

Inspection Report of 3 Houses – Ribamar

Case 1573/24

Date of Inspection:  
December 11, 2025

Technical Responsible Tiago  
Borges (Eng.)

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11.08.24

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## 1. Introduction

This report refers to the Inspection of 3 houses, of a technical nature, carried out at Rua dos Mareantes – Ribamar in Lourinhã.



Photo 1 – Location of the building [Source: Google Earth]

The main objective of this work was to present the results of the inspection carried out in this set of houses, which consists of 3 fractions with the following police numbers: 7; 9; 94 and 11. The inspection aimed to evaluate the general conditions of the properties, aiming to identify structural, electrical, hydraulic problems and other irregularities that may compromise the safety and comfort of residents. Based on the observations and measurements made, recommendations and suggestions were prepared for possible improvements and repairs, seeking to ensure a safe and comfortable environment. This report is of a technical nature and aims to verify the source of any errors in civil construction, identify hidden defects resulting from design or execution errors, human failures (exogenous), natural external agents (natural), in order to be identified at the beginning of their manifestations. The identification of the possible reasons for the existing anomalies and pathologies is

extremely important so that the appropriate corrective and preventive measures are carried out so that the building ensures compliance with the construction contract. It was decided to carry out a careful visual inspection and using technical tools, in order to be able to collect as much data as possible, to immediately provide some conclusions about the origin and causes of the anomalies and/or pathologies found. The analysis was based on non-destructive testing. The inspection was carried out on December 11, 2024, at 11:00 am.



## 2. Inspection Form

### 2.1 Property Description

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#### 2.1.1 Lourinhã Location

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#### 2.1.2 Address Rua dos Mareantes, Ribamar - Lourinhã

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#### 2.1.3 Construction Date                      2022

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#### 2.1.4 Areas -

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#### 2.1.5 No. of floors Above ground 2 Below ground 1 Total 0

---

#### 2.1.6 Dominant use

Housing ☒      Offices ☐      Commerce ☐

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Hotel ☐                      Industry ☐      Parking ☐

---

Another ☐ one?

---

## 2.2 Constructive description

### 2.2.1 Exterior of the building

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#### 2.2.1.1 Roof

a) Flat ☒

---

Walkable ☐

Yes ☒

No ☐

---

Type of  
waterproofing

Telas ☒

Argamassas ☐

Other ☐

---

Thermal insulation

Yes ☒

No ☐

---

b) Inclined ☐

---

Roof Type Tile ☐

Sheet ☐

Other ☐

Metal

---

#### 2.2.1.2 Reinforced

Concrete Structure ☒

---

Alvenaria de Tijolo ☒

---

Alvenaria de Pedra ☐

---

Metallic ☒

---

Wood ☐

---

2.2.1.3 Exterior openings

Aluminium frames ☒

---

2.2.1.4 Revestimento

Reboco pintado ☐

---

Capoto ☒

---

2.2.1.5 Ports

Security

Yes ☒

No ☐

---

2.2.2 Interior of the fractions

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2.2.2.1 Various Coating

aunt's

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2.2.2.2 Various Coating

Walls

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2.2.2.3 Various Coating

Floors

---

## 2.3 Characteristics of Inspection

2.3.1 Report N.º 1573 RE

2.3.2 Date of inspection 11 December 2024

2.3.3 Owner Presences

Written by: Eng. Tiago Borges

2.3.4 Condições Seco ☒ Húmido ☐ Temperatura 20 °C  
Atmospheric Sol ☐ Chuva ☐ Nublado ☐

2.3.5 Parts analysed Exterior ☒ Interior ☒

2.3.6 Analyses performed Visual analysis of pathologies ☒

Photographic record of pathologies ☒

Use of Moisture Meter ☒

## 2.4 Pathologies Detected

### 2.4.1 Exterior

#### 2.4.1.1 Coverage

Construction defects	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
----------------------	---	-----------------------------

Material deterioration	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
------------------------	---	-----------------------------

Permeability Issues	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
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#### 2.4.1.2 Walls

Moisture	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
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Cracking	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
----------	---	-----------------------------

Coating degradation	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
---------------------	---	-----------------------------

Poor execution	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
----------------	---	-----------------------------

Obs.:

#### 2.4.1.3 Floors

Moisture	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
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Cracking	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
----------	---	-----------------------------

Coating degradation	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
---------------------	---	-----------------------------

Poor execution	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
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#### 2.4.1.4 Metalwork

Paint degradation Yes ☐ No ☒

Visible corrosion Yes ☐ No ☒

Obs.:

#### 2.4.2 Interior

##### 2.4.2.1 Tetos

Moisture Yes ☒ No ☐

Cracking Yes ☐ No ☒

Coating degradation Yes ☒ No ☐

Poor execution Yes ☐ No ☒

##### 2.4.2.2 Paredes

Moisture Yes ☒ No ☐

Cracking Yes ☒ No ☐

Coating degradation Yes ☒ No ☐

Poor execution Yes ☐ No ☒

Obs.:

### 3. Anomalies Detected and Photographic

In this chapter it was intended to record and explain the anomalies detected in all the places, houses and compartments visited. The exterior was also analysed, in order to record the anomalies in an integrated way.

#### 3.1 Moradia Nº7



Photo 2 – Exterior entrance villa Nº7

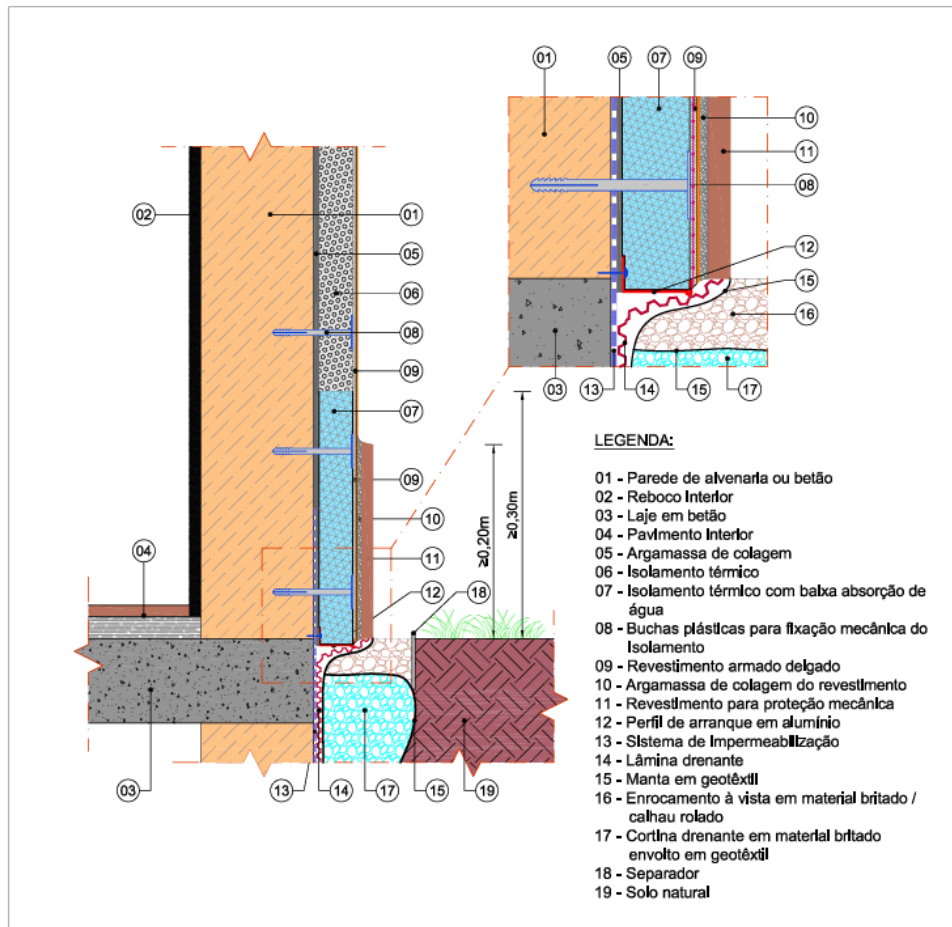
### 3.1.1 Exterior

Regarding the external floors, part of them are covered with ceramic that replicates the appearance of DECK flooring, and it is poorly applied, without a careful finish, with open joints and without grout. In addition, these areas do not have sufficient fall, presenting areas with accumulation of water, which associated with the fact that the glazed openings do not have thresholds and are embedded in the floor, creates a high risk of water entering the interior of the house, a more accentuated difference in level between the interior and exterior of the house was preferable.

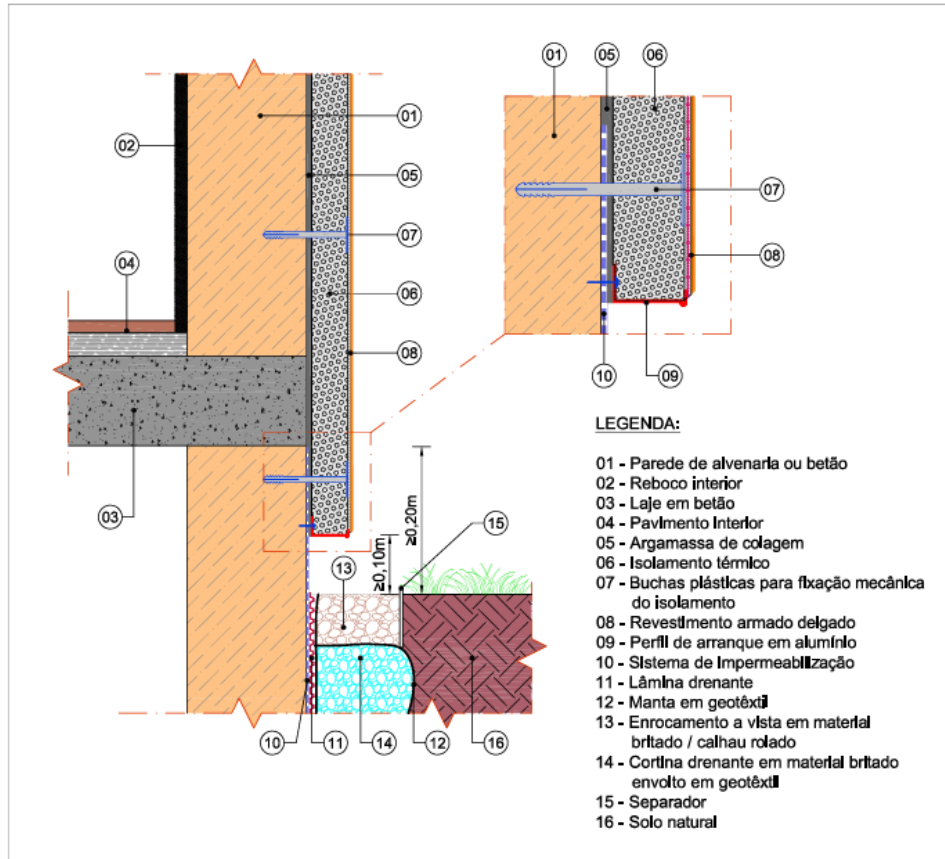
The external coating was made using the ETICS (External Thermal Insulation Composite System) system, commonly known by the CAPOTTO trademark. In its application, the absence of some construction details is notorious, namely starter profiles, so it is possible to observe pathologies in the exterior walls such as humidity by capillarity, also revealing an insufficient or non-existent perimeter drainage of the soils. Here are some typical construction details to adopt in these areas:



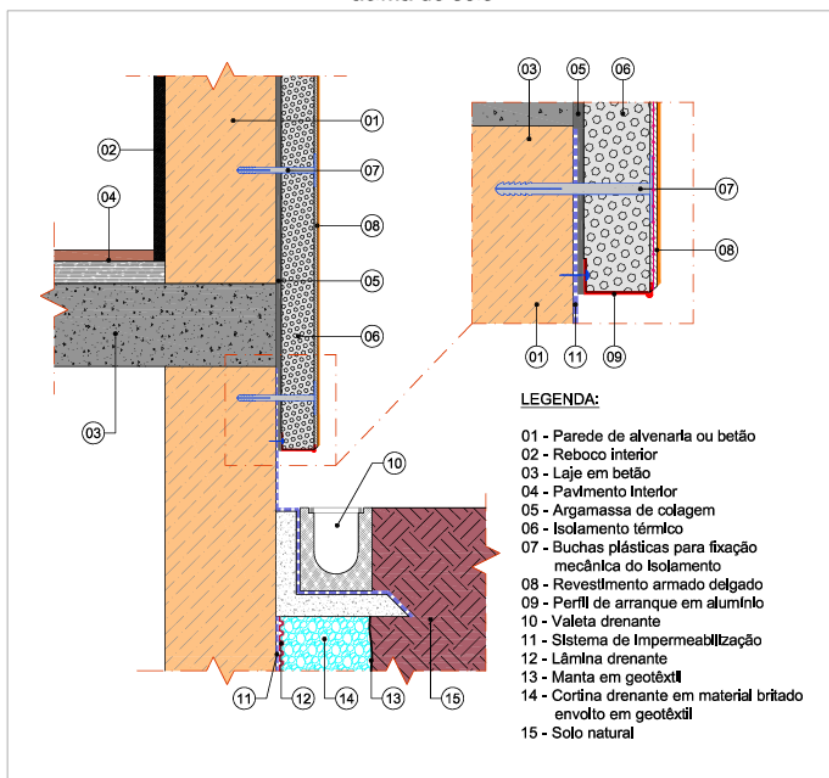
### Arranque de fachada em contacto com o solo



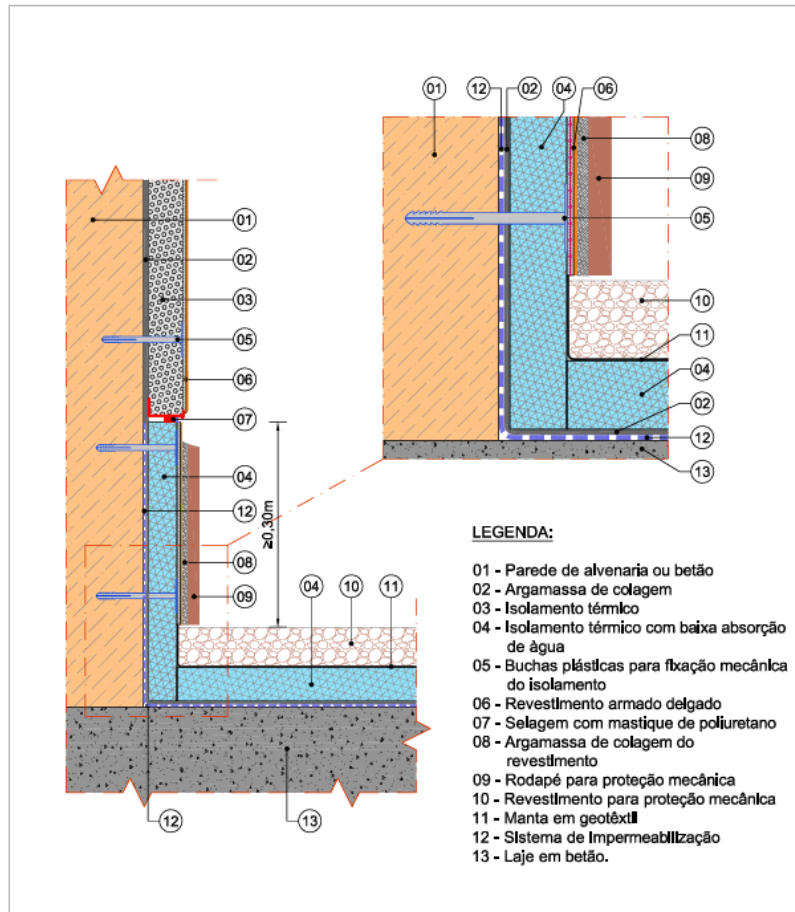
### Arranque de fachada acima do solo



### Arranque de fachada acima do solo



Arranque de fachada em  
contacto com pavimento

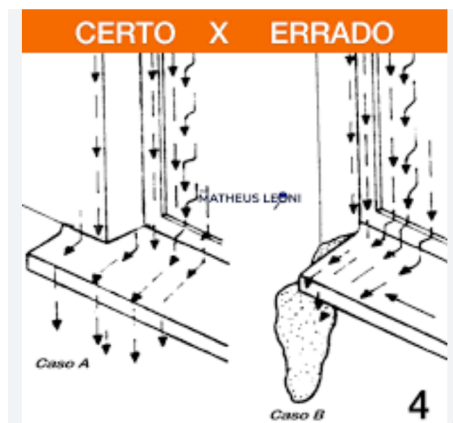


Still on the façade cladding, it is possible to observe that the lower corners of some glazed openings already have some cracking, revealing possible infiltrations on the part of the window and its threshold, as well as deficient application in this area of fiberglass, which obeys a different application from the rest, precisely to avoid this type of cracks, as shown below.



At the corners of doors and windows it is necessary to insert diagonal reinforcement nets to be applied to the bracket before applying the reinforced bar and to be fixed so that the edges of the strips are directly at the corner with an inclination of about 45 °. Network strips typically have a size of approximately 200 x 300 mm. Precast nets can be used.

The thresholds of the glazed openings also seem to have insufficient delivery, which can contribute to infiltrations and consequently this type of cracking.



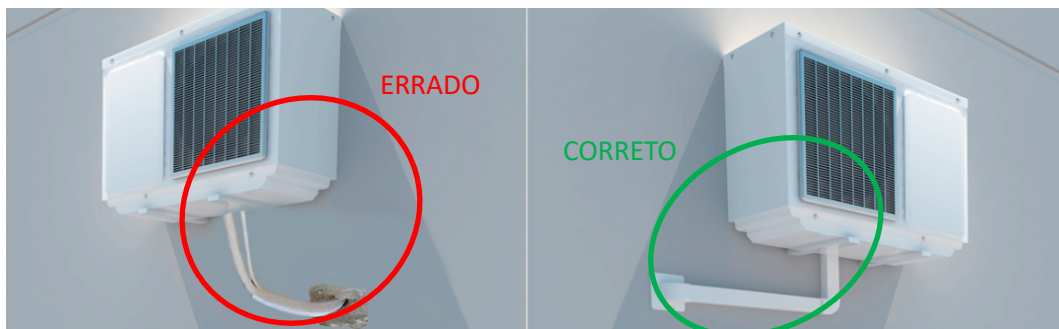
Regarding the terraces of the house, it is once again noted the poor quality in the application of ceramics, especially with regard to the joints, with a deficient and poorly executed filling, very poor and deficient finishes.

The drainages in these areas also seem to be very deficient, with few rainwater collection points, in places that do not promote free and efficient drainage, such as behind chimneys, as well as unusual drainage solutions, not very effective and without taking into account future cleaning and maintenance actions, namely a tear/opening solution in the middle of the area to be drained, in turn the rainwater was sent to a very small orifice. All terraces have deficient drainage, with accumulation of water and proliferation of parasitic vegetation.

All the capping of the walls of the terraces and roof were executed in stonework, and these stone pieces do not have any drip pan, promoting drainage along the walls where they are applied. In addition to the above, the stonework solution is not the most effective because there is the possibility of infiltrations in the joints of the pieces, it is already possible to observe the presence of organic matter in these joints indicating the presence of water. Once again, aiming at a higher quality, sheet metal capping should have been chosen, as they are more effective in promoting the watertightness of the walls and the overall building. It is also noteworthy the absence of any capping in one of the walls of the roof of the annexes, and this roof even has watertightness problems, which is already manifested through dampness in ceilings and walls inside the annexes.

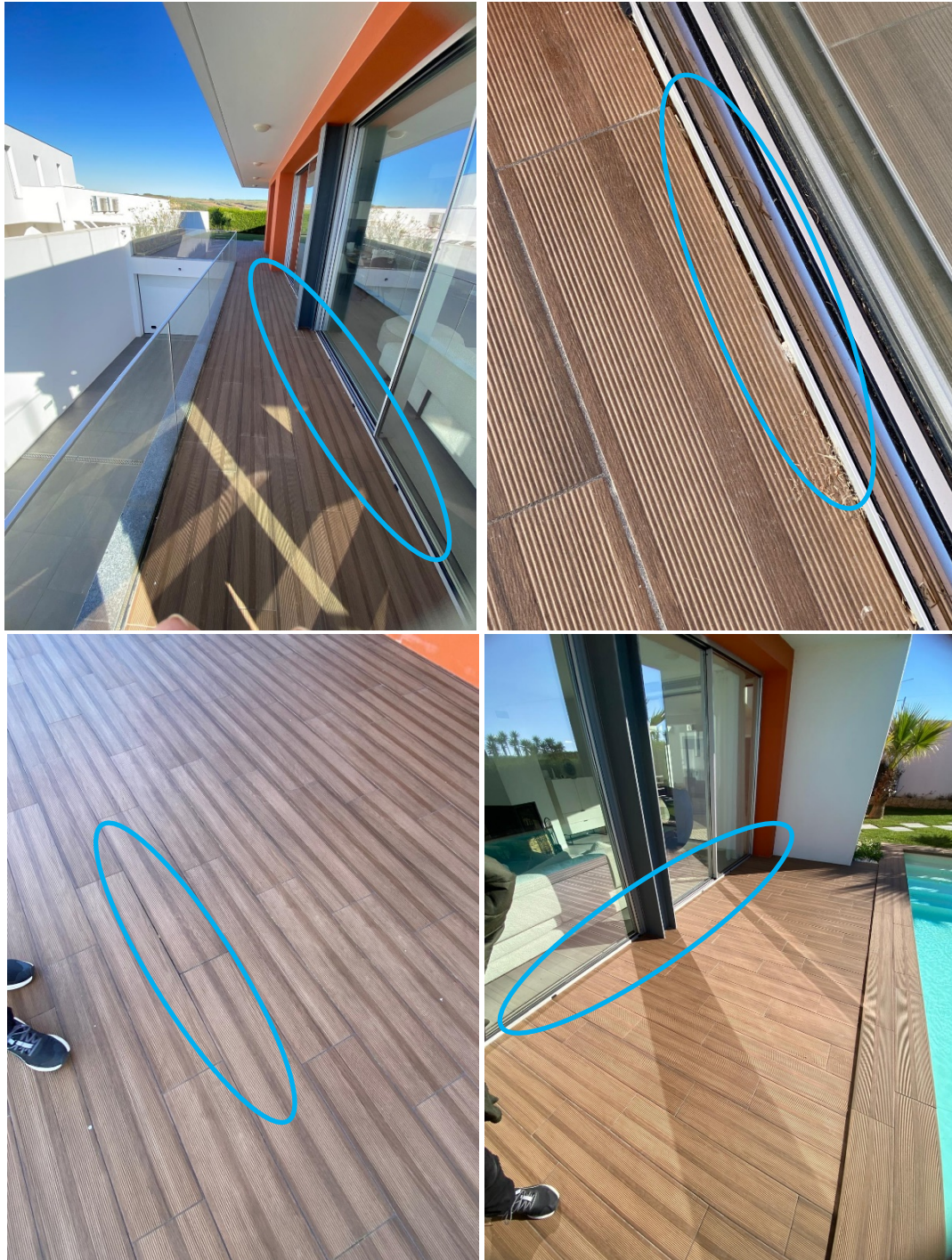
Another factor revealing the lack of perimeter drainage of this house is the accumulation of water in the gardens pooling large areas.

Regarding the outdoor units of air conditioners, the lack of protection of their cables through a technical rail stands out, to ensure more effective tightness and a more adequate finish, the same happens with the wiring of solar panels.



Some exterior walls also already have some cracking, namely next to some external beams that form a kind of pergola, as well as under some stone capping. These cracks are not worrisome, given their size, although they need to be repaired.



























Fotos 3 a 30 – Anomalias indicadas nas fotos

### 3.1.2 Interior

It should be noted that the ventilation of the ground floor toilet was carried out through a simple opening in the wall, without any piping and finished only with an open grille, which is not the right solution for this case, since there is no blockage to the entry of light and air currents from the outside. This type of ventilation serves to expel saturated air from the inside out, while preventing and/or mitigating the entry of air from the outside, as well as the entry of insects and light, which in this case is not the case, not being consistent with the quality that the house proposes. The remaining toilets

do not have any mechanical ventilation, it is only possible to ventilate them by opening the windows

The annexes, as already mentioned, have humidity on the walls and ceilings resulting from the lack of watertightness of their roof.

It was decided to pass rainwater pipes, coming from the roof and upper terraces, through the inside of the false ceilings, an uncommon solution that is not the most suitable in terms of maintenance, as this type of pipes is exposed to external elements, having a greater probability of obstructions and clogs through debris, dust, leaves, etc., so it is desirable that its tracing is always carried out from the outside, avoiding infiltrations and flooding inside the house, which in this case has already happened, and it was necessary to open the false ceiling and/or repair it in several compartments, a bedroom and in the living room.

The glazed openings do not have shutters, instead they have blackouts inside. Now, the function to which they propose, even by their name, is to block the sun's rays, so that, in order for them to fulfill this purpose, they must necessarily be wider than the openings. But the described is not always verified, and there is the absurdity of blackouts narrower than the windows where they are applied.

Built-in cabinets have in some cases air extraction grilles, so the ventilation of the compartments is inside them, so that there is effective ventilation of the spaces, the users of the property are forced to open the doors of these cabinets.

There are no technical trapdoors in the false ceiling for visiting and maintaining the A\C pipes, forcing them to be destroyed whenever any intervention of this type is necessary, as has already happened.

In the basement, the presence of moisture by capillary in the walls is notorious, as well as cracks in the reinforced concrete floor, in order to hide the moisture on the walls, they were covered with sheets of insulating and waterproof material, however this procedure **only masks the problem without solving it, demonstrating once again insufficient perimeter drainage of the house.**











Photos 31 and 41 – Anomalies indicated in the photos

### 3.2 House No. 9



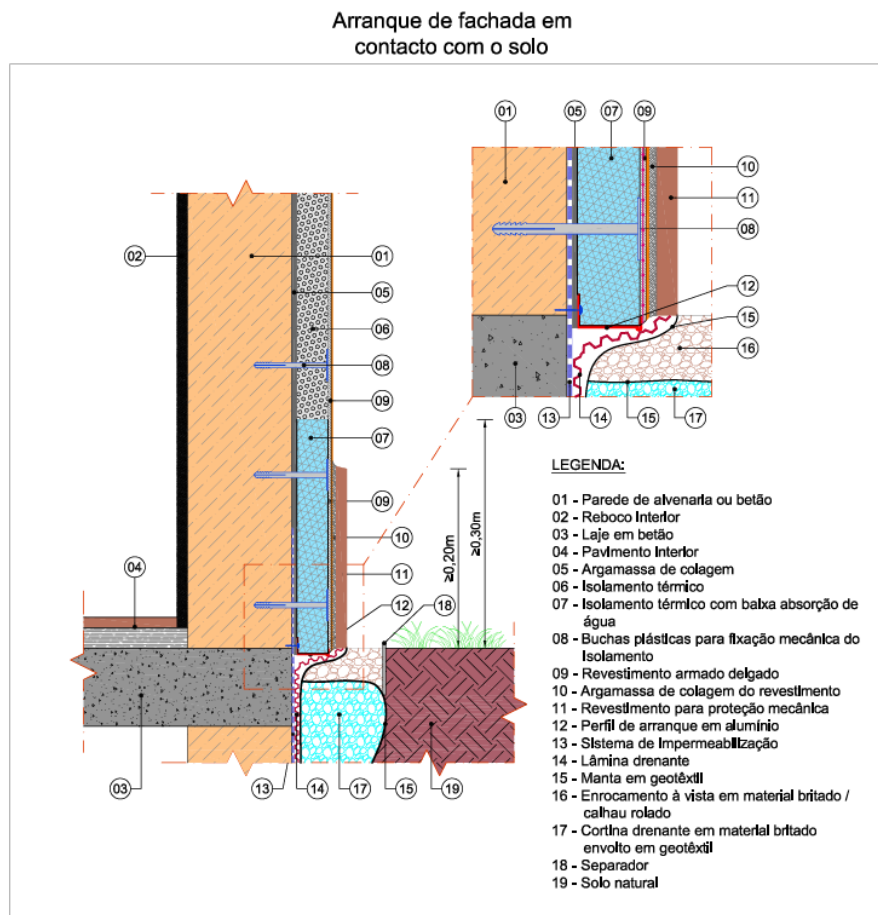
Photo 42 – Exterior entrance villa N°9

#### 3.2.1 Exterior

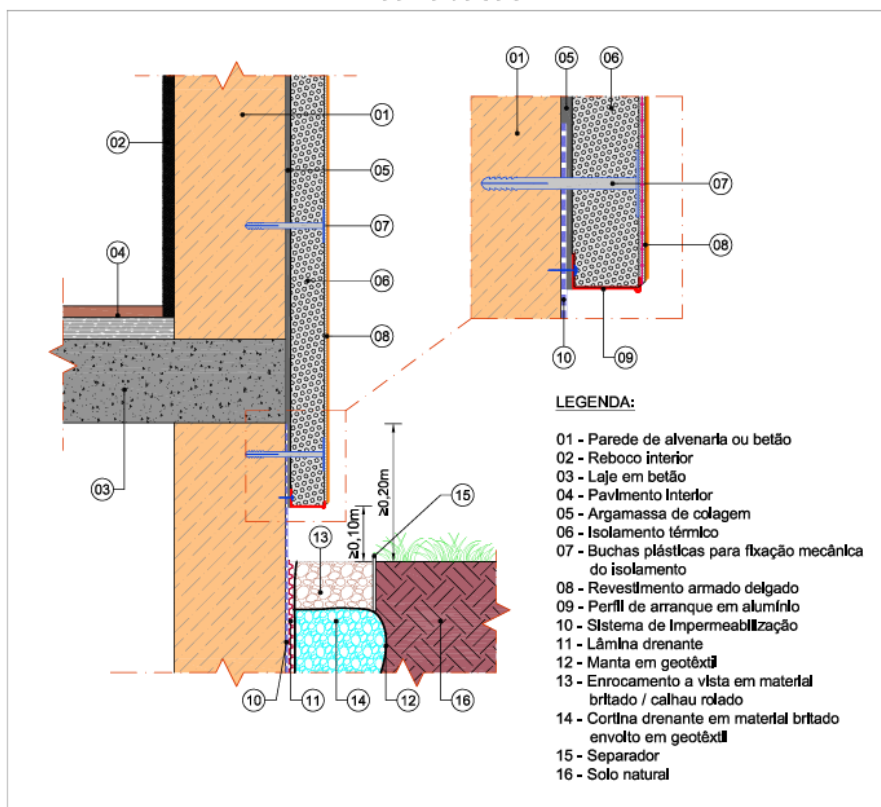
Regarding the external floors, part of them are covered with ceramic that replicates the appearance of DECK flooring, and it is poorly applied, without a careful finish, with open joints and without tomato. In addition, these areas do not have sufficient fall, presenting areas with accumulation of water, which associated with the fact that the glazed openings do not have thresholds and are embedded in the floor, creates a high risk of water entering the interior of the house, a more accentuated difference in level between the interior and exterior of the house was preferable.



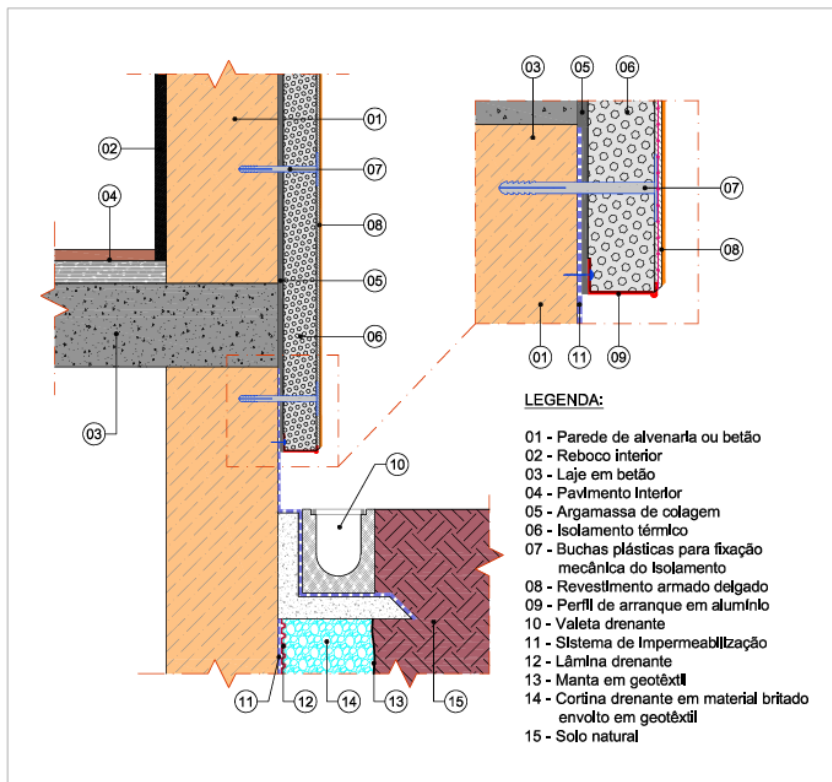
Regarding the external coating, it was carried out using the ETICS (External Thermal Insulation Composite System) system, commonly known by the commercial brand CAPOTTO. In its application, the absence of some construction details is notorious, namely starter profiles, so it is possible to observe pathologies in the exterior walls such as humidity by capillarity, also revealing an insufficient or non-existent perimeter drainage of the soils. Here are some typical construction details to adopt in these areas:



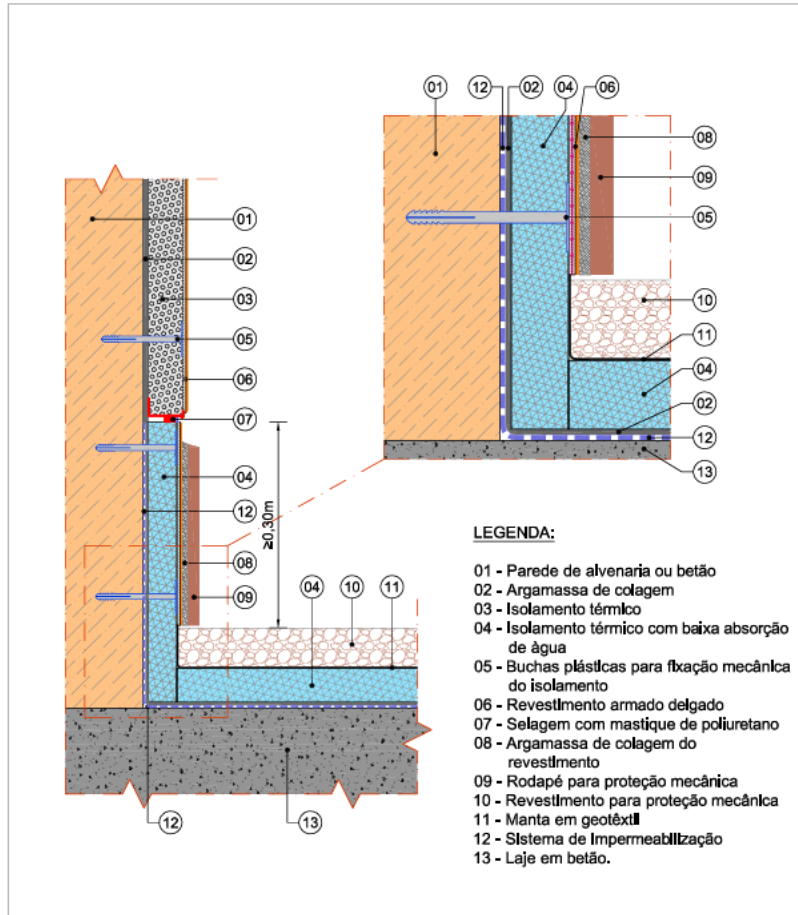
### Arranque de fachada acima do solo



### Arranque de fachada acima do solo



Arranque de fachada em  
contacto com pavimento



In the areas of Portuguese pavement it is possible to observe settlements of the same, revealing that the base ground was poorly compacted and has high levels of water, once again associated with insufficient or non-existent perimeter drainage of the soils.

Regarding the terraces of the house, it is once again noted the poor quality in the application of ceramics, especially with regard to the joints, with a deficient and poorly executed filling, very poor and deficient finishes.

The drainages in these areas also seem to be very deficient, with few rainwater collection points, in places that do not promote free and efficient drainage, such as behind chimneys, as well as unusual



drainage solutions, not very effective and without taking into account future cleaning and maintenance actions, namely a tear/opening solution in the middle of the area to be drained, in turn the rainwater was sent to a very small orifice.

All the capping of the walls of the terraces and roof were executed in stonework, and these stone pieces do not have any drip pan, promoting drainage along the walls where they are applied. In addition to the above, the stonework solution is not the most effective because there is the possibility of infiltrations in the joints of the pieces, it is already possible to observe the presence of organic matter in these joints indicating the presence of water. Once again, aiming at a higher quality, sheet metal capping should have been chosen, as they are more effective in promoting the watertightness of the walls and the overall building.

Regarding the outdoor units of air conditioners, the lack of protection of their cables through a technical rail stands out, to ensure more effective tightness and a more adequate finish, the same happens with the wiring of solar panels.



Some exterior walls also already have some cracking, namely next to some external beams that form a kind of pergola. These cracks are not worrisome, given their size, although they need to be repaired.

























Fotos 43 a 69 – Anomalias indicadas nas fotos



### 3.2.2 Interior

It should be noted that the ventilation of the ground floor toilet was carried out through a simple opening in the wall, without any piping and finished only with an open grille, which is not the right solution for this case, since there is no blockage to the entry of light and air currents from the outside. This type of ventilation serves to expel saturated air from the inside out, while preventing and/or mitigating the entry of air from the outside, as well as the entry of insects and light, which in this case is not the case, not being consistent with the quality that the house proposes.

In terms of interior coverings, several defects and construction anomalies stand out, namely in the skirting boards that do not seem to have a coherent continuity, being present in certain walls and then in the adjoining walls do not exist, in ceramic coverings with different shades of colour, seeming that not all pieces have the same RAL and in the lower finish of the areas covered with stone. In the latter, instead of first applying the ceramic tile to the floor and then the stone coating to the wall, so that the border area between the two materials is perfectly disguised, the opposite was done, finishing the perimeter zone between the two materials with layers of mortar, a crude, unaesthetic and poor quality solution.

It was decided to pass rainwater pipes, coming from the roof and upper terraces, through the inside of the false ceilings, an uncommon solution that is not the most suitable in terms of maintenance, as this type of pipes is exposed to external elements, having a greater probability of obstructions and clogs through debris, dust, leaves, etc., so it is desirable that its tracing is always carried out from the outside, avoiding infiltrations and flooding inside the house, which in this case has already happened, and it was necessary to open the false ceiling.

In the kitchen, something completely unusual was found, the visible piping of the hood that enters inside the false ceiling does not continue to the outside, that is, all the vapors, fats, gases and smells resulting from the process of cooking food and absorbed by the hood, are expelled into the air space between the false ceiling and the slab of the house, instead of being sent abroad as it is supposed to, making the use of the hood completely irrelevant and reductive and disseminating cheiros coming

from the kitchen through the remaining compartments. In addition to being irregular, this aspect alone reveals a completely absurd and bad faith attitude on the part of the builder.

The glazed openings do not have shutters, instead they have blackouts inside. Now, the function to which they propose, even by their name, is to block the sun's rays, so that, in order for them to fulfill this purpose, they must necessarily be wider than the openings. But the described is not always verified, and there is the absurdity of blackouts narrower than the windows where they are applied.

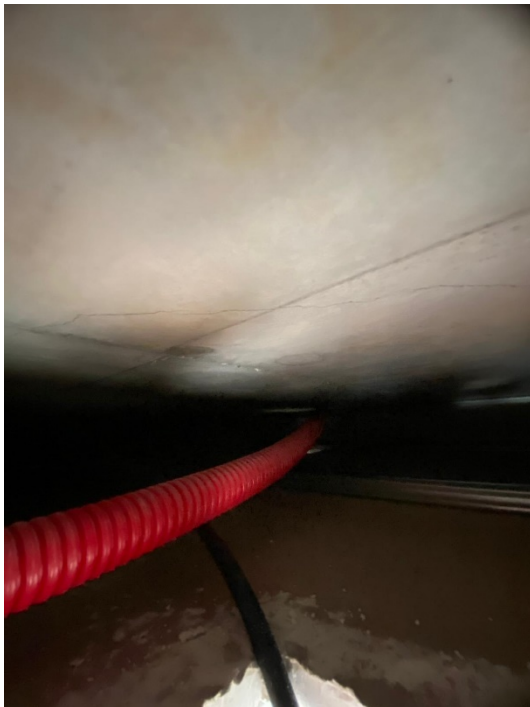
The built-in cabinets have poorly executed finishes near the ceilings and in some cases the air extraction and ventilation grilles of the compartments are inside them, so that, in order for there to be effective ventilation of the spaces, the users of the property are forced to open the doors of these cabinets.

There are no technical trapdoors in the false ceiling for visiting and maintaining the A\C pipes, forcing them to be destroyed whenever any intervention of this type is necessary, as has already happened.











Fotos 70 a 85 – Anomalias indicadas nas fotos

## 5. Intervention Proposal

### 5.1 Exterior

In this chapter, some intervention proposals will be elaborated to eliminate or mitigate the pathologies described above.

#### 5.1.1 Cappings

All walls and walls should be capped, ideally using metal flashing. If you want to keep the stonework, then the joints of the pieces must be cleaned and treated using water-repellent material and the respective drip pans must be created.

In the case of metal flashings, they follow schemes for their execution.

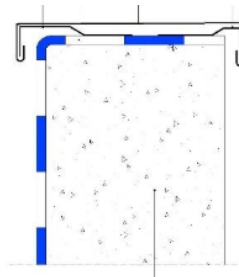


Image 1 – Walls\walls – Detail of capping with waterproofing screens and metal flashing

### Ligação de fachada em platibanda

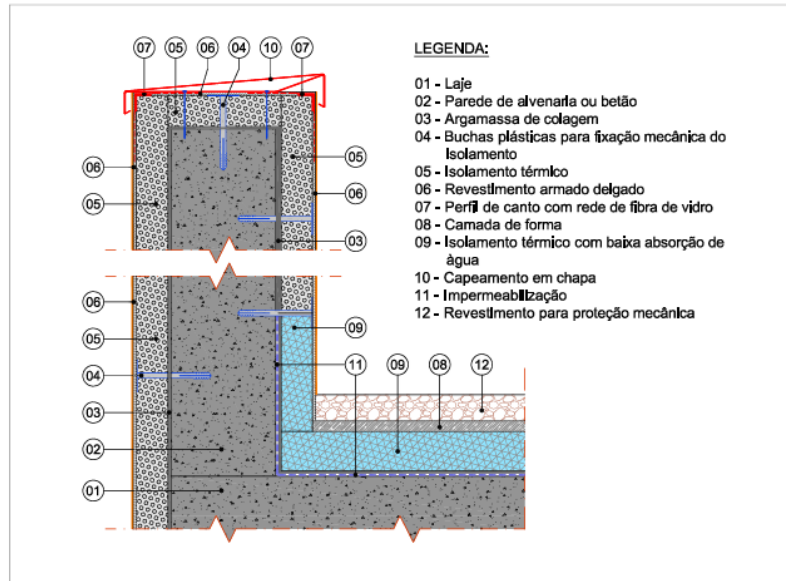


Image 2 – Detail of platiband\roof with ETICS system

Metal flashings: they must be made of zinc and have a 2% slope to the interior of the roof, linear joints can be materialized in two cases, either with an overlapping joint, with a minimum of 15 to 20cm and respective silicone wire, or with a joint profile, plus the corresponding connection/waterproofing material recommended by the supplier. After choosing one of the options, all linear joints must be executed in the same way.

For the corners it is possible to use a joint profile with a cut to the frame of the flashings, overlapping them and sealing material, or through a constructed corner profile, which in turn will overlap the flashings.





Image 3 – Roof – Linear flashing joint with overlap

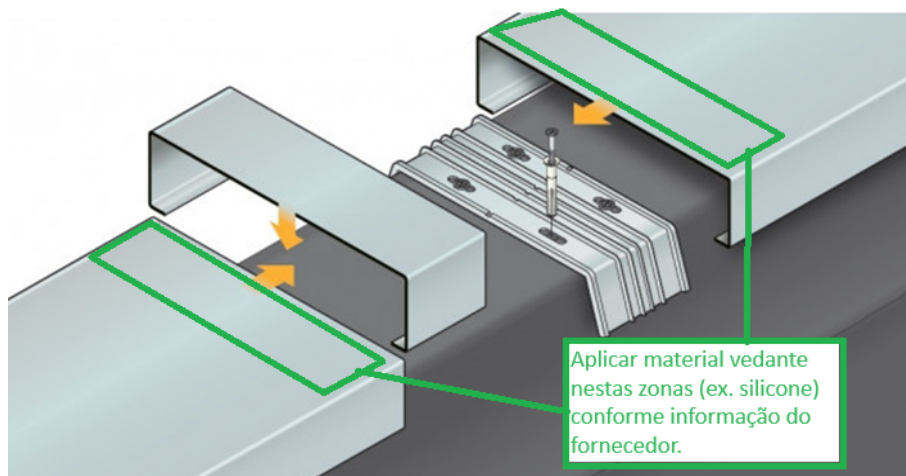


Image 4 – Roof – Linear joint with finishing profile

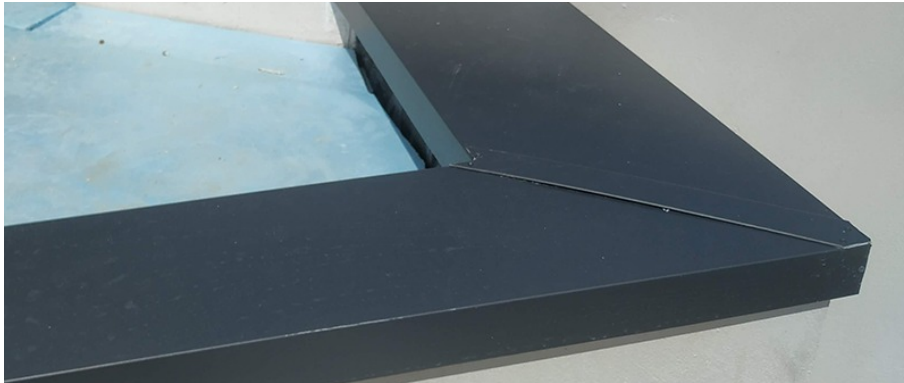


Image 5 – Roof – Corner joint with finial profile



Image 6 – Roof – Corner joint with constructed profile

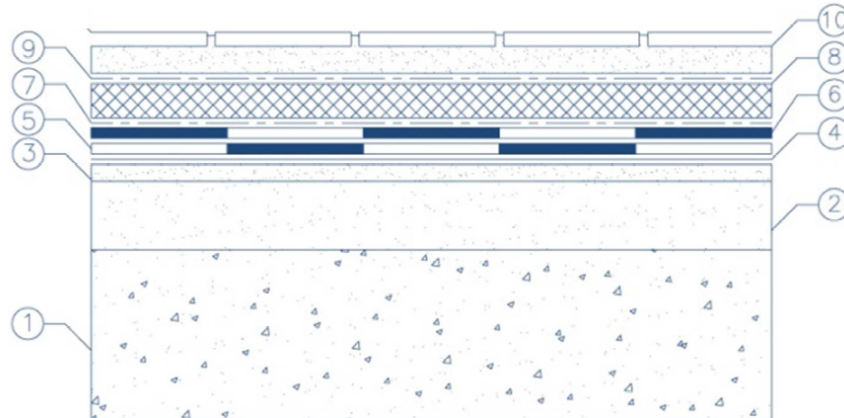
### 5.1.2 Coverage

All roofs with waterproofing problems, unless the area that has watertightness problems is clearly identified, must be completely redone by the following:

Demolitions: removal of the coating layer if it exists (e.g. ceramics), geotextile, thermal insulation, metal flashings of the walls, waterproofing layer (screens) and regularization layer (screed), demolishing all layers up to the upper level of the structural slab.

Constructions: formation of slopes with application of screed with 1.5% to 2% slope, application of smoothing mortars, bituminous printing, application of waterproofing screens, two layers, crossed, folding in the area of the walls and capping them, application of a separating layer, application of thermal insulation in extruded polystyrene (XPS) with a thickness equivalent to that which was removed, application of geotextiles, capping with metal flashings and respective accessories of all walls and placement of final coating.

Then, an image will be presented with a suggestion for intervention, based on what has been explained and with commercial products, for reference. The cover of the stairwell should be subject to the same type of intervention.



**Figura 1: Sistema CIPB**

**Impermeabilização betuminosa**

1 Suporte resistente, 2 Formação de pendentes, 3 Argamassa de regularização, 4 Imprimação betuminosa **CURIDAN**, 5 Membrana impermeabilizante **GLASDAN 30 P ELAST**, 6 Membrana impermeabilizante **ESTERDAN 30 P ELAST**, 7 Camada separadora **DANOFELT® PY 200**, 8 Isolamento térmico **DANOPREN® TR**, 9 Camada separadora **DANOFELT® PY 200**, 10 Pavimento.

Image 7 – Detail Coverage

The roofs that are not redone must be cleaned and all the ceramic tiles that cover them must be redone, through water-repellent mortars.

Effective maintenance and cleaning mechanisms of the rainwater drainage system must also be created, namely ceramic pieces that can be removed through clipping systems, or technical pavement.

All glazed openings must be siliconized again around their entire perimeter.

### 5.1.3 A\C pipes and solar panels

These pipes must be protected with a technical rail with the crossings fully covered with polyurethane foam as shown in the following image.

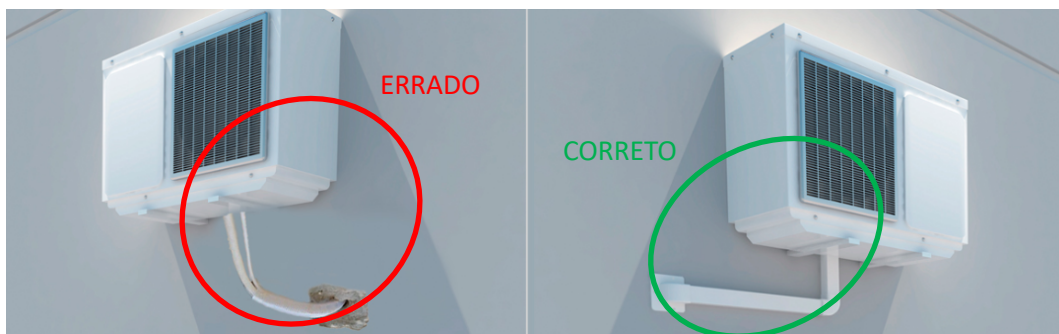


Image 8 – Detail of technical pipe protection

### 5.1.4 Facades

It is advisable that start profiles be implemented in the ETICS system applied to the facades, through the following details, as well as the repair and reinforcement of this system at the vertices of the openings, see diagram below.

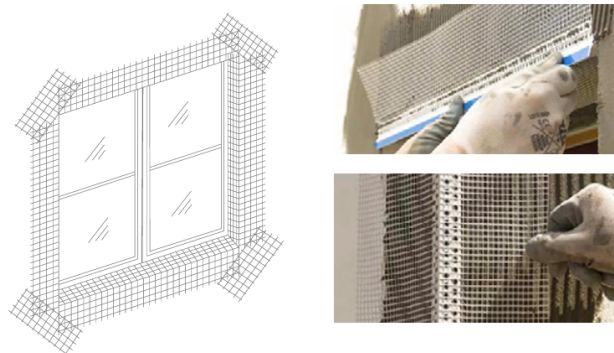
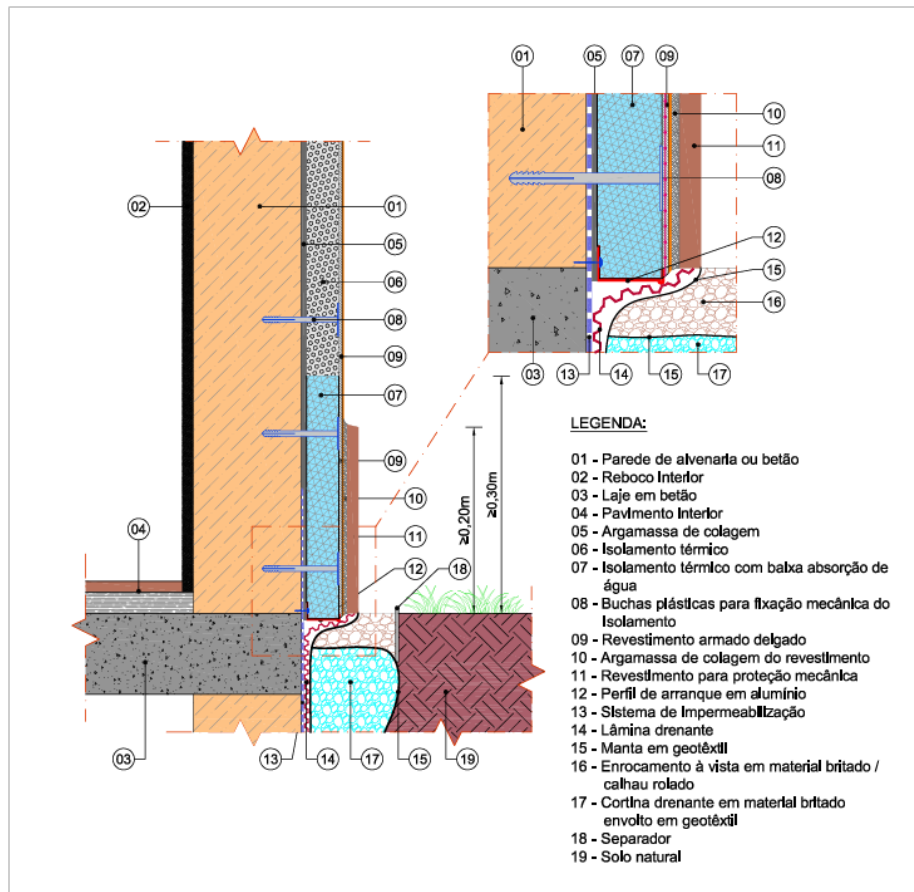
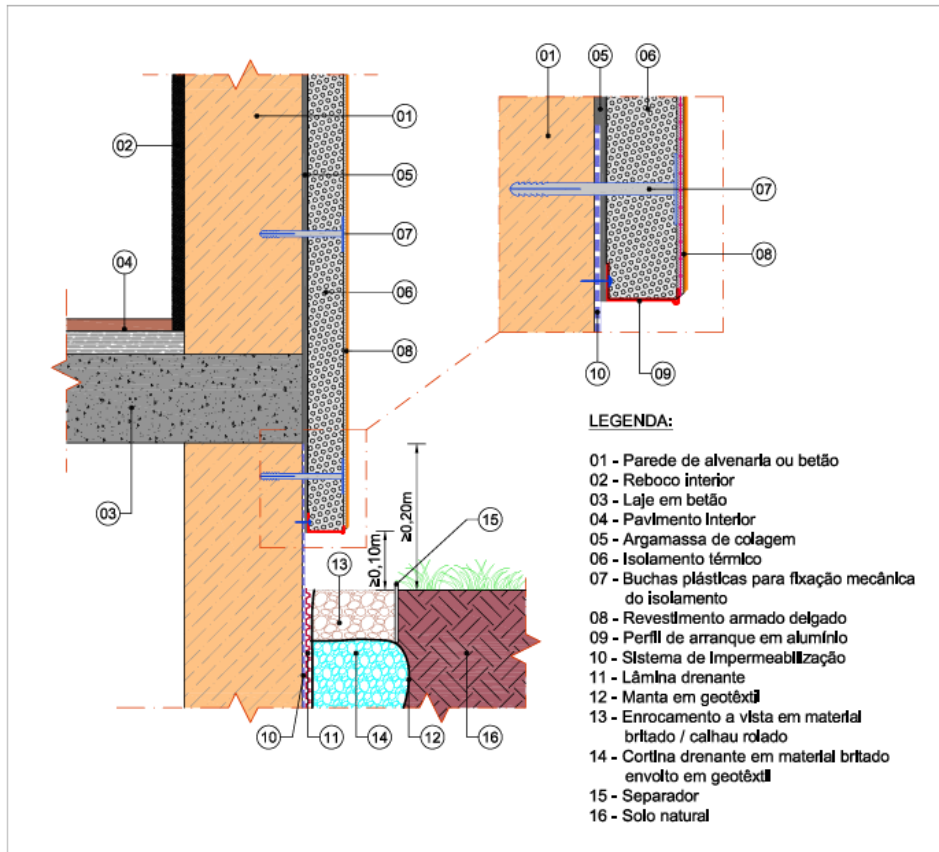


Image 9 – Detail of the reinforcement of the ETICS system openings

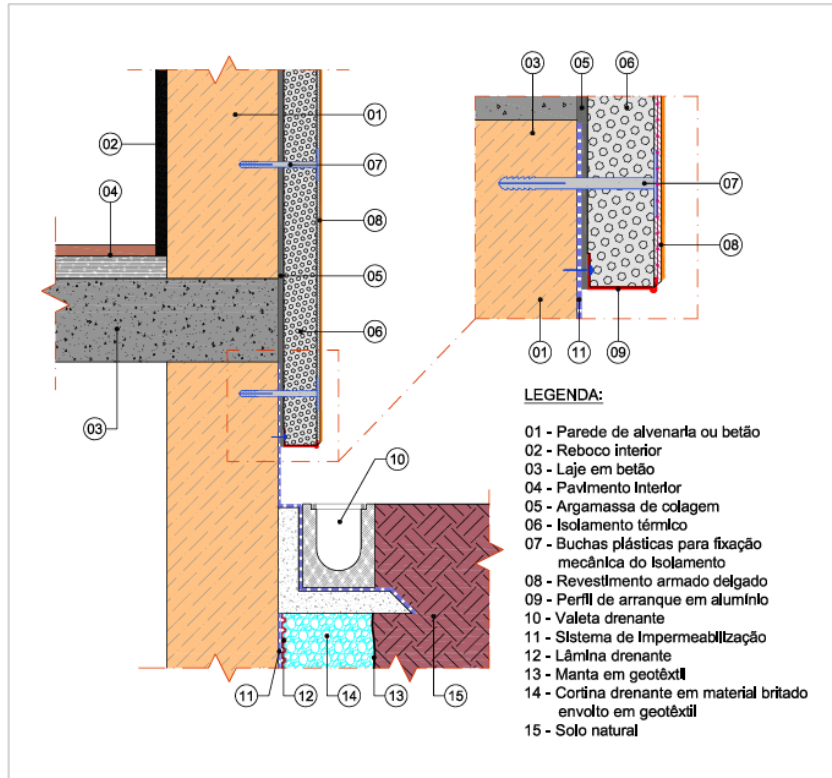
Arranque de fachada em  
contacto com o solo



### Arranque de fachada acima do solo



Arranque de fachada  
acima do solo



Images 9, 10 and 11 – Details of the start of the ETICS system façade

### 5.1.5 Waterproofing and perimeter drainage

Surveys should be carried out to verify whether there are effective perimeter drainages and waterproofing using the following detail details.





Images 12 and 13 – Waterproofing and drainage in foundations and perimeter buried walls, with construction details of exterior walls coated with ETICS solution

## **5.2 Interior**

### **5.2.1 Paintings**

In terms of painting areas damaged by humidity, washing the walls should be promoted, with a specific product, with a greater incidence in areas with moisture stains, removal of all paint that is blistered and damaged, with sanding of the surface, application of insulating primer and finishing painting with two hand paints with anti-fungal paint, throughout the cloth so that the intervention carried out is not visible, creating a homogeneous finish on the entire wall.

Cracks in small walls, approximately 0.5mm wide, should be sanded with fine sandpaper, barred with a finishing putty and then painted the intervened area with two coats of paint.

### 5.2.2 Floors and skirting boards

All parts that are in a different colour or in short supply must be replaced by parts with the same colour, RAL and tone.

### 5.2.3 Air and gas extraction pipes and paths

The extraction paths must be redone, namely the creation of missing exhaust pipes, the creation of new A\C ventilations that are not inside built-in cabinets and the separation of the chimney gas extraction path, with its own duct.

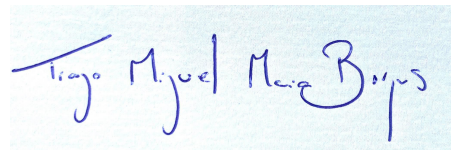
In toilets whose extraction is done through a simple grille, it should be replaced by a more effective model that prevents the entry of air and outside light.

## 6. Validation

Matosinhos, January 07, 2024

Technical validation of the Report

Validated Report: Yes: ☒ No: ☐ Responsible:



(Tiago Miguel Maia Borges)