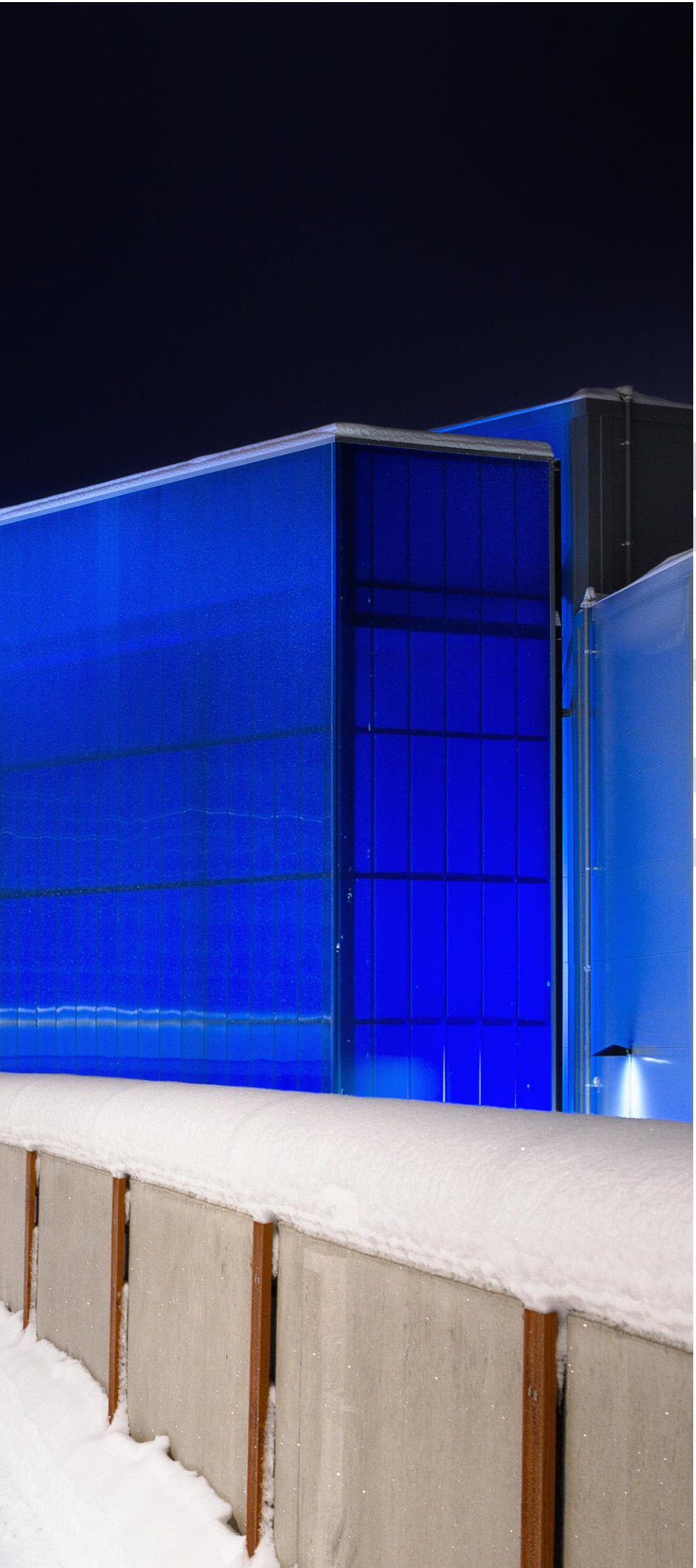
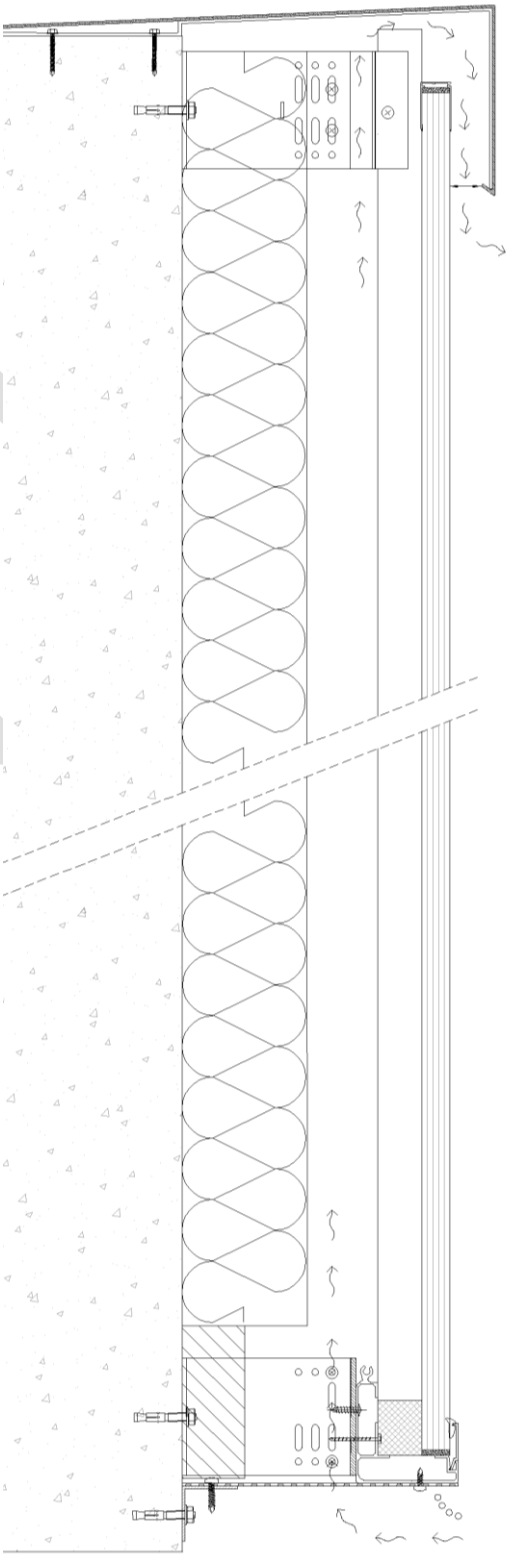


arcoPlus® 626 VENTILATED Facade system



dott.gallina
POLYCARBONATE SYSTEMS & 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.

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1 – System definition

The ArcoPlus® ventilated façade systems with AR Absolute treatment are conceived to envelop the outer wall of new and existing buildings. Those systems can be installed on plan and vertical surfaces, concrete and masonry walls, blind or with openings, located on the ground floor or on the higher floors. The implementation on a lower surface is also possible on plan and horizontal, new or existing masonry supports, even if inaccessible (above 3 m from the ground), and without nearby play area.
ArcoPlus® ventilated façade systems can be used for any building type (industrial, air-conditioned offices, schools, hospitals, sport centres, housing, swimming pool, etc …). This system can be installed with a maximum slope of 15°.
The ArcoPlus® ventilated façade 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.
Those systems can be used on masonry walls or timber frame walls while respecting:

- For timber frame walls, Implementation condition of uses such as defined in ATEC report, ref 2/13-1551.
- Absolut AR treatment will be required on the panels
- The installed breather membrane will be UV protected.
- The breather membrane will be mechanically fixed to prevent the extremities from closing the ventilation gap (fixing with a flat, see page 30).

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

2 – General principles of installation

To obtain a correct installation of the ArcoPlus® ventilated façade systems:

- The Cladding T brackets must be installed in quincunx along connectors 4243.
- The distance between the axe of the connectors 4243 must be 600 mm.
- An anti-rodent grid must be installed in the lower part of the cladding.
- The distance between the ground and the lower part of the base profile must be at least:
  50 mm for the hard grounds
  150 mm for the soft grounds
- In order to conduct the expansion of connectors cod. 4243, only one fixed point will be created by connector. The other fixings will be of slipping type, noted on our drawings by “mobile point”.
- The panels are delivered custom-made and the installation must take account of the expansion constraints and air circulation for the ventilation of the system.
- Being given the elasticity of the polycarbonate panels and their catch to the level of the connectors, those do not need to be cut during the splitting up of framework (connector ref. 4243)
- If int necessary to cut the panels on the building site, use fine cutting disc or a saw with fine teeth (5 tooth/cm). Then, to evacuate the possible chips inside the cells and to remake the sealing, use the micro perforated adhesive tape.
- The installation of the system must be done with advance: don’t install all the connectors first and then all the panels. The system must be installed progressively in its totality.
- The film of protection of the panel must be withdraw after the installation.

3 – 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

4 – 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.

5 – Panels specifications/treatments

	626
Width (mm)	600±2
Thickness (mm)	20
AR	√
IR	√
Bi-coloured	√
UV Tech	√
UV Matt	√
AG	√
AR Absolute	√

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.

6 – Thermal specifications

	626
Uc (W/m².K)	1.7
ψi (W/m.K)	0.16
χk (W/k)	0.005

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

7 – Fire reaction according to EN 13501-1

Pannel	Fire classification	Combustible mass (MJ/m²)
626	B-s,1 d 0	80

Classificazione al fuoco conforme alla norma EN 13501-1:2007

8 – 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

9 - 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.

10 - 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.

11 – How to replace a damaged panel?

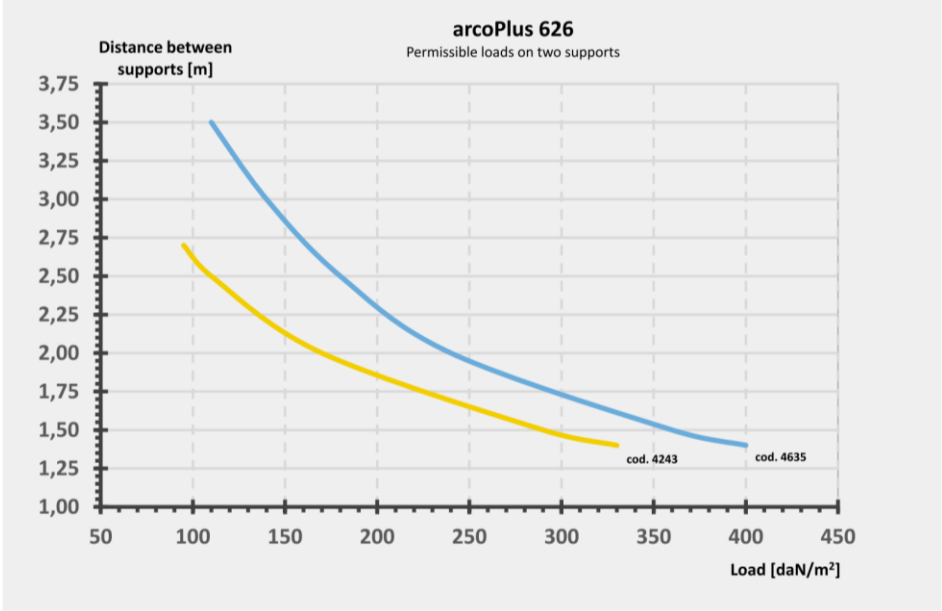
1. Remove the epdm gasket.
2. Unclip the frontal opening aluminium profile.
3. Using a portable grinder with a diamond disc, cut the damaged panel carefully, alongside the connector.
   A guide could be used in order to protect the other panels against any damage.
   Then unclip the weakened panel.
4. 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 – Width of the air entry and air exit of the ventilation gap with crystal panels with AR treatment or opal.

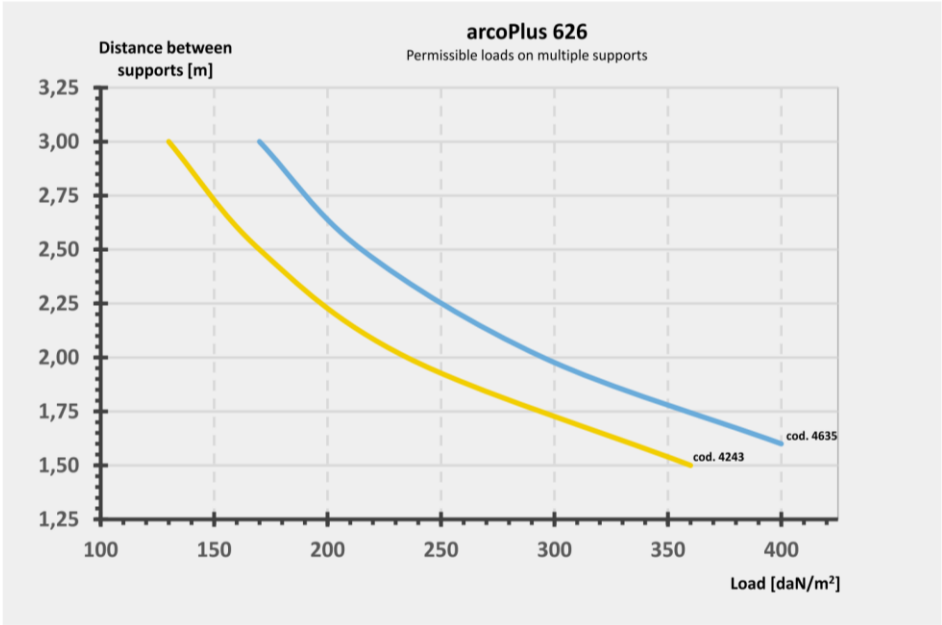
ORIENTATION	Cladding's height	FLUSSO SOLARE			
		0-250	251-500	501-750	751-1000
NORD	0-3 m	20	20	20	20
	3.01-6 m	20	20	20	20
	6.01-9 m	20	20	20	20
	9.01-12 m	20	20	20	30
	12.01-16 m	20	20	20	30
EST	0-3 m	20	20	20	30
	3.01-6 m	20	20	20	30
	6.01-9 m	20	20	20	40
	9.01-12 m	20	20	30	*
	12.01-16 m	20	20	40	*
SUD	0-3 m	20	20	20	30
	3.01-6 m	20	20	20	30
	6.01-9 m	20	20	20	40
	9.01-12 m	20	20	30	*
	12.01-16 m	20	20	40	*
WEST	0-3 m	20	20	20	30
	3.01-6 m	20	20	20	30
	6.01-9 m	20	20	20	40
	9.01-12 m	20	20	30	*
	12.01-16 m	20	20	40	*

13 – Permissible loads.

626 – Permissible loads on two supports – standard installation.

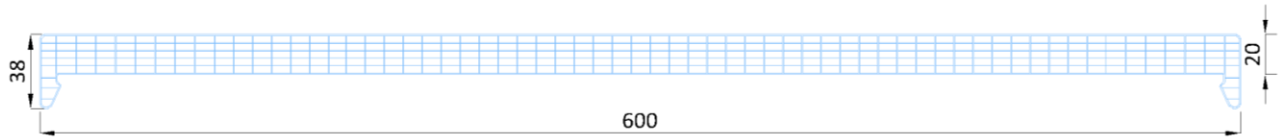


626 – Permissible loads on multiple supports – standard installation.



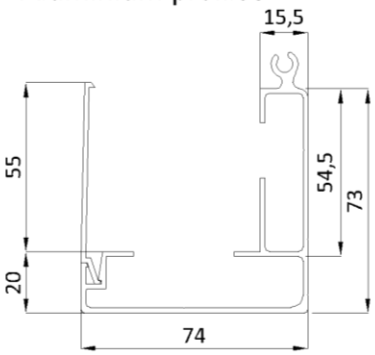
The permissible load for a specific distance between the supports can be calculated by interpolation between the x-axis value and the y-axis value.

arcoPlus® Panels , Connectors, Profiles and Accessories

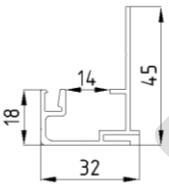


tollerance +/- 2 mm

Aluminium profiles



4271



4276/X

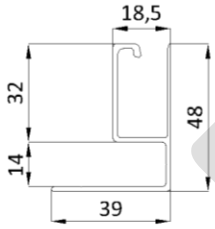
Drip AL edges

4275

4755

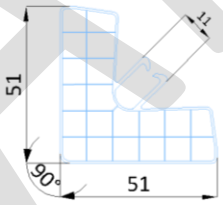
4140/B

4243



AL end profile
4589

4588



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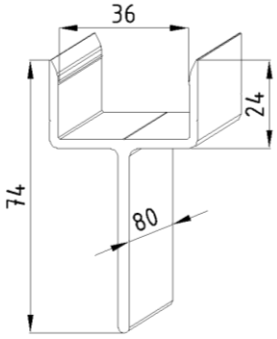
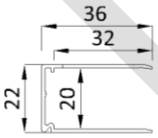
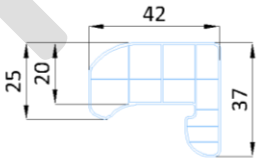


4760

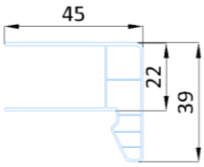


4668/600

Additional tape
"antidust"4327

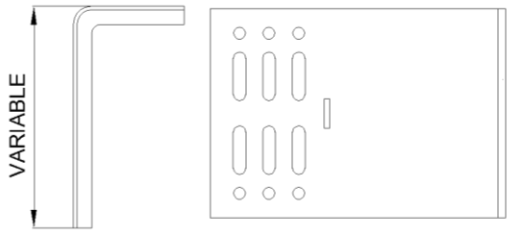


2179

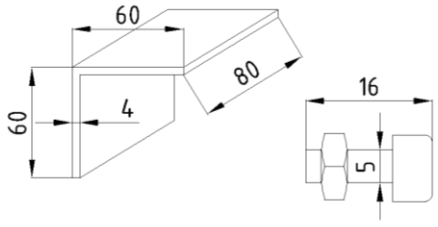


2180

1169/b

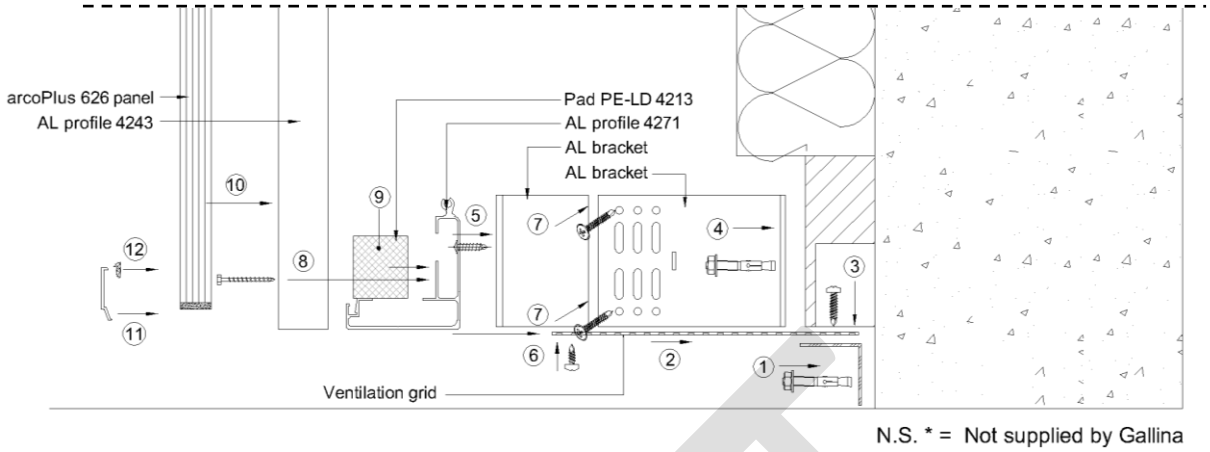


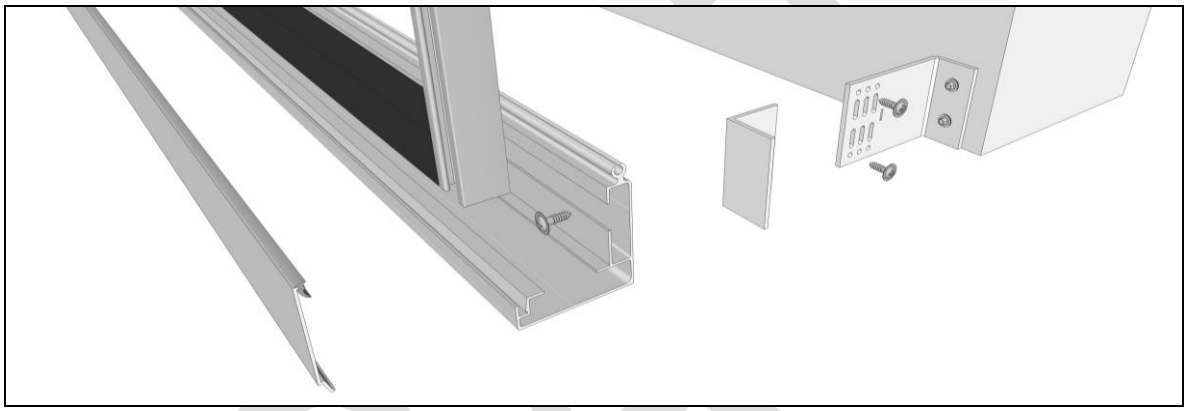
Aluminium, inox or steel
fixing bracket 4871

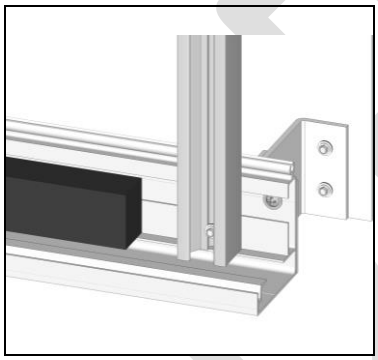


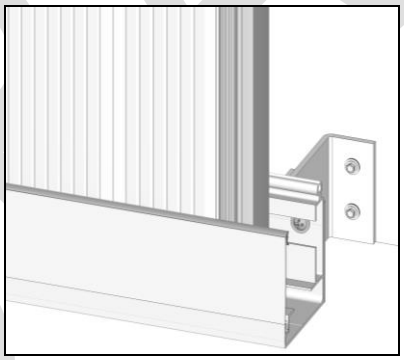
Aluminium bracket 60x60x4 sp
+ bolts 5x16

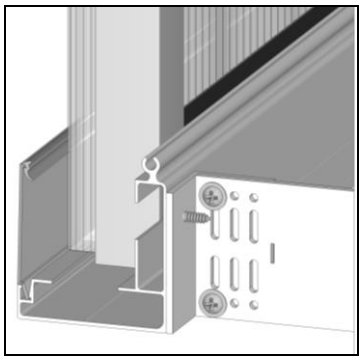
Cladding's lower part detail with profile cod. 4271





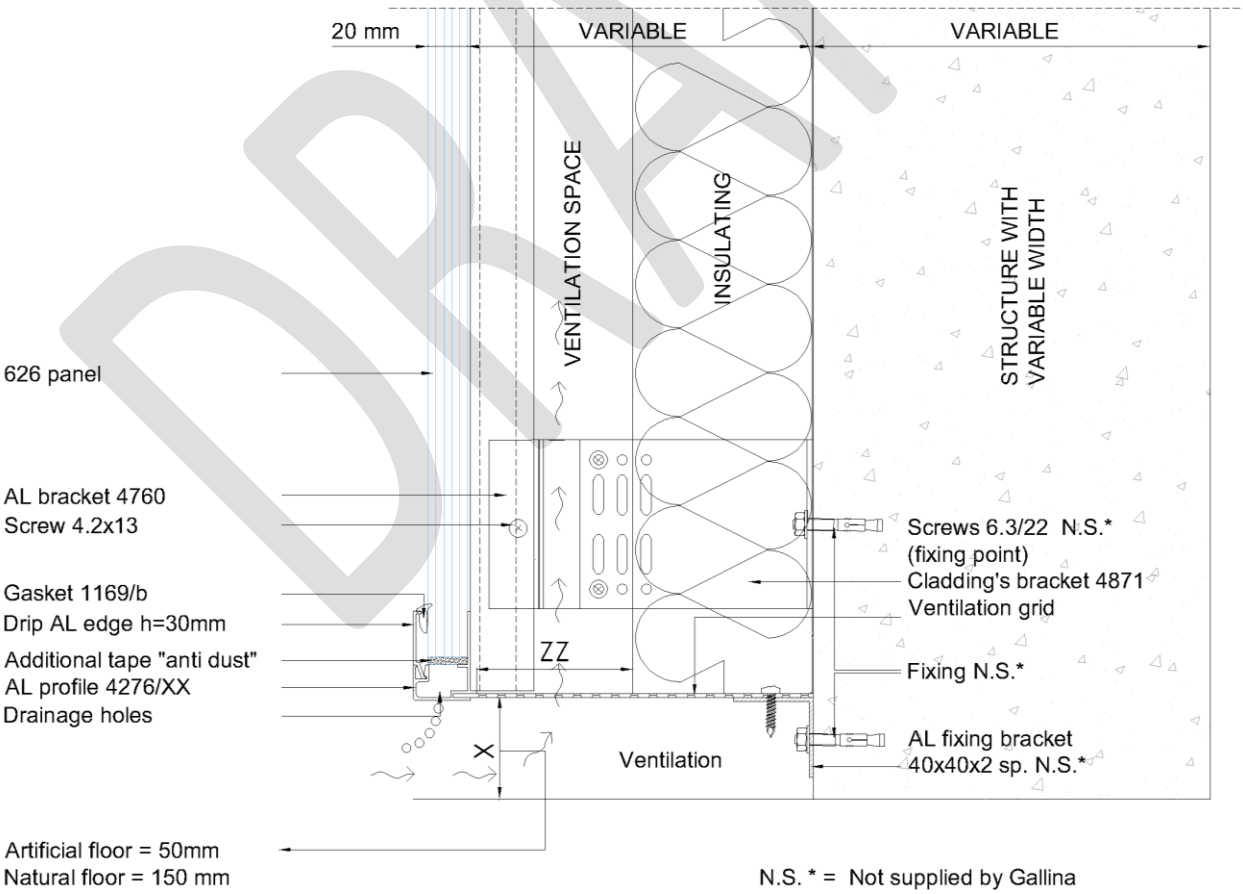




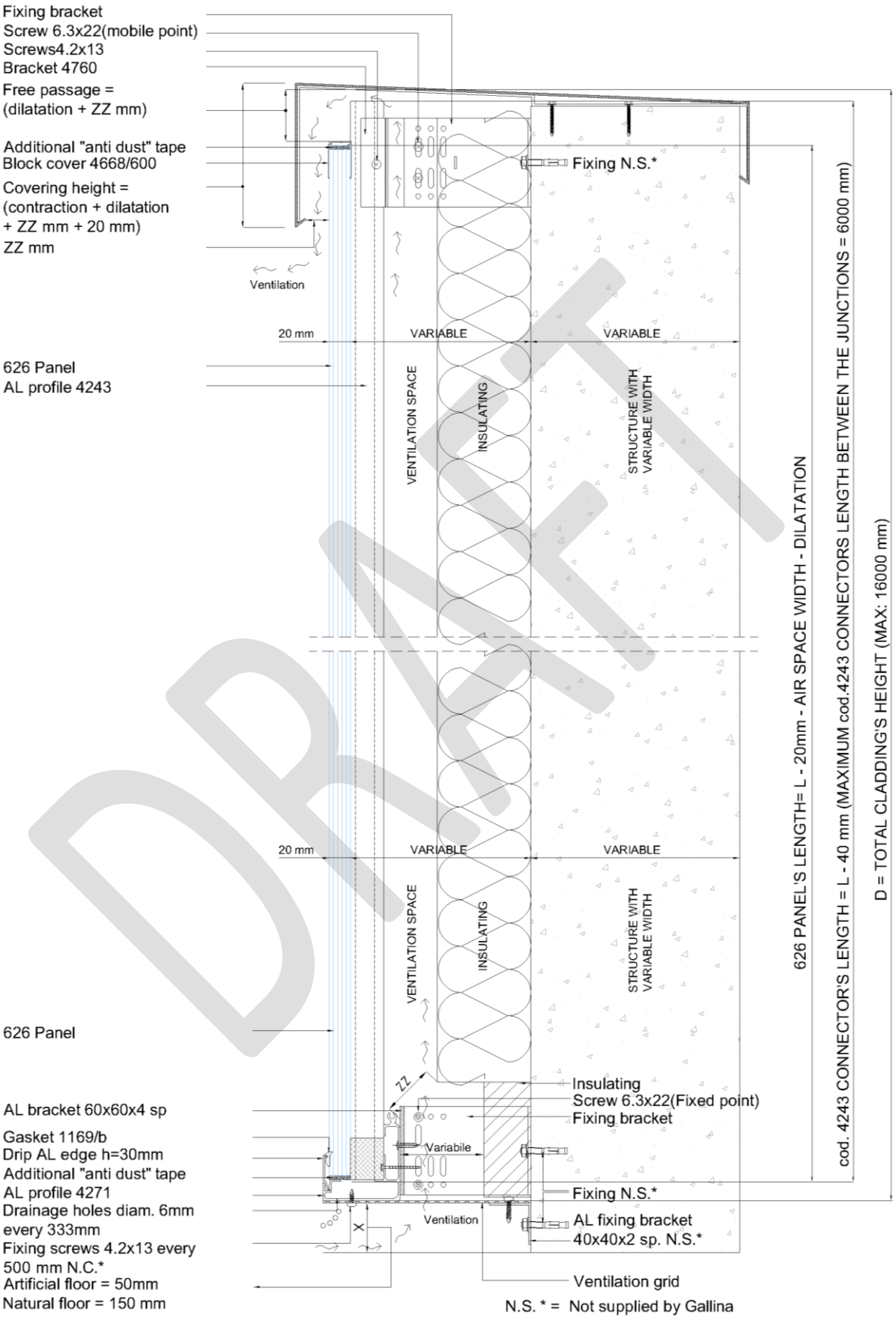


1 – Fix the corner profile to support the perforated grid (N.C.*);
2 e 3 – Fix the grid on the corner profile;
4 – Fix the cladding's support bracket (N.C.*) to the structure;
5 – Fix the profile cod. 4271 to the aluminium bracket;
6 – Fix the grid to the profile cod. 4271;
7 – Fix the profile cod. 4271 with the bracket to the structure;
8 e 9 – Fix the connectors cod. 4243 putting the pad cod. 4213 between them;
10 – Insert arcoPlus® 626 panels;
11 – Clip the drip al edge in the profile cod.4271;
12 – Insert the gasket cod. 1169/b between the drip edge and the panel.

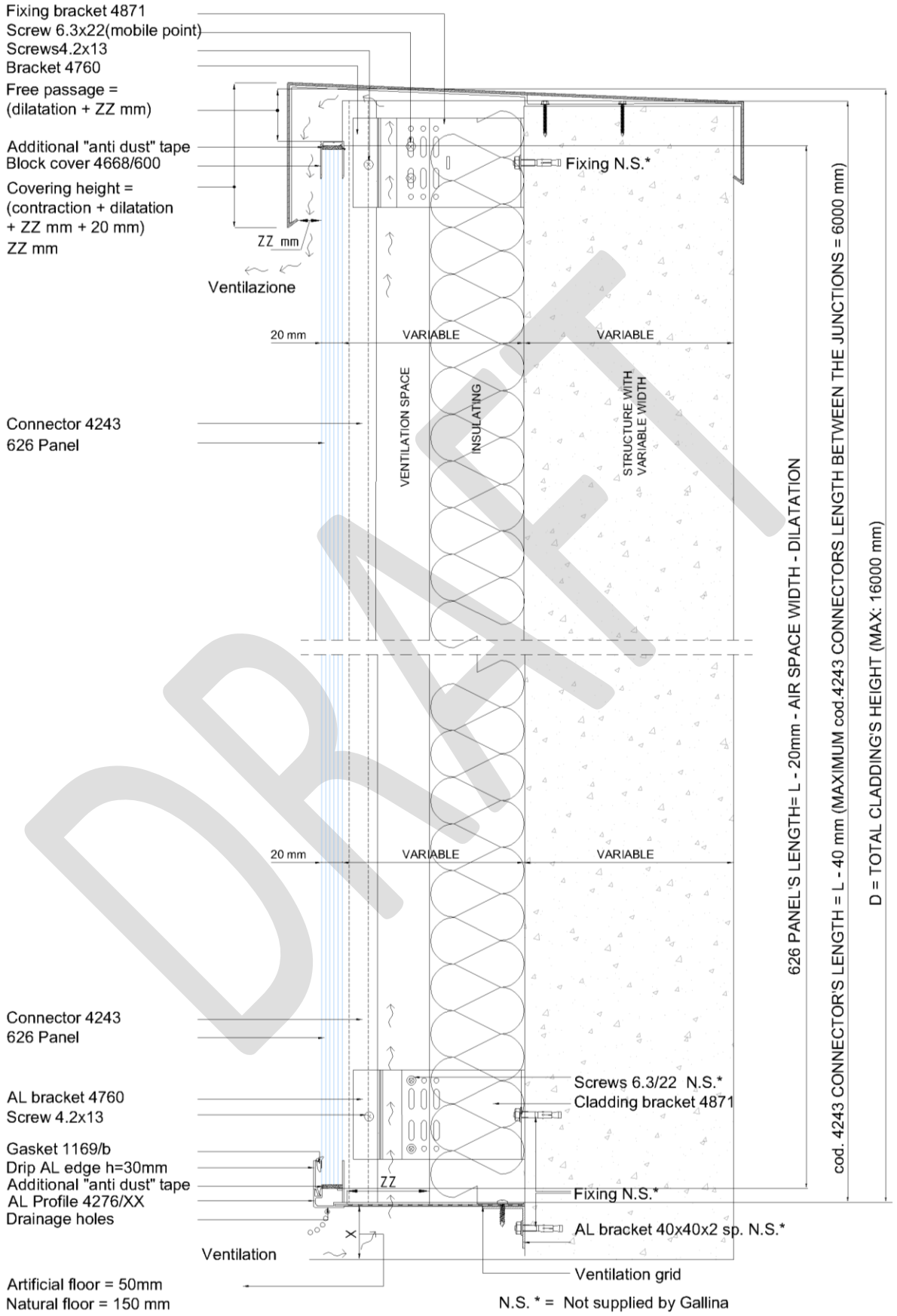
Cladding's lower part detail with profile cod. 4276



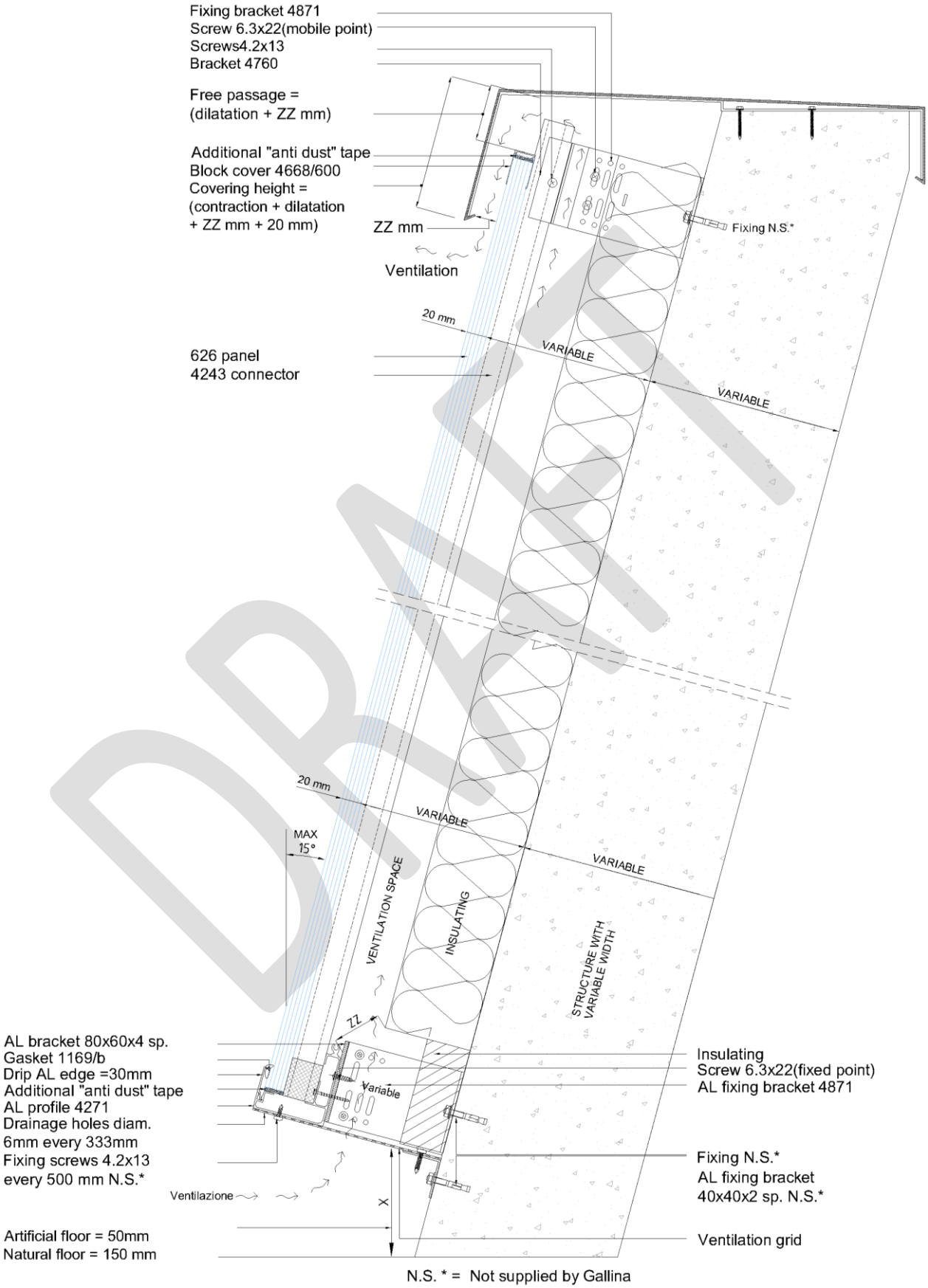
Vertical section with base profile cod. 4271



Vertical section with base profile cod. 4276

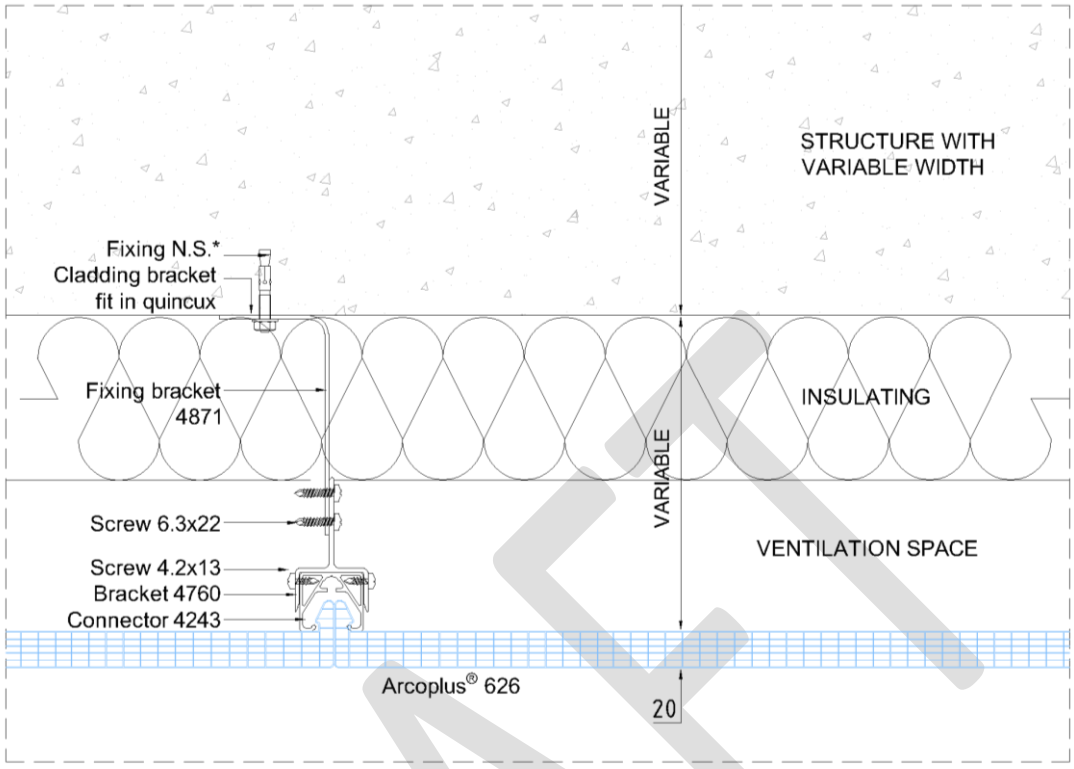


Inclined cladding's vertical section with profile cod. 4271



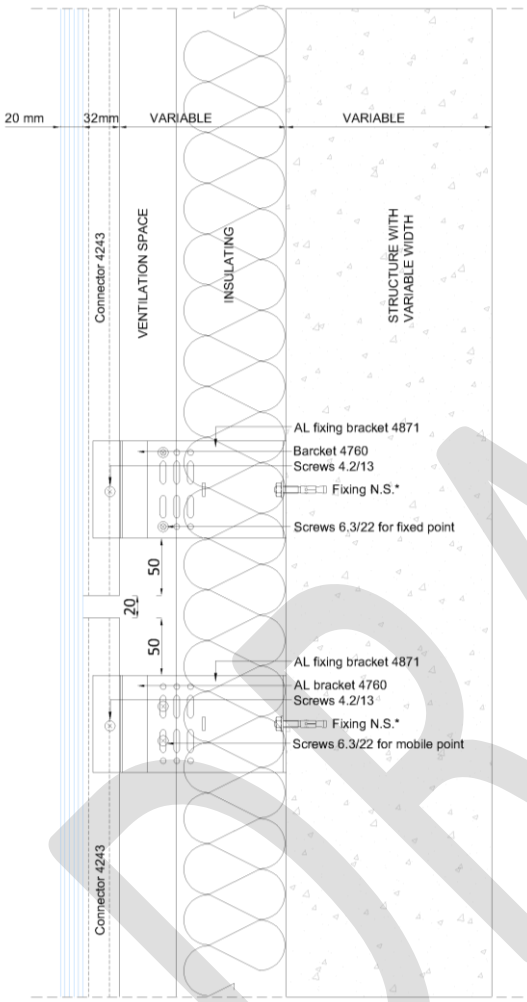
N.S. * = Not supplied by Gallina

Connector's fixing detail cod. 4243

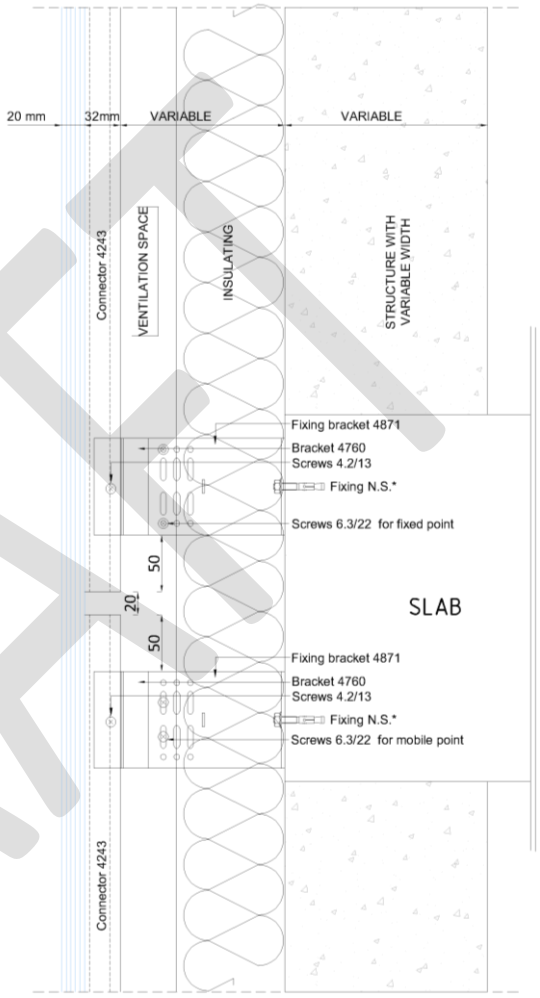


Connectors' vertical junction detail cod. 4243

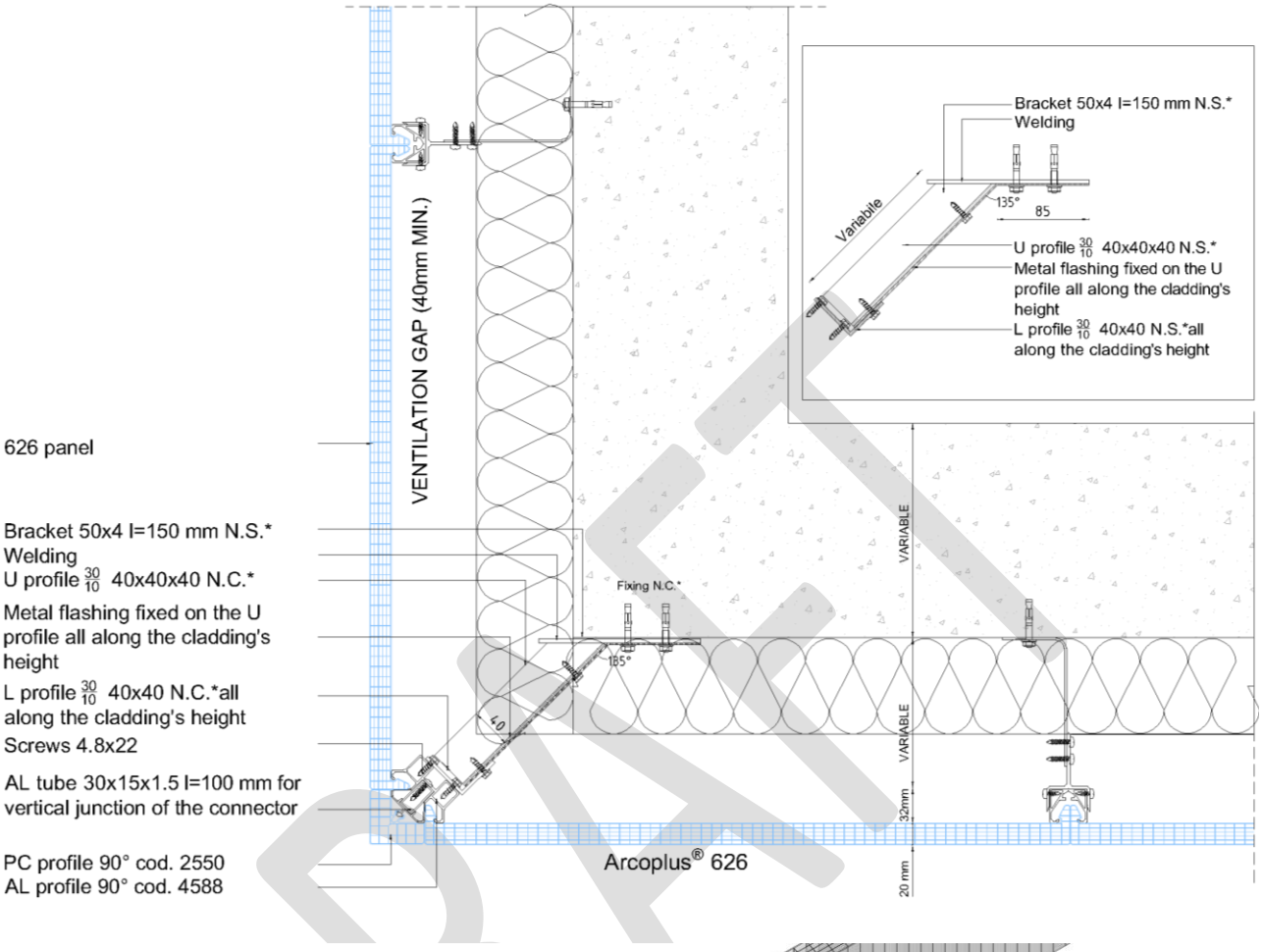
On a continuous wall

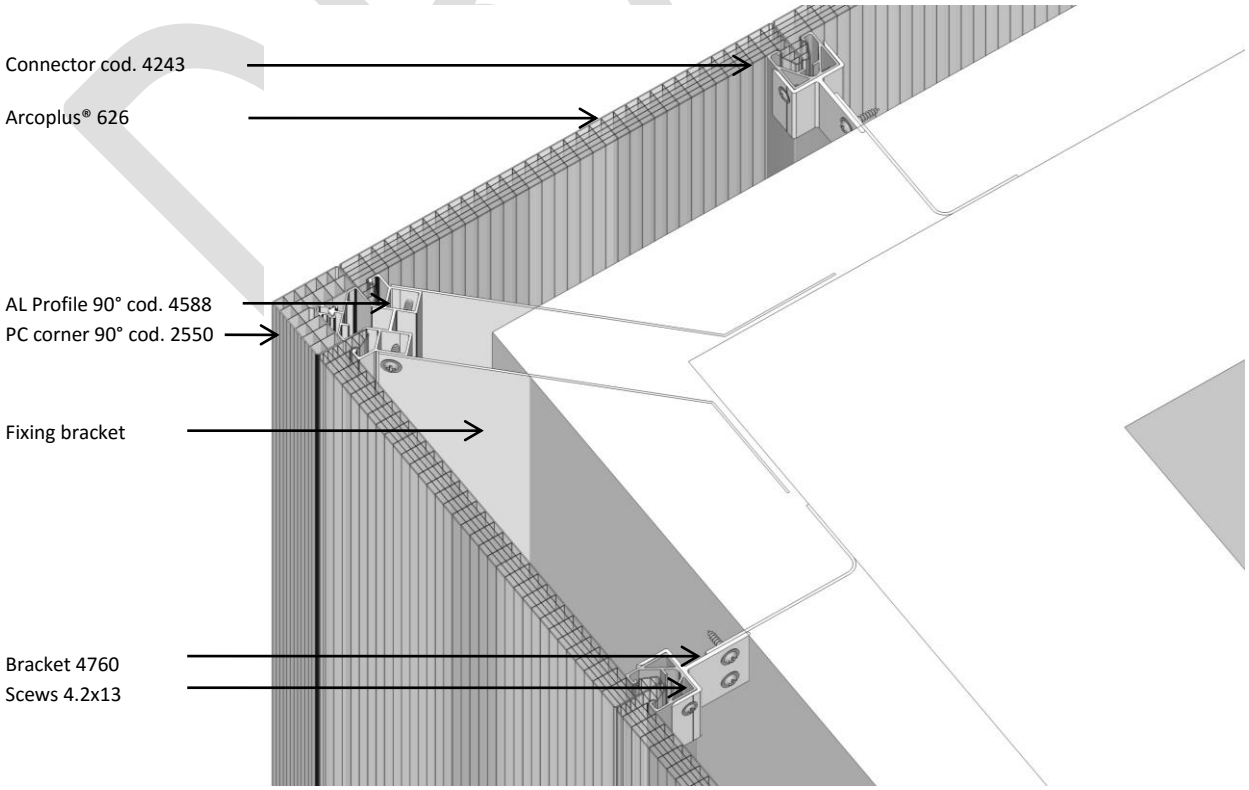


On a slab

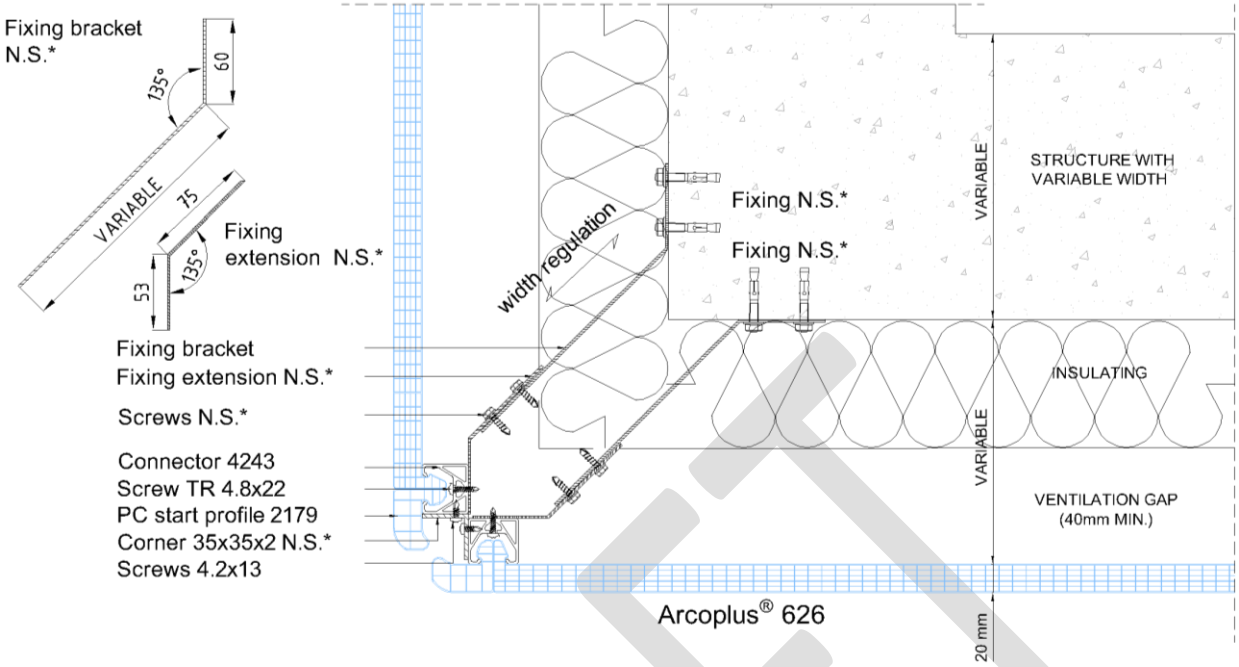


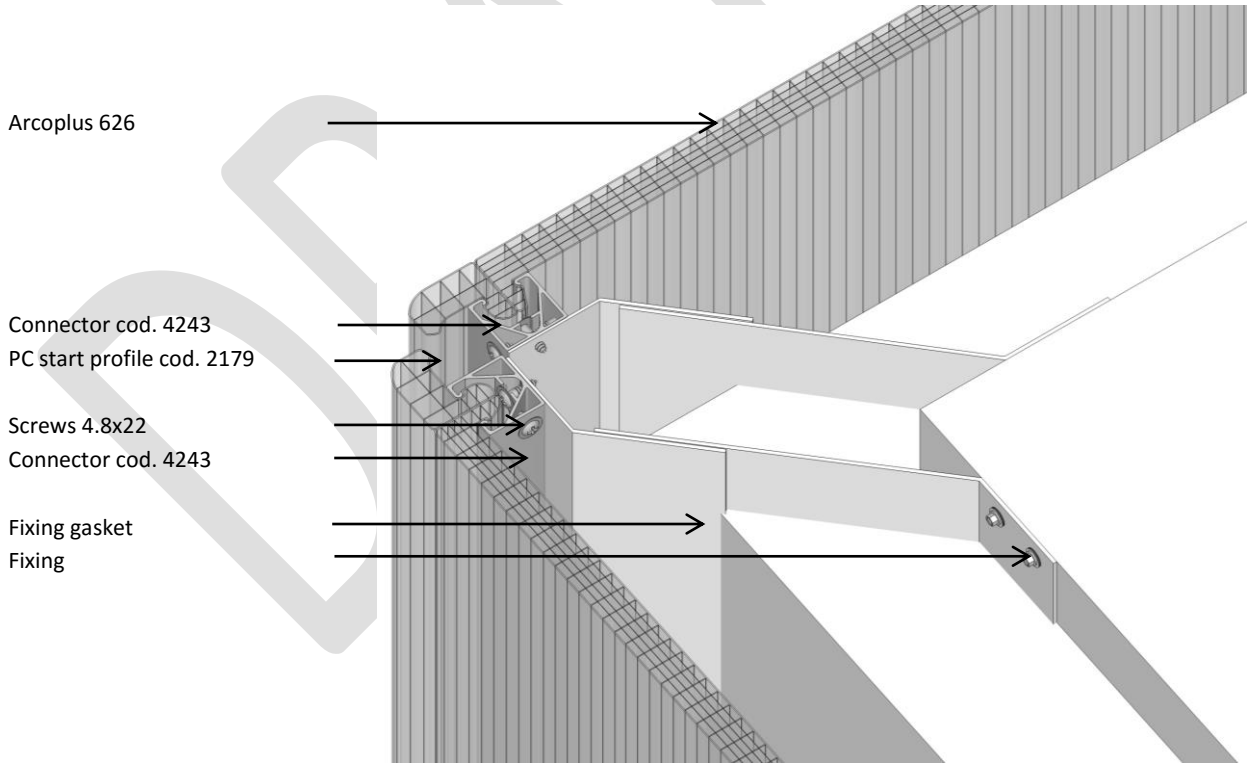
90° corner's detail



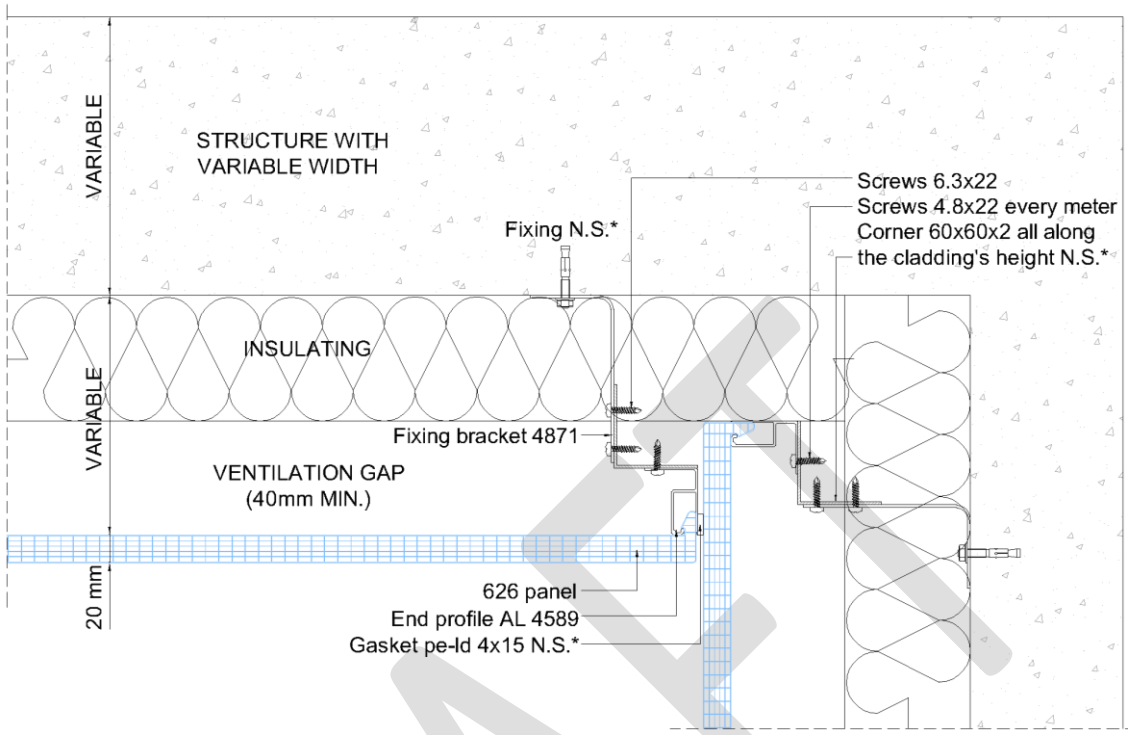


Rounded corner's detail with PC profile cod. 2179

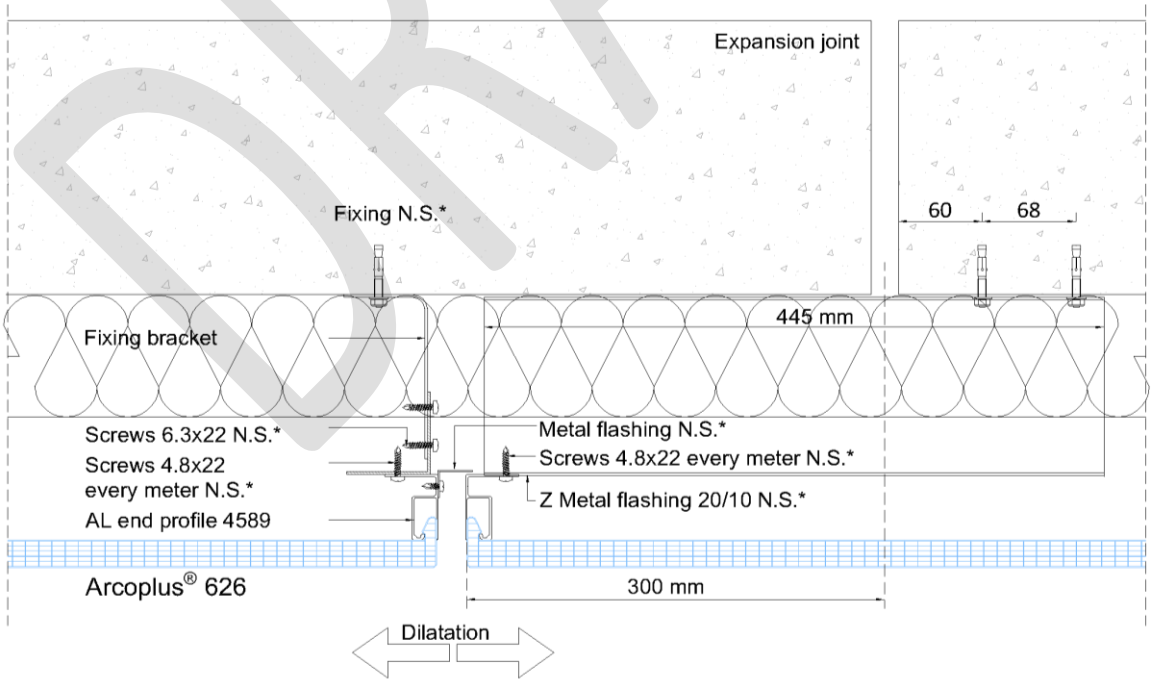




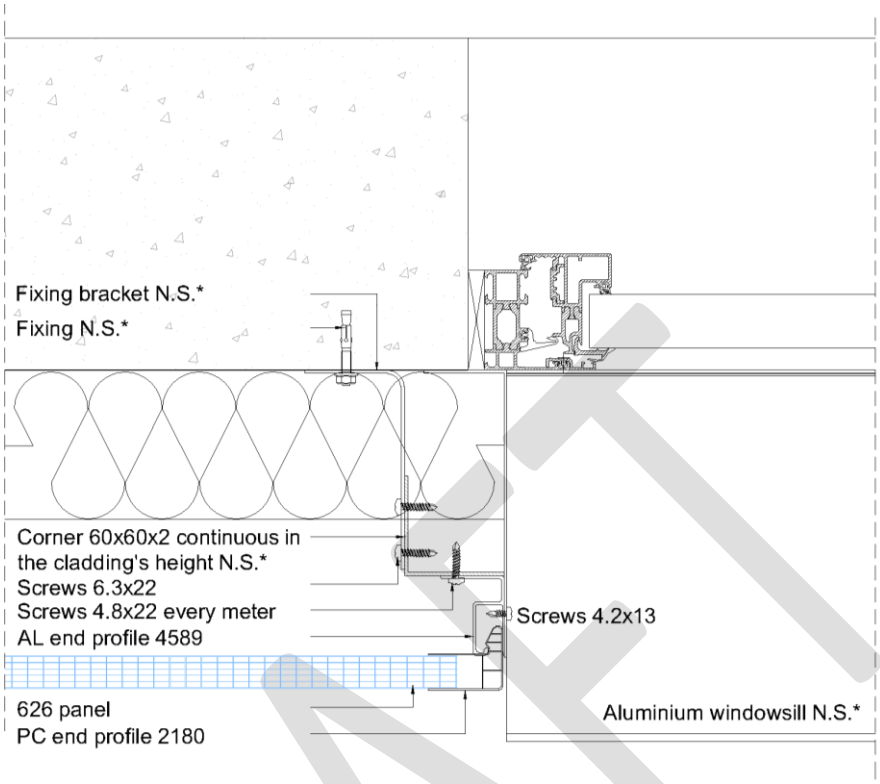
Inner angle detail



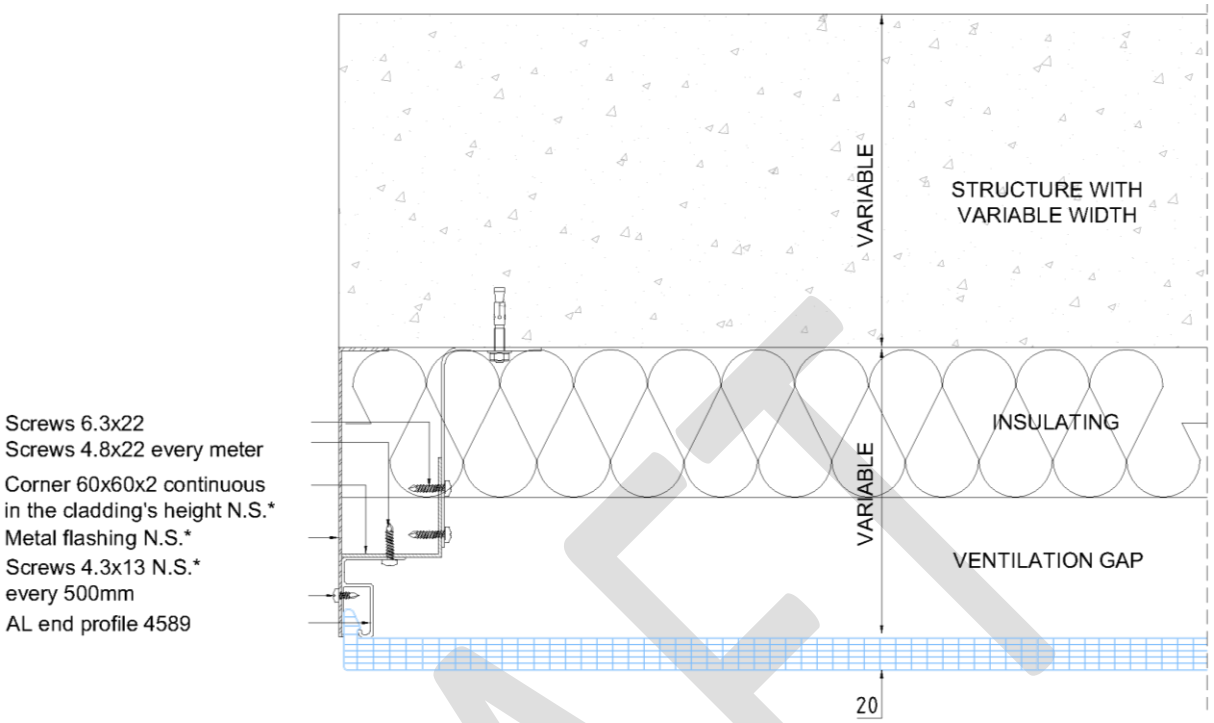
Expansion joint

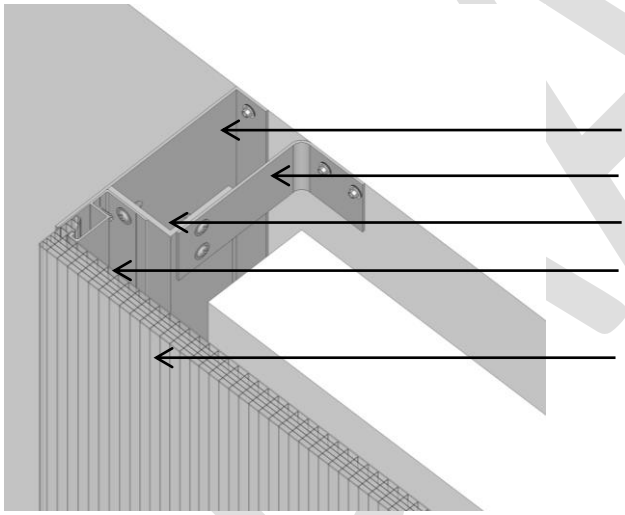


Bay covering detail



Vertical section with arcoPlus 9257 and lateral profiles cod. 4800+4809
Height from 0 to 16000 mm





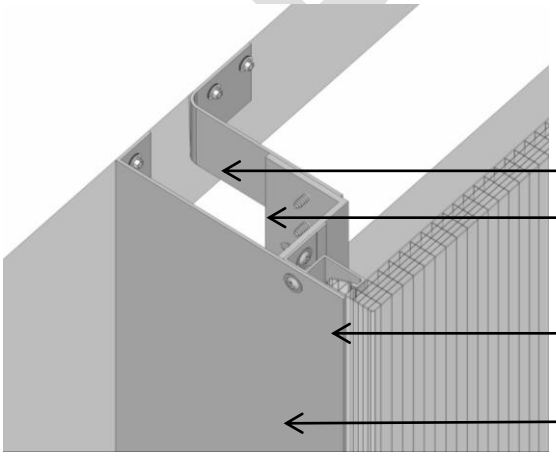
Folded metal-flashing N.S.*

Fixing bracket N.S.*

Corner profile all long the cladding's height N.S.*

AL terminal profile cod. 4589

626 panel



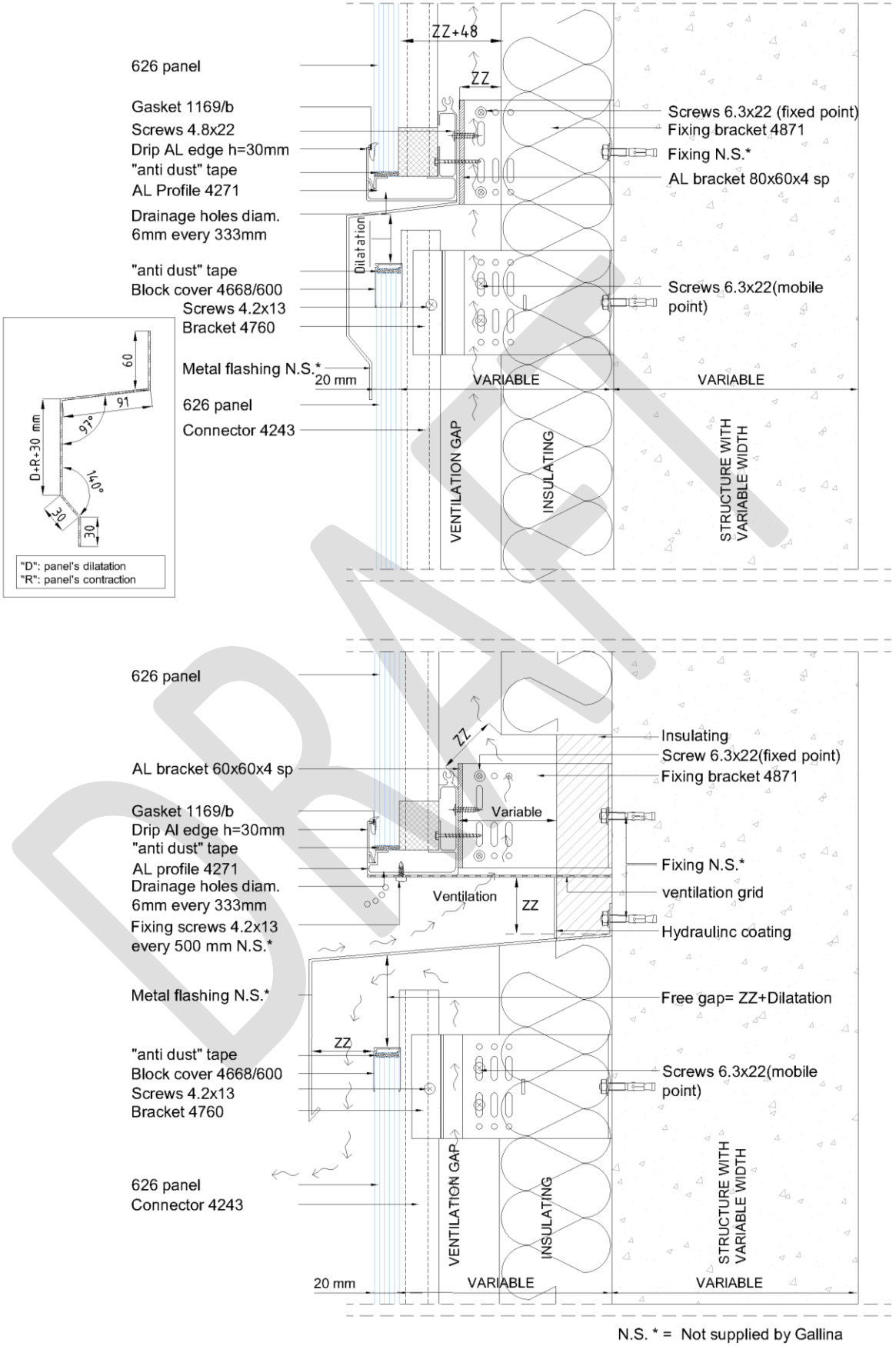
Fixing bracket N.S.*

Corner profile all long the cladding's height N.S.*

AL terminal profile cod. 4589
Screw 4.2x13 N.S.* every 500 mm

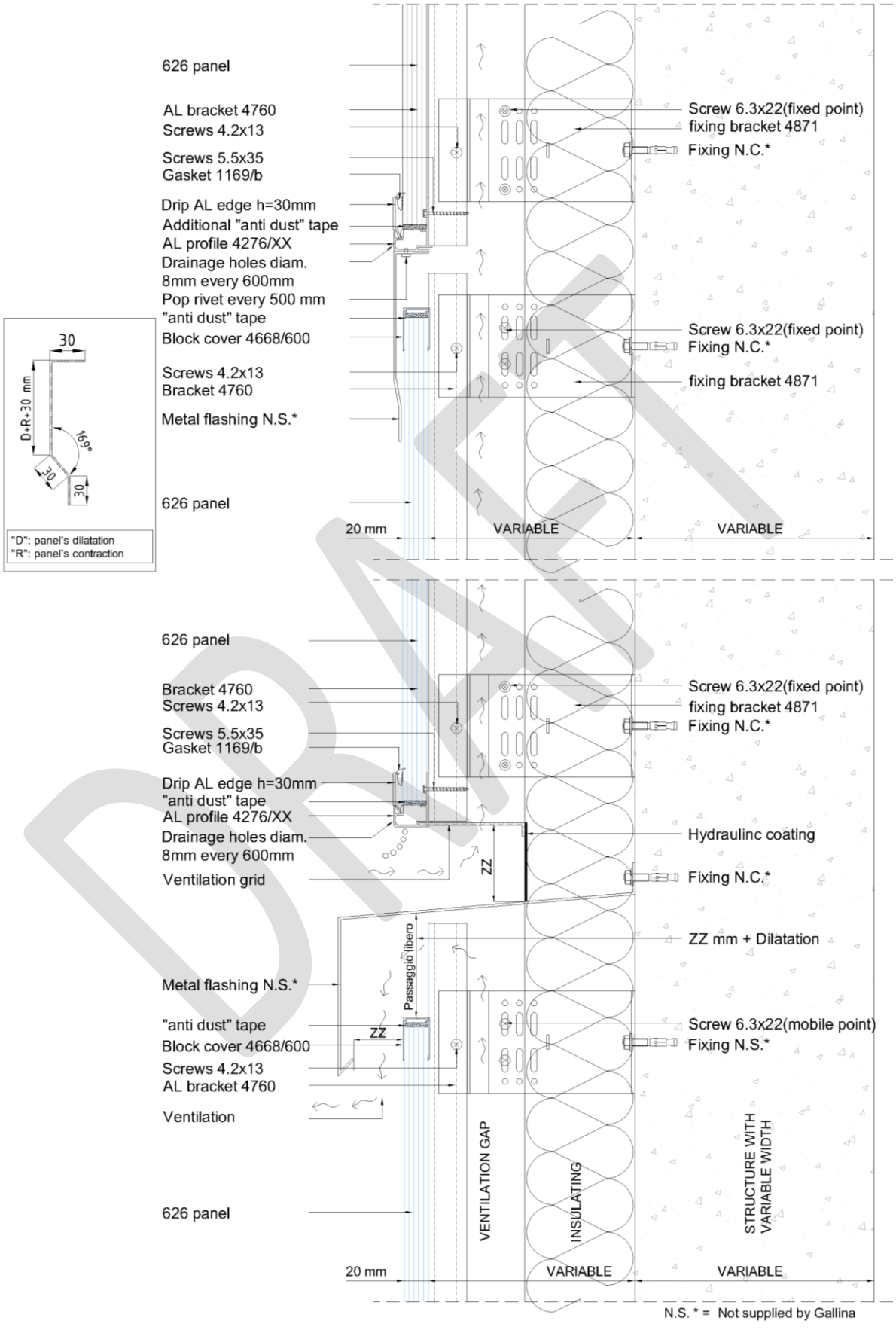
Metal flashing N.S.*

Detail of the junction between two panels with the profile cod. 4271

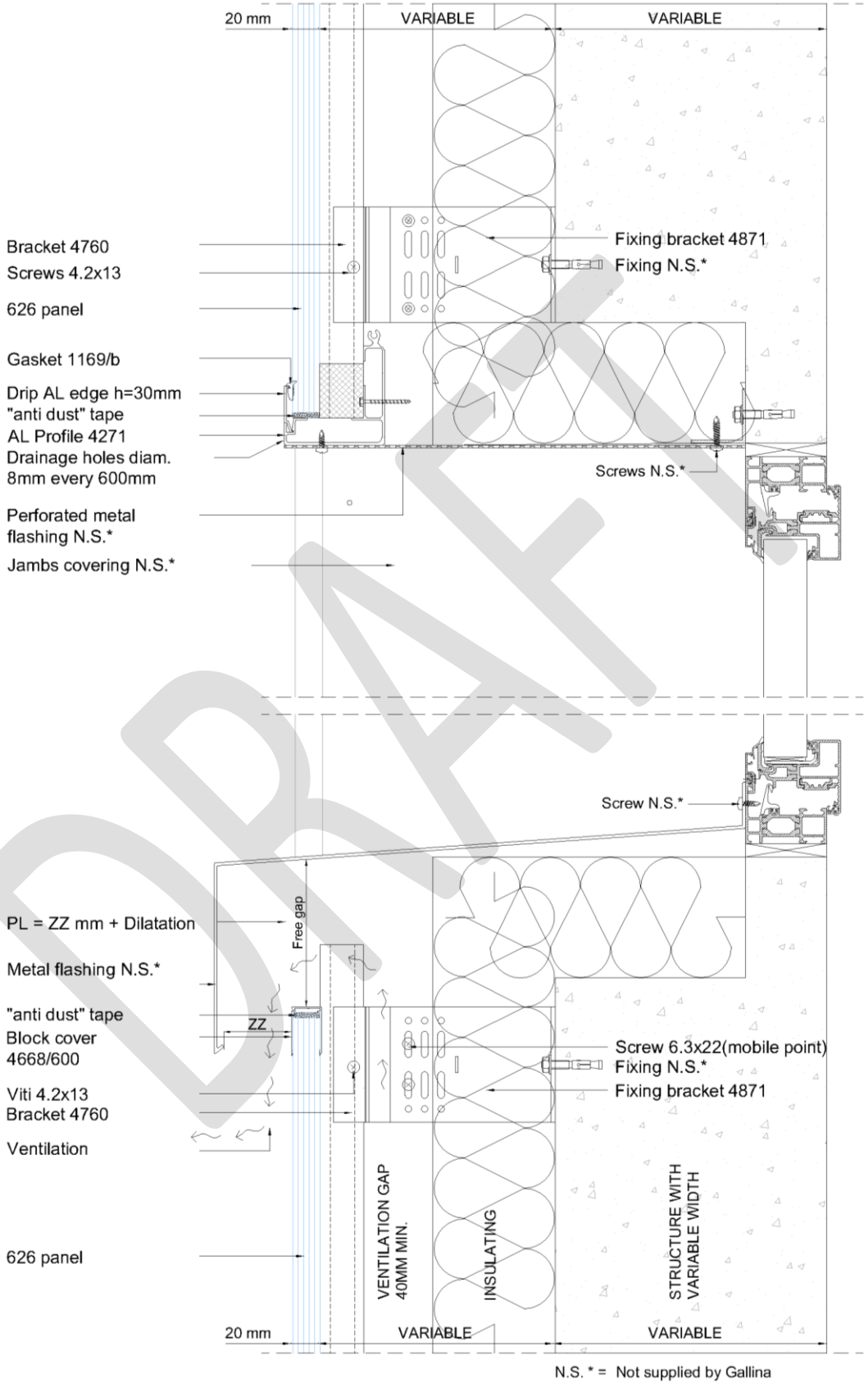


N.S. * = Not supplied by Gallina

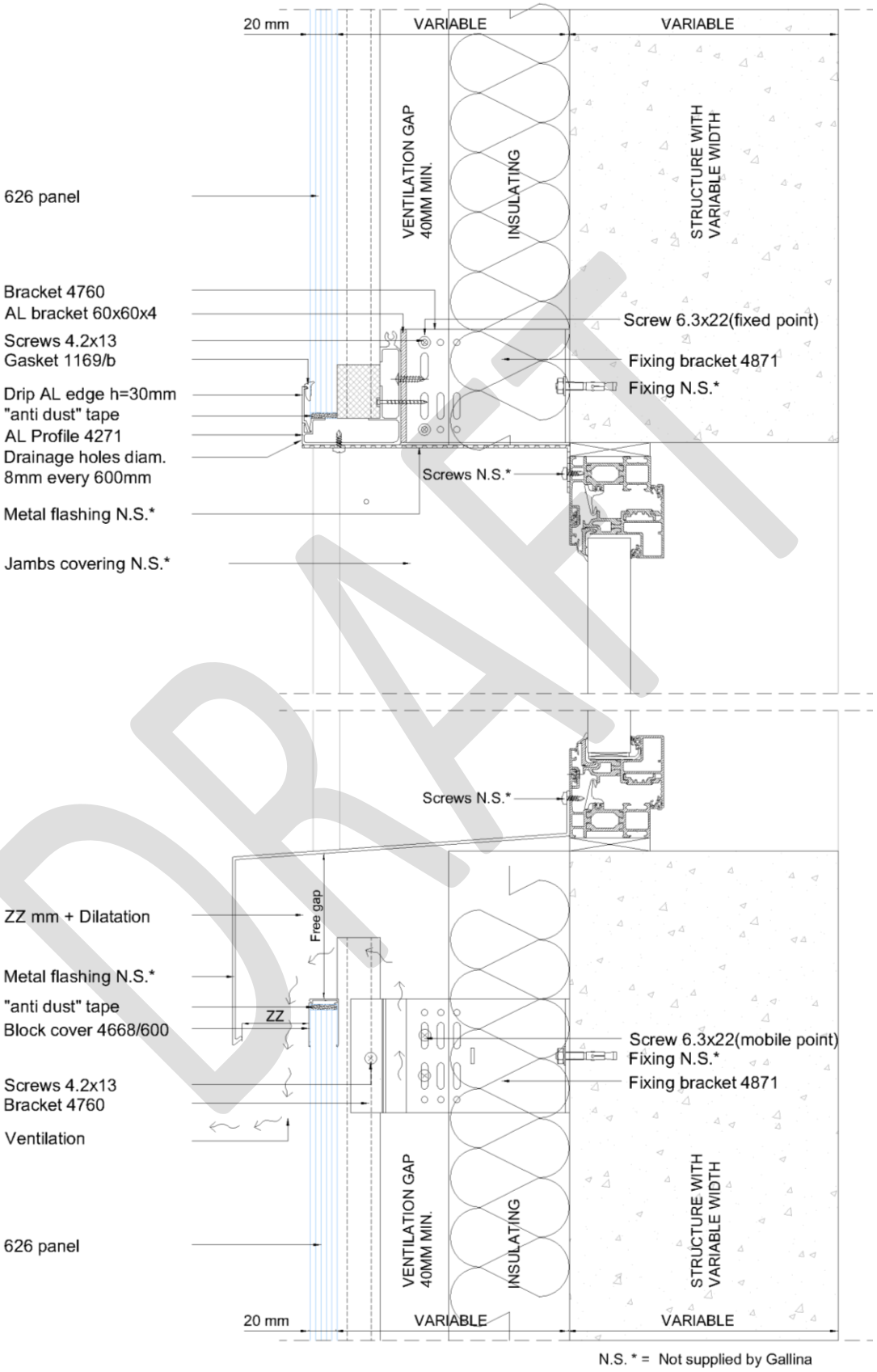
Detail of the junction between two panels with the profile 4276/XX



Bay covering detail with profile 4271 – internal framing

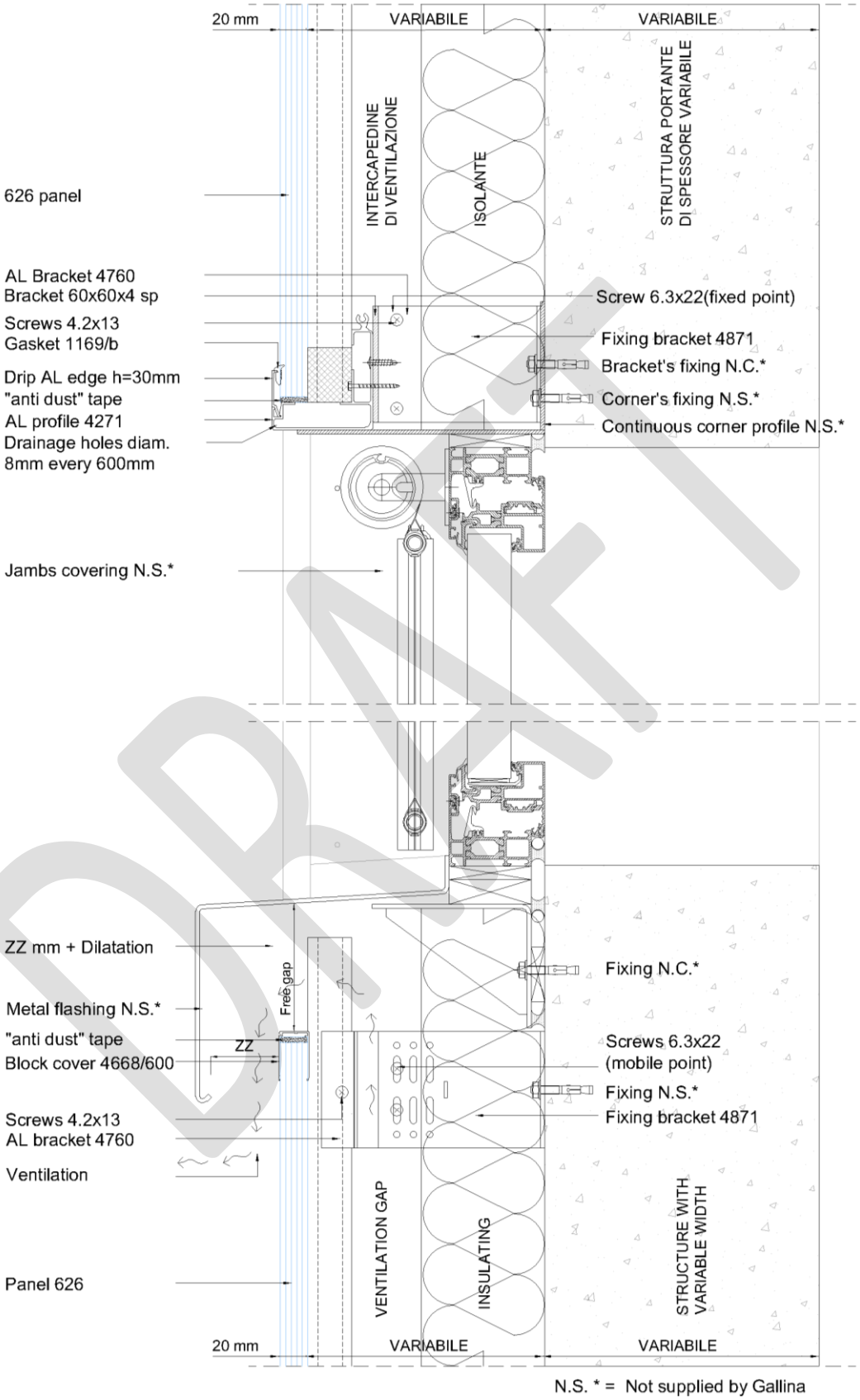


Bay covering detail with profile 4271 – external framing



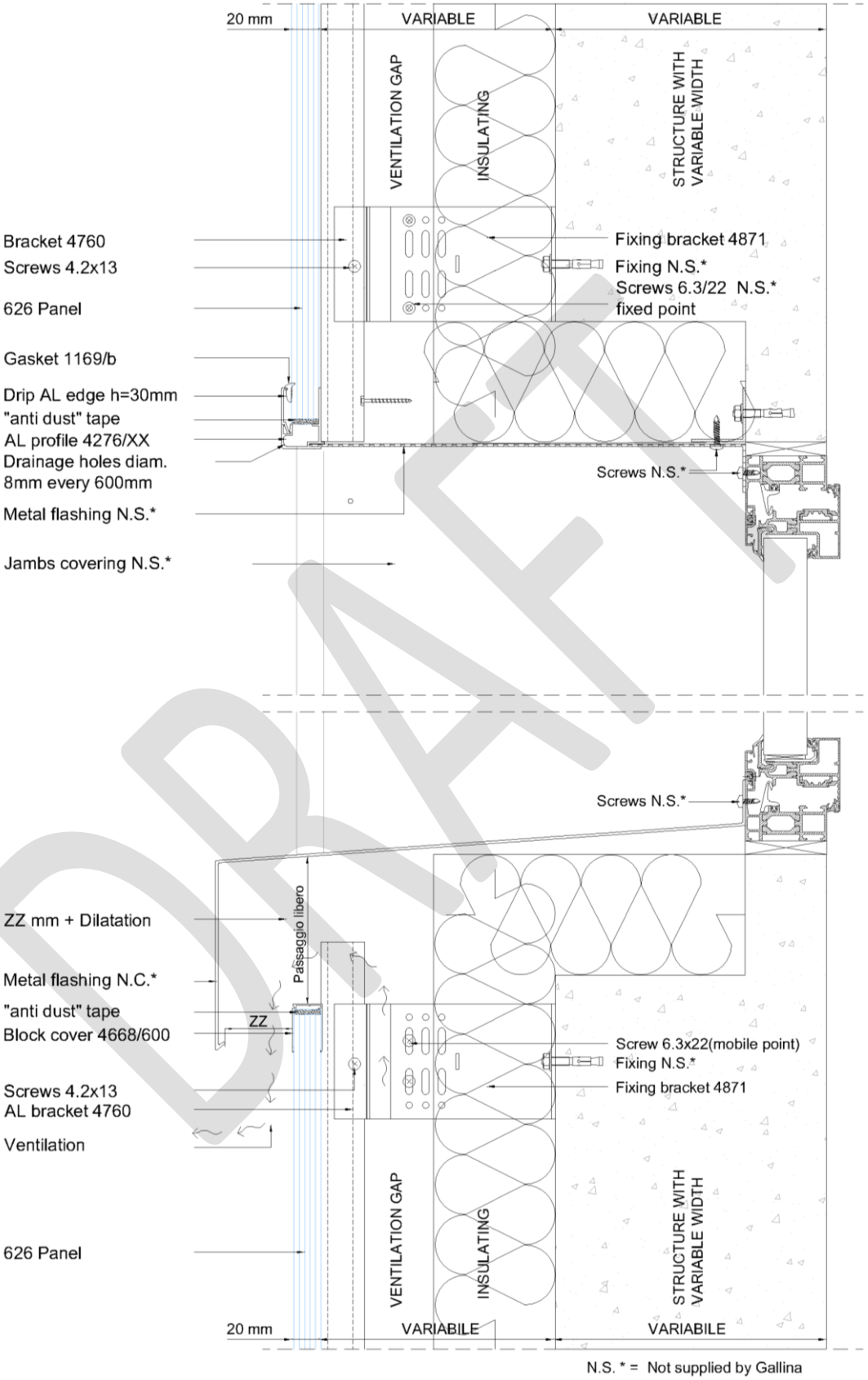
N.S. * = Not supplied by Gallina

Bay covering detail with profile 4271 and with precast frame



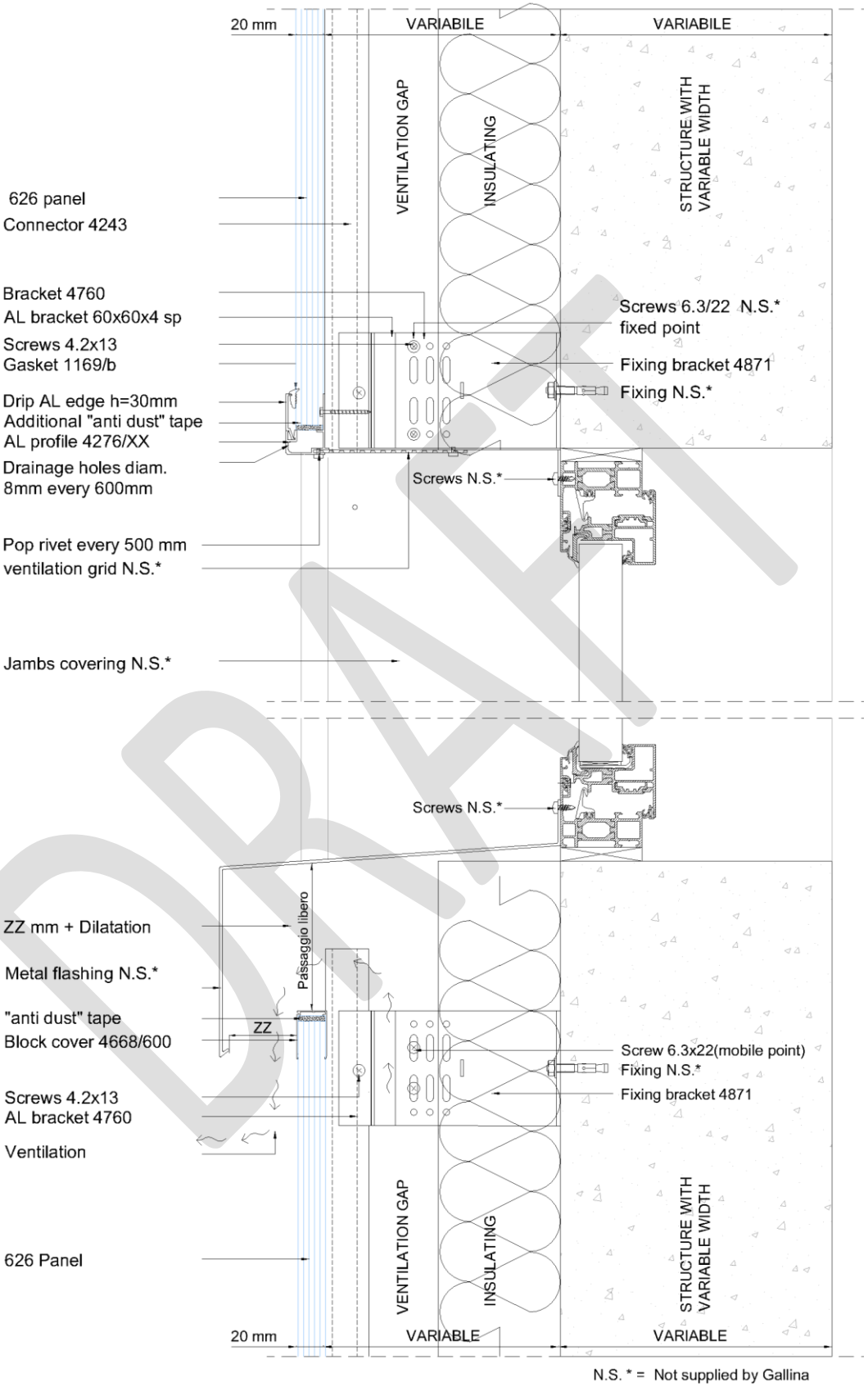
N.S. * = Not supplied by Gallina

Bay covering detail with profile 4276 – internal framing



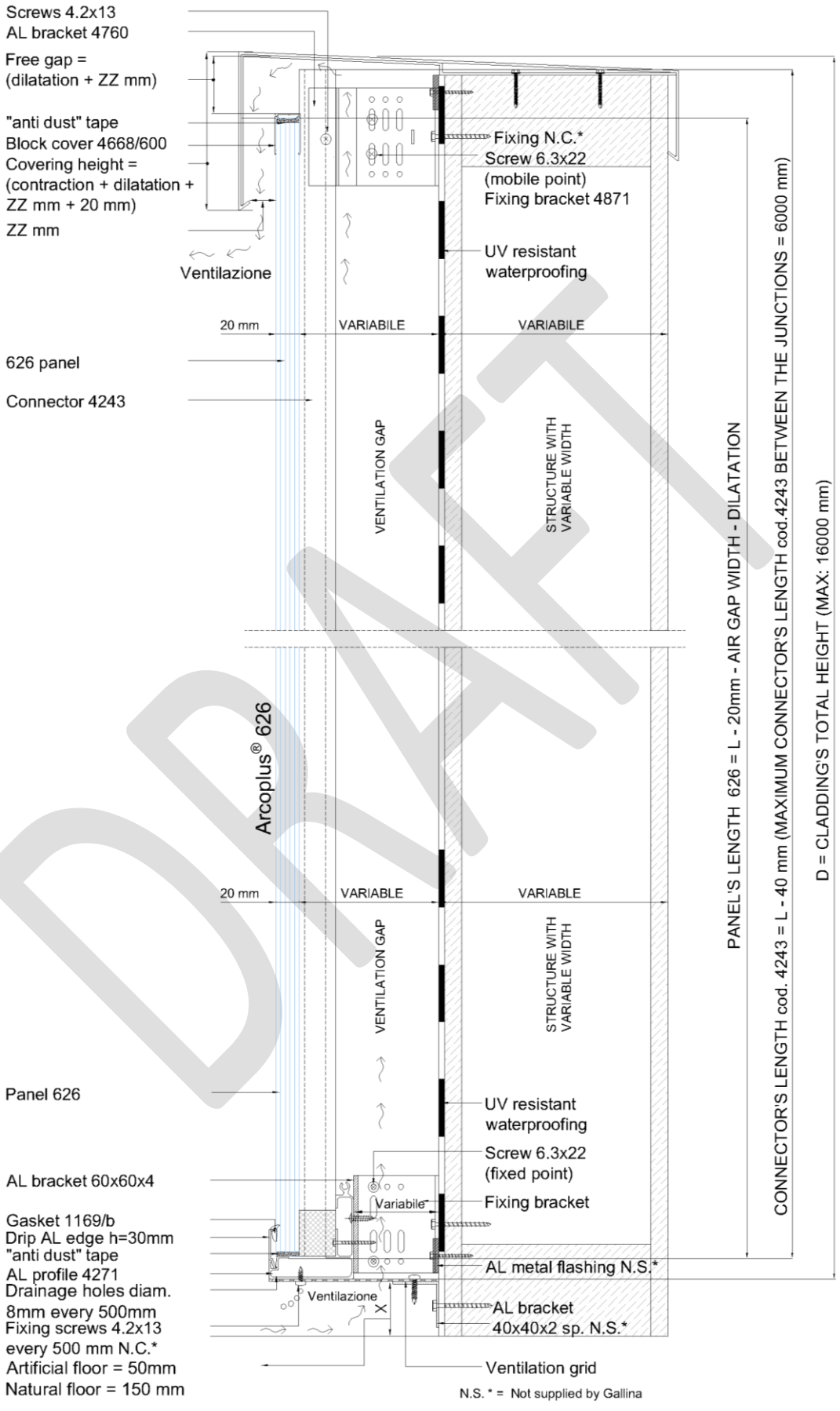
N.S. * = Not supplied by Gallina

Bay covering detail with profile 4276 – external framing

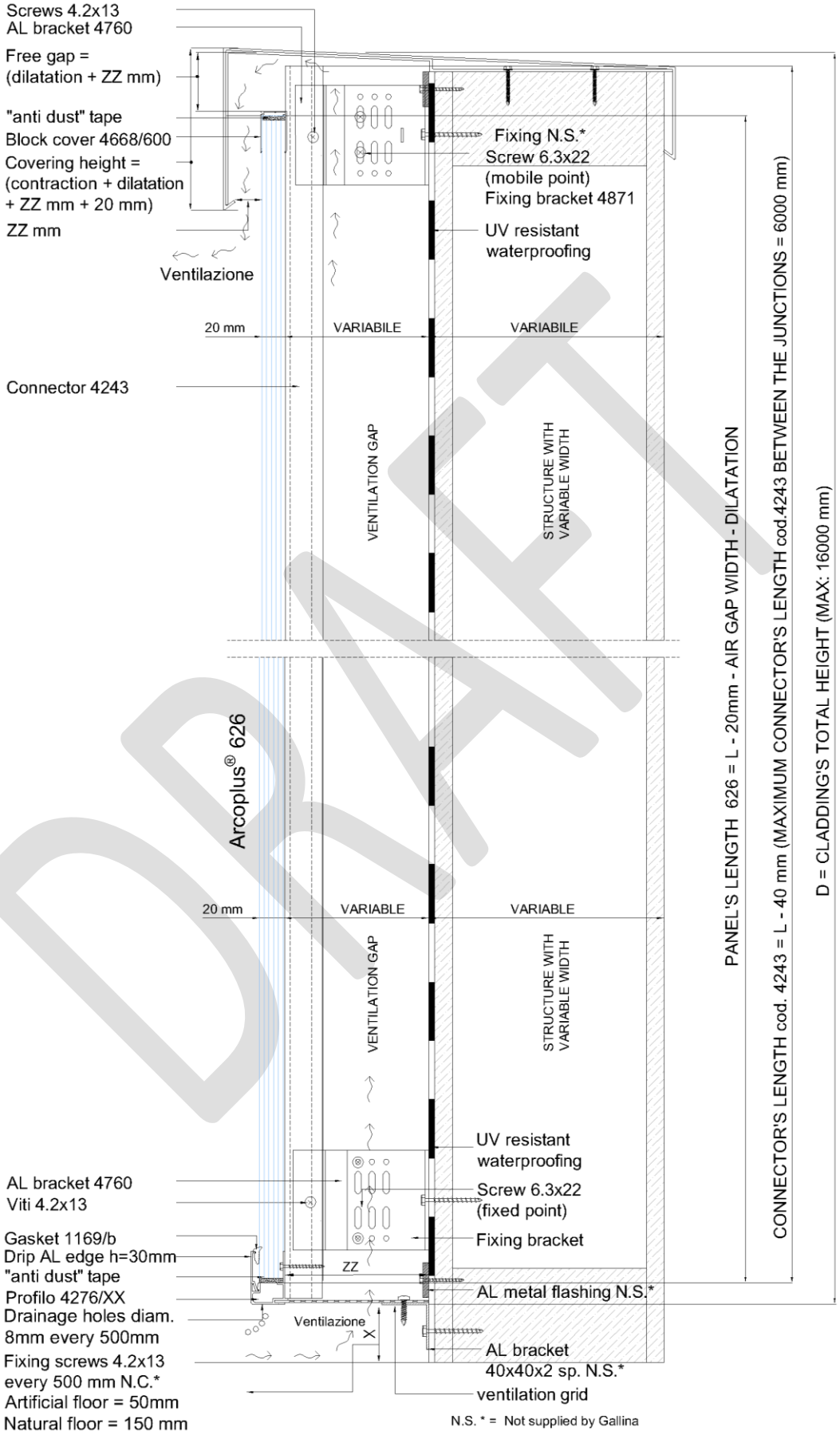


N.S. * = Not supplied by Gallina

Vertical section : Installation with low profile cod 4271 on timber frame wall



Vertical section : Installation with low profile ref 4276 on timber frame wall



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