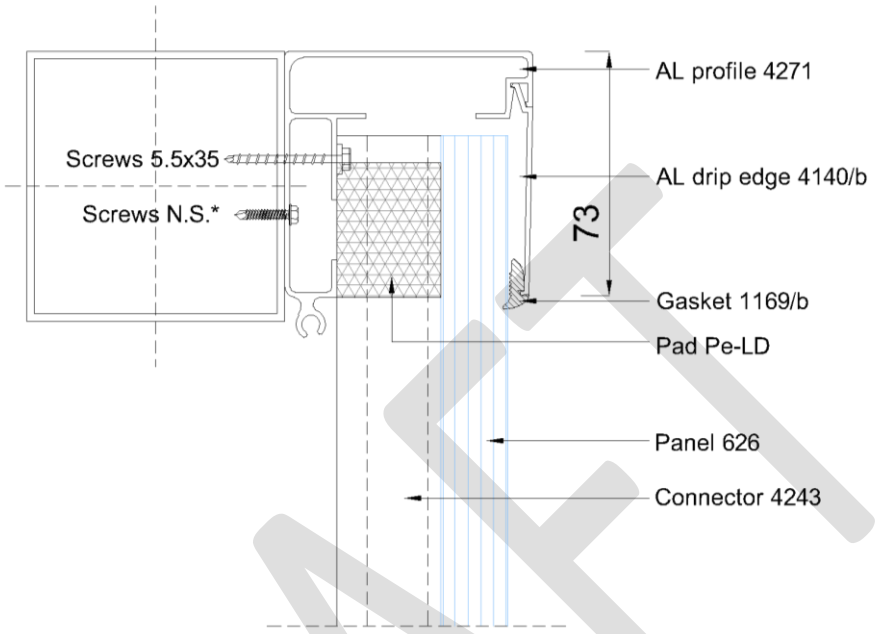
ArcoPlus® 684



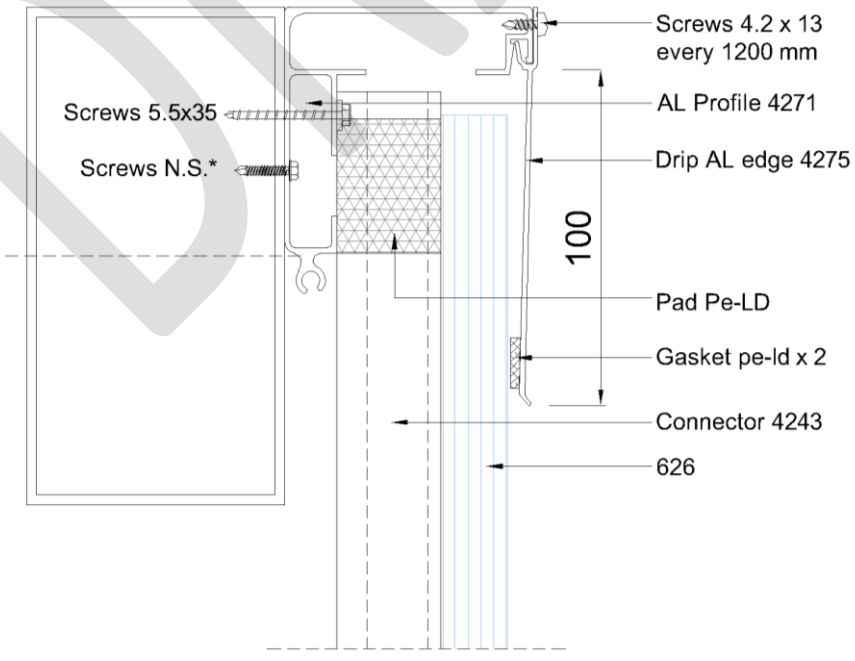


Installation of the frontal opening aluminium top profiles

ArcoPlus® 626 (from 0 to 7m)

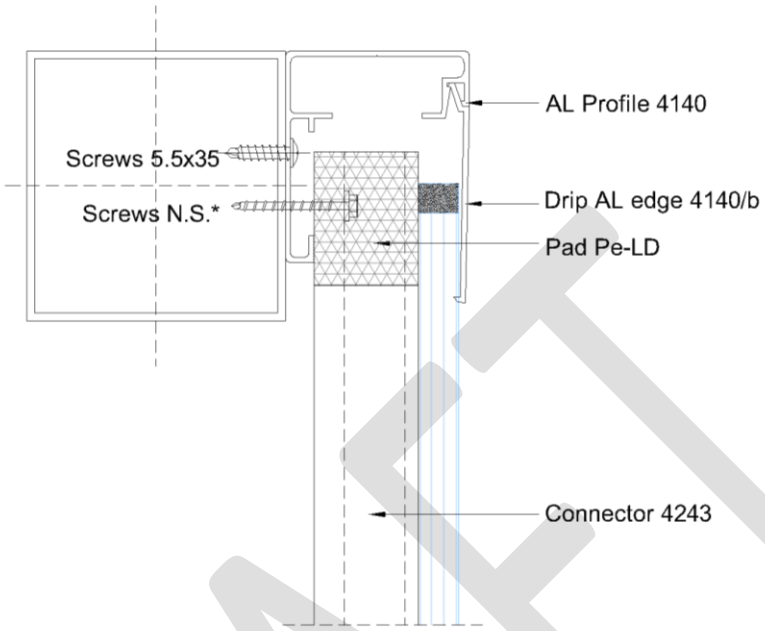


ArcoPlus® 626 (from 0 to 10m)



N.S.* = Not supplied by Gallina

ArcoPlus® 6124 (from 0 to 7m)



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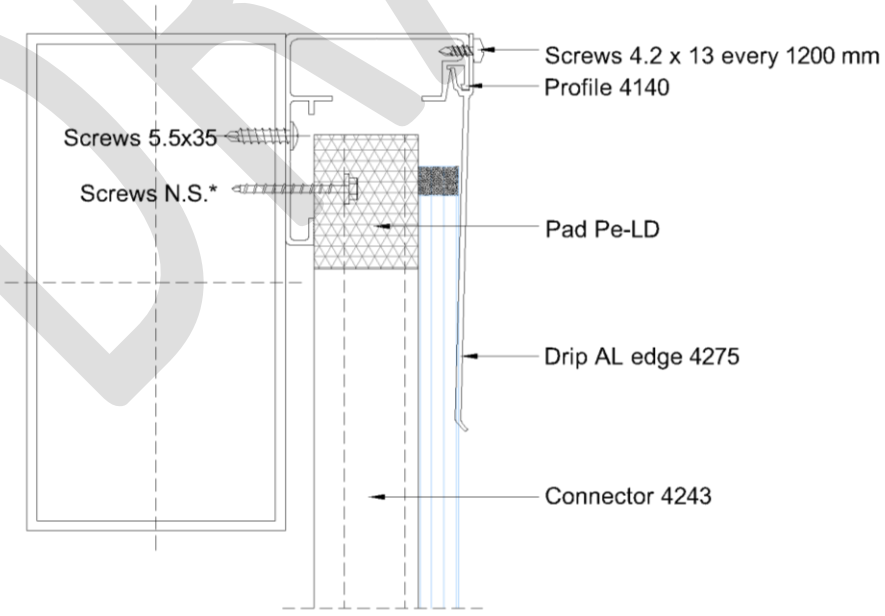

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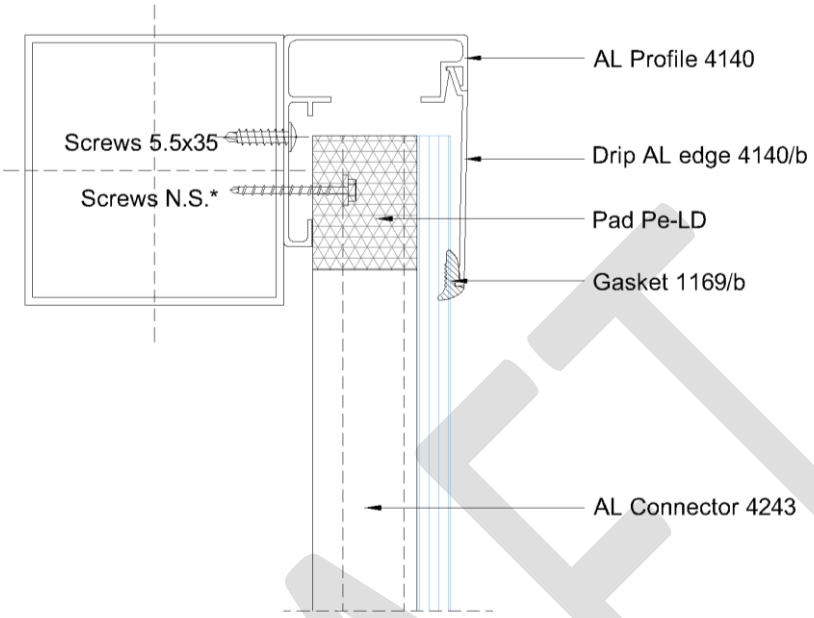
ArcoPlus® 6104 (from 0 to 7 m)



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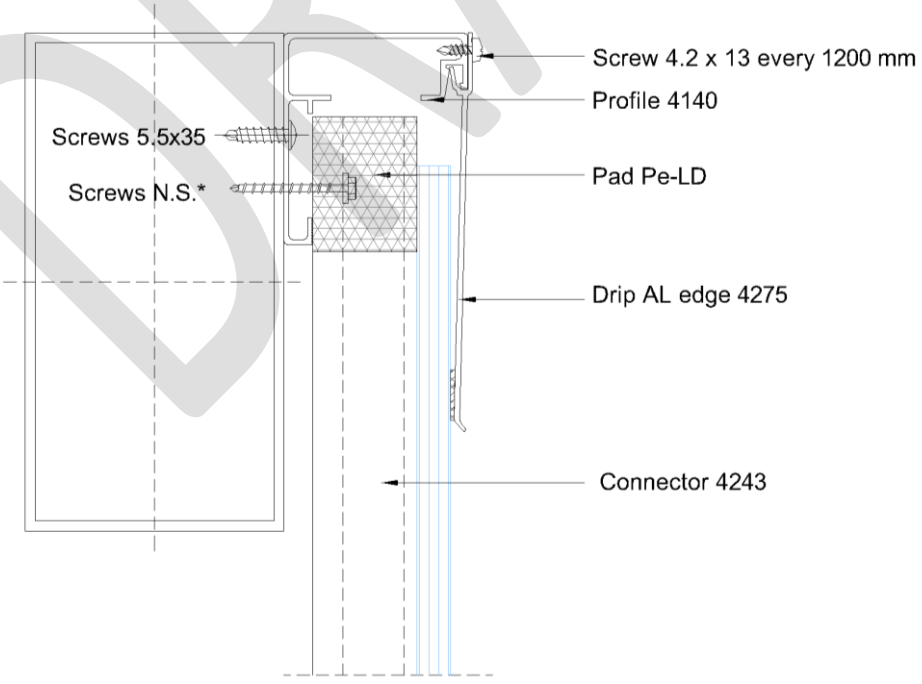

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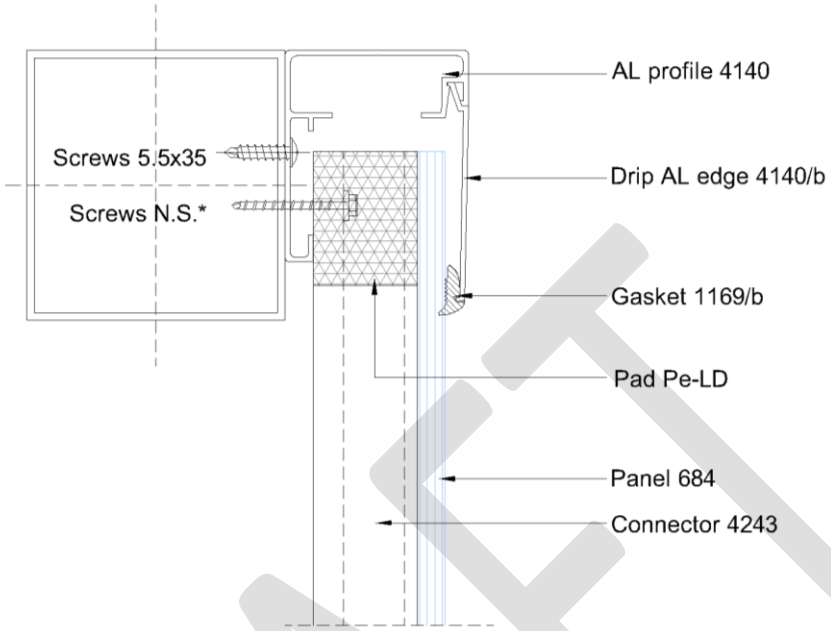
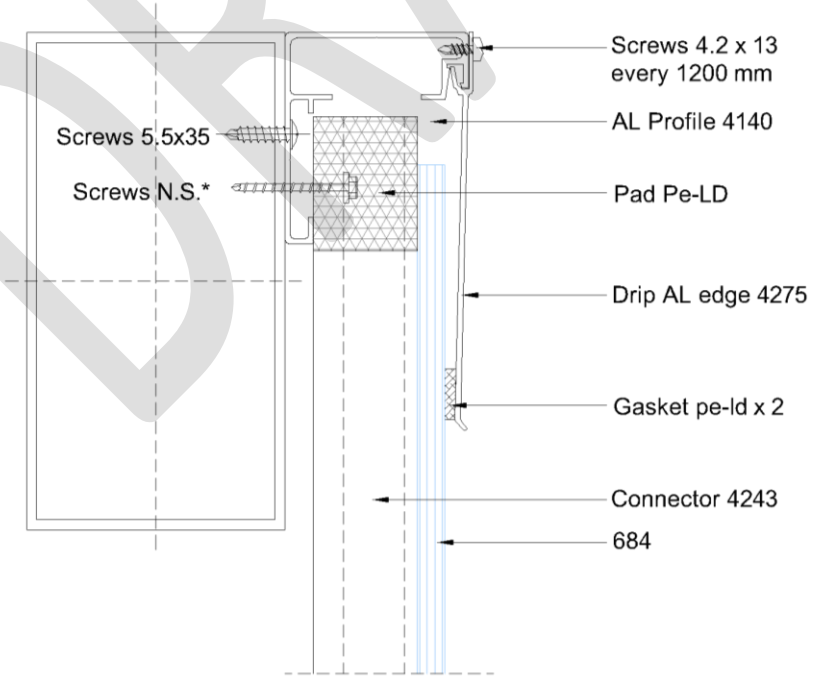
ArcoPlus® 684 (from 0 to 7 m)



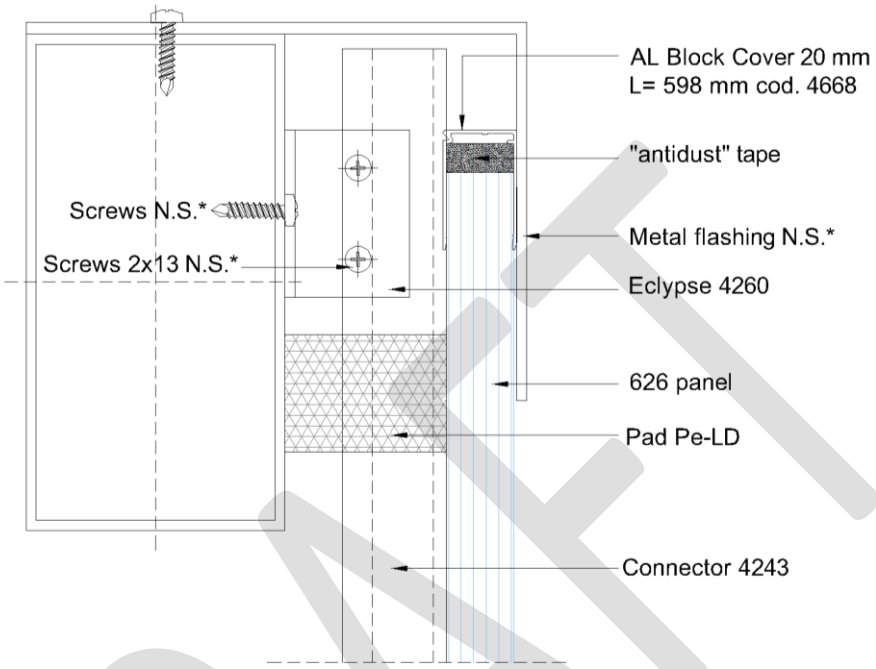
ArcoPlus® 684 (from 0 to 10 m)



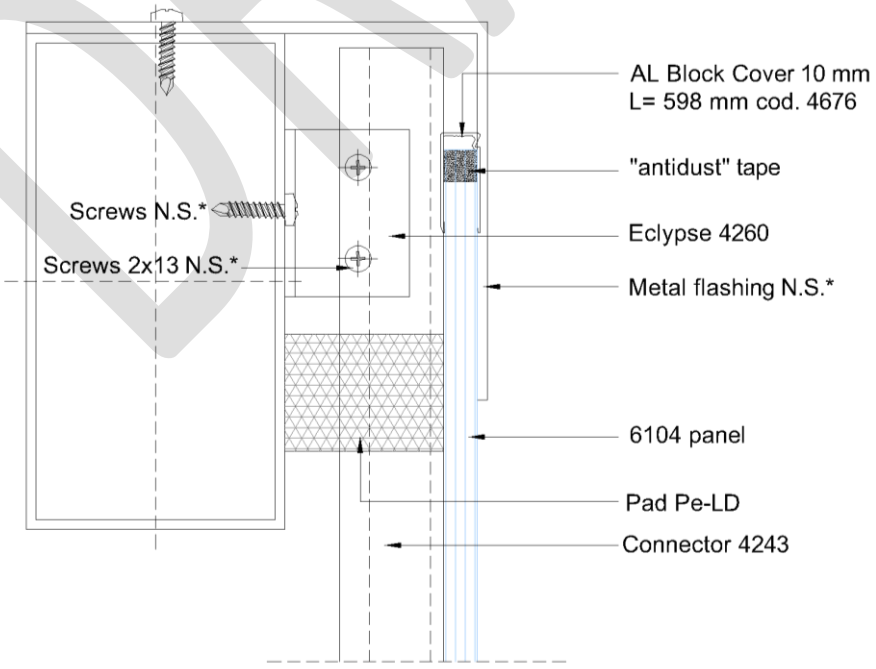
N.S.* = Not supplied by Gallina

Detail of the metal flashing for the cladding's top closing (height from 0 to 16m)

ArcoPlus® 626

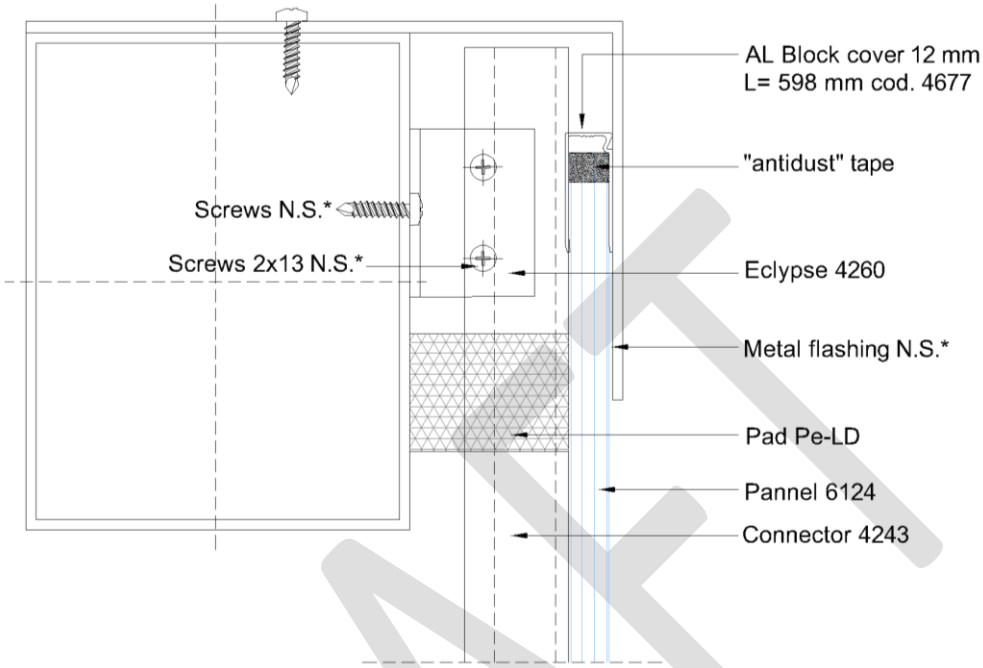


ArcoPlus® 6104

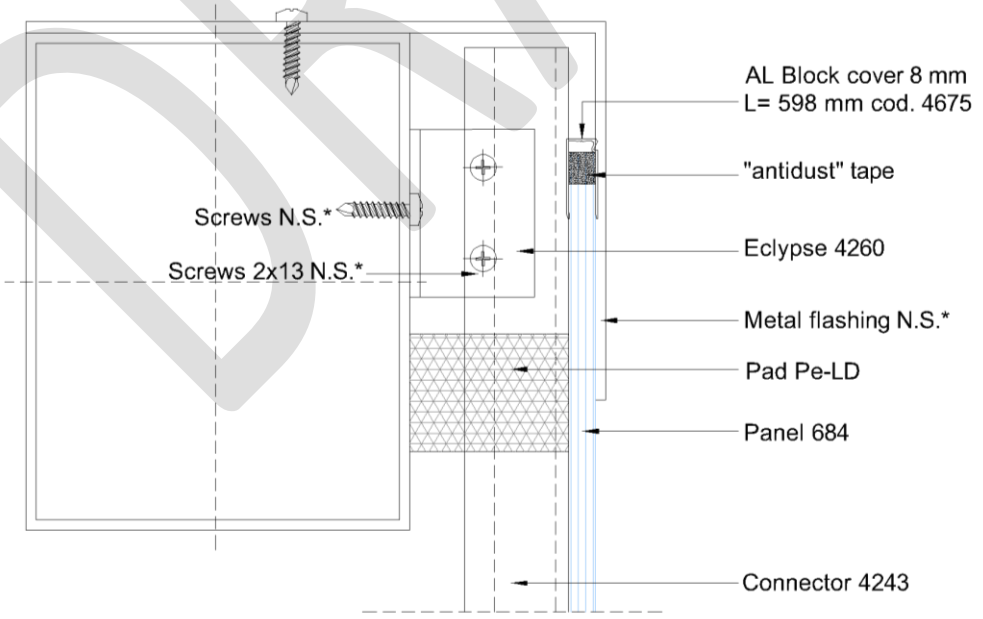


N.S.* = Not supplied by Gallina

ArcoPlus® 6124

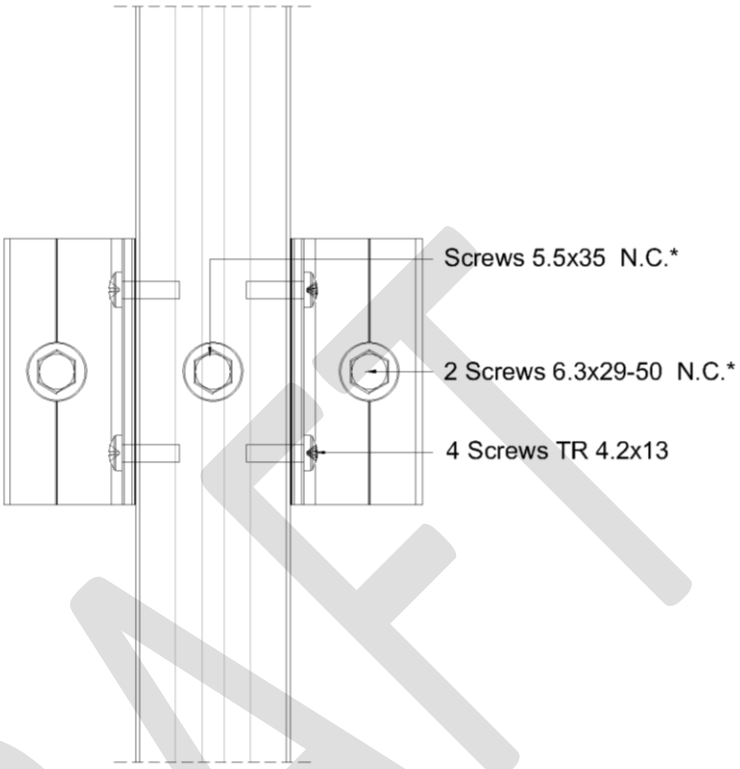


ArcoPlus® 684



N.S.* = Not supplied by Gallina

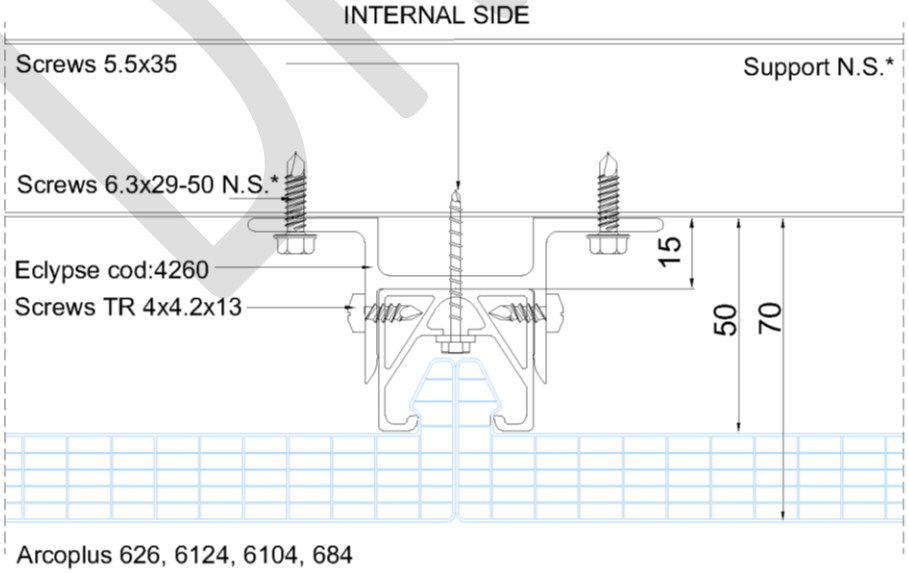
Detail of the eclypse + connector – horizontal section



Eclypse + Connector view

Horizontal section on the support

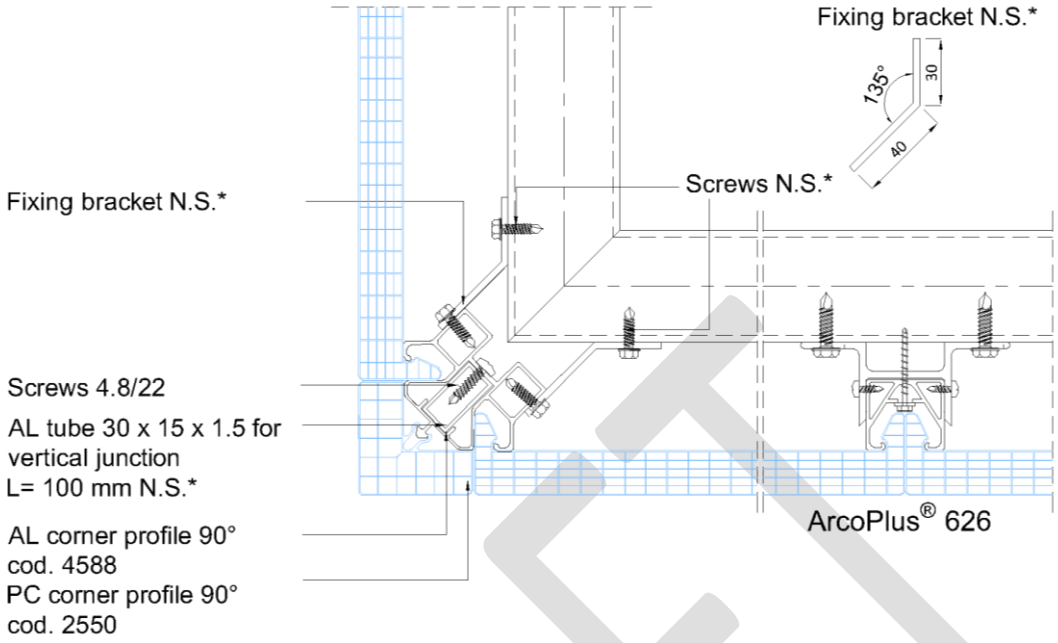
INTERNAL SIDE

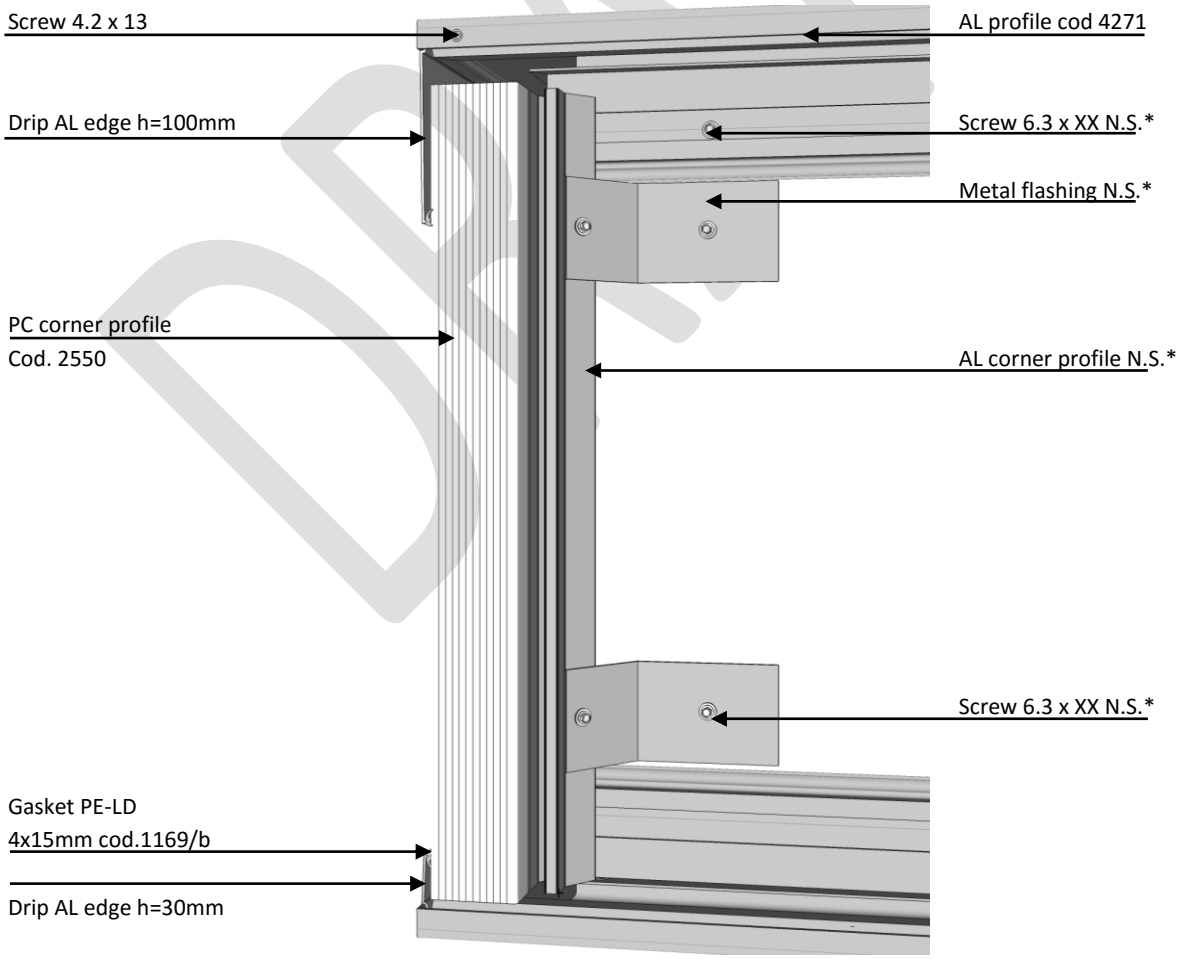


Arcoplus 626, 6124, 6104, 684

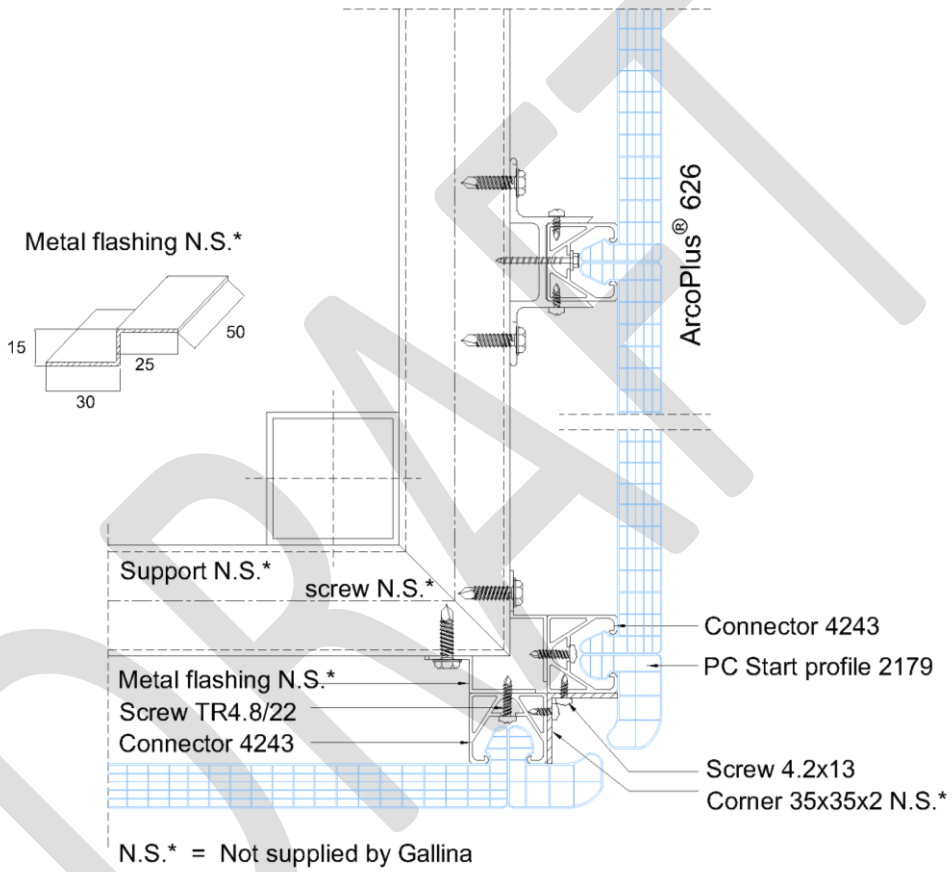
N.S.* = Not supplied by Gallina

90° corner with aluminium profiles cod. 2550 et 4588

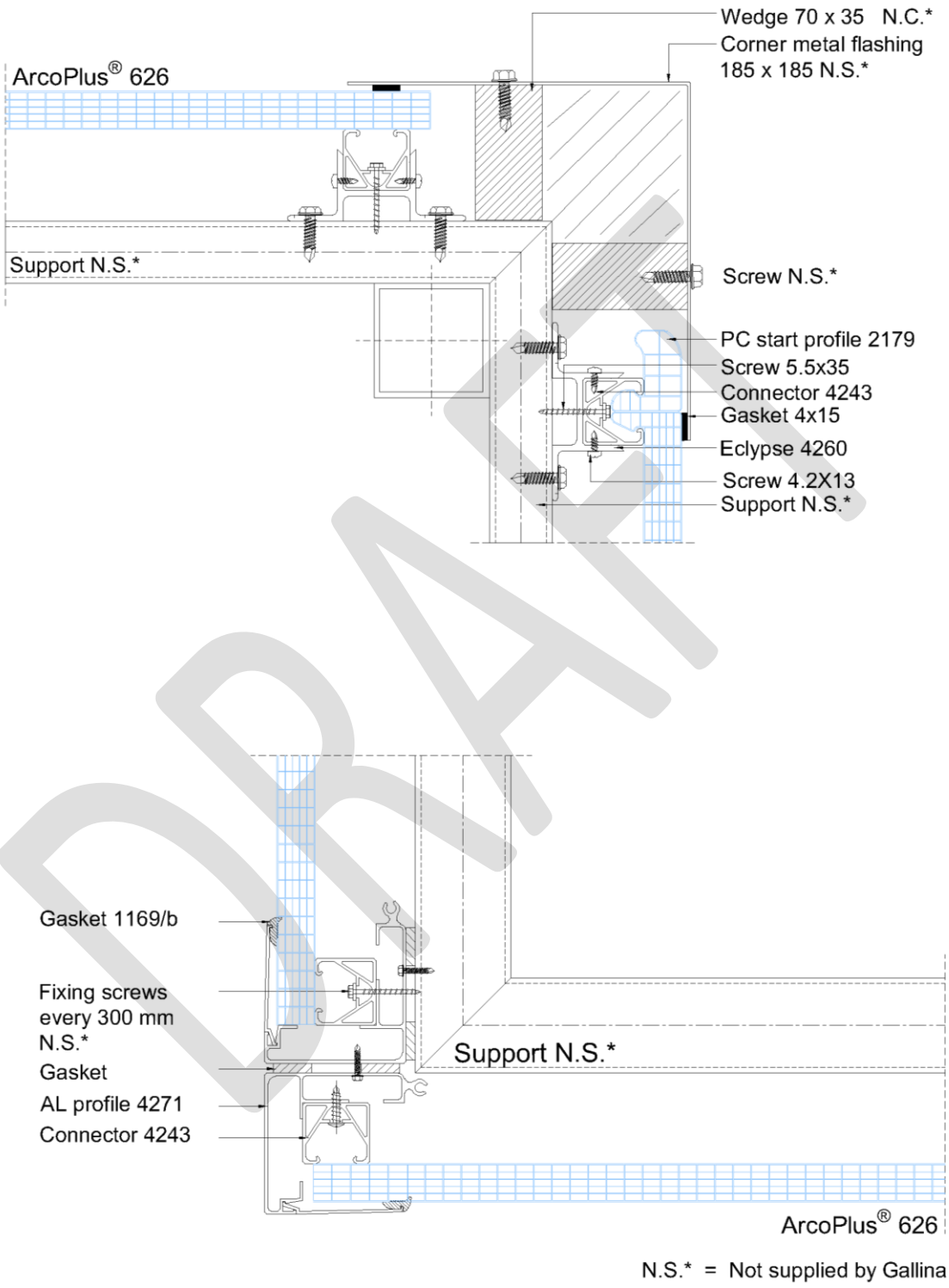




Corner with PC start profiles

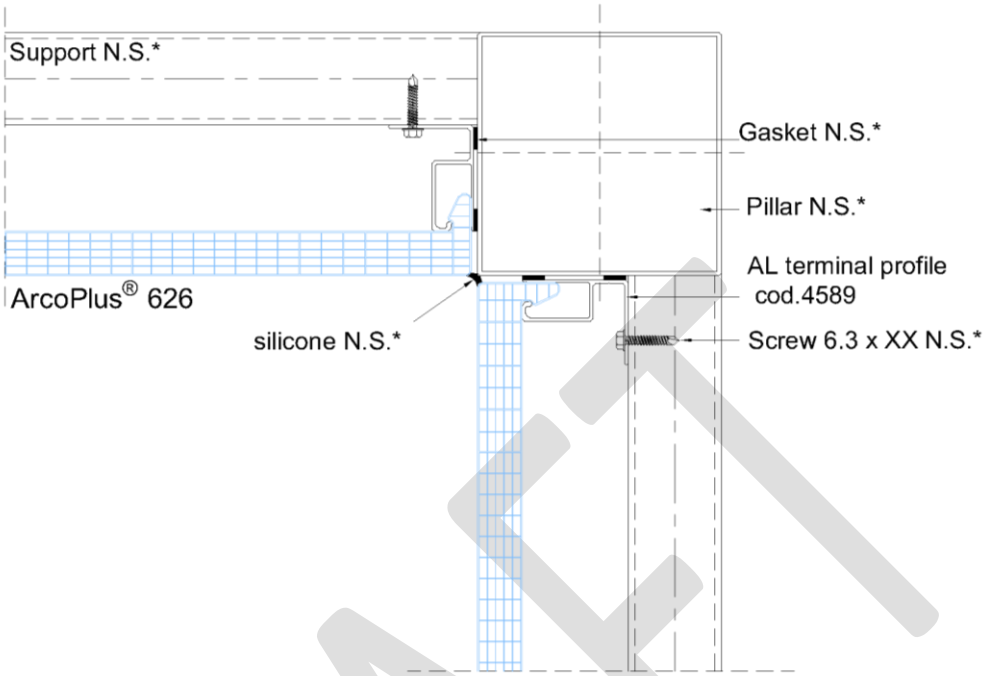


Angle realised with profiles cod.4271 or using traditional metal flashing

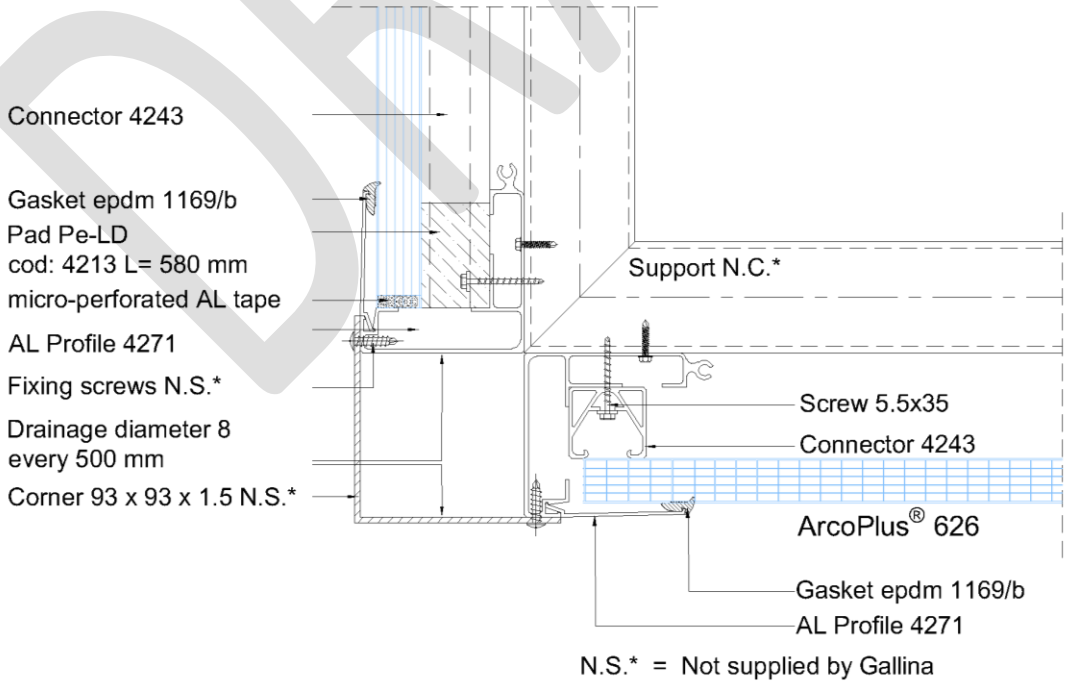


N.S.* = Not supplied by Gallina

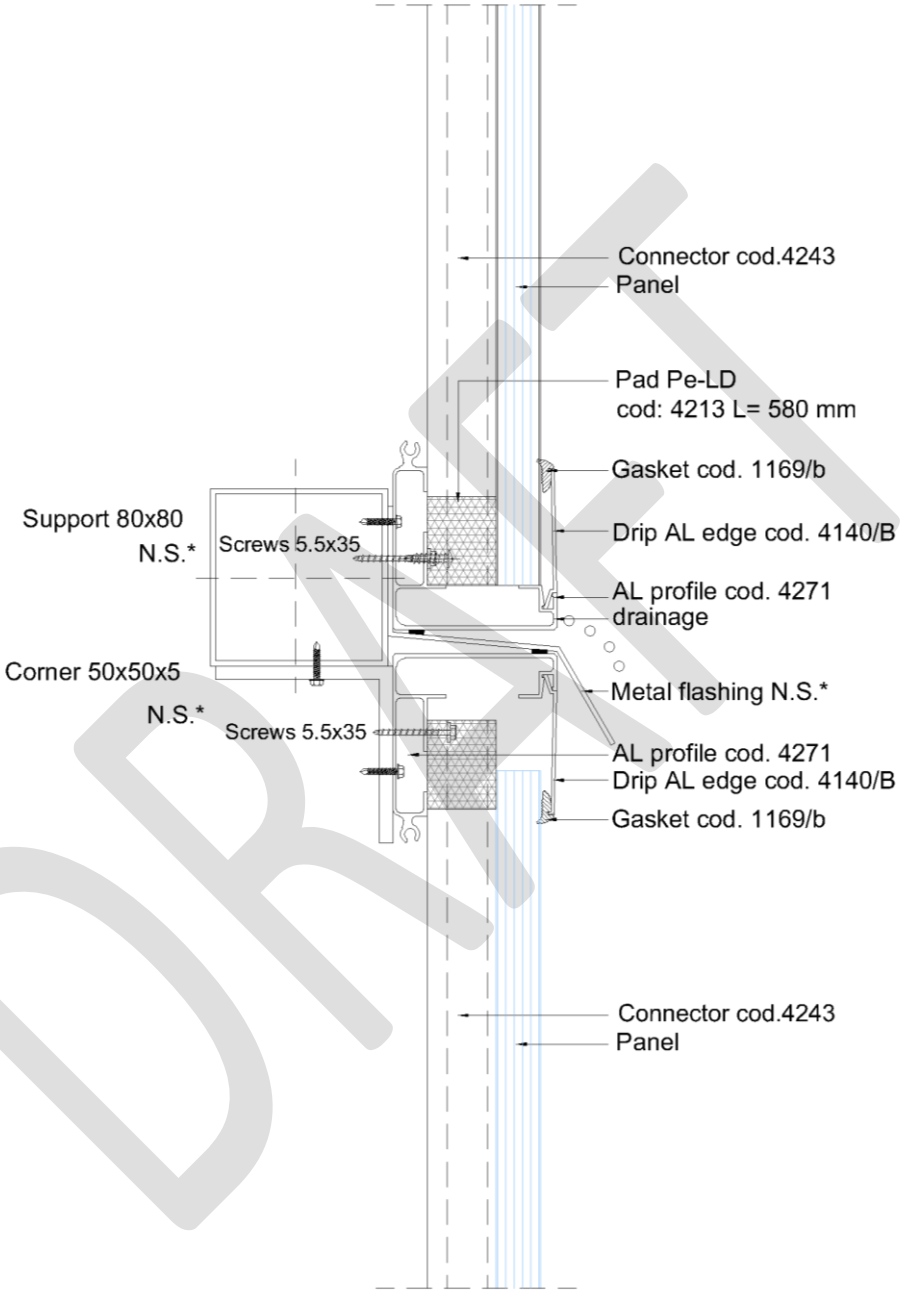
Internal angle detail



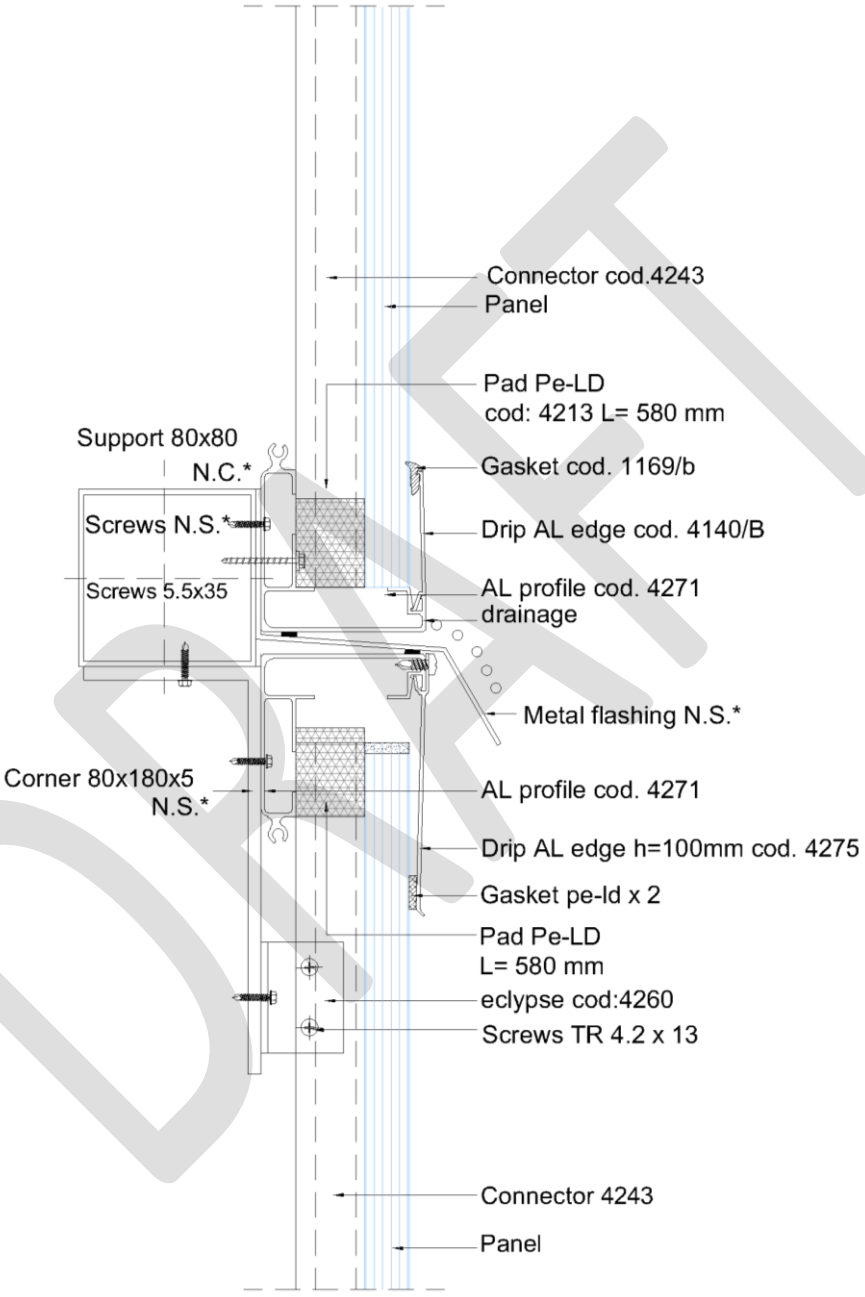
Detail of the junction between cladding and soffit



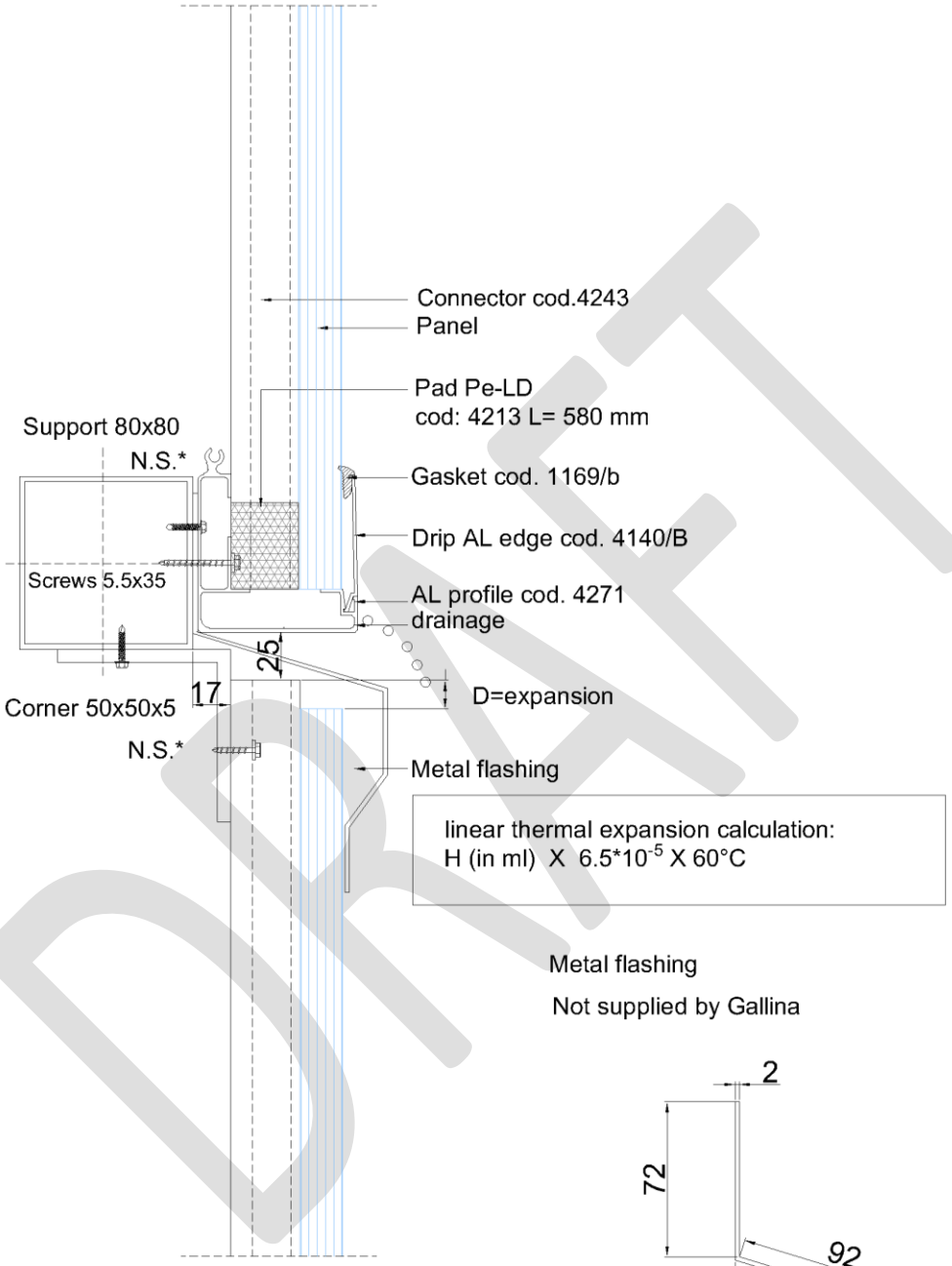
Detail of the vertical junction with an intermediate profile – h max 7m



Detail of the vertical junction with an intermediate profile – h max 10m

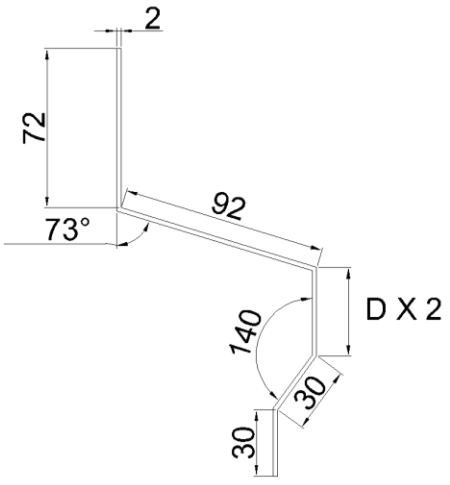


Detail of the vertical junction with an intermediate profile – higher than 10 m

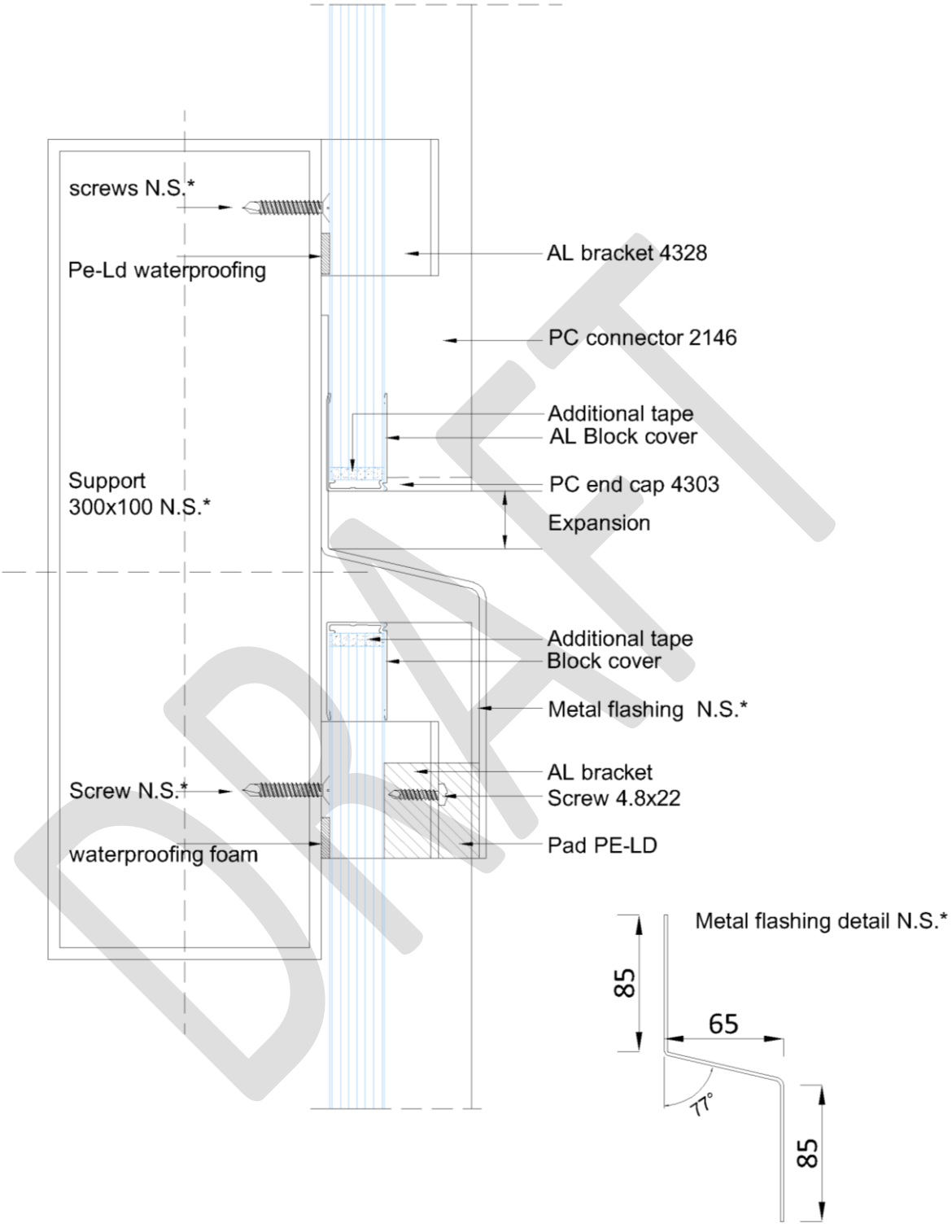


Metal flashing

Not supplied by Gallina

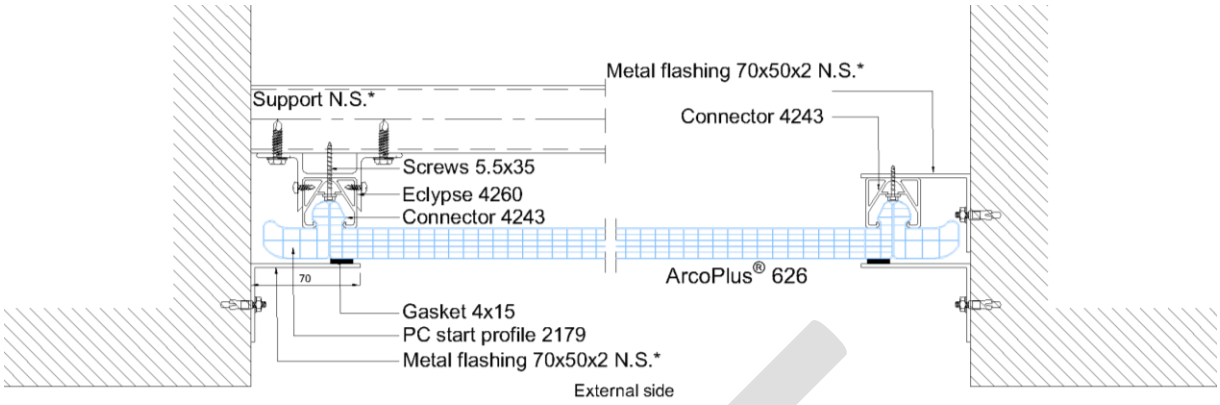


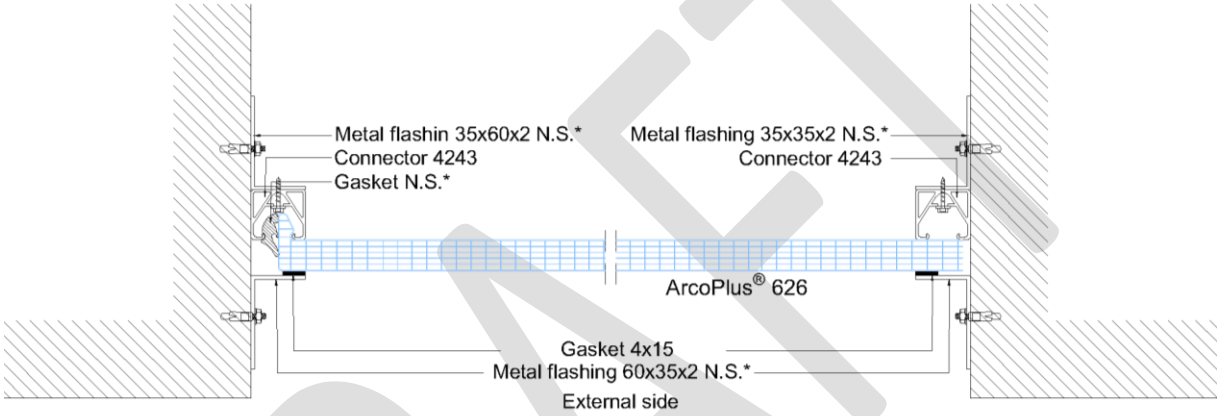
Detail of the vertical junction with an intermediate profile

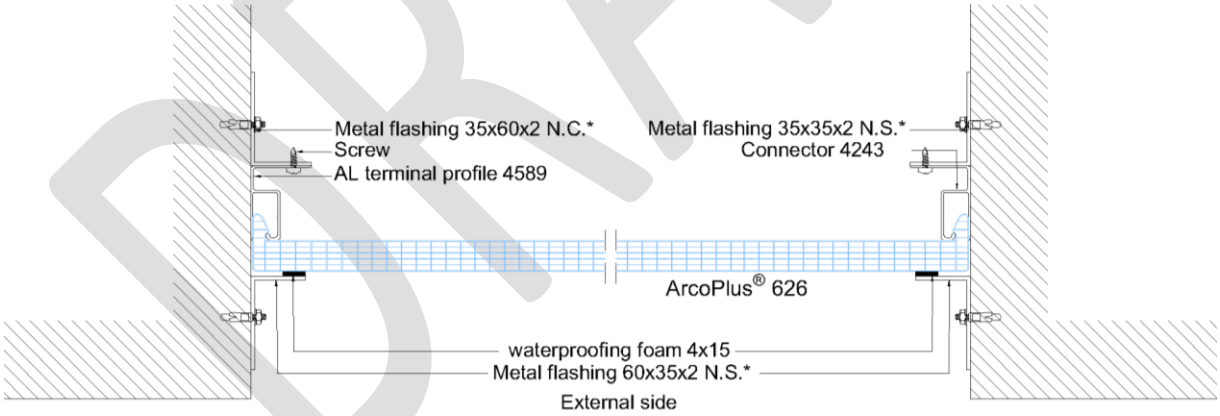


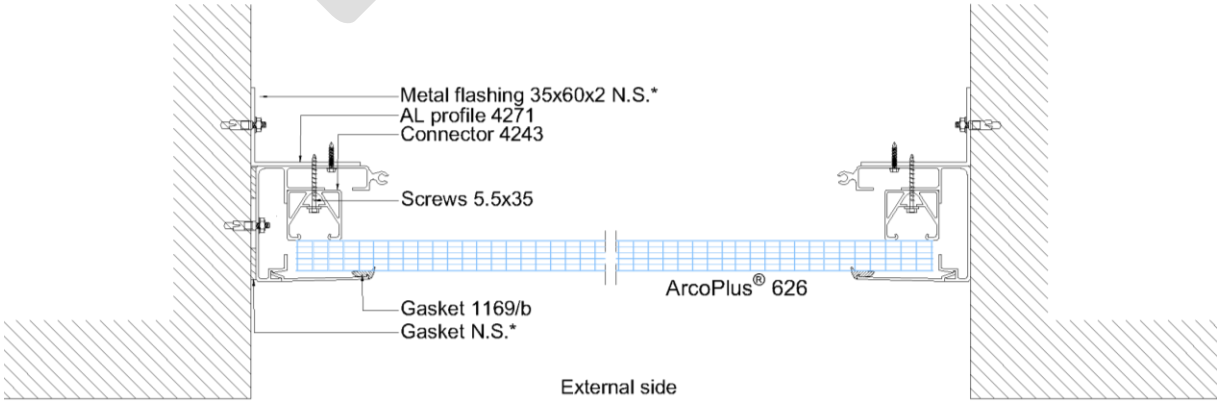
Linear thermal expansion calculation:
H (in ml) X $6.5*10^{-5}$ X 60°C

Lateral frame profile installation

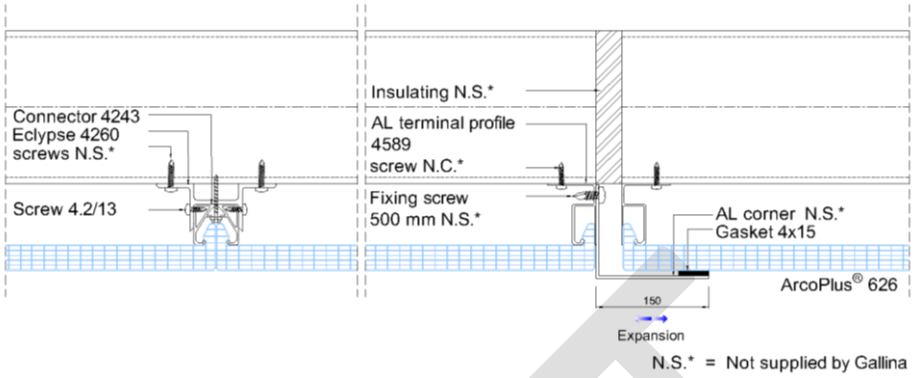




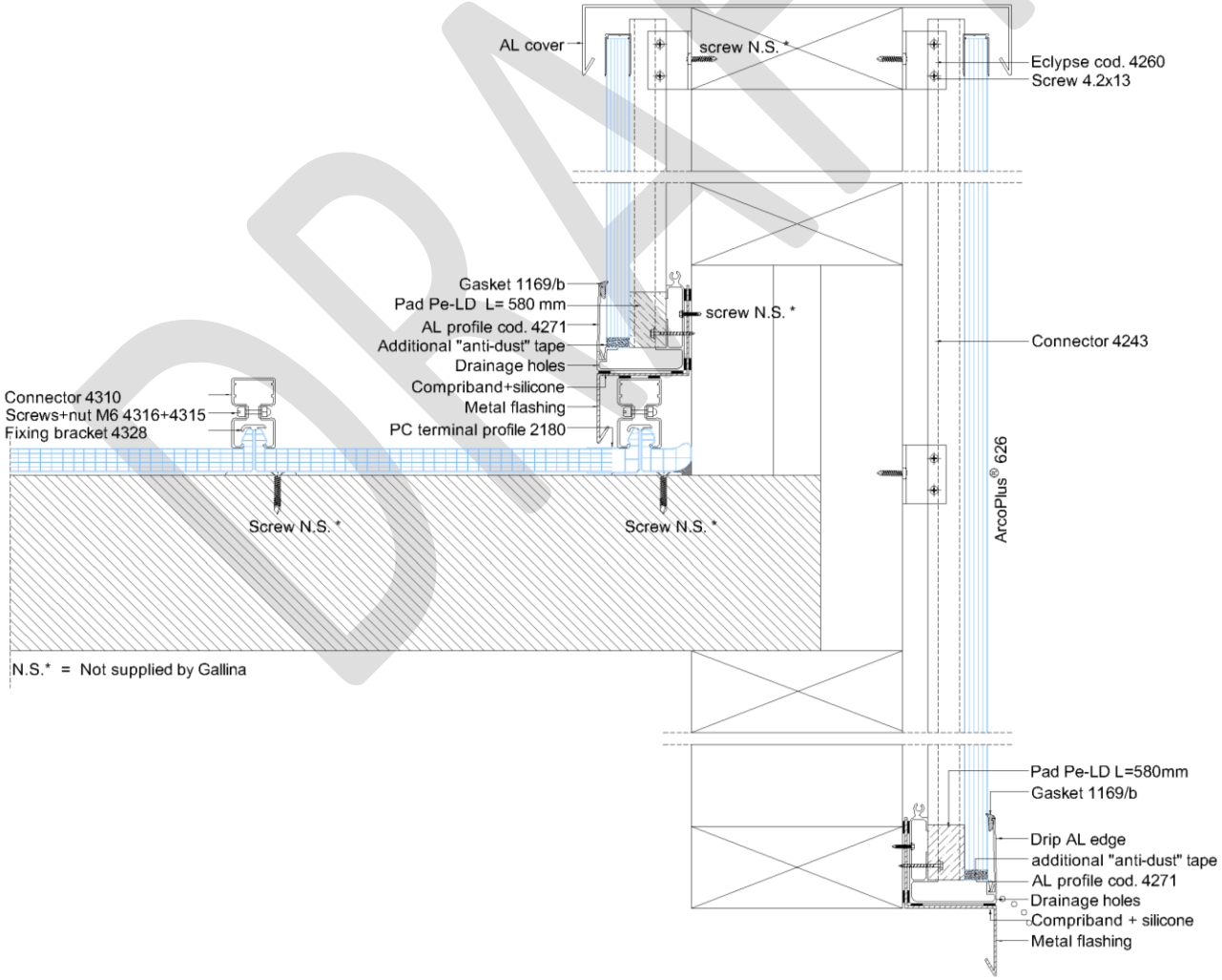




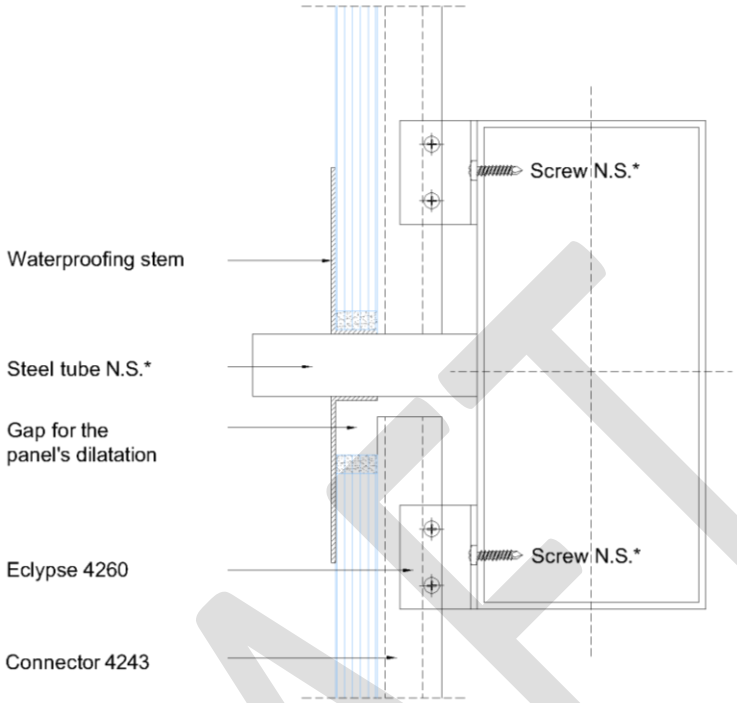
Expansion joint detail



arcoPlus® - Detail of the junction between roofing and acroterion

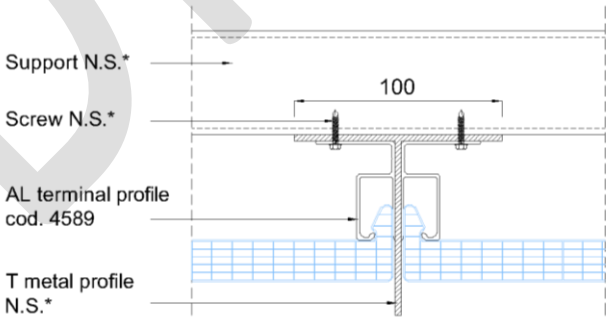


Principle of Cross-Through Stem



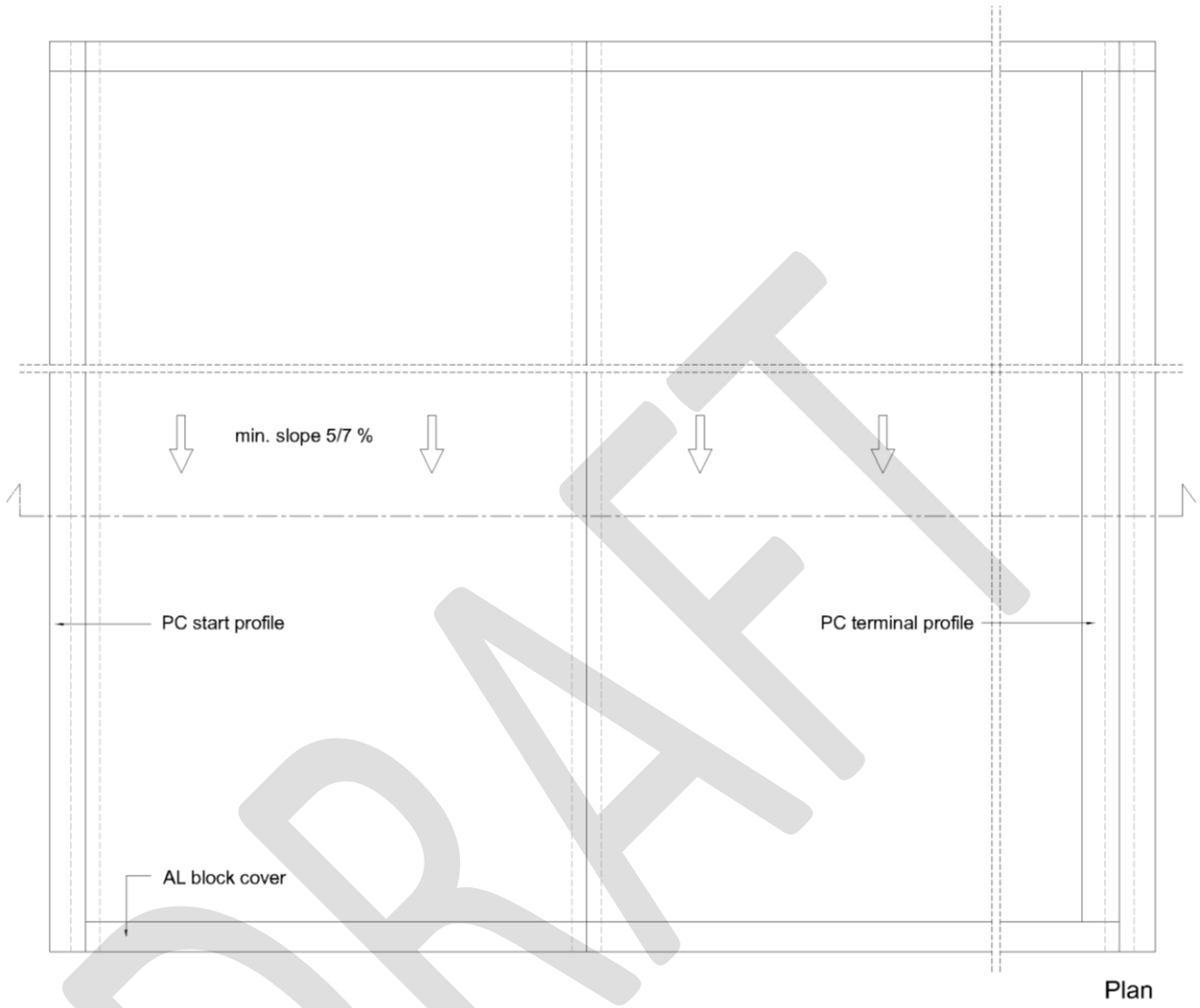
N.S.* = Not supplied by Gallina

Principle of Cross-Through « T-Shape »

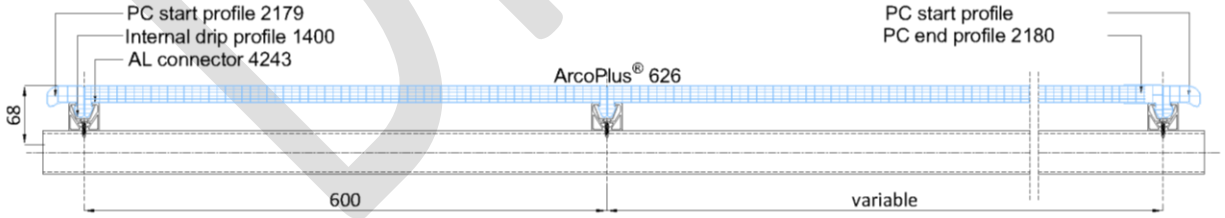


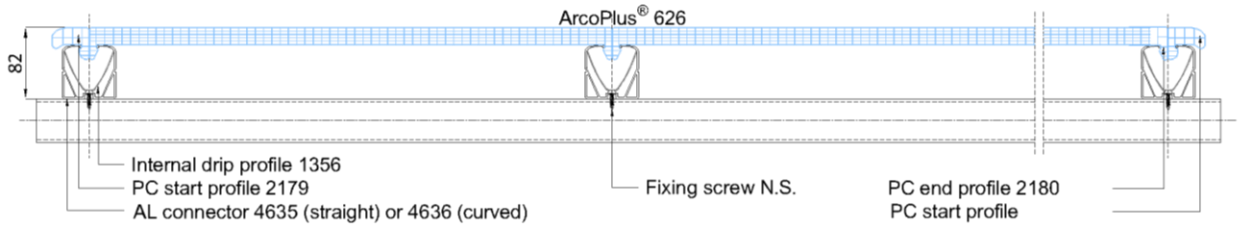
N.S.* = Not supplied by Gallina

Roofing – standard installation



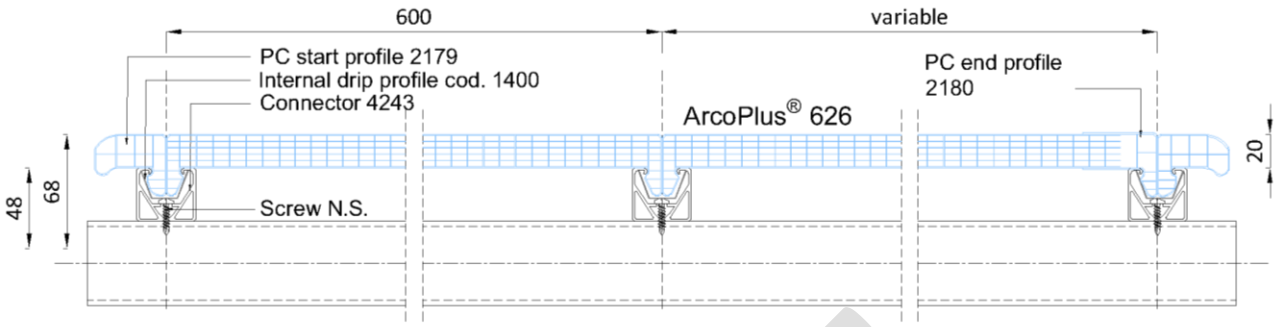
Plan

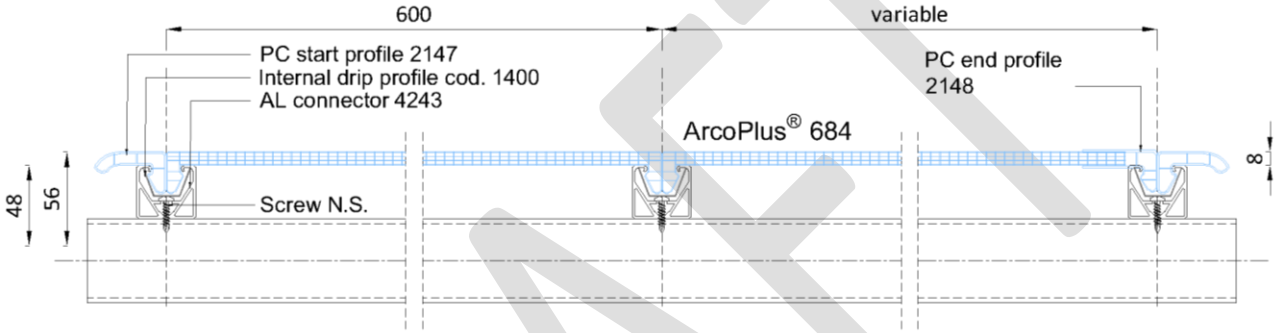


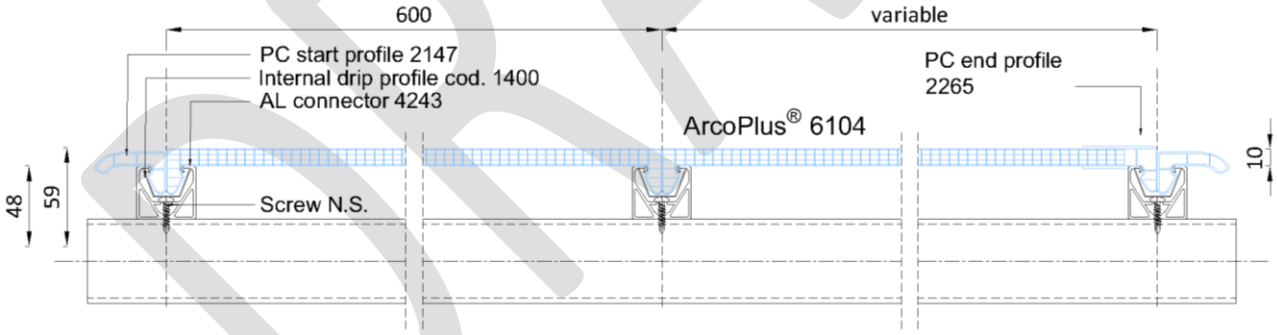


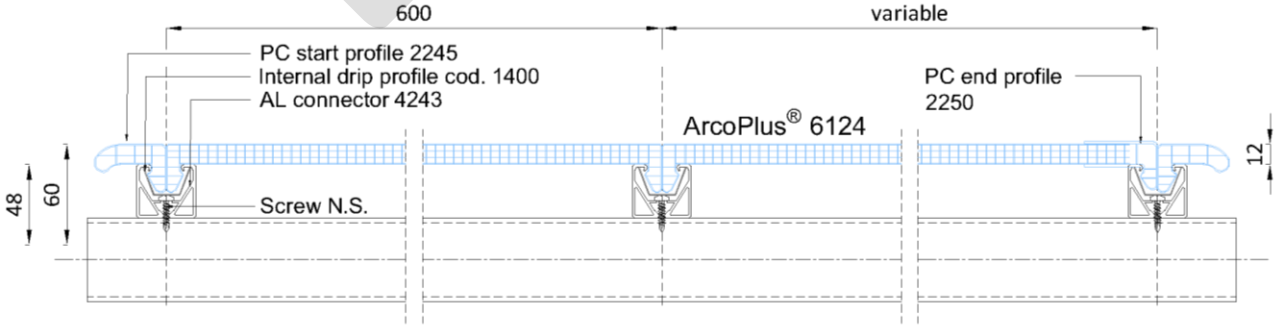
Cross section

Roofing – standard installation – cross sections

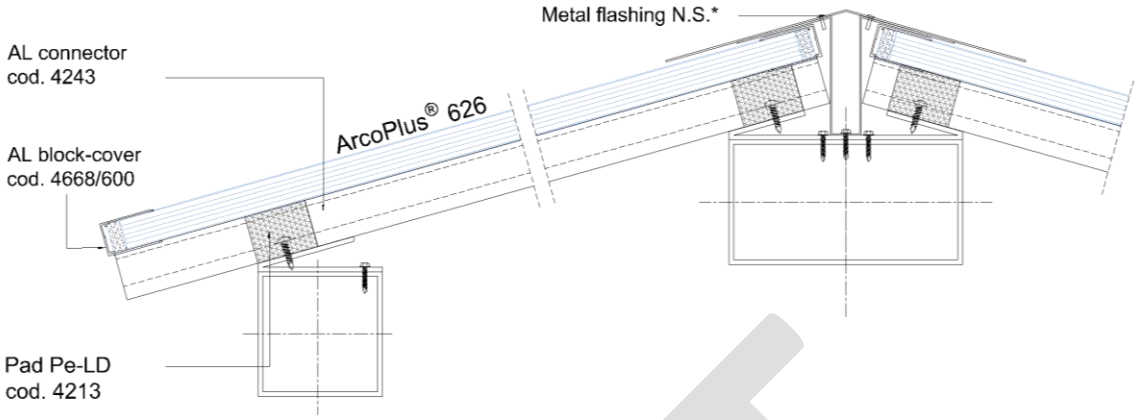


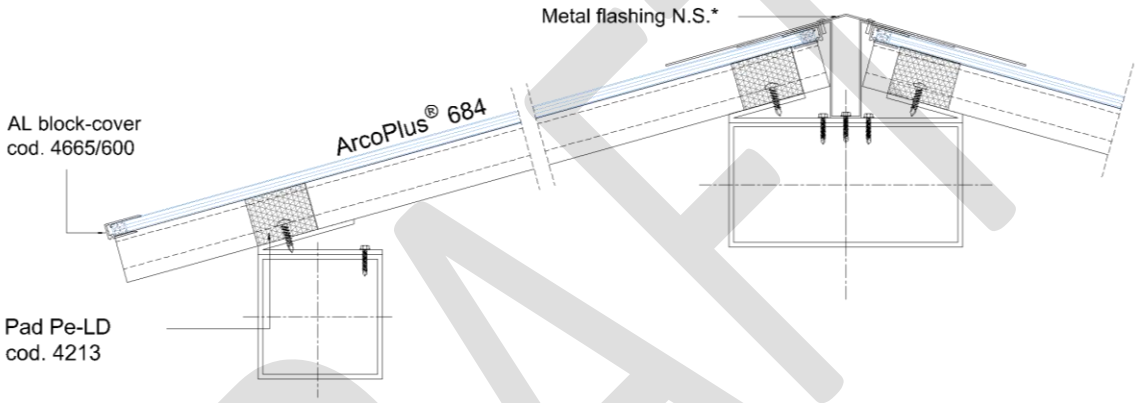


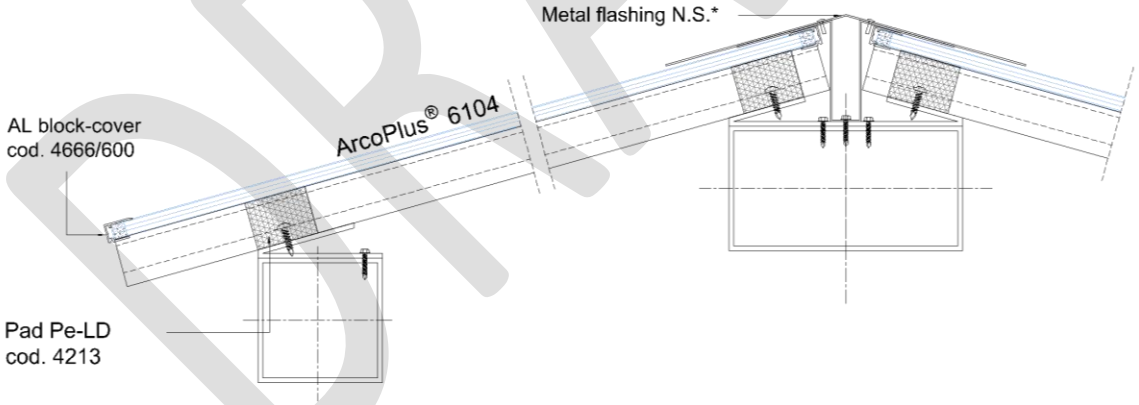


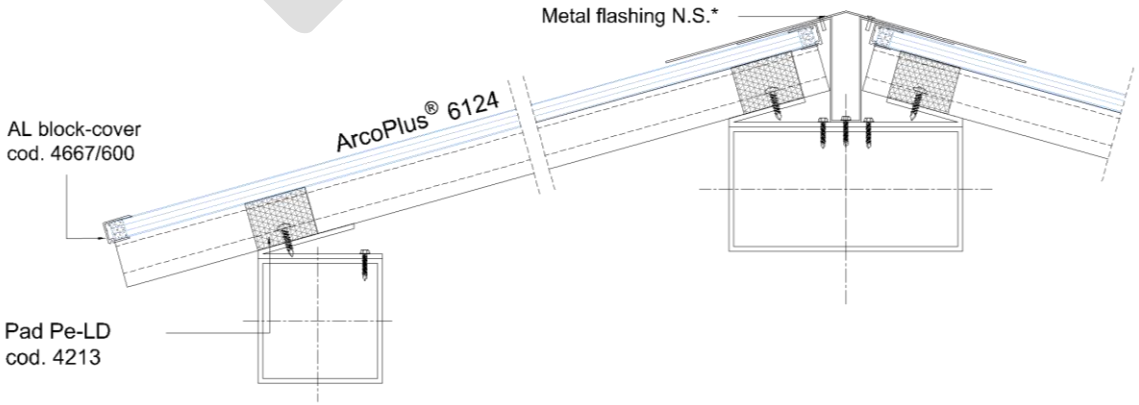


Flat roof – standard installation

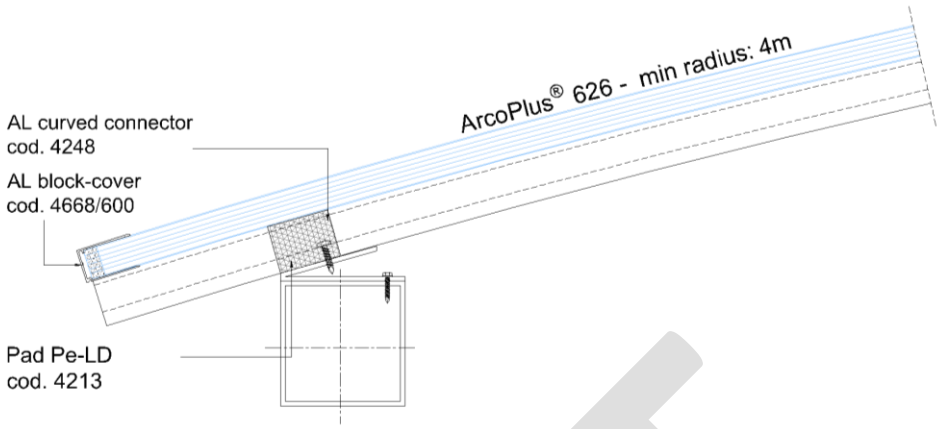


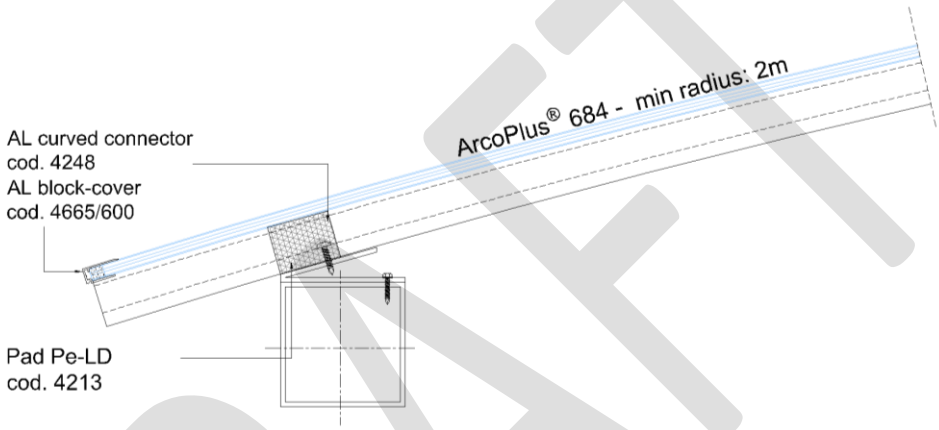


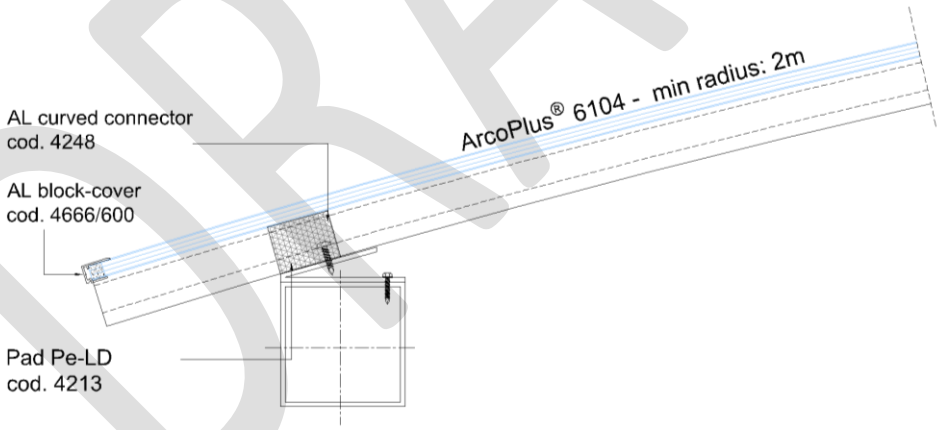


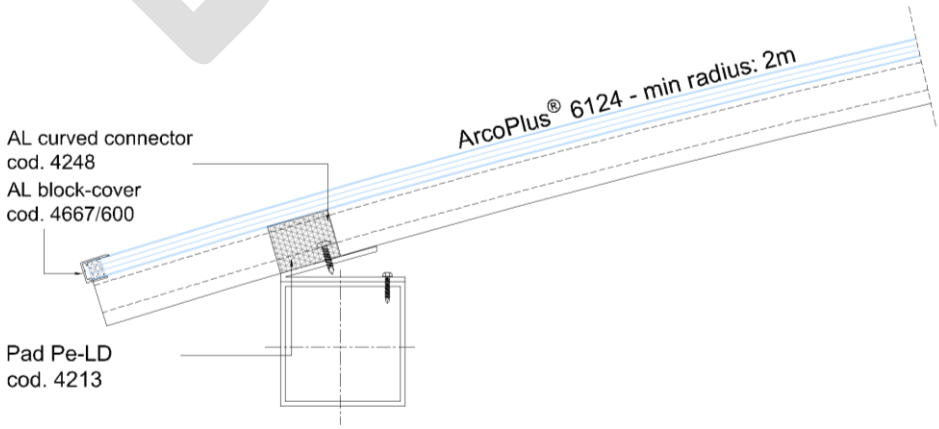


Curved roof – standard installation

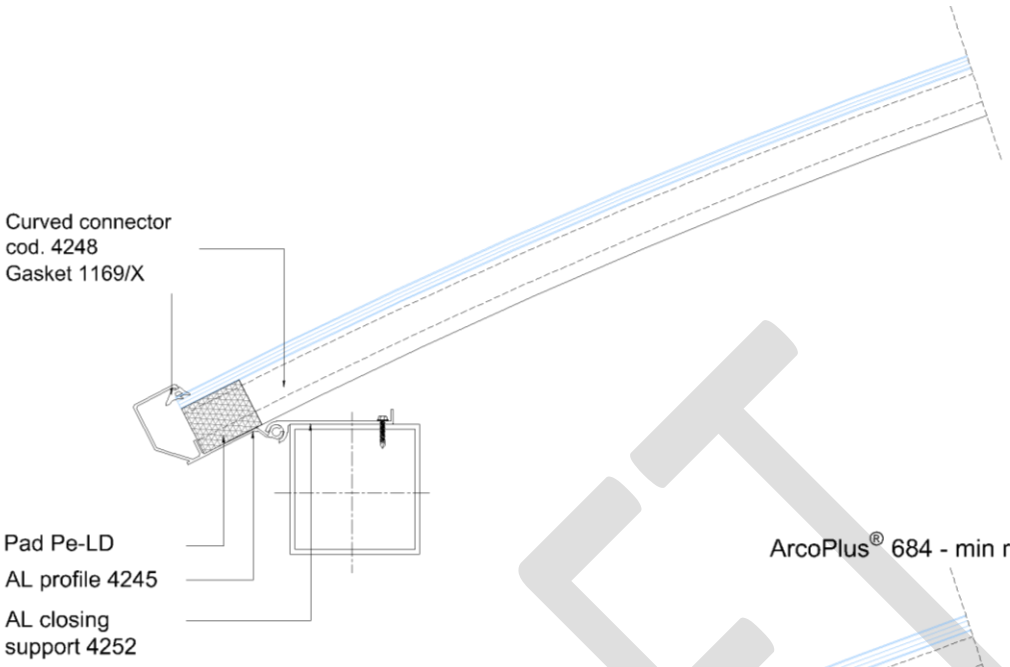




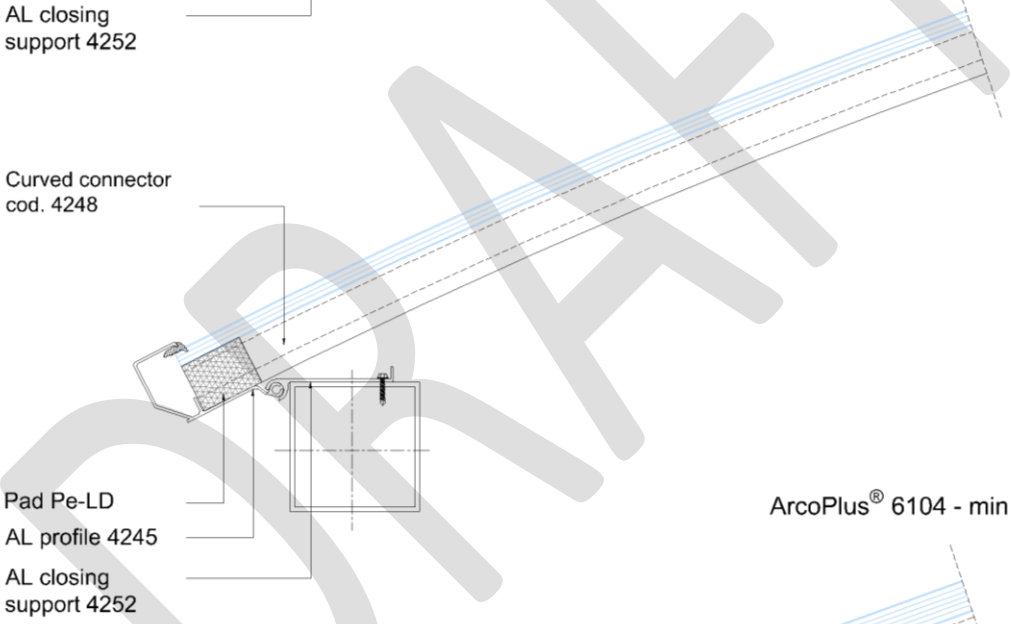




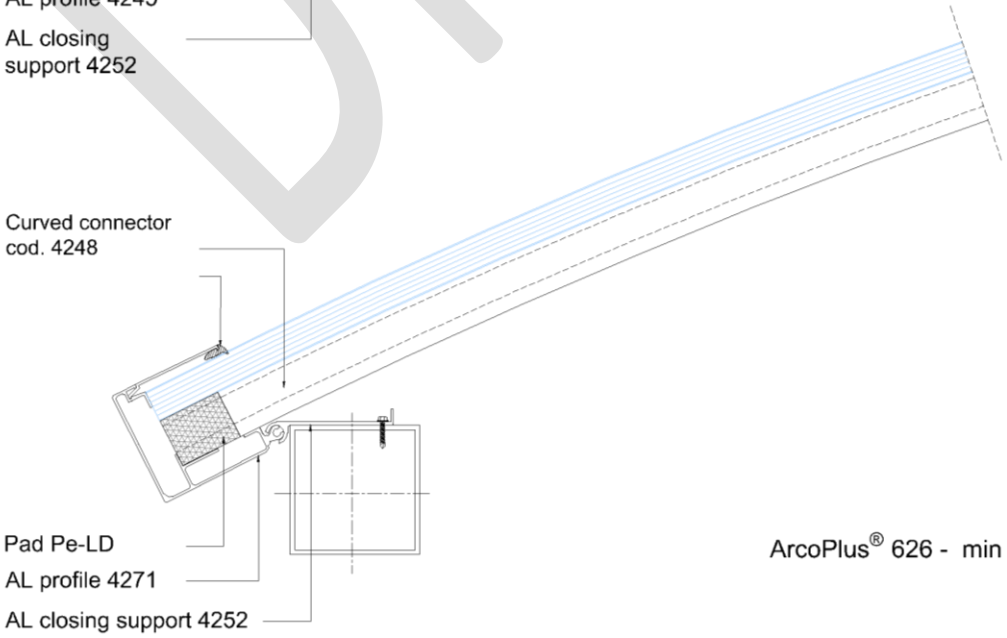
Curved roof with AL profiles ref. 4245,4252 and 4271



ArcoPlus® 684 - min radius: 2m

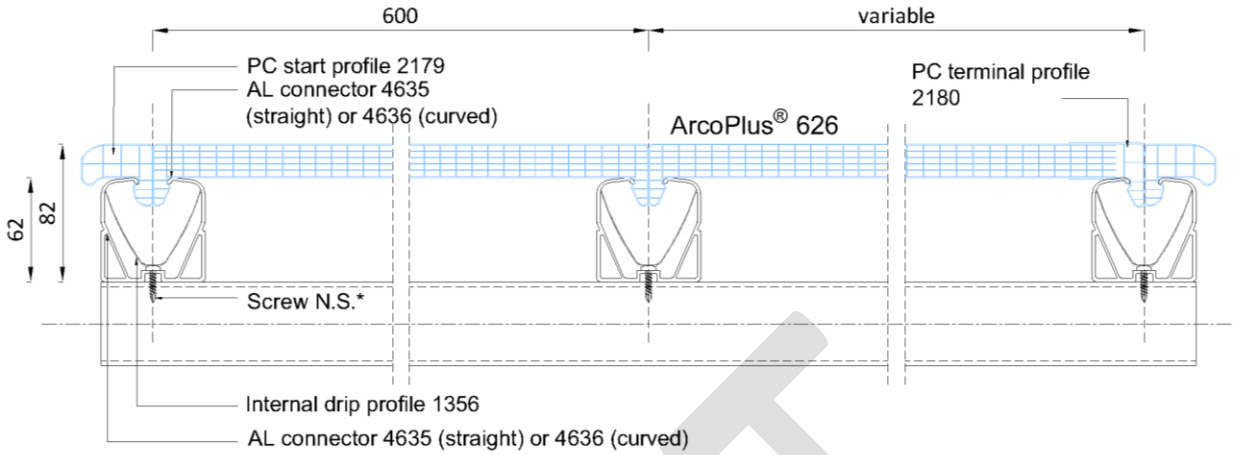


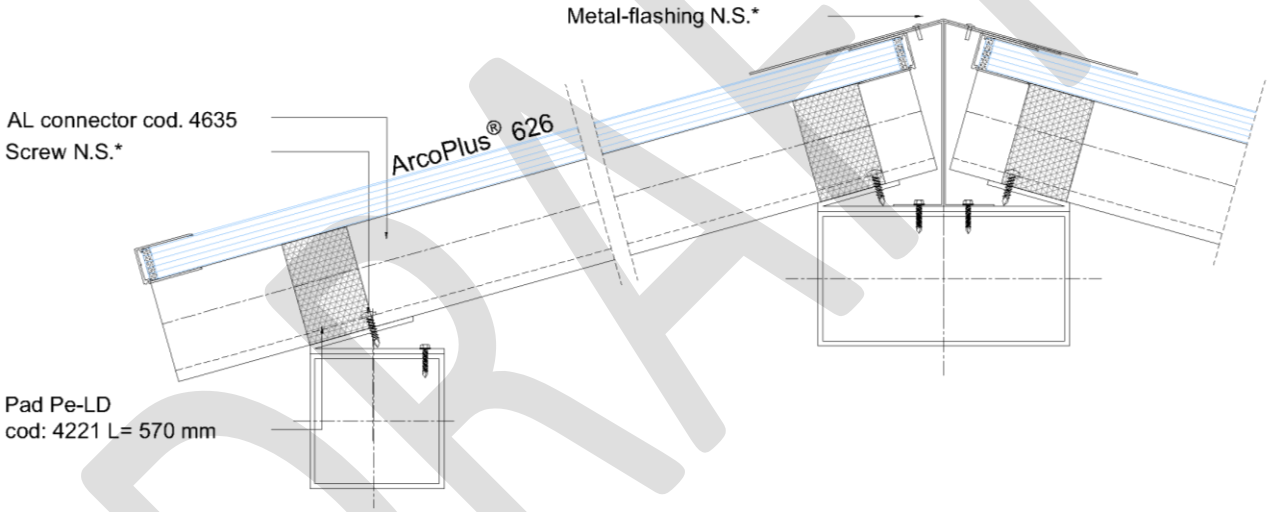
ArcoPlus® 6104 - min radius: 2m

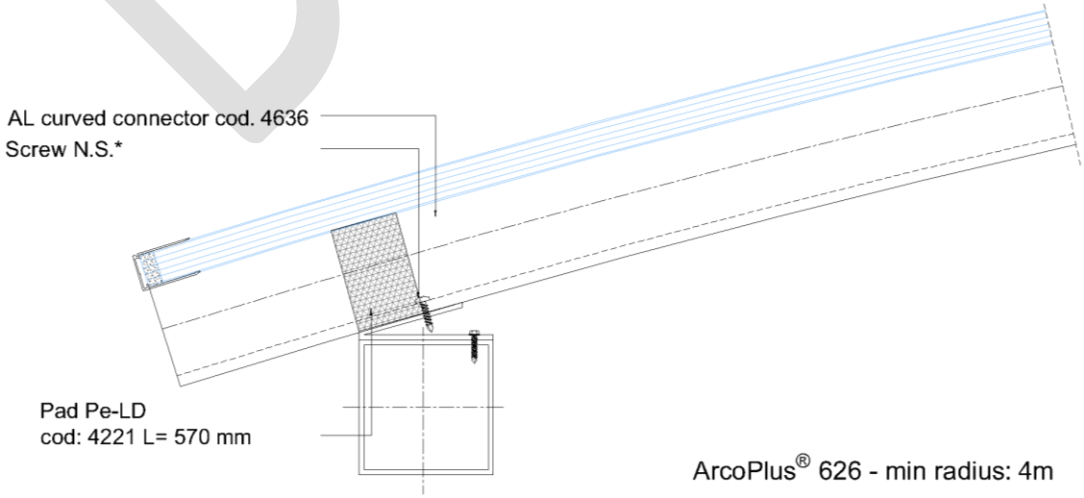


ArcoPlus® 626 - min radius: 4m

Roofing standard installation with profiles h=62mm ref. 4635 - 4636

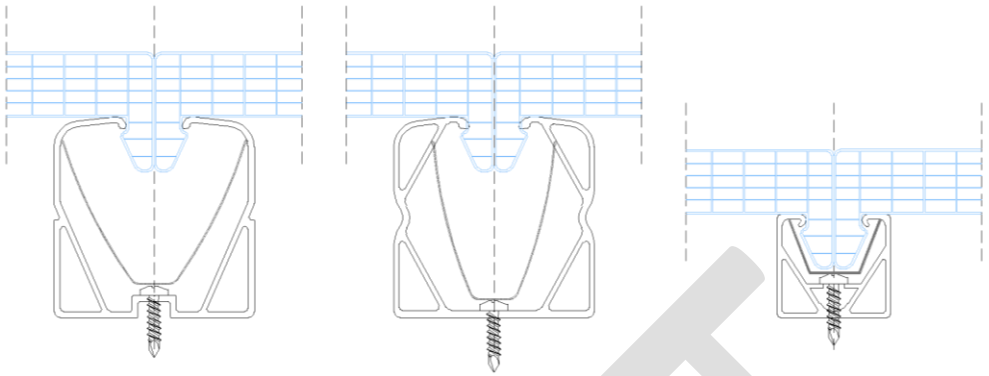






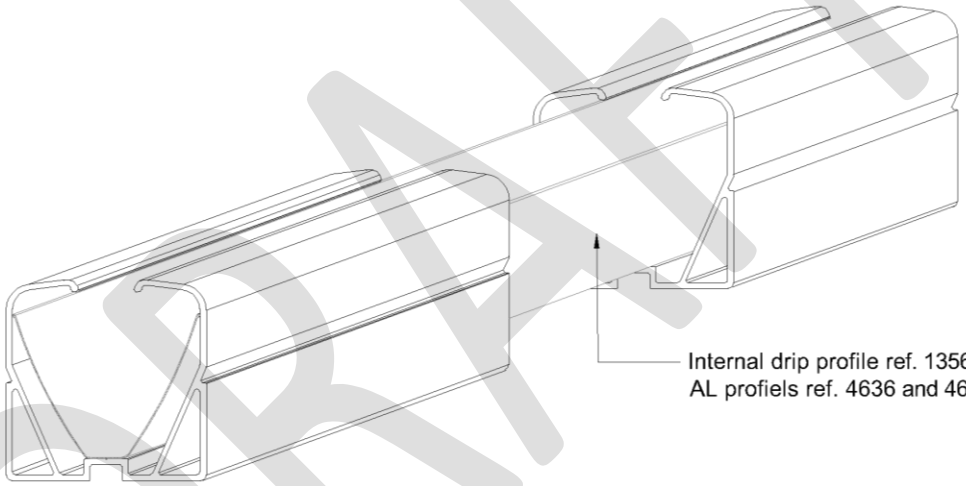
ArcoPlus® 626 - min radius: 4m

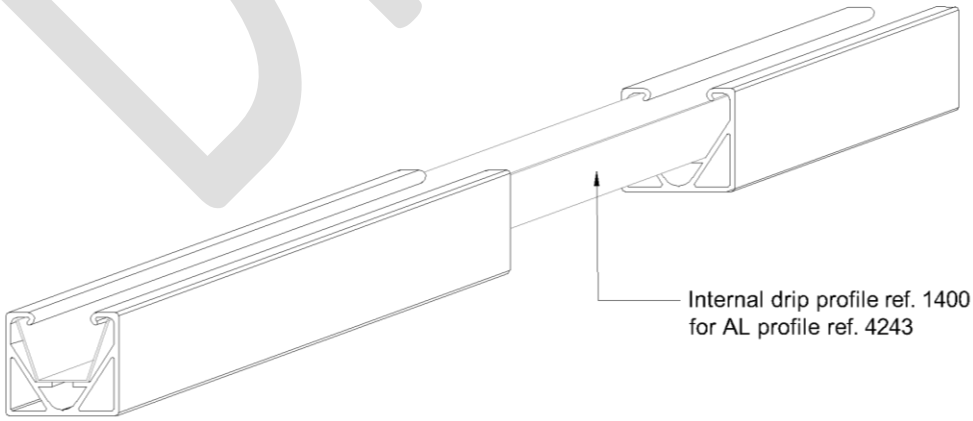
Internal drip profiles ref. 1356 and 1400



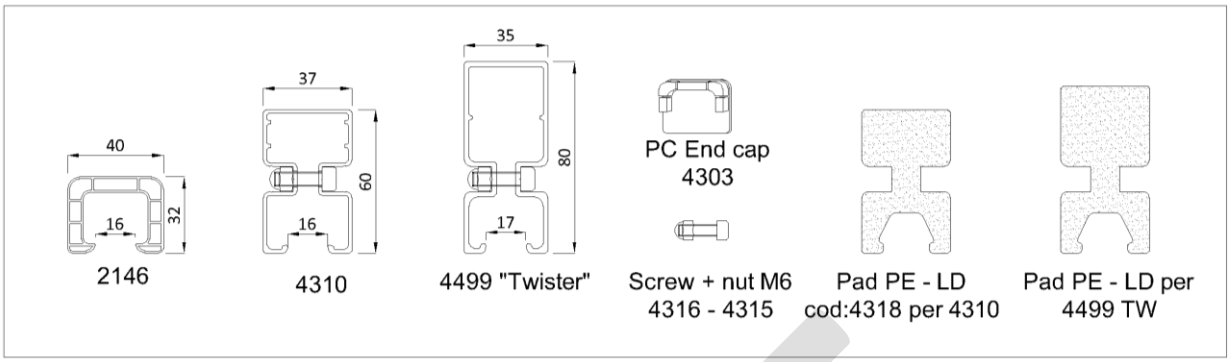
Internal drip profile ref. 1356
for AL profiles cod. 4636 and 4635

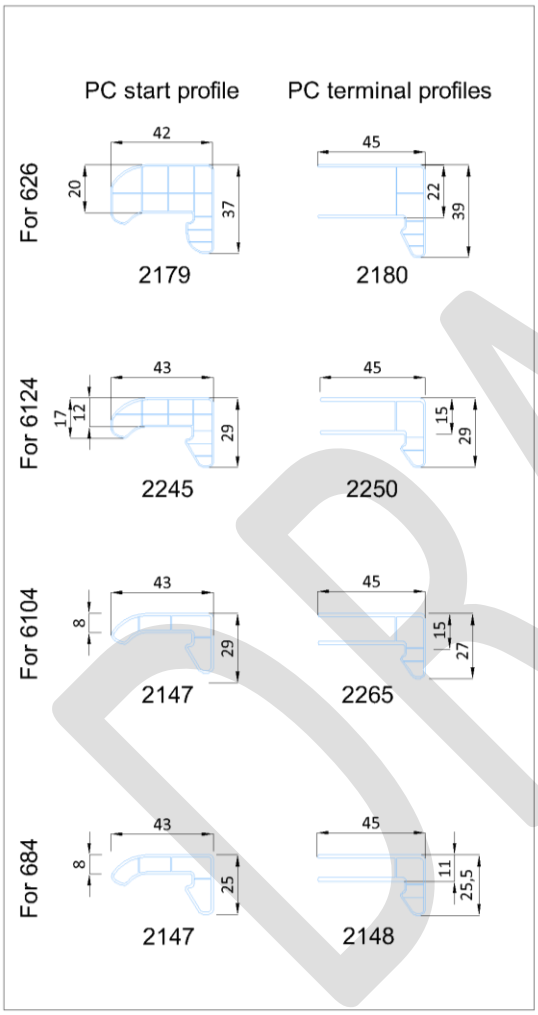
Internal drip profile ref. 1400
for AL profile ref. 4243

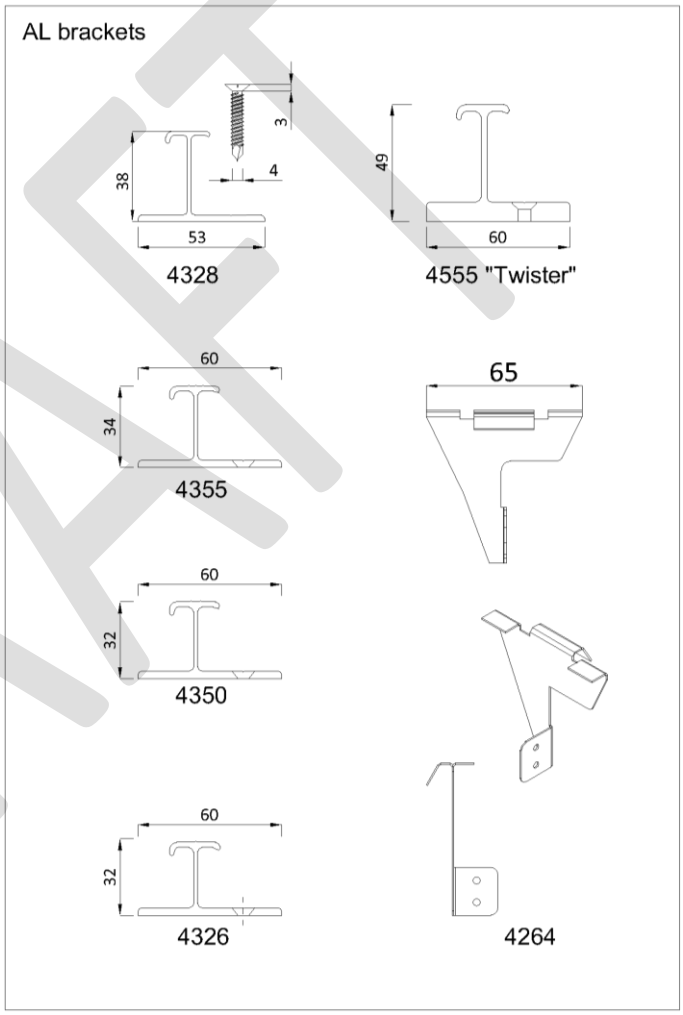


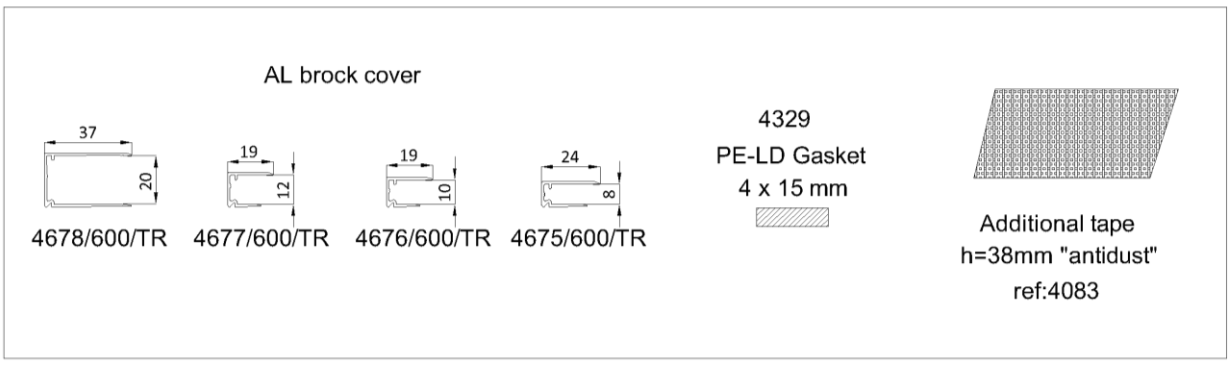


arcoPlus® Reversò installation: Connectors, Profiles and Accessories

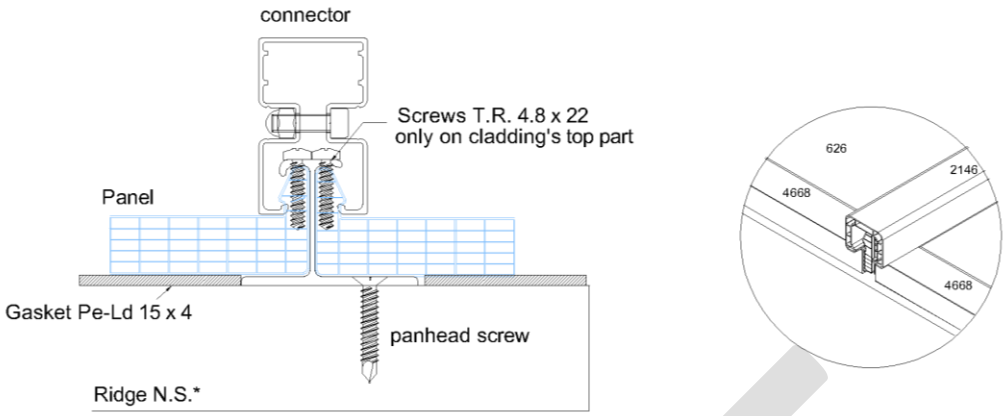


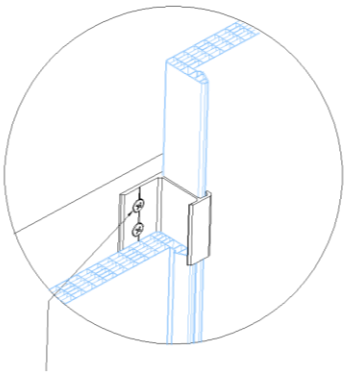




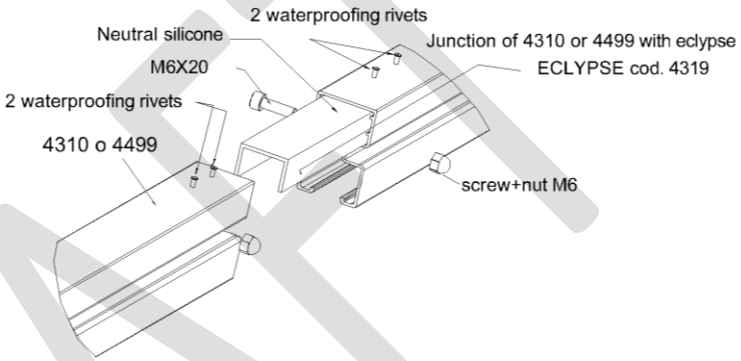


Principle of installation - Reversò

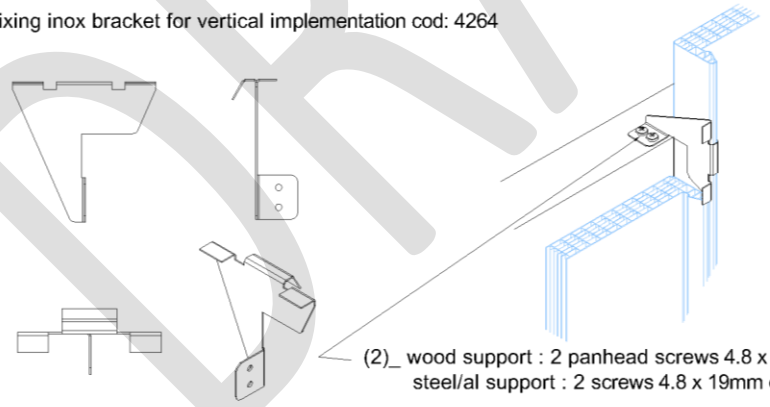




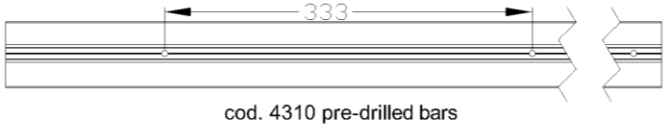
wooden support : 2 panhead screws 4.8 x 40mmor superior
Steel support : 2 panhead 4.8 x 19mm or superior



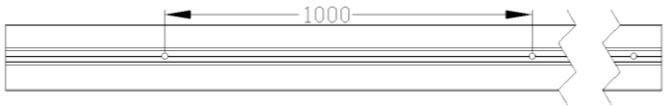
Fixing inox bracket for vertical implementation cod: 4264



(2)_ wood support : 2 panhead screws 4.8 x 40mm or more
steel/al support : 2 screws 4.8 x 19mm o more



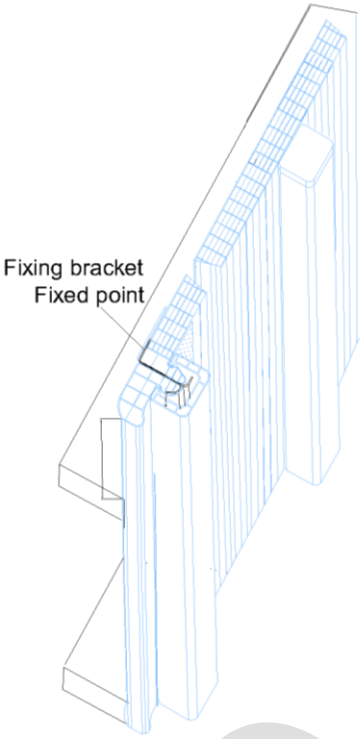
cod. 4310 pre-drilled bars



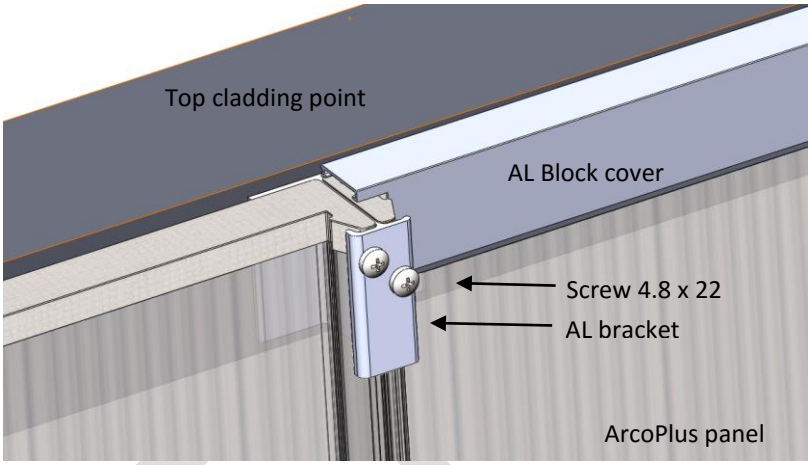
cod. 4499 pre-drilled bars

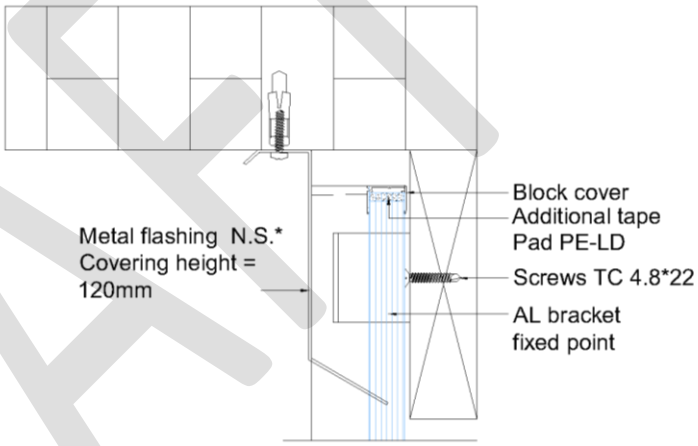
N.S.* = Not supplied by Gallina

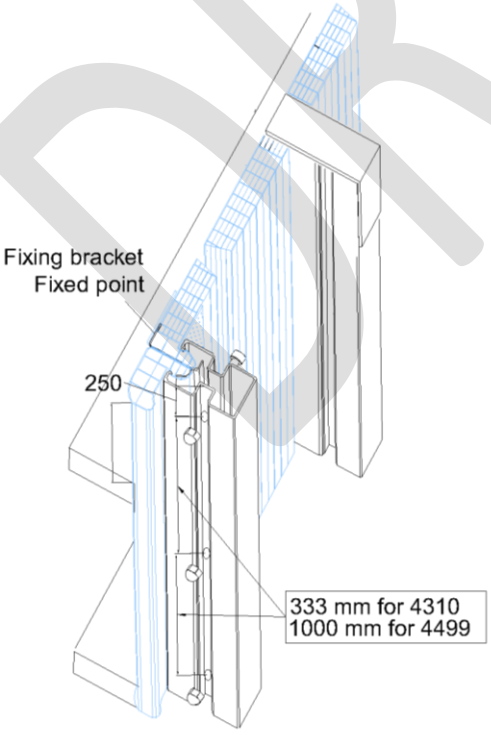
Principle of installation - Reversò



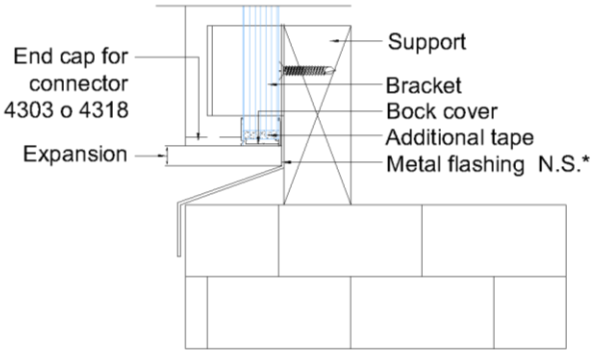
626 WITH PC CONNECTOR 2146





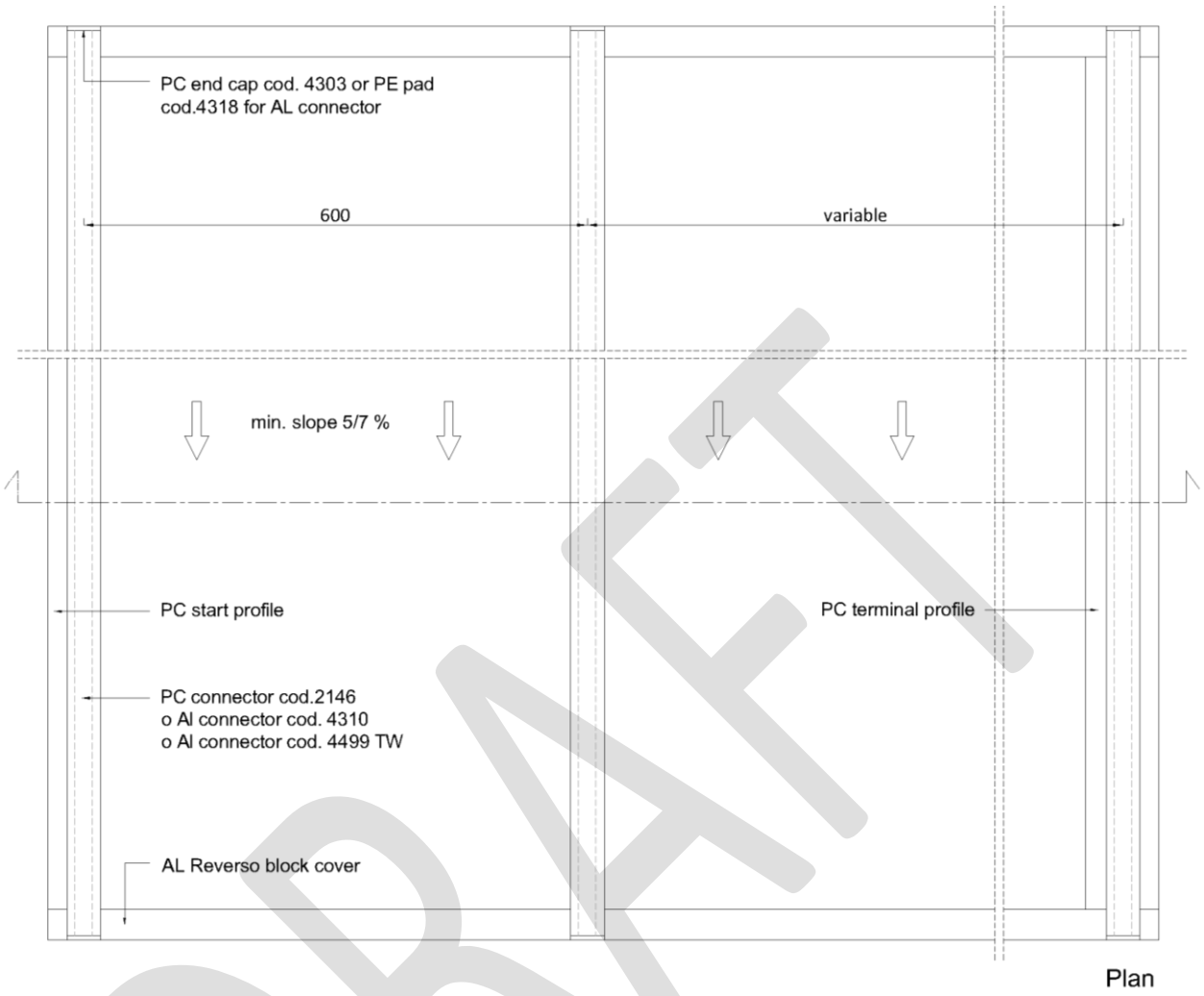


626 WITH AL CONNECTOR cod. 4310
OR AL cod. 4499

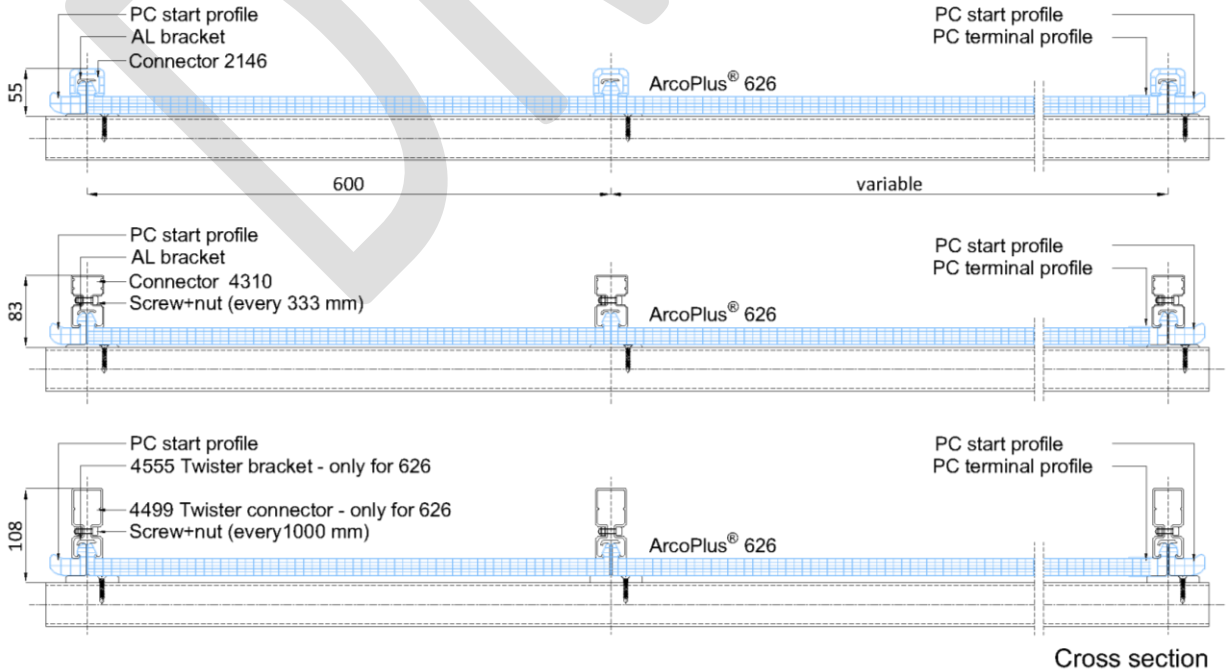


N.S.* = Not supplied by Gallina

Roofing – Reversò installation

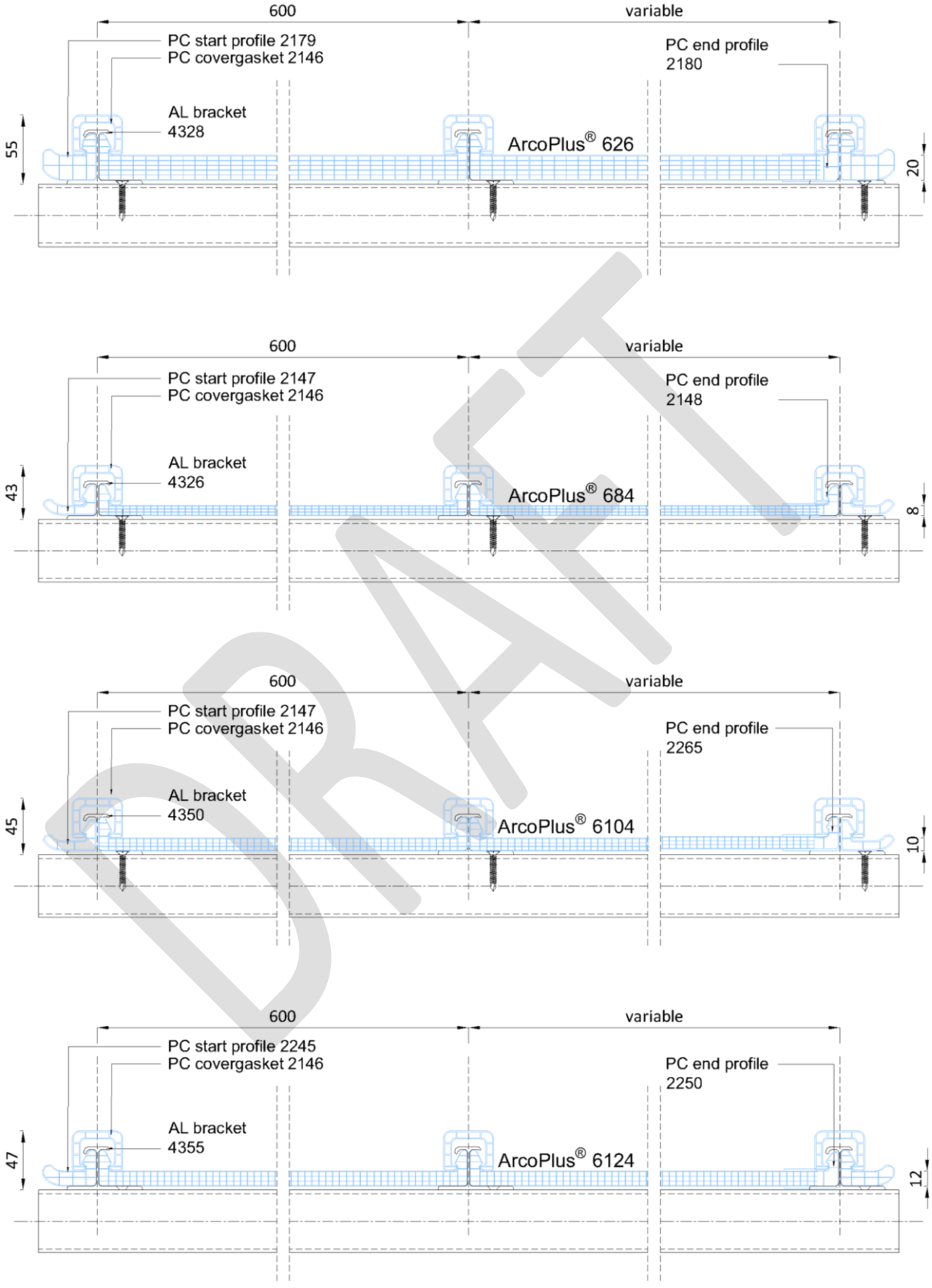


Plan

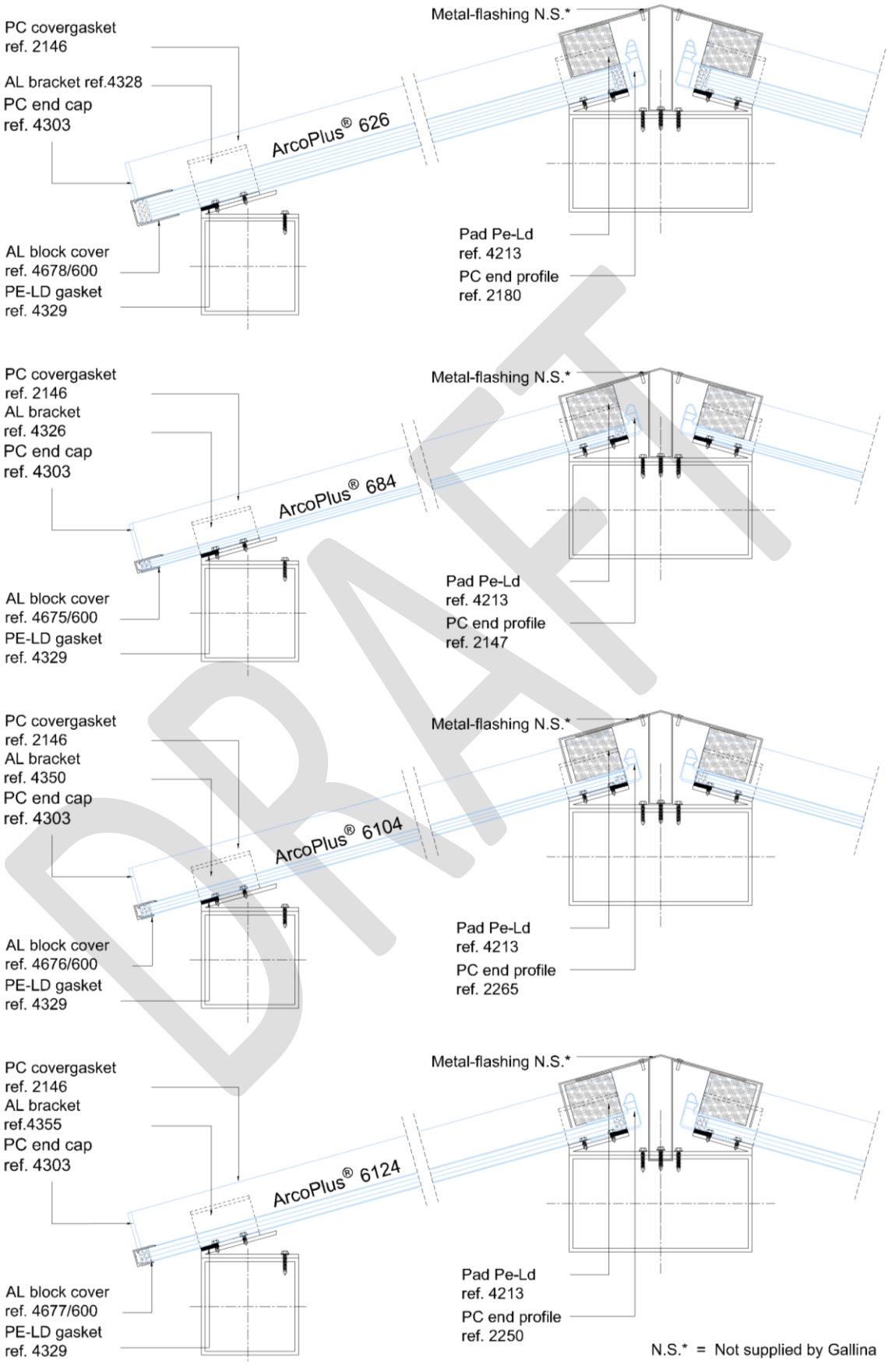


Cross section

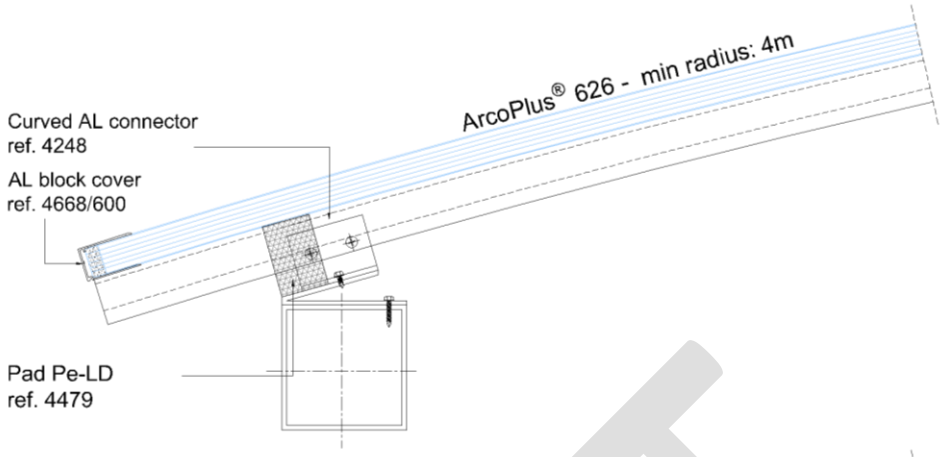
Roofing – Reversò installation – cross sections

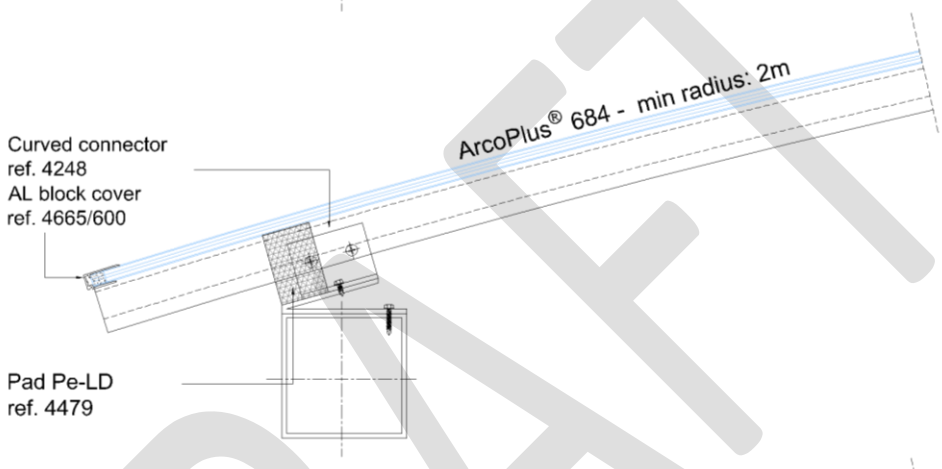


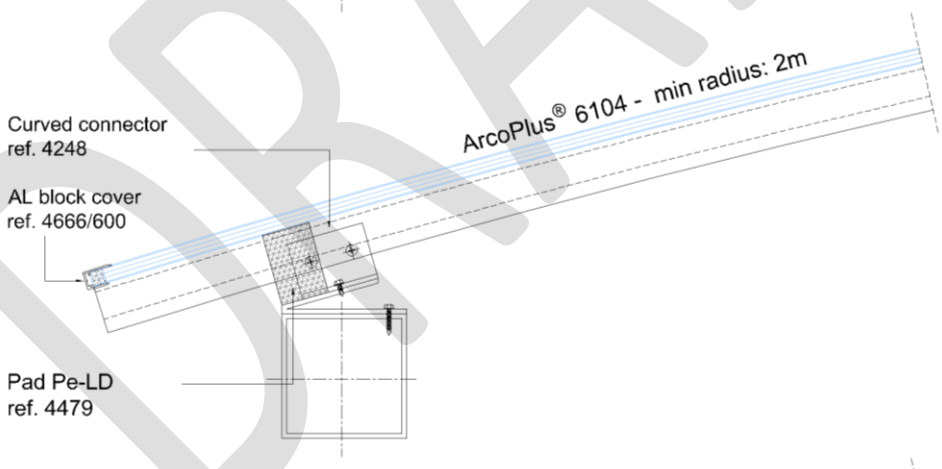
Flat roof – Reversò installation

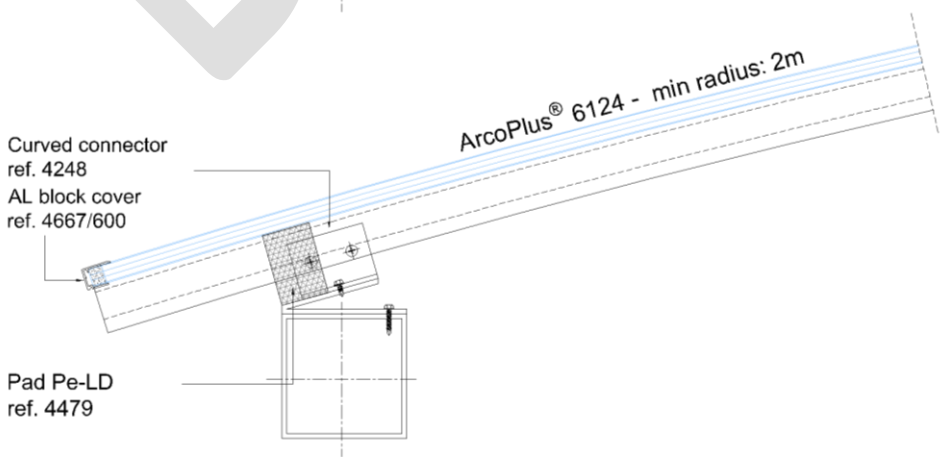


Curved roof – Reversò installation

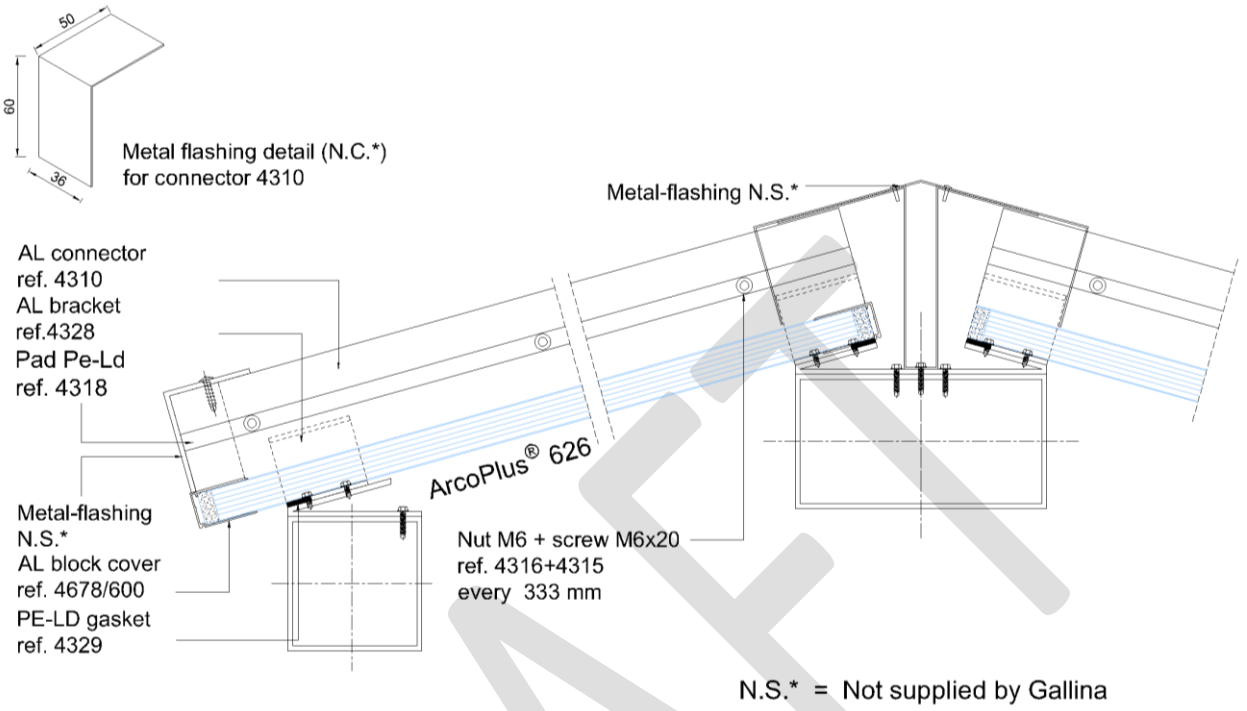




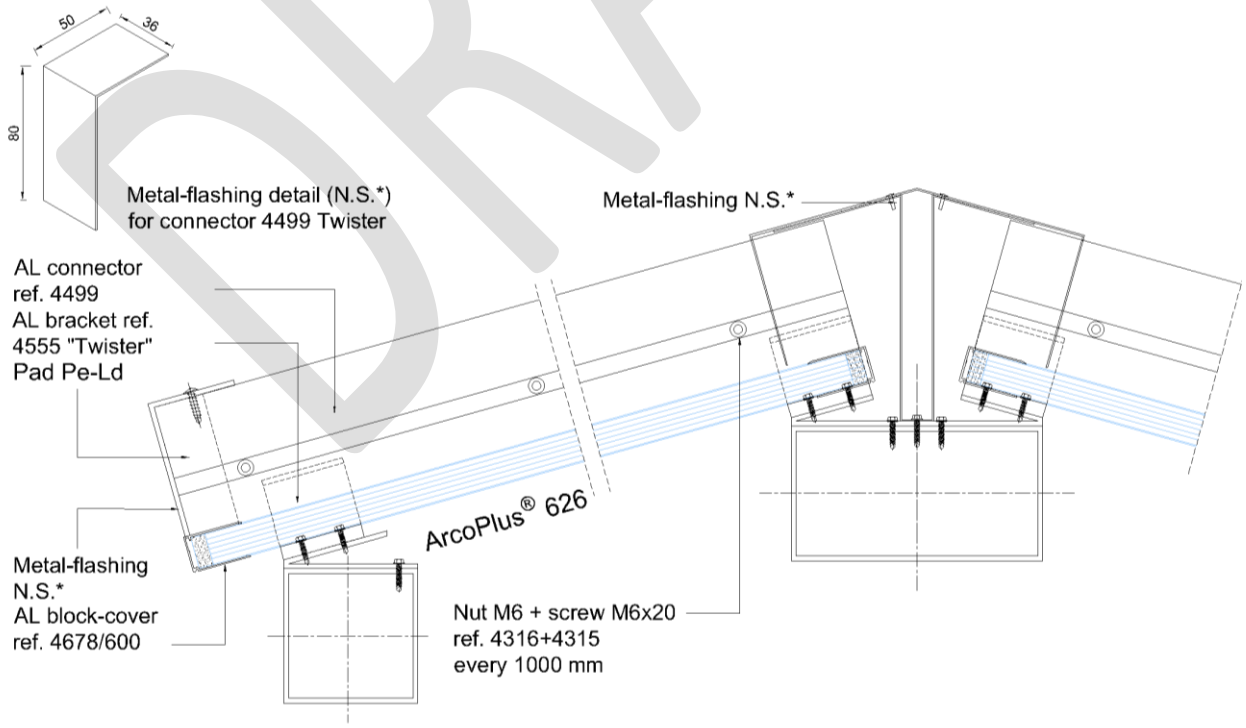




Roofing Reversò installation with connectors ref. 4310 – 4499

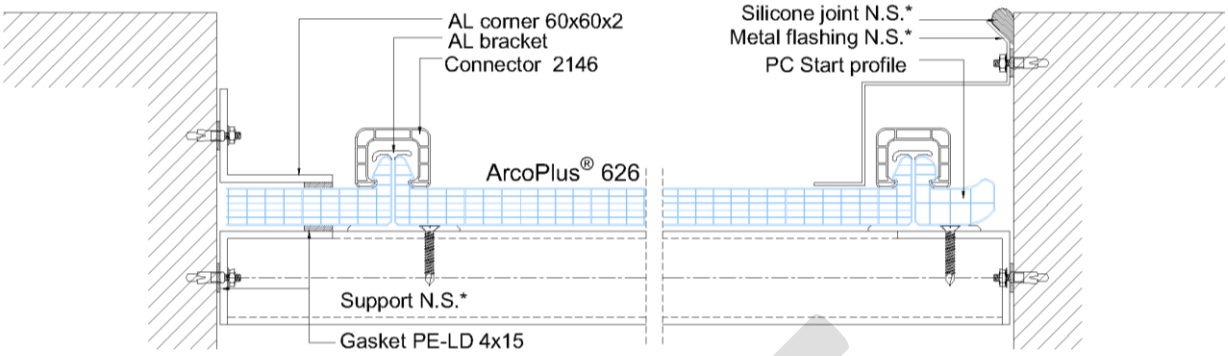


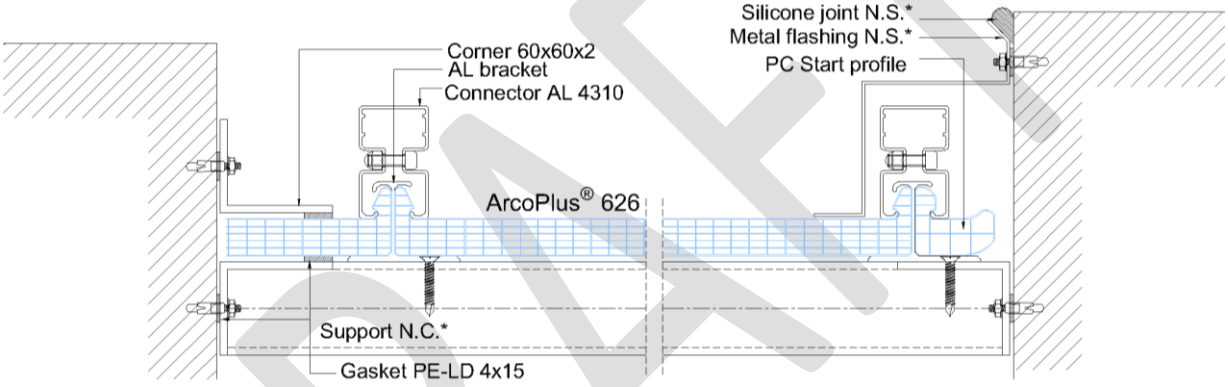
N.S.* = Not supplied by Gallina



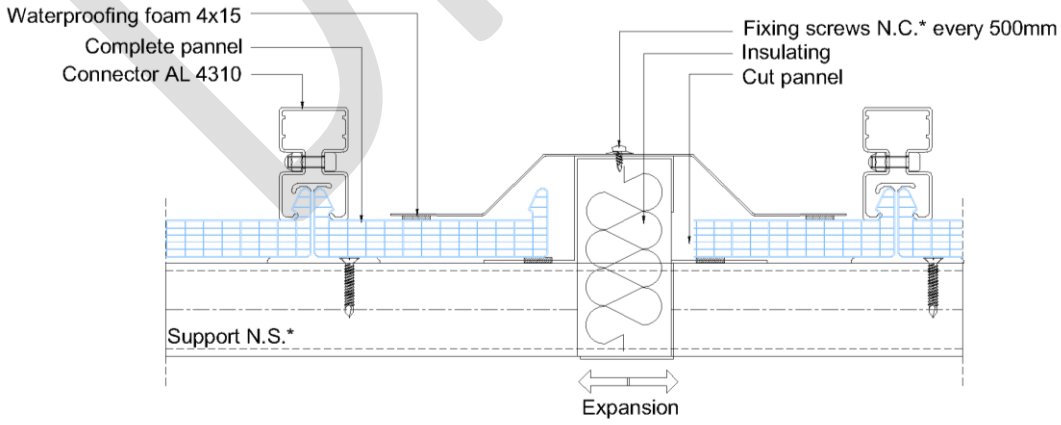
N.S.* = Not supplied by Gallina

Lateral frame profile installation



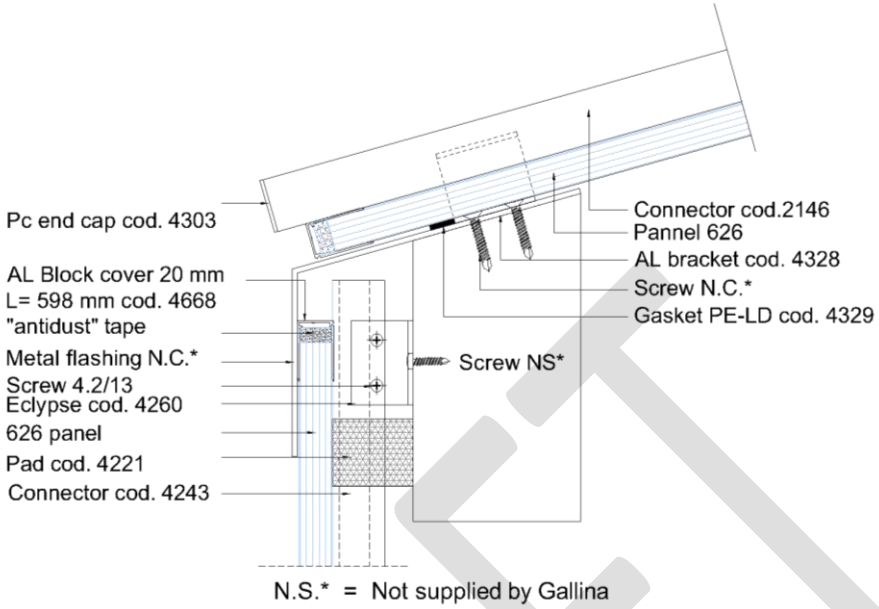


Expansion joint detail

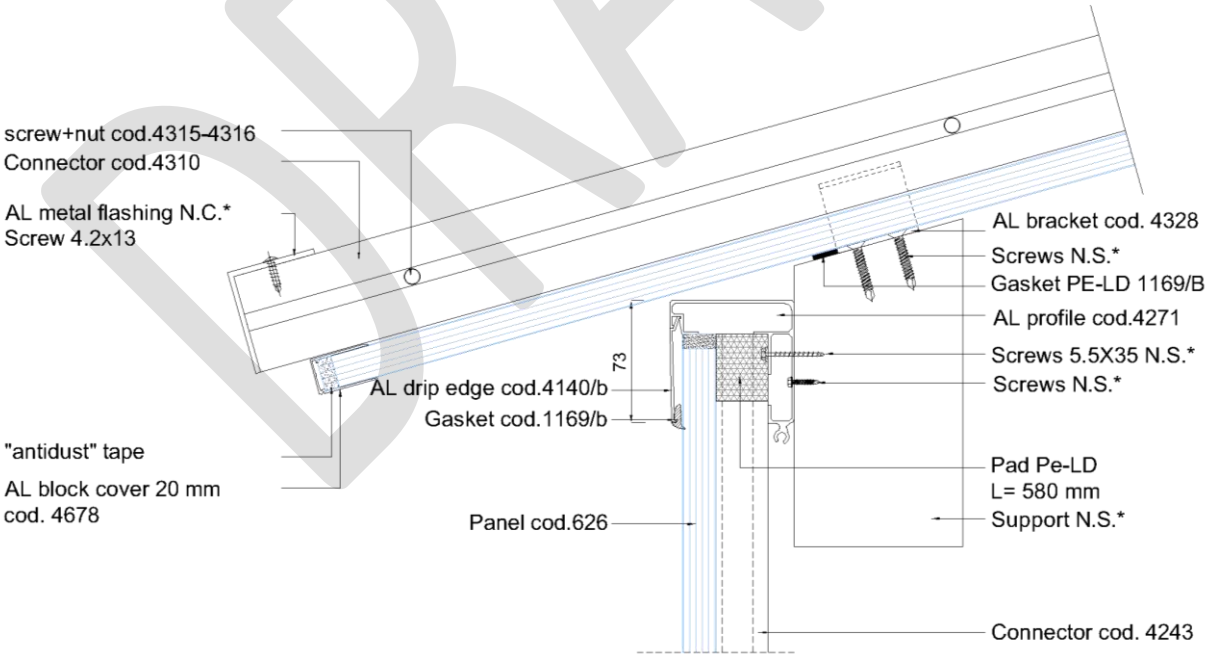


N.S.* = Not supplied by Gallina

Detail of the junction between vertical cladding with top metal flashing cover and modular roofing



Junction between vertical cladding with top 4271 AL profile and modular roofing



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