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**IMPROVEMENT WORKS FOR VENTILATION AND ACCESS TO VOIDS  
ON BLOCKS 1 ON JARDÍN 3, 1 ON JARDÍN 5, 7 ON JARDÍN 7, 11 ON  
JARDÍN 13, AND 10 ON LA ISLA, ON CONDADO DE ALHAMA  
PROPERTY COMPLEX, ALHAMA DE MURCIA, MURCIA.  
PROJECT MANAGER'S REPORT**

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**BUILDER: ALCOMVI 10 S.L.**

**DEVELOPER: CONDADO DE ALHAMA PROPERTY  
COMPLEX**

**SAFETY COORDINATOR: JULIO PÉREZ**

**PROJECT MANAGER: JULIO PÉREZ**

**DATE: 3RD MARCH 2019**

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This report has been produced with the aim of recording the works carried out as referred to above.

## BACKGROUND

In November 2018, at the request of the aforementioned developer, the undersigned technician drew up a project for the implementation of works for improvements to ventilation and access at the indicated areas.

In this project, the installation of ventilation grilles and access to spaces in the voids on the indicated blocks was envisaged. On some occasions, when the height of the ground floor void was sufficient with respect to the level of the street, this ventilation and access was envisaged directly on the facade, and on others, when this condition was not apparent, it was envisaged via ventilation and access panels.

Below is a table indicating the planned features:

URBANISACIÓN GROUP.	SUBGROUP.	BLOCK.	V.A.D.E.	V.D.E.	V.A.I.E.	V.I.E.	P.I.	V.I.
Jardines I.	Jardín 3.	Block 1.			1.	3	.	
	Jardín 5.	Block 1.			1	3		
Jardines II	Jardín 7.	Block 7.		4				
	Jardín 13.	Block 11.	1	1		2		
La Isla		Block 10.				2 Test 6 fac	Yes	Yes

Key: V.A.D.E. Ventilation and Direct Exterior Access.// V.D.E. Direct Exterior Ventilation.//

V.A.I.E. Ventilation and Indirect Exterior Access. // V.I.E. Indirect Exterior Ventilation. // P.I. Interior Passageway. //V.I. Interior ventilation.

## **IMPLEMENTED WORKS.**

On each block, on accessing the void, the works to be carried out were reconsidered, depending on the features of the space.

Below are shown the works finally carried out, and the features of the spaces under the voids in each block.

### **JARDÍN 3 BLOCK 1.**

The interior space of the void is divided by concrete walls, both longitudinally and transversely, and it is estimated that 47 interior passageways would need to be made in order to obtain effective ventilation.

One ventilation with indirect access has been carried out, and given the large amount of interior perforations that would need to be made on the concrete walls in order to obtain effective ventilation, no further work has been carried out.

It was agreed to make the required interior perforations in the future, together with further perforations in the concrete walls, so that a more competitive price may be obtained.

### **JARDÍN 5 BLOCK 1.**

The interior space is totally open, with no internal divisions, and the height of the space is 1.50m, which is reduced at one end.

One indirect exterior ventilation with access has been carried out, and three indirect exterior ventilations.

### **JARDÍN 7 BLOCK 7.**

The interior space is totally open, with no internal divisions, with a height close to 1.90m. It already had two direct ventilations with access, one on each wall.

Two new direct ventilations have been carried out on each wall.

On the wall giving out onto the street (rear facade), 4 direct exterior ventilations have been carried out on the concrete wall with three perforations, each one 200 in diameter.

### **JARDÍN 13 BLOCK 11.**

The interior space is not divided, and it has an approximate height of 1.50m. It has an existing access at the base of a manhole cover.

Two direct exterior ventilations have been carried out, and two indirect exterior ventilations.

### **LA ISLA BLOCK 10.**

As has already been indicated in detail in the report corresponding to this block, the space is divided longitudinally and transversely, and in this case, action was taken in one of the block modules.

6 ventilations have been carried out on the facade of the main street, and two indirect exterior ventilations on the wall.

Once these works were carried out, and at the request of the owner, as a complement to the unimplemented works on block 1 of Jardín 3, the following works were carried out:

### **JARDÍN 3 BLOCK 2.**

The interior space of the void is divided by concrete walls, both longitudinally and transversely. Interior passageways would need to be made in order to obtain effective ventilation.

One ventilation with indirect access has been carried out, and given the large amount of interior perforations that would need to be made on the concrete walls in order to obtain effective ventilation, no further work has been carried out.

It was agreed to make the required interior perforations in the future, together with further perforations in the concrete walls, so that a more competitive price may be obtained.

### **NARANJOS 5. BLOCK WITH PROPERTY 381**

One ventilation and indirect exterior access has been carried out, in order to obtain access to the void, and to inspect a problem with the sanitation facilities.

The space is divided longitudinally, and is of reduced height, between 40 and 50cm.

It would be advisable to carry out more ventilations and accesses, until there are at least two on each wall, and if possible, ventilations of small dimensions on main and rear facades.

### **NARANJOS 8. BLOCK WITH PROPERTY 697**

This is the same as the previously indicated block on Naranjos 5.

In this case, it can be indicated that considerable damp was observed on the inner face of the void, which may not be caused by condensation. It would be necessary to inspect the corresponding property or observe the development of the damp described.

Similarly, it would be recommended to carry out more ventilations and accesses, the same as indicated in the previous case.

### **PENDING WORKS.**

On the other hand, the installation of metal profiles for preventive reinforcement in gaps remains pending.

## EFFECTIVENESS OF THE VENTILATIONS CARRIED OUT.

In order to check the effectiveness of the ventilations carried out, data have been taken of the percentage of damp relative to the space under the voids, when these were first accessed, and once the ventilations described had been completed.

Before giving the results obtained, it is reminded that for optimum functioning, the ventilations should have been carried out on the main and rear facades. However, with the exception of Block 7 on Jardín 7 and Block 10 on La Isla, where these were carried out on walls and the rear facade, these have been carried out solely on walls, in order to avoid interventions affecting gardens or private areas, by decision of the Community of Owners.

Below is a summary of the results obtained.

BLOCK	INITIAL OBSERVATIONS	% INITIAL RELATIVE DAMP	% FINAL RELATIVE DAMP	FINAL OBSERVATIONS
Jardín 3 block 1.	Condensation observed.	87.2%	*(1)	
Jardín 5 block 1.	Condensation observed.	85.6%	82.0%	Condensation not observed.
Jardín 7 block 7	Condensation observed.	84.0%	76.6%	Condensation not observed.
Jardín 13 block 11	Condensation observed.	87.7%	74.0%	Condensation not observed.
La Isla. Block 10	Condensation observed.	78.4%	57.0%	Condensation not observed.

(1) In block 1 on Jardín 3, given that the planned ventilations were not carried out, the measurement was not repeated.

As can be seen, a considerable reduction in the relative damp occurred, which indicates that the ventilations that have been carried out are fulfilling their function.

In the case of Jardín 5, the reduction in relative damp is considerably lower, possibly because in this void, the height of one of the ends is considerably reduced, hindering ventilation.

Regarding condensation, it is also noteworthy that after carrying out the ventilations, no condensation in the interior of the voids has been observed, although it would be necessary to continue studying the development of this at different periods in order to confirm the effectiveness of the solutions applied.

## **OTHER POINTS OBSERVED**

We should also highlight that at the time of the second visit, once all the ventilations had been carried out, it was noted that on block 7 of Jardín 7, there was a small loss in sanitation, which will need to be repaired if this has not already been done.

It was also observed, both in this and in other blocks, that some support braces of the sanitation facility were hanging, corroded.

As previously stated, on the block on Naranjos 8 with property 697, there is considerable damp, the origin of which will need to be verified, as it may not be due to condensation.

On some perimeter walls of the concrete block, the remains of the entry of water have been observed, which apparently were not there at the time of the visits.

Finally, on various blocks it was also observed that some structural steel elements were slightly corroded.

## **RECOMMENDATIONS**

Taking into account the data indicated previously, it is recommended to carry out the following operations:

- Regular review of the voids on blocks where this is possible, reviewing the state of the sanitation network, and looking for possible damp on perimeter walls or in voids.
- Repair of sanitation facilities and replacement of corroded support elements.
- Passivated cleaning and coating corroded concrete reinforcements with repair mortar.
- Cleaning and protection of corroded structural metal profiles.
- Carrying out access points to voids that do not have these.
- Improvement or implementation of ventilation systems for the voids, with priority in those where problems are detected in the previously described inspections, or through other exterior signs.

With the above, and contrary to a contradictory opinion issued by an equally qualified and duly authorised competent technician, the undersigned technical architect considers this technical report to sufficiently meet the request made, consisting of five pages, and a graphic annexe of three pages.

*Cartagena, 8th April 2019*  
*The Technical Architect*

**GRAPHIC ANNEXE.**

LA ISLA BLOCK 10



General view of interior.



General view of ventilation on rear facade.



View of wall ventilation.



View of wall ventilation.

JARDINES 3 BLOQUE 1



General view of interior.



General view of ventilation and indirect exterior access.

JARDÍN 3 BLOCK 2



View of ventilation with access carried out.

JARDÍN 5 BLOCK 1



View of interior prior to intervention.



General view of interior after ventilation.



View of wall ventilation.



General view of ventilation and access.

JARDÍN 7 BLOCK 7



View of interior prior to intervention.



General view of interior after ventilation.



View of wall ventilation.



Ventilation on rear facade.

JARDÍN 13 BLOCK 11



View of interior prior to intervention.



General view of interior after ventilation.



View of wall ventilation.



General view of ventilation and access.

NARANJOS 5 BLOCK WITH PROPERTY 381



View of interior prior to intervention.



General view of interior after ventilation.

NARANJOS 8 BLOCK WITH PROPERTY 697



View of interior prior to intervention.



General view of interior after ventilation.