

The Report

House No 9

March 2025

v 1.4

This report systematises and organises the numerous construction and workmanship errors occurring in the private residential house located in Lote 3 - Casais Porto Dinheiro.

The photographic material used in this report comes from the inspection on February 4-7, March 4-14, 2025 as well as other material produced between 2023 and 2025, and documents the various deficiencies and problems occurring during this period.

This report uses some material from the report made by engineer Tiago Borges [Case 1573/24 on December 11, 2024].



Serious design and workmanship flaws were discovered during the inspection. The consequences of these errors could result in serious material damage, endangering the health and even the lives of residents.

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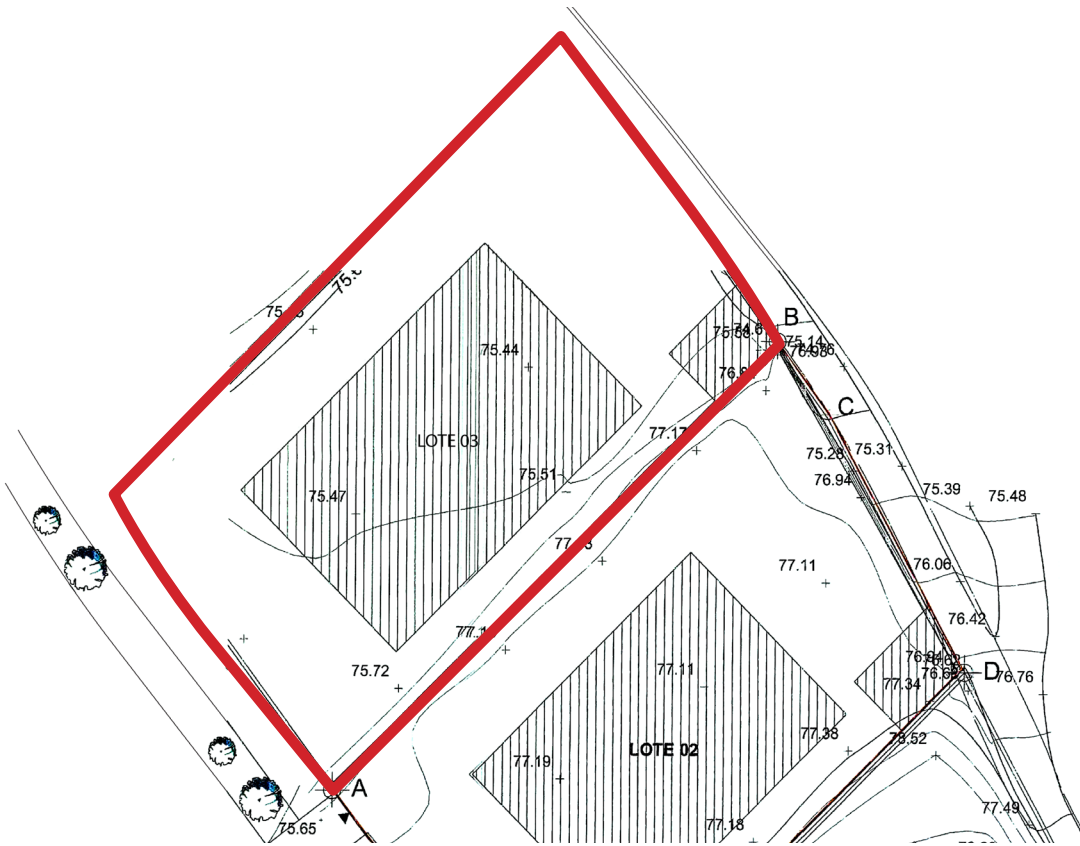
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Location and general view of the house.



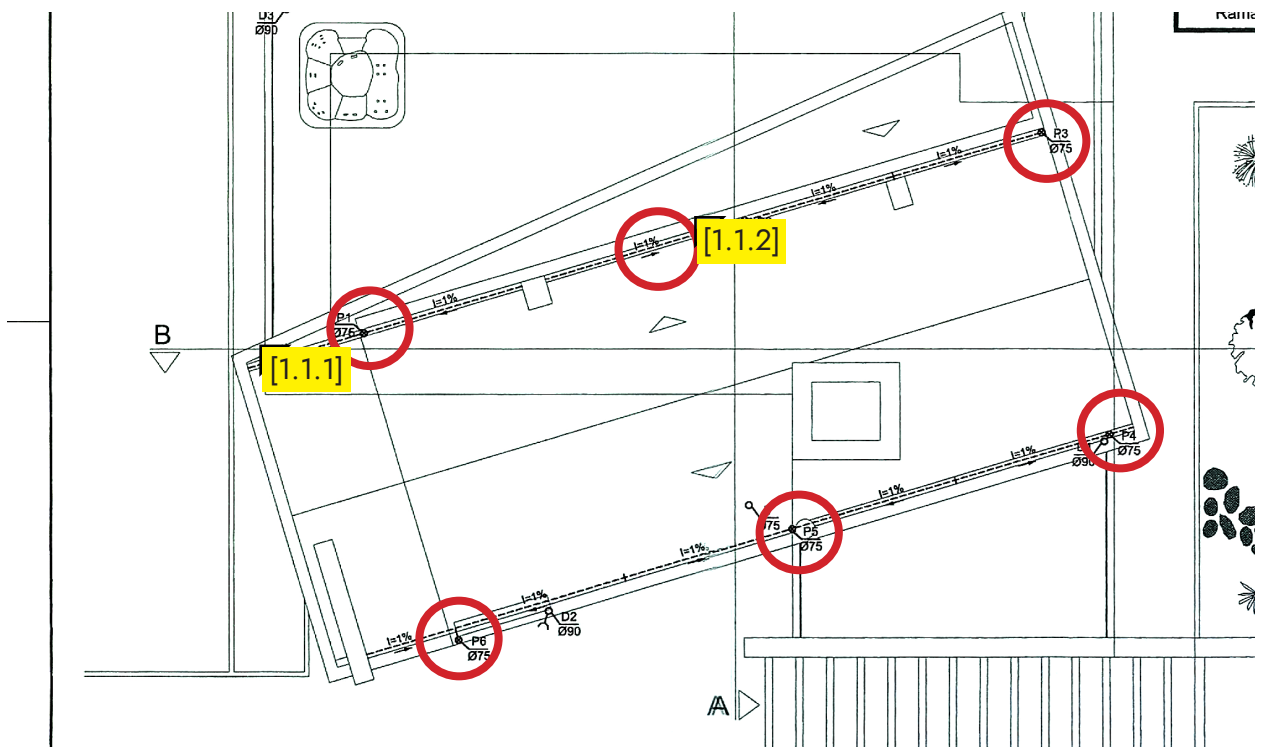
1. THE ROOF

1.1. Downpipes and gutters

1.1.1. All the downpipes from the roof are of insufficient diameter.

In the design, the pipe diameter was specified as 75 mm, while in reality the pipes have a diameter of less than 50 mm (their diameter was reduced by the layers of roofing felt rolled inwards).

1.1.2. There were also no horizontal gutters (ditches) detected on the roof, which were shown in the design.



[1.1.1]



[1.1.1]



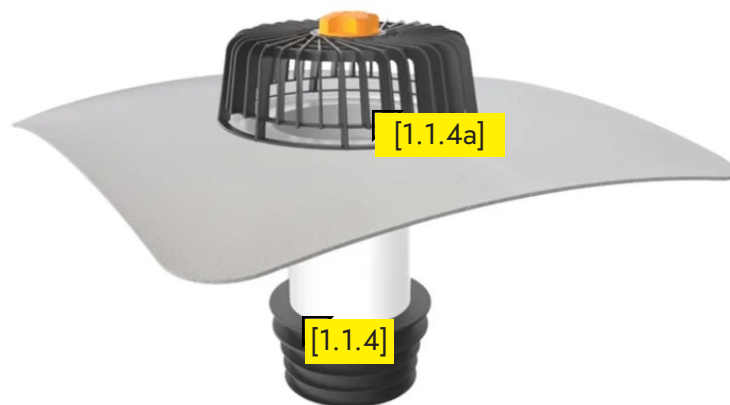
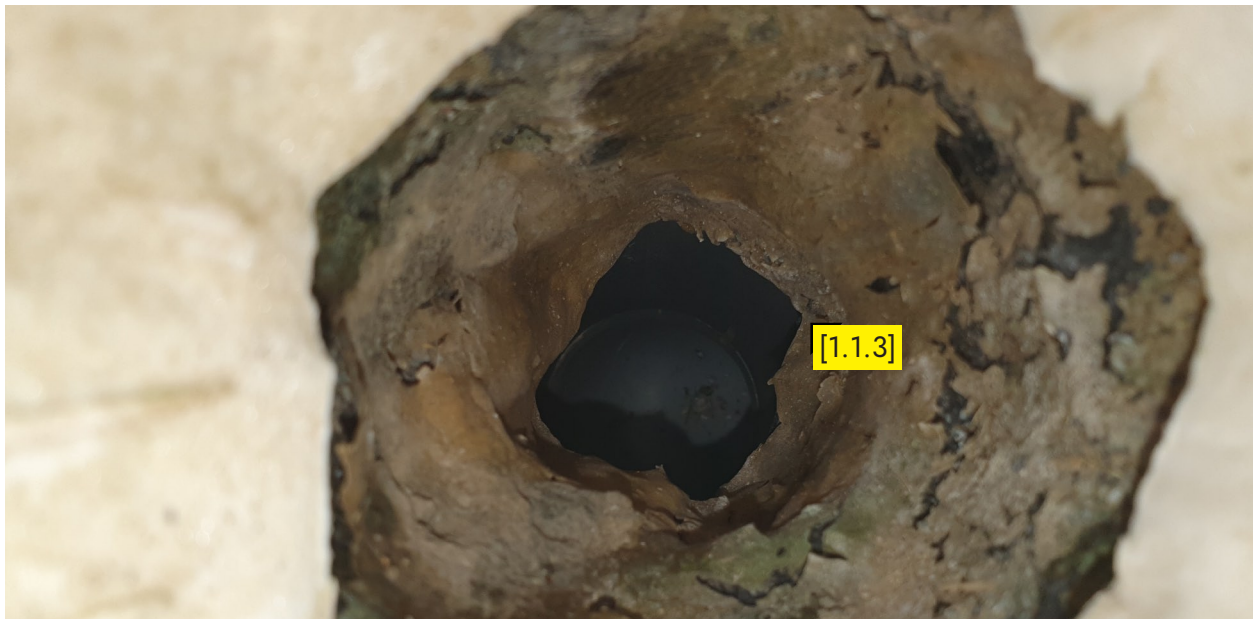
[1.1.1]

1.1.3. The water drainage through the roof ceiling was done incorrectly, as the bare ceiling slab is visible in the drainage holes. It is only partially covered by roofing felt bent inwards. This allows water to penetrate through cracks in the concrete and further flood the house.

1.1.4. Drainage holes should be fitted with an appropriate outlet fitting. Its apron should be welded to the roofing felt and the drain should be sealed in the downpipe.

1.1.4a. None of the drains have a basket to protect the drainpipes from clogging with small objects.

1.1.5. The roof should also be equipped with **thru-wall overflow scuppers** that could drain excess water from the roof in the event of extremely heavy rain or clogged drainage holes.



1.2. Fireplace chimney



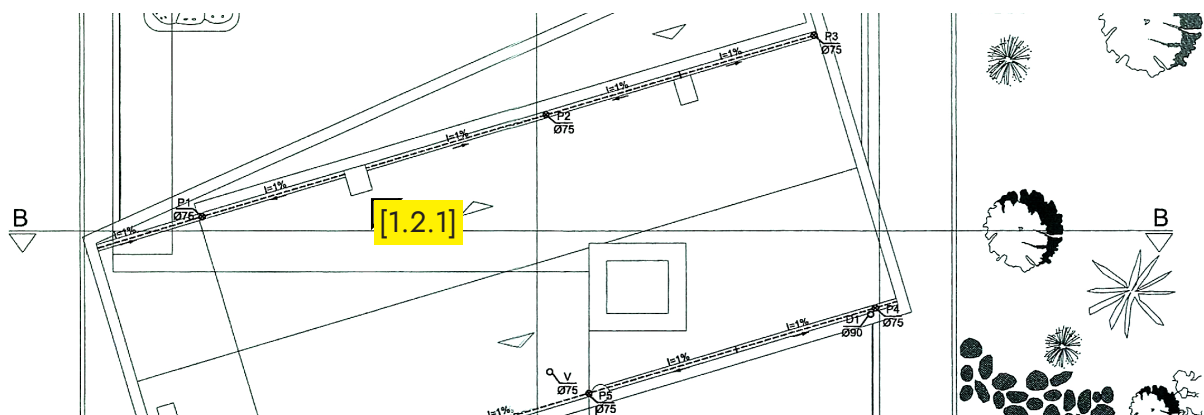
1.2.1. The chimney flue is made of spirally wound galvanized pipe (SPIRO), the use of which is prohibited for solid fuel combustion fireplaces!

There is a serious risk of thermal damage to the pipe and the release of toxic exhaust gases into living spaces.



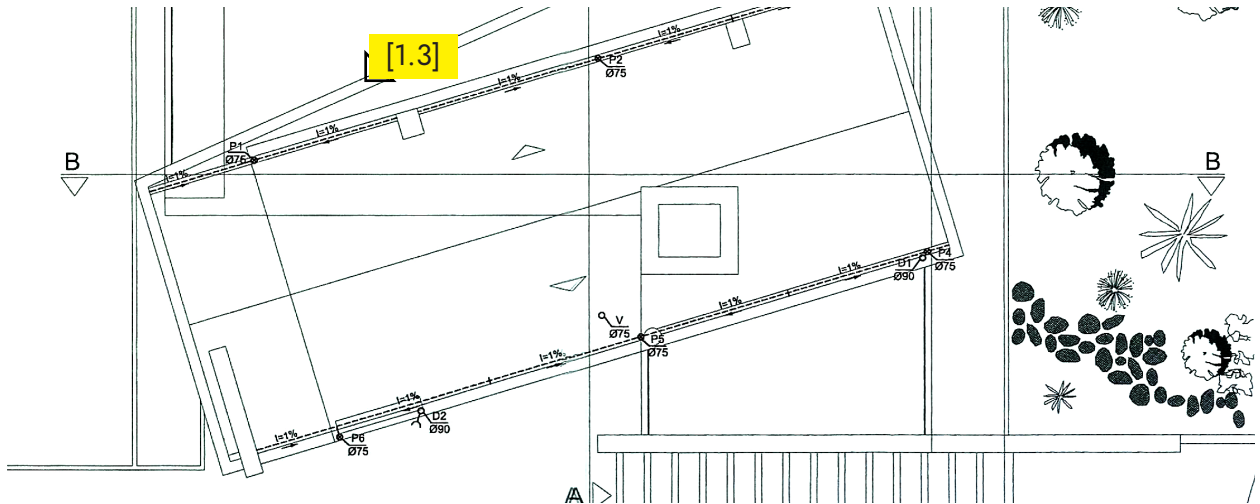
1.2.2. The chimney cap was made incorrectly. It has the form of a concrete slab mounted on 4 posts. The clearance between the cap and the chimney is created by very small gaps, thus limiting the chimney draft! Both the smoke and ventilation chimneys are too short. Significantly shorter than on the building design.

1.2.3. Corrosion is already visible on the pipe.



1.3. Cracks and other defects

1.3. The roof attic walls have copings made of stone, with many defects also lack of the grout on connections. Cracks and leaks in the copings joints promote the nesting of vegetation, resulting in further degradation.



2. THE TERRACE

The terrace was not constructed in accordance with the building design and in violation of technology and good construction practice. Below is a long list of defects and non-conformities with the building design.

2.1. The drainage

2.1.1. The terrace drainage trough is not located in accordance with the building design.

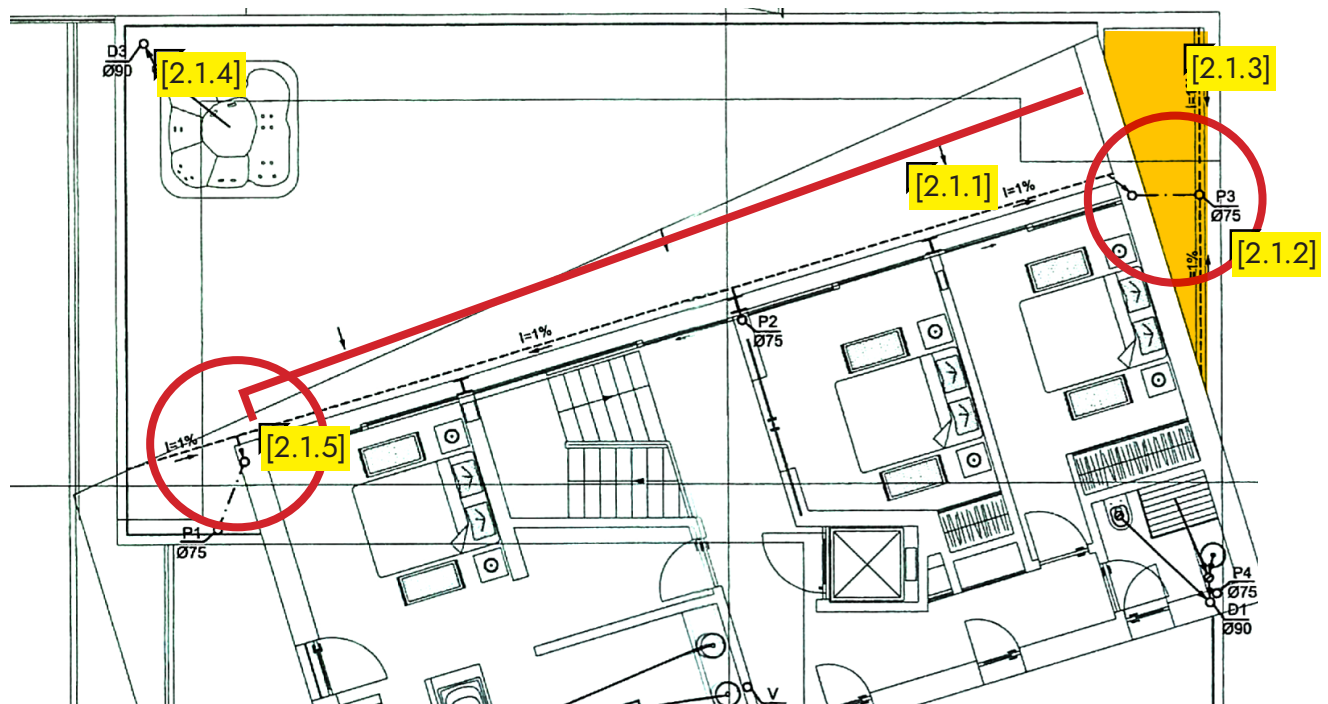
According to the building design, the terrace should have a slope towards the wall. Instead, a drainage trough was laid diagonally across the centre of the terrace surface.

Its inlet is only a few millimetres wide. The walls and the bottom of the trough are simply concrete of the screed - the trough is in no way protected by a system insert or other barrier to prevent water from seeping into the screed under the tiles.

2.1.2. The northern end of the drainage trough was not connected to drain P3 as shown on the building design. The drain marked on the building design as P3 should have a diameter of 75 mm, when in fact the diameter of the drain is 50 mm.

2.1.3. Furthermore, the drainage trough at P3 cannot serve as a support for the terrace drainage, as the part marked in orange is about 8-10 cm higher than the rest of the terrace!

2.1.4. The drainage for the jacuzzi pool (D3, 90 mm) was not made at all.



2.1.5. The drain on the south side was filled with pieces of tile and other construction waste. As these pieces were larger than the original size of the hole, it is not possible that they got in there after the construction was completed.

This kind of negligence could easily have led to the drain becoming clogged and consequently filling the terrace with water with all its consequences.



Endoscopic image of the debris in the terrace drainage pipe





To prevent the drain from becoming completely blocked, the owner decided to take off part of the terrace covering [2.1.5a] and remove the debris that had accumulated there [2.1.5b].



2.2. The covering

The terrace covering was made of ceramic/gres tiles, attached by adhesive mortar. The majority of the tiles are hollow - detached from the screed, and in places the tiles stand out clearly from the terrace plane. A significant number of joints are cracked, cracks and cavities are visible.



Total lack of expansion joints, which causes the joints between the tiles to crumble and the tiles to detach from the substrate.

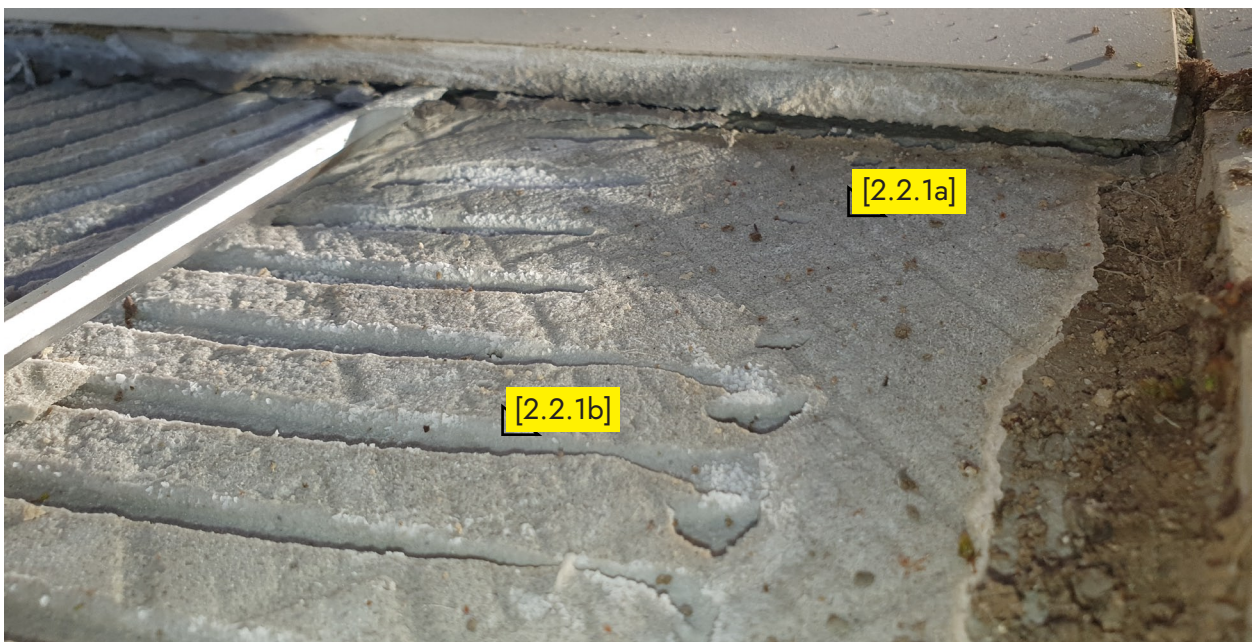
A section of the terrace covering was dismantled to ascertain the quality of the work and the materials and technology used. The tiles came off easily, without cutting or hammering, just using simple tools such as a screwdriver.



2.2.1. Defective terrace covering.

The tile was very poorly bonded to the screed and was easily removed when levered.

The adhesive mortar is not bonded to the tile over a significant area [2.2.1a]. Insufficient adhesive and voids between the adhesive layer and the tile are revealed [2.2.1b].



Numerous tiles are defectively laid, their edges standing out from the surface. [2.2.1c].





No waterproofing was found to protect the screed from water penetration [2.2.1c]. The only insulation against the water is the tar fabric on the concrete slab. This causes all the above layers to be penetrated by the rain water sipping thru the grout cracks.



The concrete screed is yellow in places, very crumbly and resembles wet sand in texture. [2.2.1d].



Stress cracks were found in the tiles around the steel pillars of the buildings' superstructure [2.2.1i].



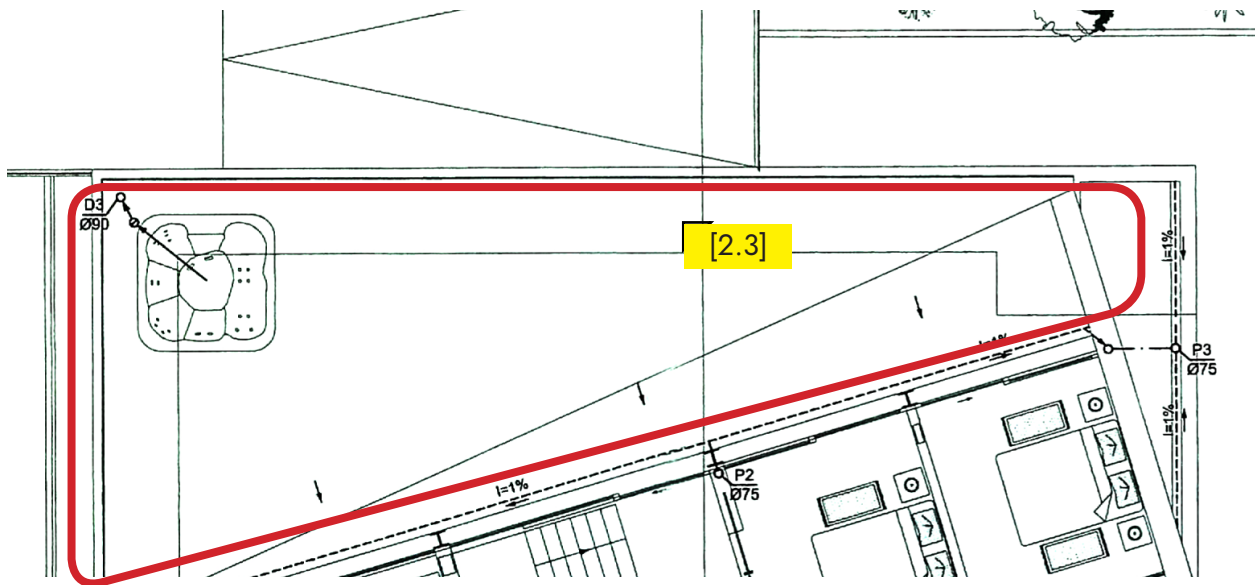
Stress cracks in the area of the connection between the terrace and the wall [2.2.1j].

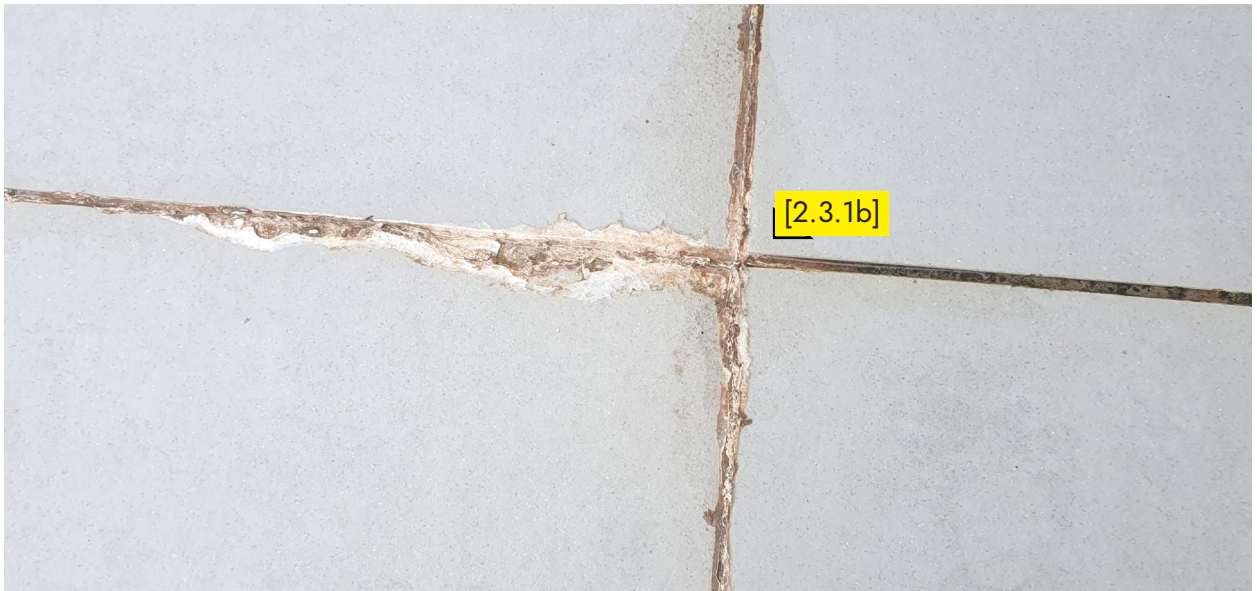


2.3. Grouts and seals

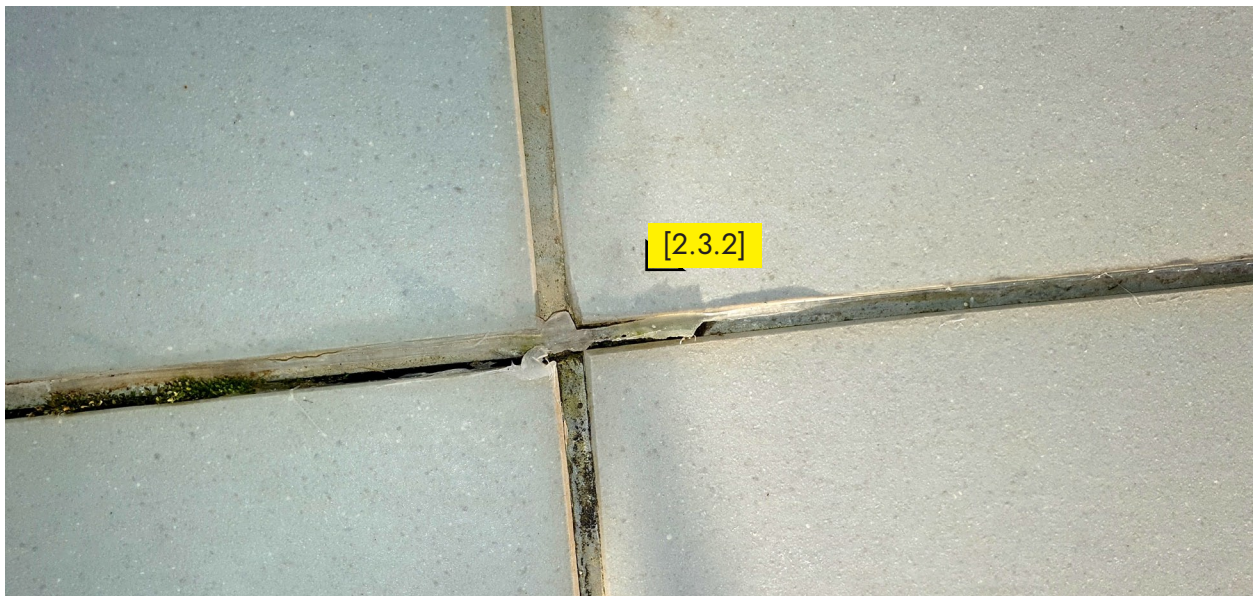
2.3.1. Numerous cavities and discolouration in the tile grouts were found on the overall terrace surface. There are many visible instances of grout erosion [2.3.1a].

The connection between the terrace surface and the balustrade is cracked or absent in many places. This creates the possibility of water penetrating into the balustrade attachment points and further erosion. The connection between the balustrade and the terrace should be both watertight flexible.





2.3.2. Some joints show signs of repair and sealing. These are ineffective treatments because the wrong technology and materials were used. Significant degradation of repaired joints can be seen.



3.

THE FIRST FLOOR

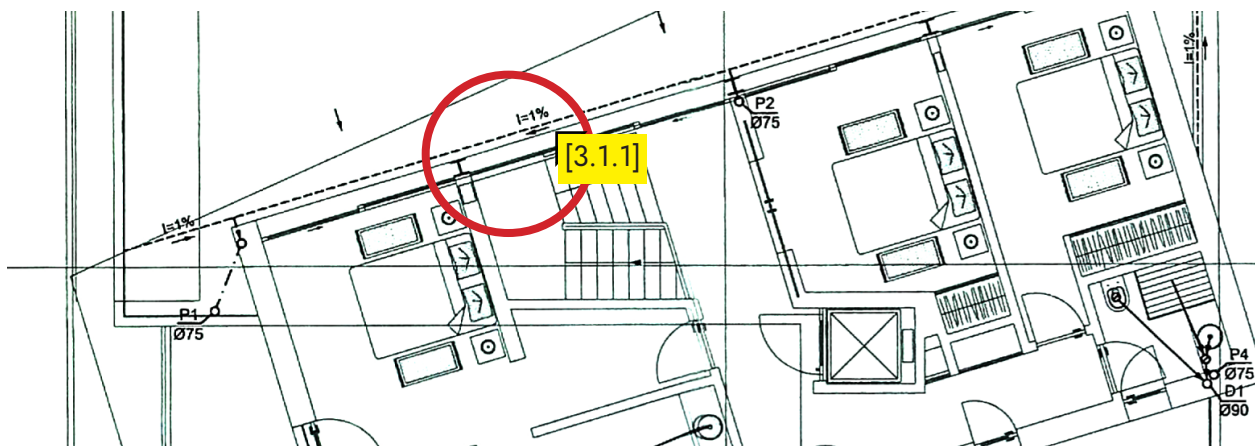
Construction defects such as leaks and cracks were detected on the first floor.
There are also a number of conceptual errors that make it difficult or impossible to use the facilities.

3.1. Cracking in the stairwell

3.1.1. The walls in the stairwell are cracked

Numerous cracks running from the terrace lintel [3.1.1a].

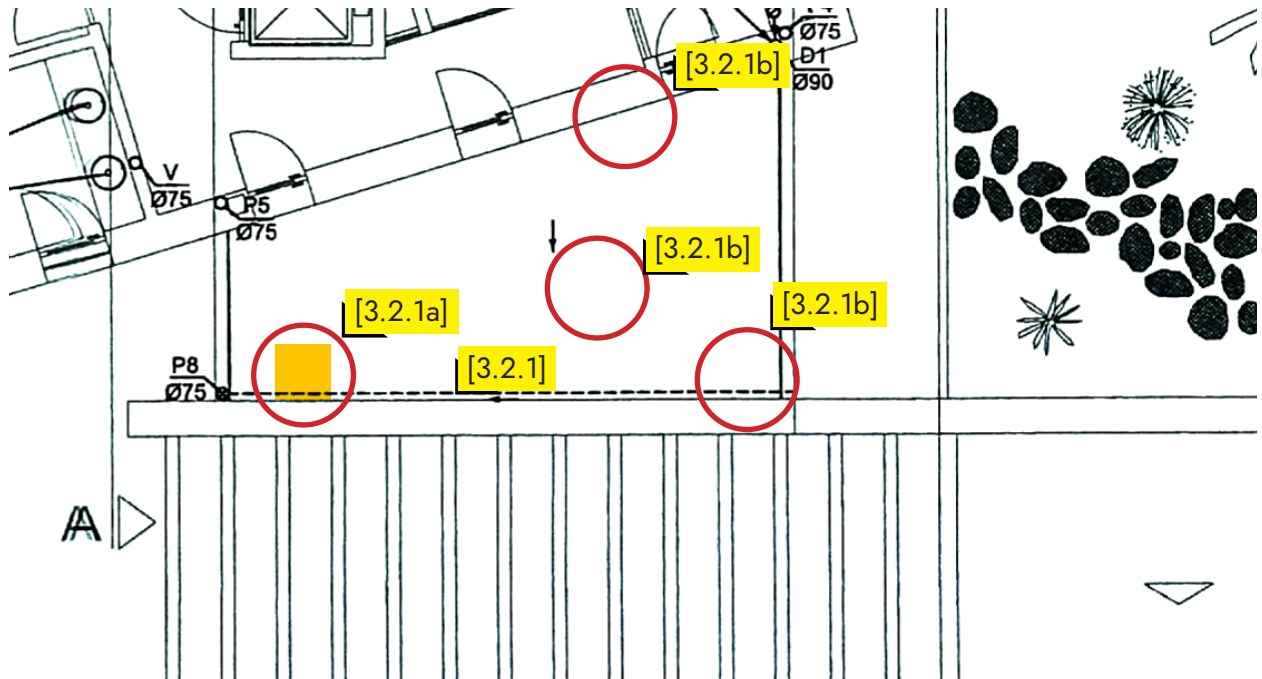
From under the layer of paint, previous cracks in the same area can be seen. [3.1.1b].



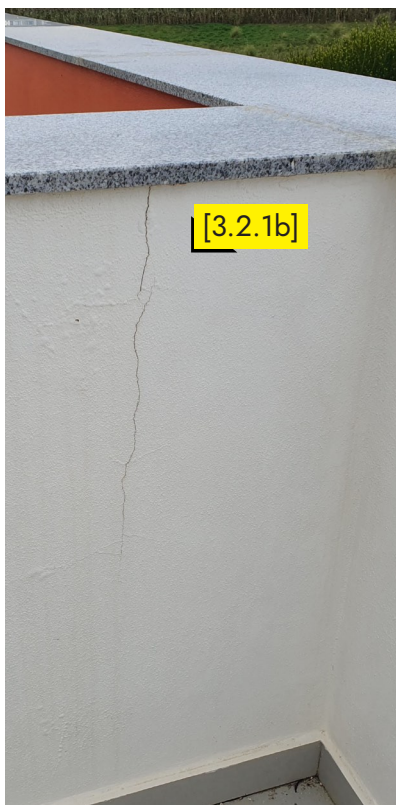
3.2. Defects in the balcony on the east elevation

3.1.1. Improperly constructed rainwater drainage from balcony.

The diameter of the P8 drain pipe is 50 mm whereas by the building design it should be 75 mm. In addition, the P8 drain has been placed behind the chimney of the grill located on the patio below. This location of the drain results in the accumulation of debris and plant elements and makes cleaning the drain much more difficult. It should be mentioned that the grill chimney (highlighted in orange) is not present in the building design. [3.2.1a].



Cracks in the masonry fence of the balcony [3.1.1b].



Degraded grouts [3.1.1c].



Rainwater deposited on the balcony as a result of incorrect surface profile [3.1.1d].



Cracks at the junction between balcony and house wall [3.1.1e].



3.3. Leaks into bedrooms



There is a distinct musty smell in the northern bedroom and the nearby corridor, despite the fact that the air conditioner has been running in the room in dehumidification mode every day for the past six months.

3.3.1. The floor boards had been removed. Clear traces of dampness covering almost half of the room were noted on the screed. The probable cause of the dampness is rainwater leaking from the balcony on the east side of the house. It can be assumed that there is also no waterproofing on the balcony and rainwater is seeping into the screed in the bedroom.



3.3.2. The bedroom on the south side has developed leaks around the patio window. The window frame was covered with green algae, there was water in the floor and in the window frame. The skirting board is slightly swollen from the dampness.



3.4. Lack of ventilation in bathrooms

3.4.1. Neither of the two bathrooms on the first floor has ventilation ducts.

This is particularly important for the south-facing bathroom, which is one room with the bedroom.

All odours and dampness will be allowed to enter the living areas and soak the the clothes in the open wardrobe located near by.

The opinion that this is not required when windows are open is not true, as this would mean that during cold or rainy weather, residents would be forced face the weather elements to provide ventilation.



3.4.2. The bathroom adjacent to the small bedroom has two air vents, but these lead to a blind section of technical duct in the wall. This duct is closed off towards the roof and on the bottom, so there is no air exchange.

The only effect of these vents is to saturate the bricks in the wall with moisture.



This bathroom does not even have a window, thus the ventilation is impossible!

Space behind the ventilation grille upstream and downstream of the duct.



3.5. Air conditioning defects

3.5.1. On the first floor, three air-conditioning systems were installed built-in in the walls, the false ceiling and in the wardrobes. None of them has an inspection opening to access the junction box. In the event of a malfunction or the need to make adjustments, it will be necessary to dismantle the wardrobe or to drill a hole in the wall. The owner was forced to do so in this case.



3.5.2. In the middle bedroom in the center of the house, the air conditioner have air intake hidden in lockable wardrobes. For this reason, it is impossible to use them properly. For the air conditioner to work effectively, the wardrobe doors must be open.



3.6. Wardrobe defects

The wardrobe in the south bedroom is bulging and a large gap has been created between the wardrobe and the ceiling.



4. THE GROUND FLOOR

A number of serious construction errors have been discovered on the ground floor, the consequences of which could be very severe for the occupants of the house.

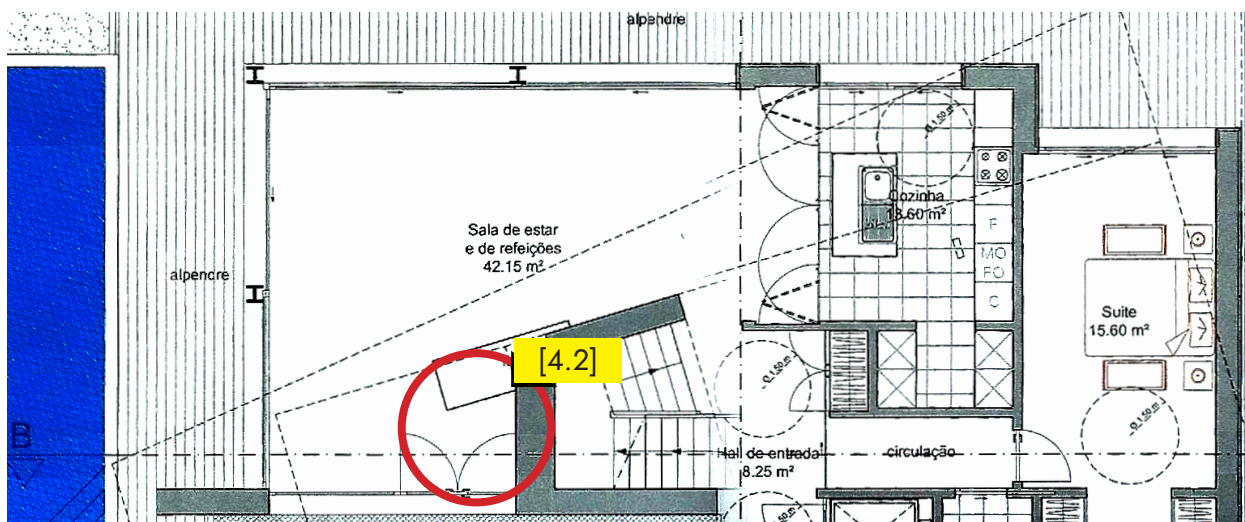
A major problem is the chimney system of the fireplace, which is made in an extremely incorrect way, endangering the health and life of the residents.

Unusual contraptions and fittings installed by the contractor during construction were also revealed, indicating that he was aware of the problems and tried to hide them from the buyer.

4.1. Fireplace



Using a fireplace in this building is a serious danger for the health and life of the people in the house!

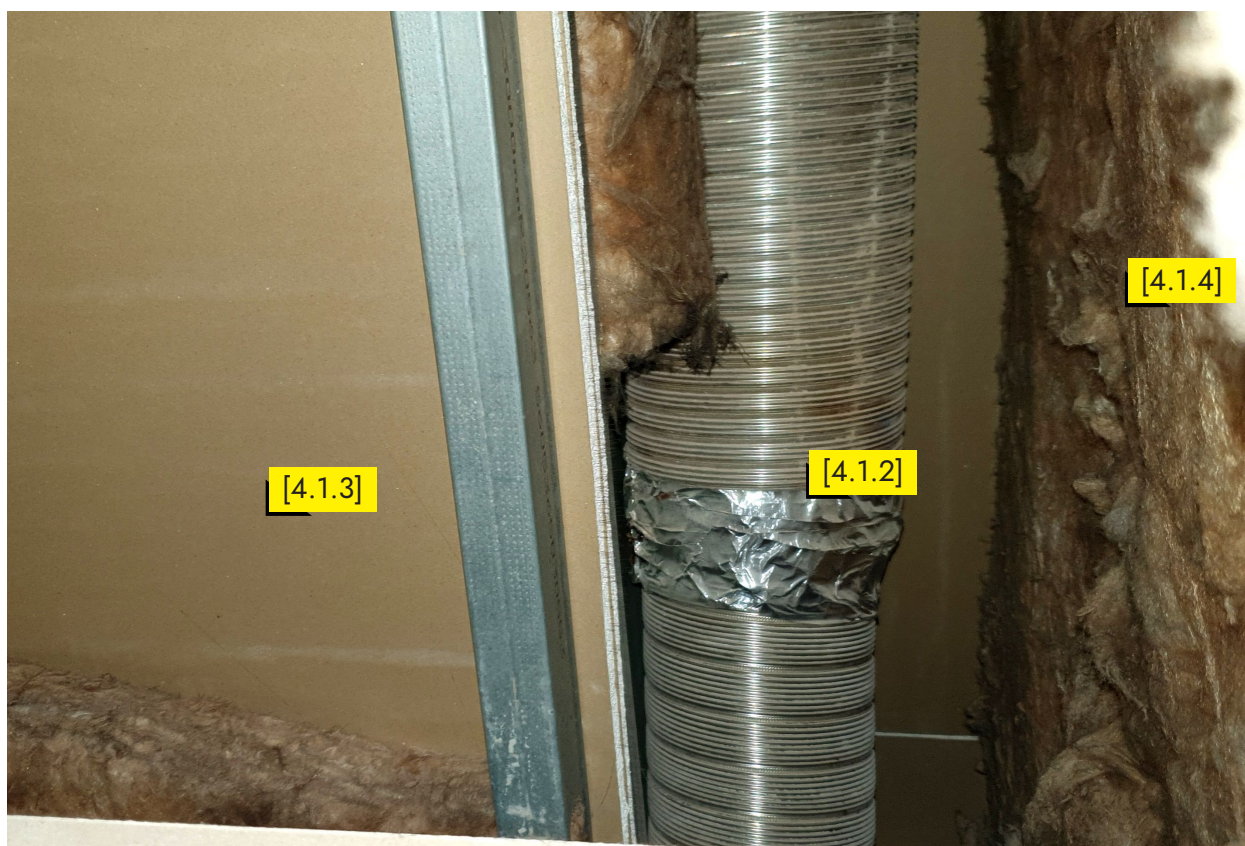


4.1.1. The fireplace was connected to the flue via a flexible flue pipe! This type of pipe is not approved for flue gas from solid fuel burners, where the flue gas temperature is not controlled and can reach up to 350 °C.





4.1.2. Flue pipe consists of two joined sections, connected together with an adhesive tape!



4.1.3. The fireplace cladding in some parts has not been thermally insulated on the inside - the plasterboard should be protected from the heat on the inside.

4.1.4. The material used to insulate the fireplace is incorrect. Compressed rockwool, laminated with aluminium foil, should have been used. The aluminium layer reflects infrared radiation and prevents the fine rockwool particles from breaking off and spreading through the dwelling.

Instead, an ordinary rockwool is used (as to insulate the closed spaces in the walls), the fine needles of which can detach unhindered and be spread around the room with the hot air from the fireplace.

Above, in the suspended ceiling area, the flue pipe passes in close proximity to the electrical cables. Such negligence can lead to insulation melting, fire and even electric shock!



**4.1.5. The fireplace cladding does not have a single hot air inlet or outlet!
This risks overheating the firebox, the smoke pipe, the housing and other
objects in the vicinity!**



**The fireplace is made completely contrary to the good building
practice and the operating manual supplied with the fireplace!**

4.2. Kitchen hood connection

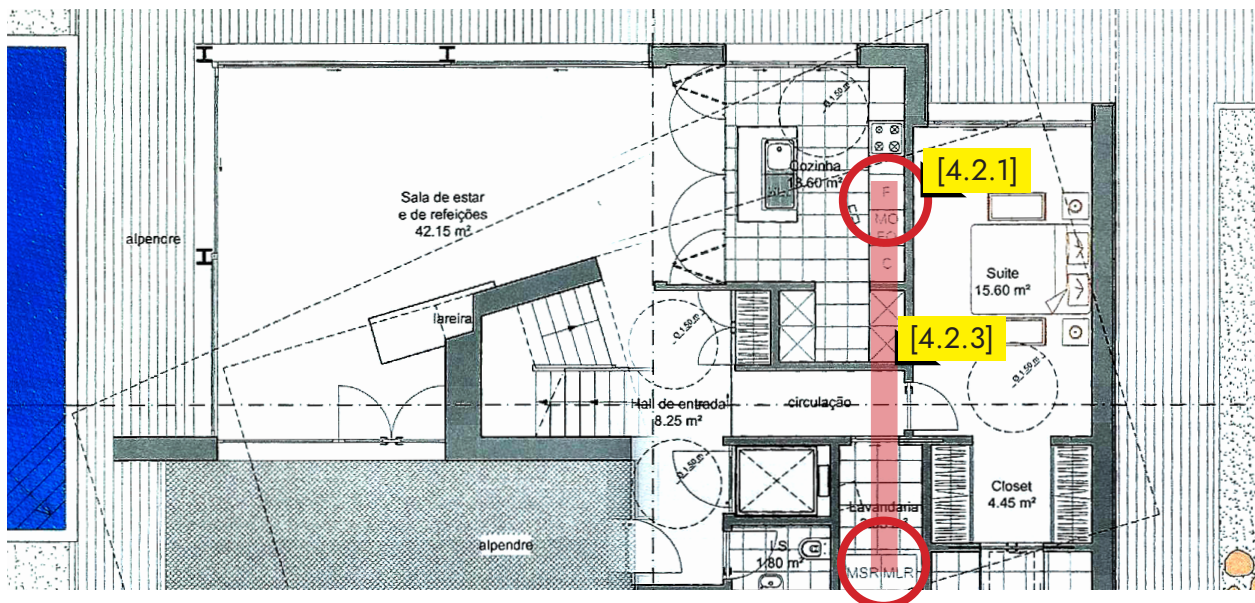


4.2.1. The cooker hood was not connected to the ventilation duct!

The pipe from the cooker hood was led into the space between the concrete slab and the false ceiling [4.2.2]. A few metres of ventilation pipe are missing between the cooker and the ventilation duct [4.2.3].

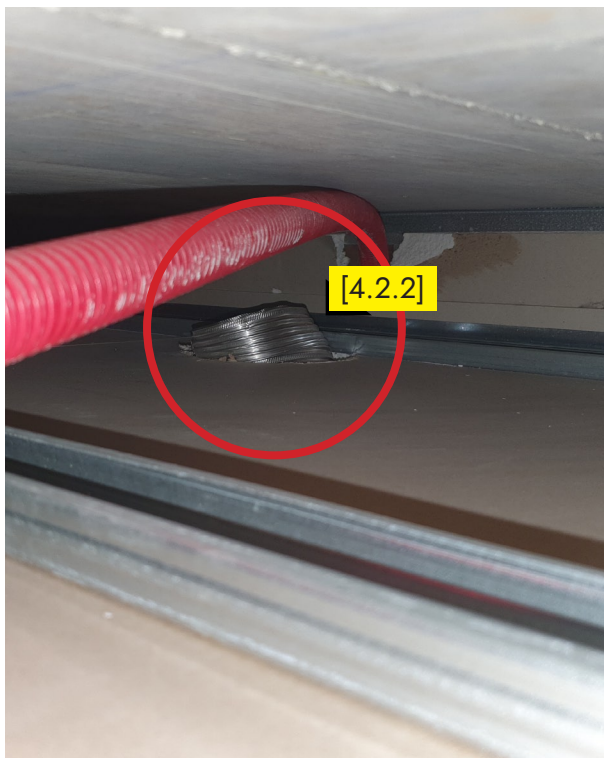
All cooking fumes, odours and moisture are introduced into the hollow space below the false ceiling and spread throughout the flat.

In the long term, this will cause organic substances and their decomposition products to accumulate on the ceilings.



Pipe outlet from the eaves into the space over the false ceiling.

Dismounted hood pipe in the kitchen cupboard.



4.3. Water-catching contraption

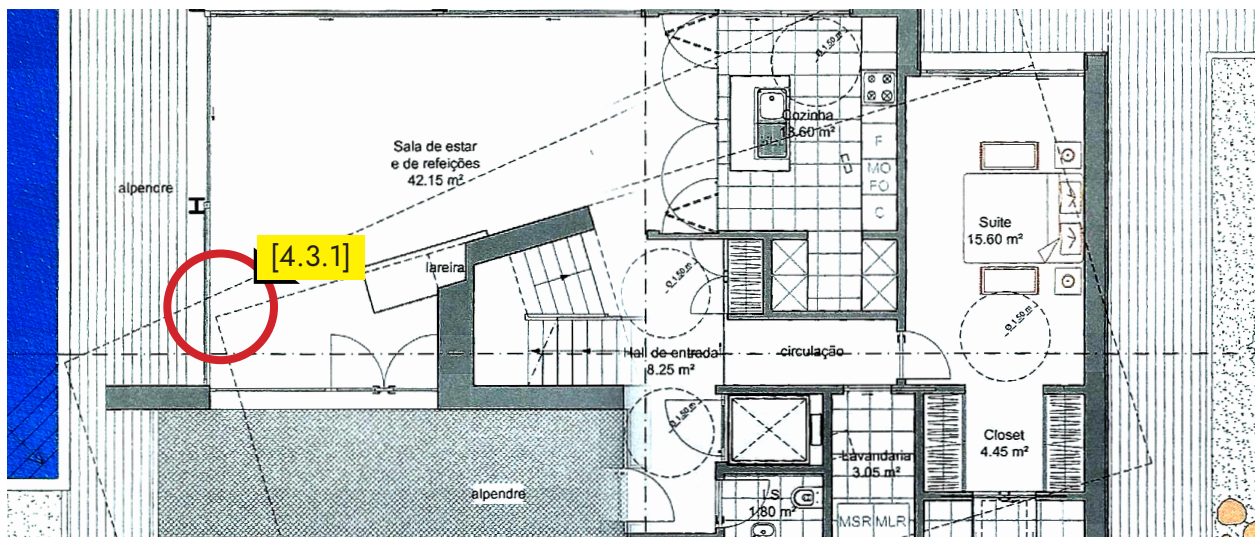
4.3.1. In the south-east corner of the living room, a specific structure was detected hidden above the false ceiling. It consists of a metal tray partly suspended from the ceiling and partly lying on the frame of the suspended ceiling. There is also a tar paper apron attached to the ceiling using a metal profile and supported by a wooden pole made from a cut-off brushstick.

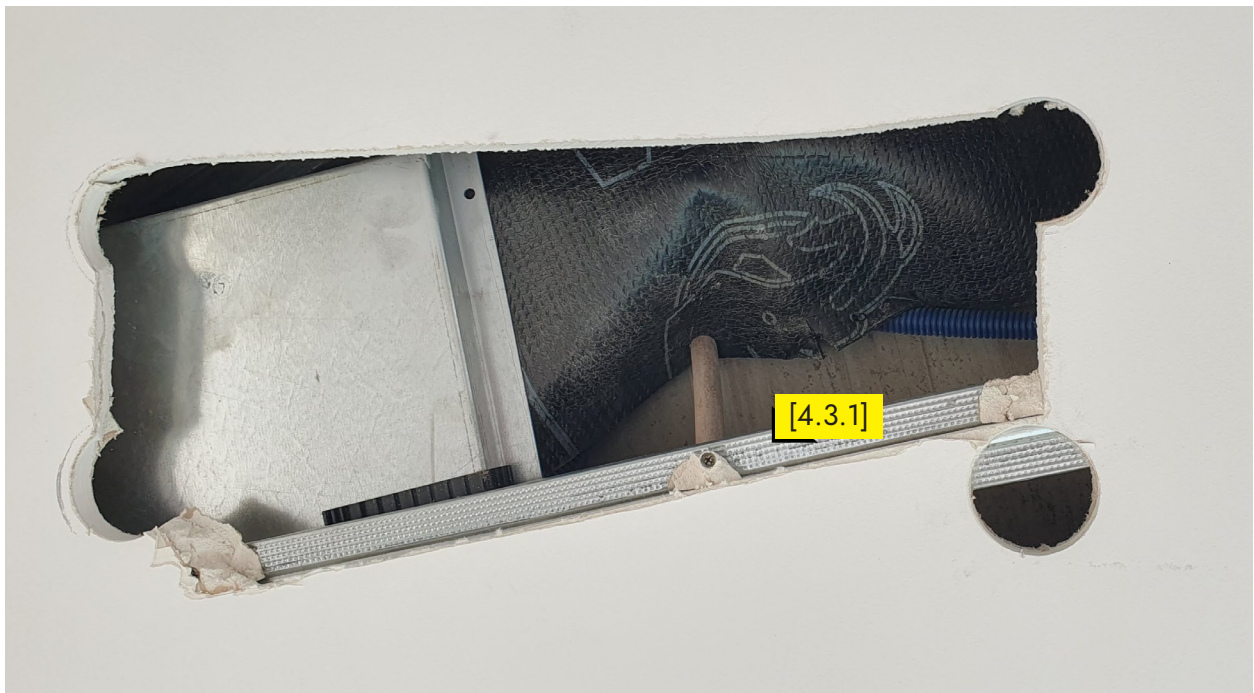
The whole thing is located underneath where the roof and terrace drainage pipes pass through the terrace ceiling.

Presumably this is a device to catch leaks from the terrace that the contractor could not deal with. Instead of sealing the penetrations through the ceiling and fixing the problem, a leak masking device was installed.



This is an unprecedented, non-technological solution and should not be used in housing.





4.4. Connection of gas water heater

The gas water heater is located in the kitchen cupboard.

The exhaust pipe from this cooker is attached to it using aluminium self-adhesive tape. The flue gases are not discharged into the chimney, but are discharged to the outside through a simple ventilation grille.



4.5. No ventilation in bathrooms

4.5.1. Neither of the two bathrooms on the ground floor has ventilation ducts. This is particularly important for the bathroom, which has wide opening for the bedroom.

All odours and dampness will be allowed to enter the living areas and soak the the clothes in the open wardrobe located near by.

The opinion that this is not required when windows are open is not true, as this would mean that during cold or rainy weather, residents would be forced face the weather elements to provide ventilation.

4.5.2. Only the ground floor toilet has a simple air exchange system in the form of two holes in the wall covered by a grille.

Whilst this allows some air exchange, it does not comply with the *Portuguesa Standard NP 1037-1 2002* and cannot be regarded as properly executed ventilation.

A number of problems associated with such an arrangement are described in the *Portuguesa Standard NP 1037-1 2002*

4.6. The kitchen doors

The kitchen door jams and is stuck against the floor. They can only be moved a little and cannot be closed completely. .



4.7. The corridor floor tiles

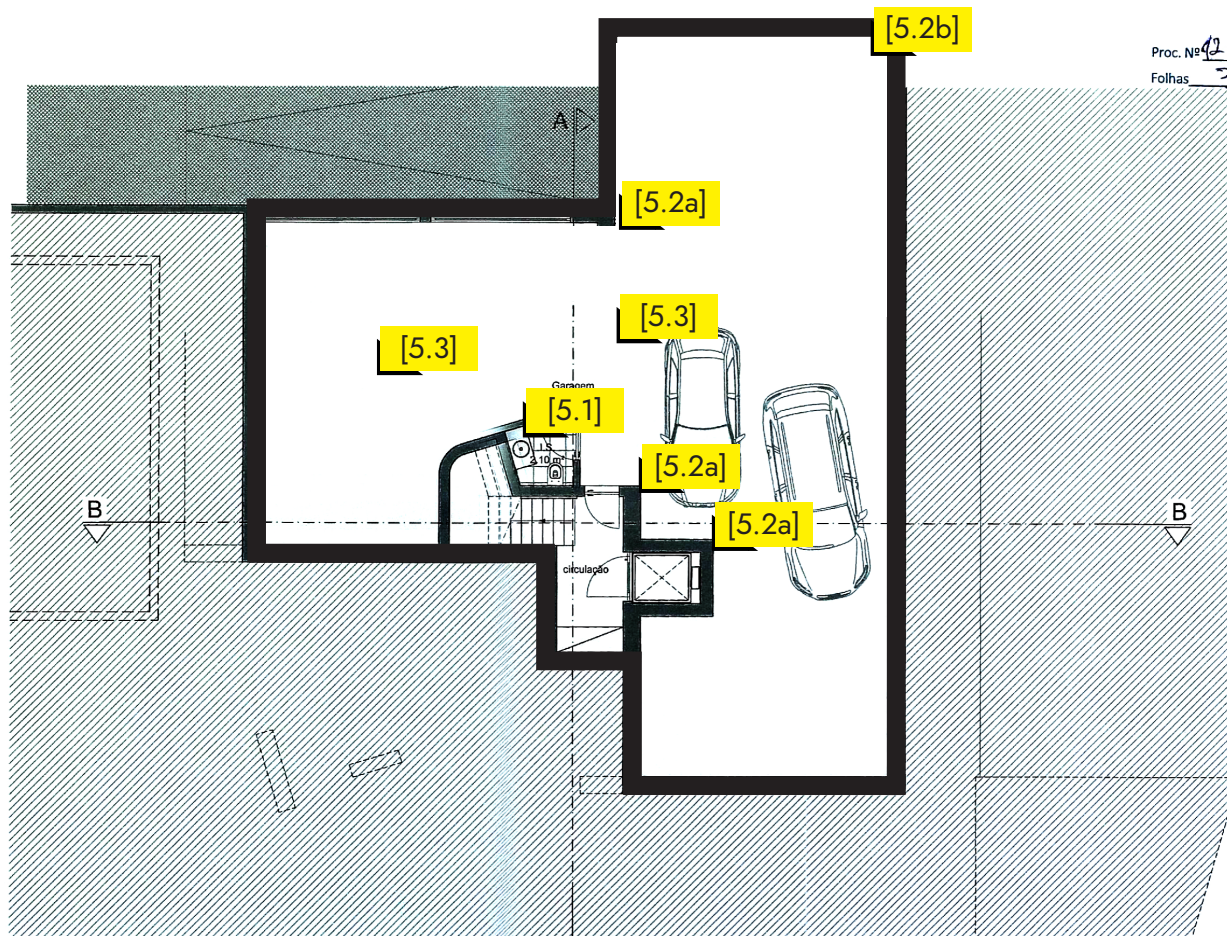
The tiles in the corridor at the entrance have different shades. This is a clear omission, as it is part of good building practice to ensure that the tiles come from the same production batch and are the same shade.



4.8. Air conditioning problems

As on the floor above, the ground floor has an air-conditioning system built into the walls, false ceiling and wardrobes. None of these have an inspection opening for access to the junction box. In the event of a malfunction or the need to make adjustments, it will be necessary to drill a hole in the wall or dismantle the cabinets.

5. THE BASEMENT



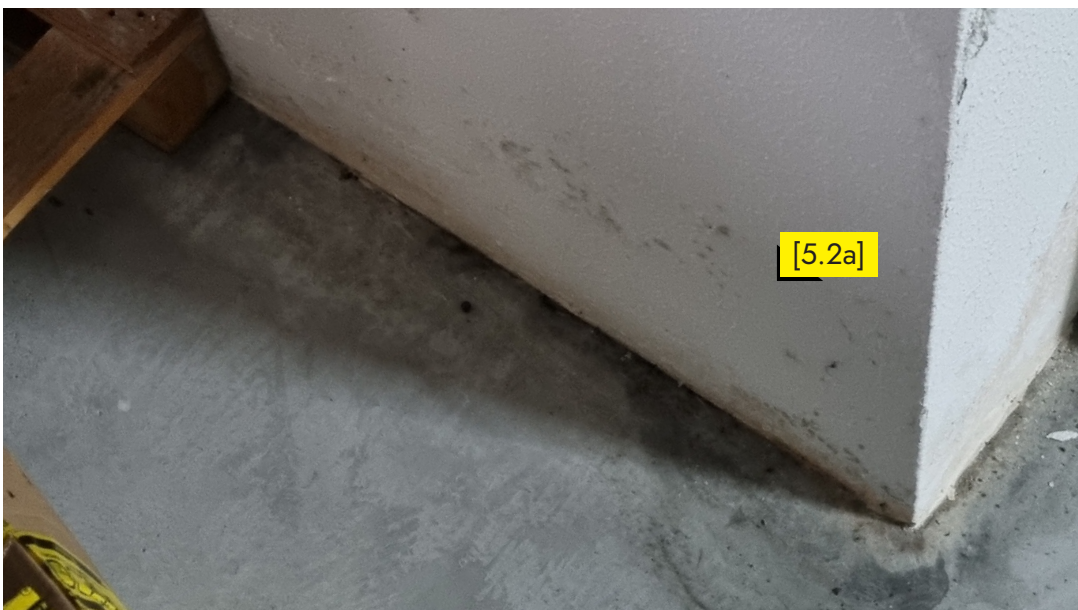
5.1. No ventilation in bathroom

As the other bathrooms in the house, also the basement bathroom has no ventilation ducts. The basement bathroom also has the shower, so the amount of moist could be substantial. This bathroom does not even have a window to let the fresh air in and let the moisture out. There is no ventilation at all.

5.2. Moisture in walls and floors

The main problem in the basement is dampness [5.2a]. There are stains on the floor, damp patches on the walls – mainly in inner walls. Poor horizontal damp protection of the floor and walls thus capillary seepage through the walls are responsible for this dampness.

There are also some traces of water soaking the walls in the garage top corner (near the ceiling) [5.2b].





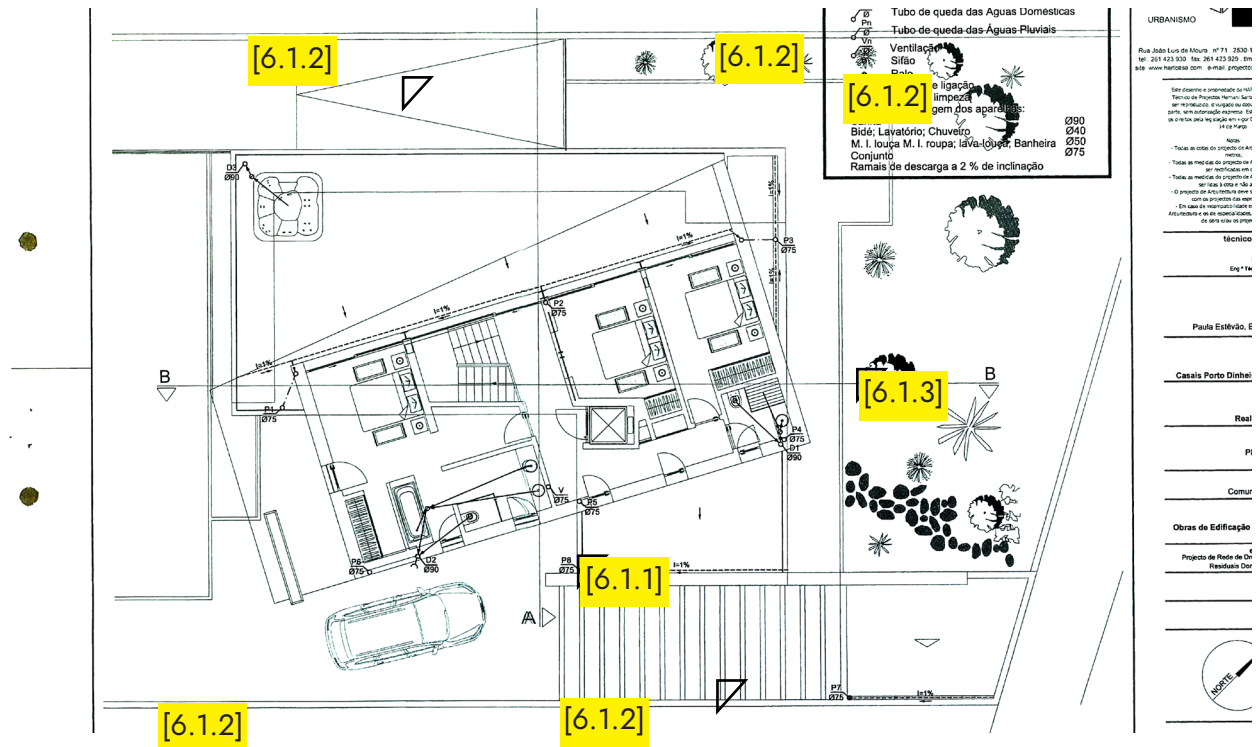
5.3. Cracked floor

The concrete screed is cracked in many places.



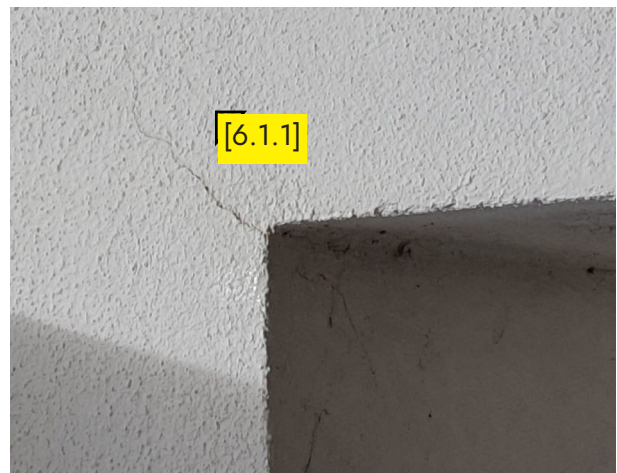
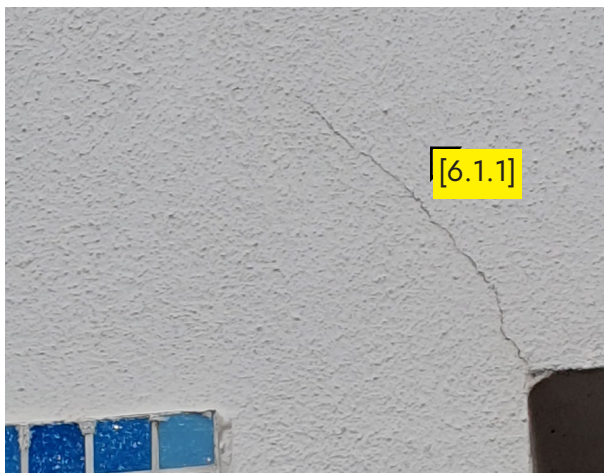
6. EXTERNAL WALLS

External walls have defects in design and workmanship, resulting in cracking and damp patches. Walls and fences are cracked and have no copings. Plasters and paints appear to be of poor quality.



6.1. Cracks and stains

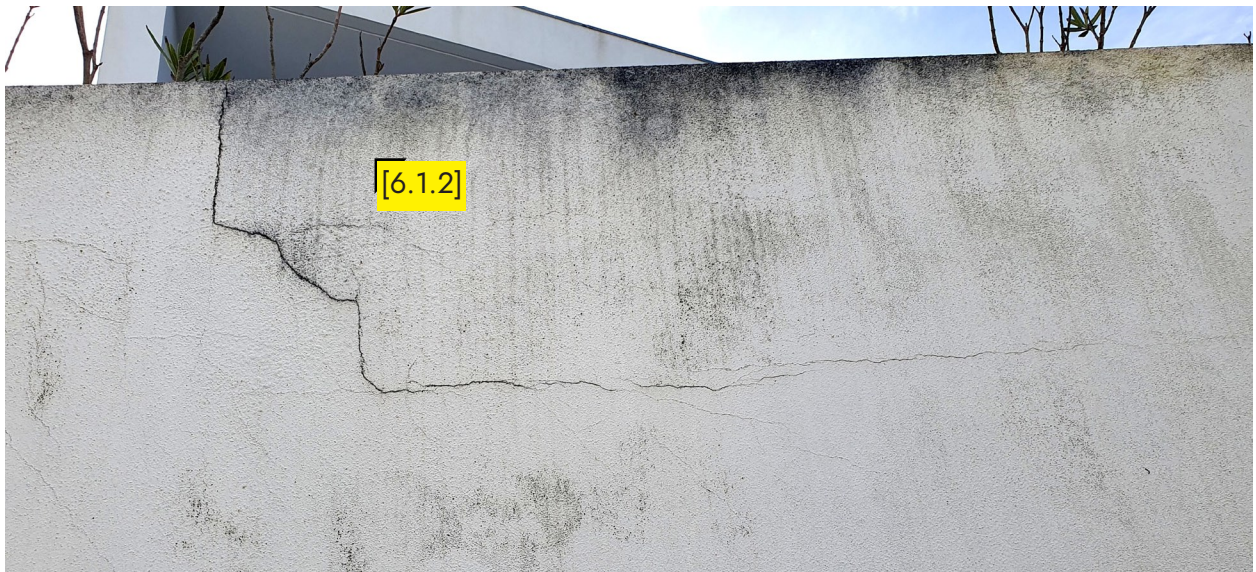
6.1.1. Cracks in the façade around the window openings and corners.
The main cause of their formation is the lack of diagonal reinforcement in the plaster layer.



The stone copings and window sills do not have throating (drip channels), thus the water flows along the walls and soak it. There are a lot of evidence of water penetrating house walls and fence walls.

6.1.2. Cracks below top of walls and masonry.

Caused by water penetration due to missing or poorly executed copings, wall settlement and stresses arising at the boundary between different materials.

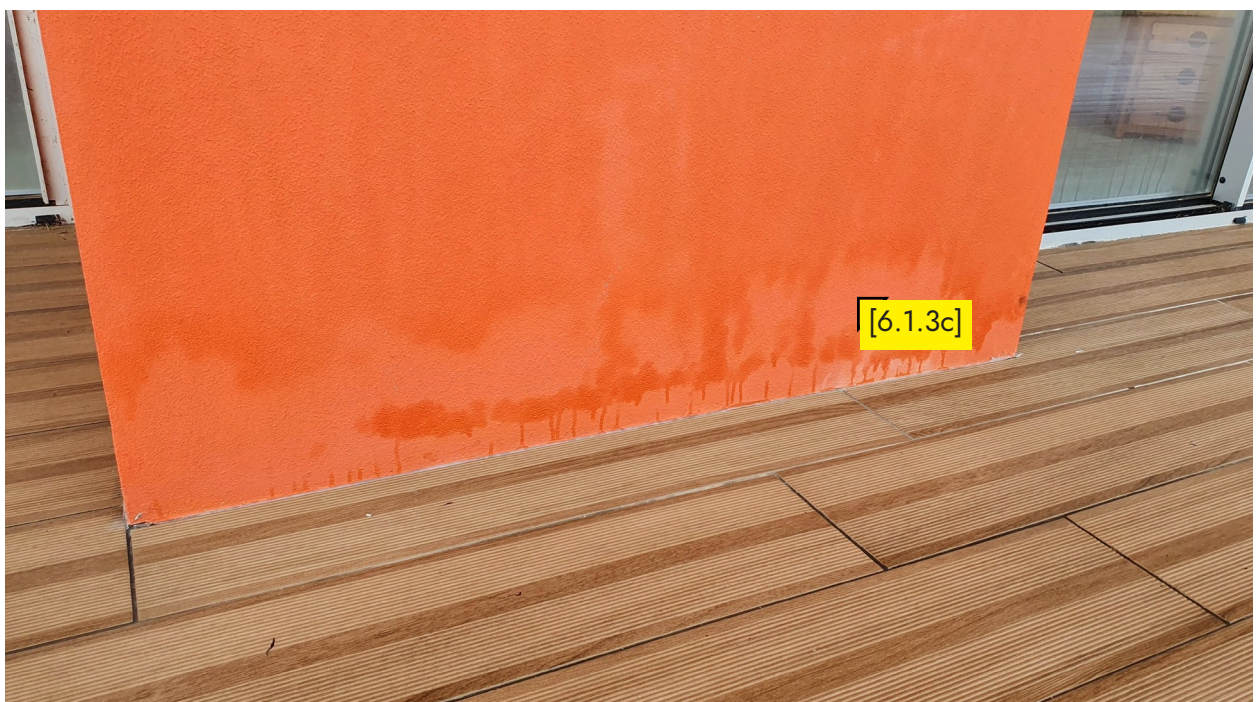
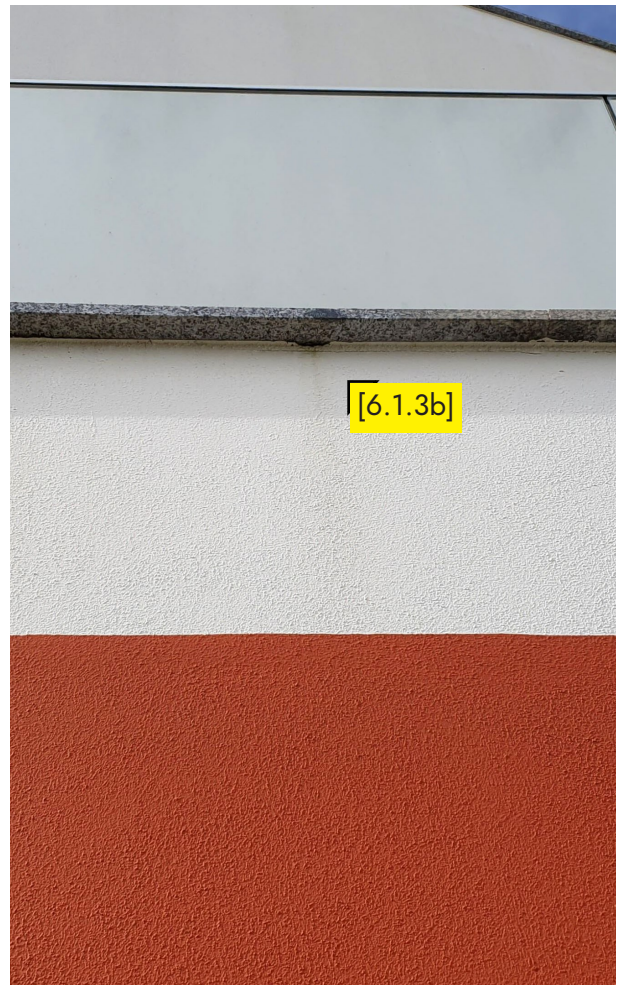


6.1.3. Discolouration and staining on the facade.

6.1.3a This is a possible exudation of water from a leaking balcony.

6.1.3b Staining from rainwater due the lack of **throating (drip channels)** in the copings.

6.1.3c Stains from rainwater sipping up from the patio floor.

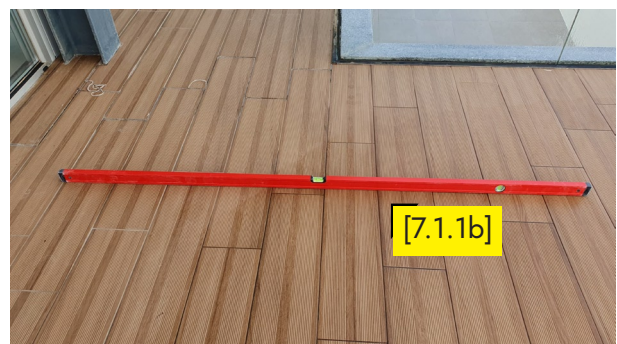
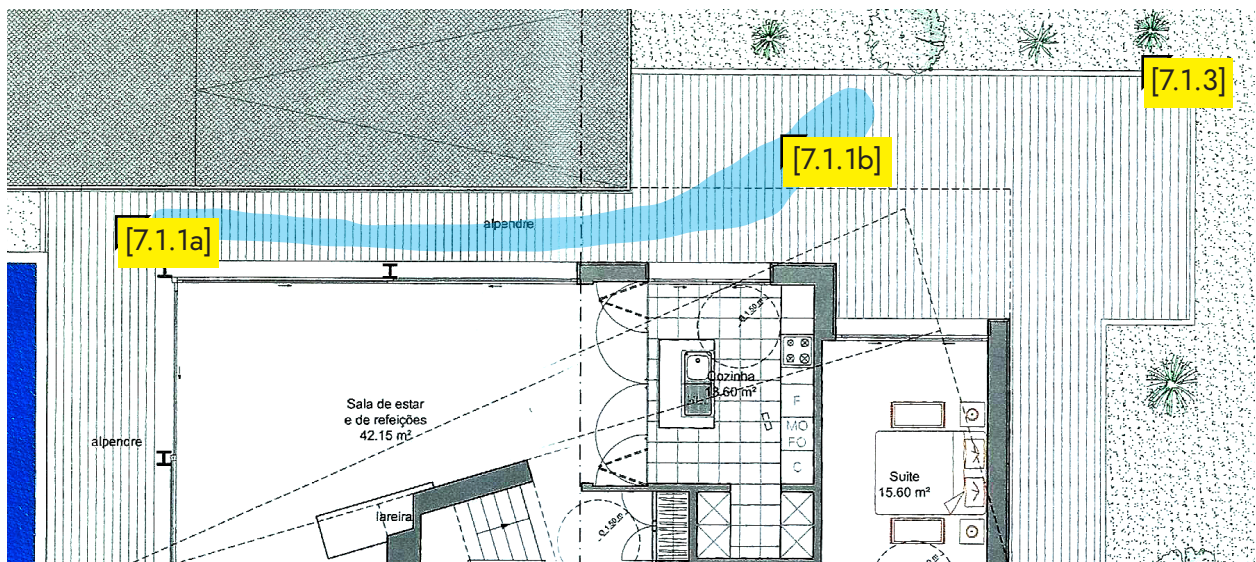


7. THE PATIO

The patio drainage is inadequate. Tiling work has been carried out negligently, copings and window seals are missing. The patio floor slab seems to be cracked.

7.1. Patio profile and drainage

Patio surface on wrong profile – it forms a trough, there is no slope [7.1.1a] or even worse - the slope is slightly to the building direction [7.1.1a]. As a result, rainwater floods the patio in puddles [7.1.2]. Excess water running off the patio is not drained anywhere. It is likely that some of the water flows freely from the terrace near the wall and infiltrates into the garage - hence the stains in the corner under the ceiling [7.1.3], and some run off at the edge of the patio and pool, as well as in the area of the underground pool pump room.



7.2. Poor quality of work, sealing deficiencies

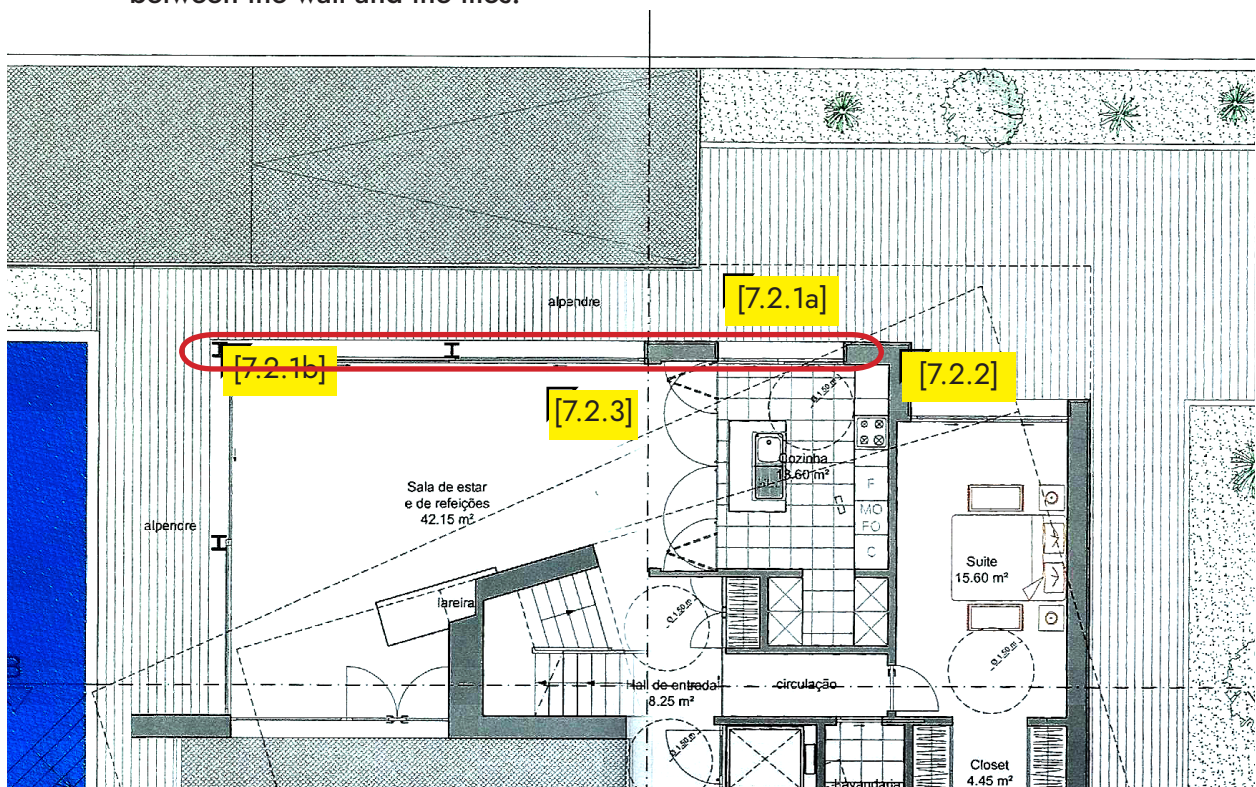
7.2.1a. Grout is chipping all over the patio and water is seeping into the adhesive layer. Worst of all is the spot in the middle of the terrace where the missing grout lines up in a pattern - the likely place of a concrete slab crack. Some joints show signs of repair and sealing. These are ineffective repairs because the wrong technology and materials were used. Significant degradation of repaired joints can be seen.

7.2.1b. Tile cracks are visible on the structural pillars and visible signs of corrosion..

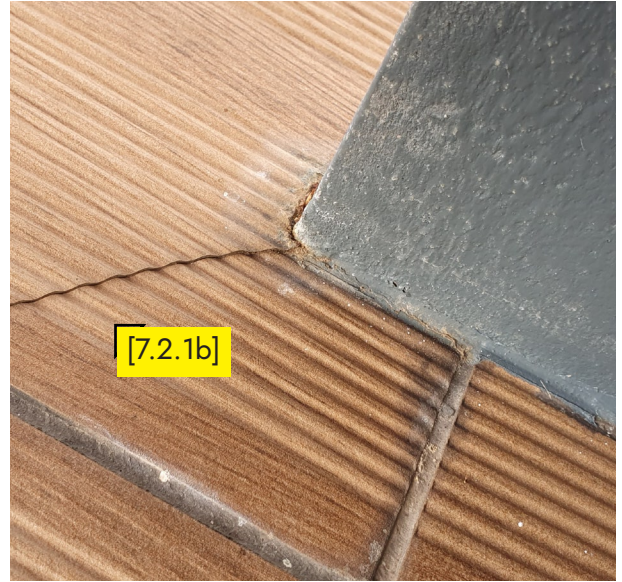
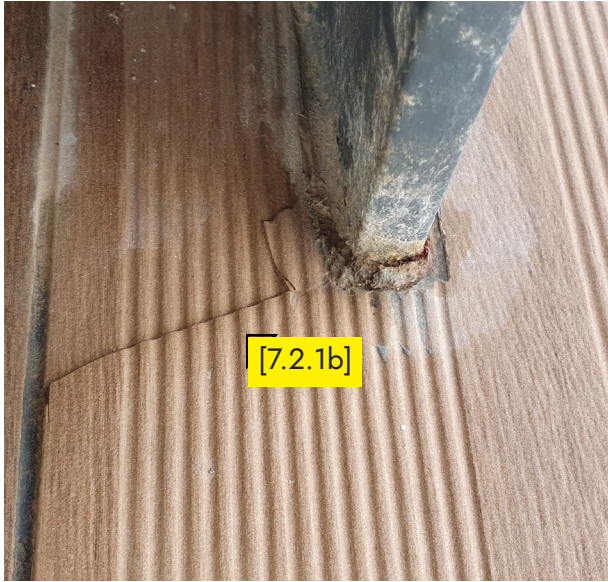
7.2.2. Water stains are visible on the walls of the building due the sipping up from the patio floor.



7.2.3 The sealing of the window openings is done extremely carelessly and in an extremely damaging way. Sealing is missing in all areas where the window drains are located! Thus, all the water that runs off the surface of the windows is introduced directly between the wall and the tiles!







7.2.3. Extreme negligence in sealing the patio windows.

There is a lack of tile sealing directly under the water outlets of the window frames, where most water flows out.



7.2.4. The connection between the terrace surface and the balustrade is cracked or absent in many places. This creates the possibility of water penetrating into the balustrade attachment points and further erosion.

The connection between the balustrade and the patio floor should be both watertight flexible.



7.3. Crooked pavement

The part of the pavement adjacent to the patio floor is very crooked. The likely cause is that the ground is being washed out by water running off the patio, which is not drained anywhere. Loose paving stones can be seen.



8. THE SWIMMING POOL

8.1. The edge of the pool

The stone slab in the pool frame are loose and wobbly. Cracked out grout can be observed.



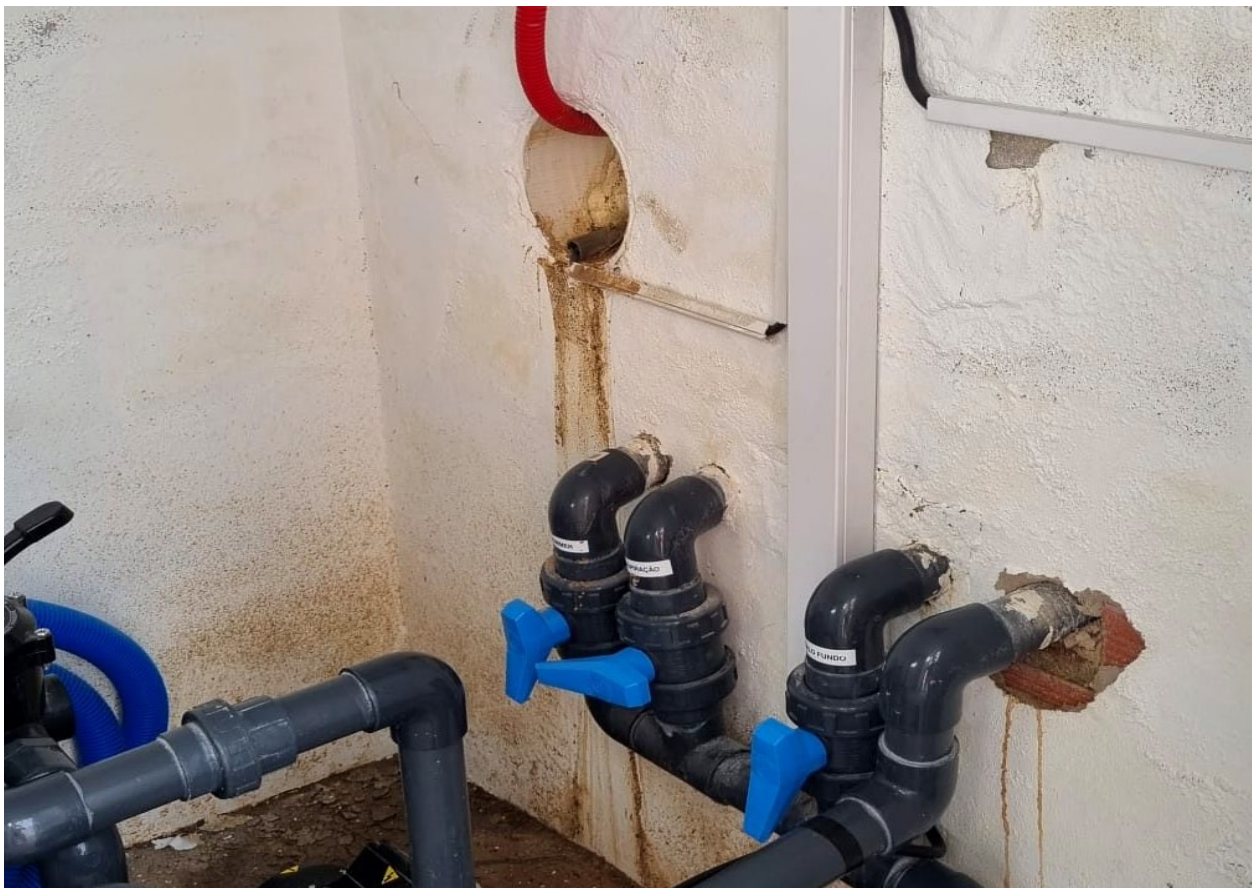
8.2. The leakage

The pool has a leak - water escapes from the pool.
Despite topping up, water reaches at most the first step of the stairs.



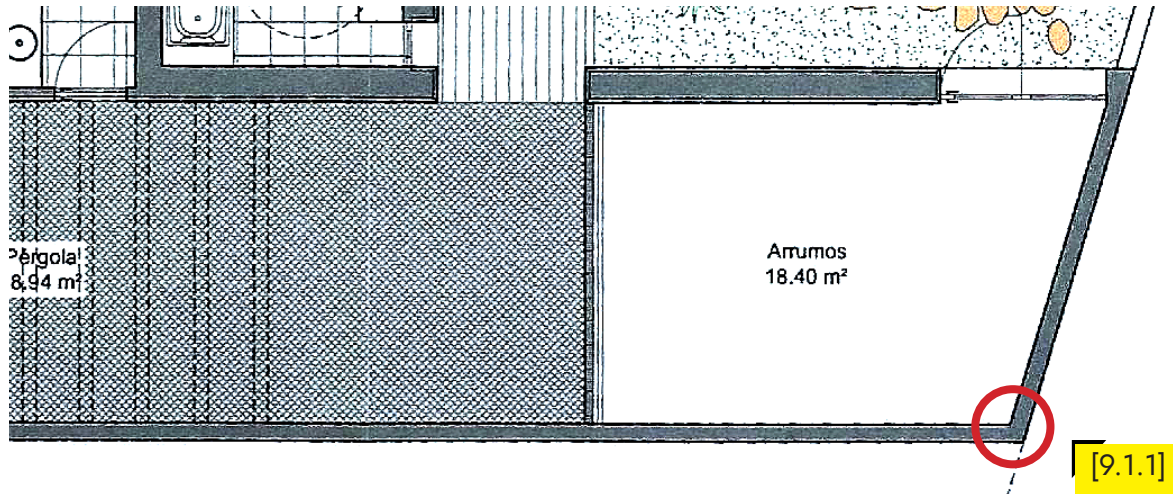
8.3. The pumping compartment

In the pool pumping compartment, the walls are damp and cracks are showing on the walls and ceiling. Plaster and paint are falling off the walls.



9. OUTBUILDING

A small house is built next to the house. It is connected to the main house by a concrete pergola. A number of anomalies were discovered in this building, such as rainwater leaks from the roof, dampness in the walls, cracks in the walls.



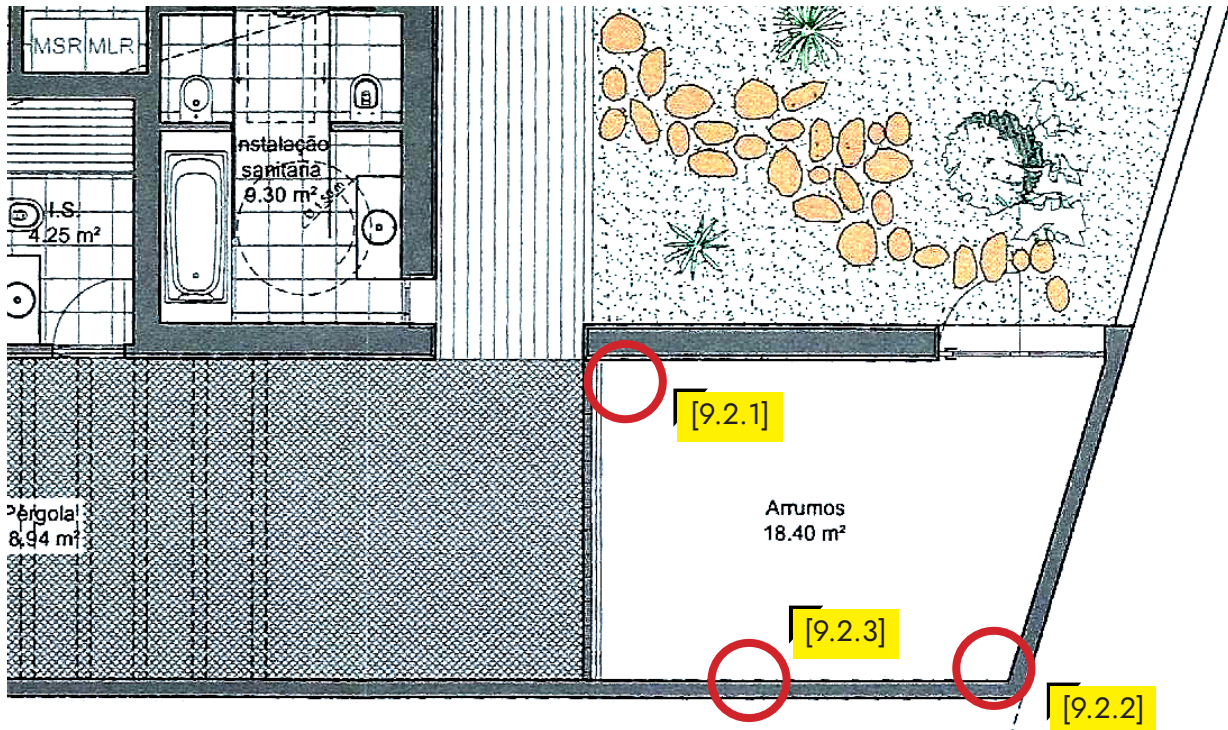
9.1. Exterior

9.1.1. Cracks in the walls

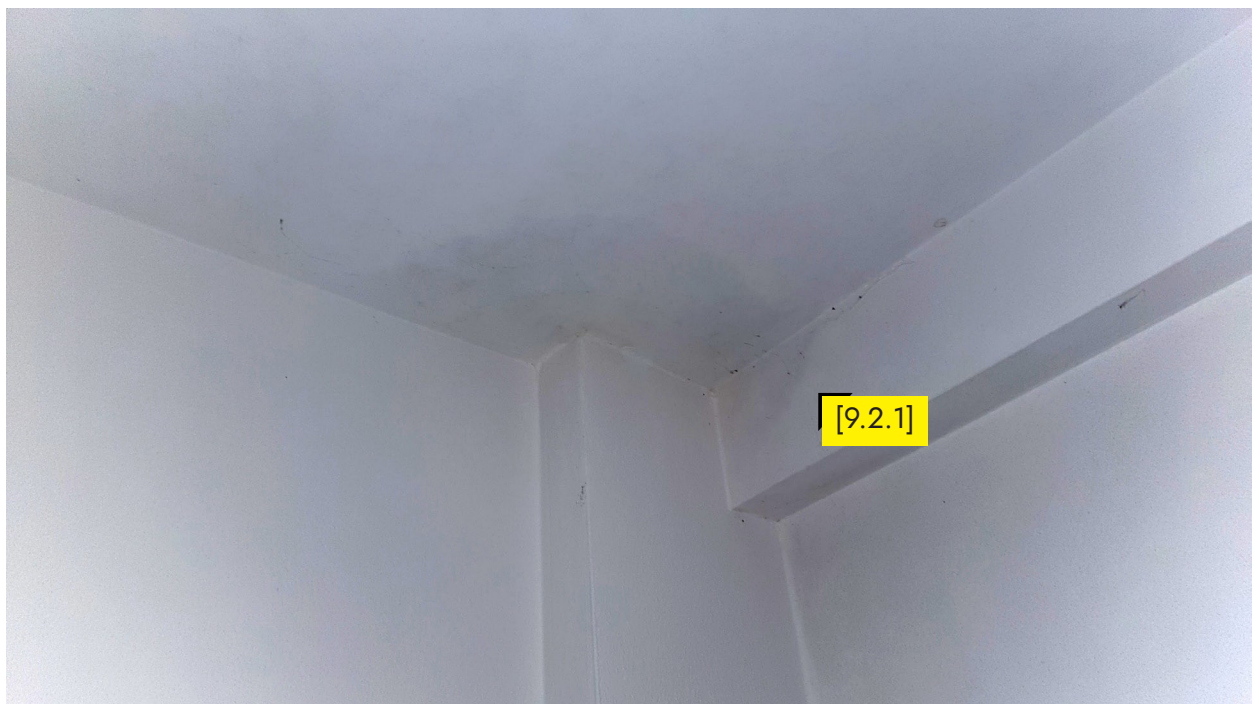


9.2. Interior

The humidity is high throughout the room and there is a distinct smell of mould. Furniture and furnishings left here are covered in mould and mildew. The covers of the garden furniture have an unpleasant musty smell.



9.2.1. Visible signs of flooding - the rainwater is penetrating from the roof. Fungus and mould developing on the walls and ceiling.



9.2.2. Damp patches on the walls. Green algae growth in plaster.



9.2.3. Crumbling plaster, soggy paint coming off.



10. MISSCONDUCT

Since the house was purchased, several disturbing findings have been detected. These relate to the reliability of workmanship and the misconduct of the builders.

10.1. Unauthorised use of a water connection belonging to the house

During a visit on 18-06-2024, it was noticed that an unknown pipe was running to the ground from a tap in the garden. Upon investigation it was found that this pipe is used to irrigate all the flower beds and lawns down the street, outside the property.



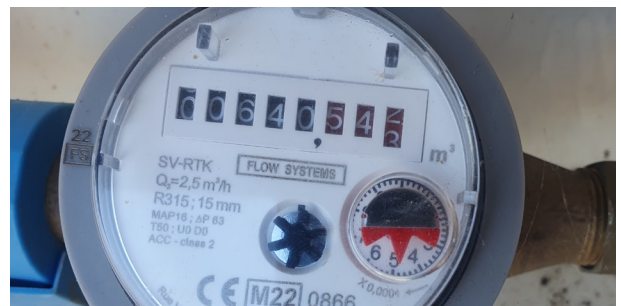
It had been connected when the house was built, and for a few years it had been used to water the lawns outside property at the homeowner's expense without informing him!



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2024.06.18_09:40:10



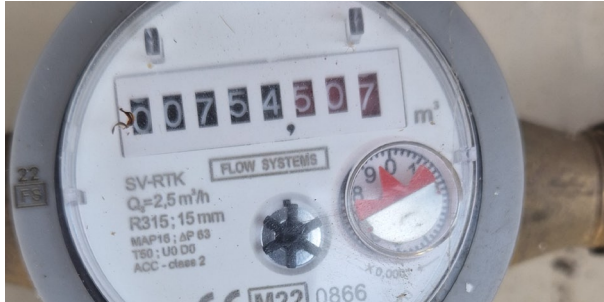
Estimated loss was ca 750 liter per day!

10.2. Unexplainable water leaks

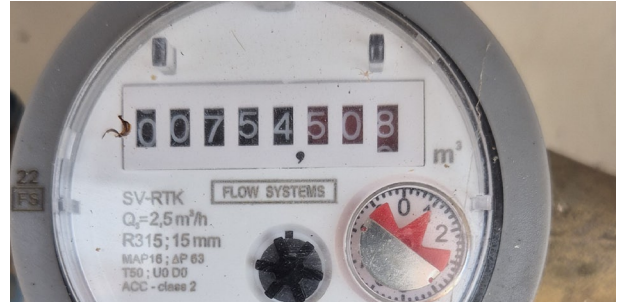
10.2.1. In June 2024, it was noticed that the water meter was turning very slowly even though no water was being used in the house.

All the valves in the house were turned off, but the water meter continued to turn. Once the main water valve at the water meter was turned off, the problem stopped. The average loss was 0.25 liter per minute. There are many videos and pictures documenting this phenomenon after this date.

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2024.09.01_11:06:10



10.2.2. A water leak was detected from the main supply pipes located in the ground and repaired. The phenomenon had reduced significantly but was still present.



10.2.3. Repeated calls to the builder resulted in a plumber being called in.

The problem was solved completely, but the builder refused to reveal the cause of the leak, claiming that the leak had never occurred.

11.

KEY PROBLEMS

The inspection carried out revealed a significant number of technical problems occurring in the house. Some of these problems need to be addressed immediately as they contribute to the structural deterioration of the building or pose a risk to the safety of the occupants.

11.1. Faulty fireplace

The fireplace has been built extremely wrong, in breach of many building regulations.
In its current form, it should absolutely be taken out of service!



Using a fireplace in present form and state is a danger for the health and life of the people in the house!

11.2. Lack of ventilation

Including the mechanical kitchen hood above the cooker, there is no effectively functioning ventilation throughout the house.

This is particularly important for bathrooms, where a large amount of water vapour is generated. This vapour spreads through the rooms and causes further dampening of the furnishings. This supports the growth of mould with all the consequences described above. In addition, unpleasant odours from the toilets spread throughout the house.

As mentioned earlier – the opinion that ventilation ducts in bathrooms are not required when windows are available to open is not true, as this would mean that during cold or rainy weather, residents would be forced face the weather elements to provide ventilation.

The relevant building standard *Portuguesa Standard NP 1037-1 2002* defines the ventilation of living spaces and, in particular, the conditions under which windows can be considered part of the ventilation system.

11.3. Water problems - poorly crafted terrace, balcony and insulation

The house has a number of problems with moisture ingress. The build quality of the terrace, balcony and patio are very poor. Many technological errors have been made which will soon reveal further problems with rainwater infiltration into the house.

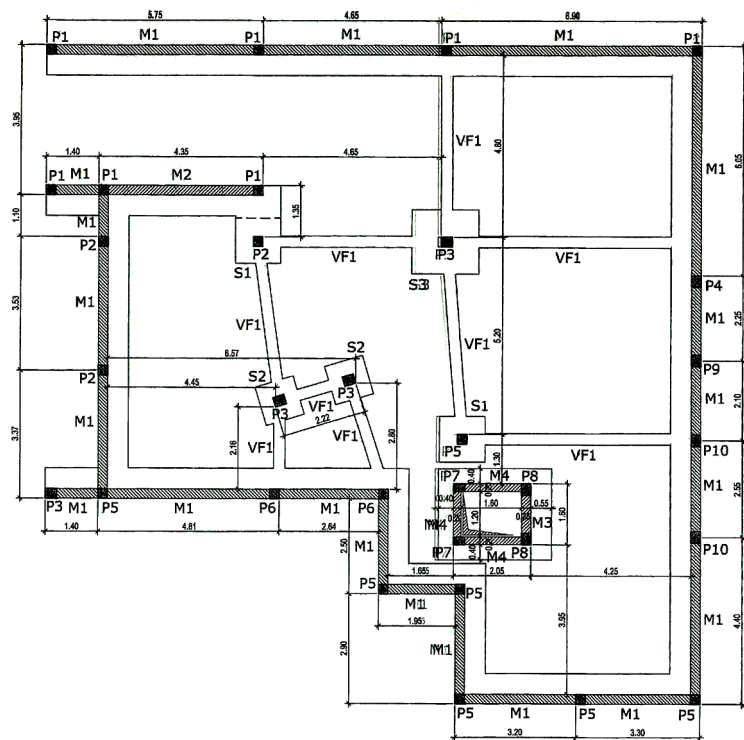
House No. 9 the same techniques and materials as House No. 7 were used. As House No. 7 is several years older, the problems discussed have already become fully apparent.

It can be expected that within 2 – 3 years the same problems will also occur in house House No. 9 and that they will cause similar effects, such as damage, dampness and fungal and mould growth.



These factors stimulate the growth of fungi and moulds in hard-to-reach spaces (for example, between the ceiling and the false ceiling). Their spores then persist in the air, which is very harmful to human health and can cause allergies and serious illnesses (e.g. aspergillosis, asthma and many others).

No drainage outlets were found during the inspection - neither in the manholes nor outside within the stone slope on the northern boundary of the plot.



End of the report.