

Rehabilitation of a historic Masía to a new multifunctional building.

Rehabilitation of *El Malloí*.

Type of intervention

Restoration Rehabilitation / Renovation

Concerned elements

on the intervention project

- 1. Foundations and underground structures
- 2. Vertical structures
- 3. Horizontal structures and vertical connections
- 4. Roof and terraces
- 5. Façade and building envelope
- 6. Finishes and completion elements
- 7. Integrate services
- 8. General strategies for building recovery

Site	"El Malloí" building, in Sant Hipòlit de Voltregà, Osona, Barcelona.
Objectives	Complete rehabilitation and change of use: "El Malloí" Building a new multifunctional equipment.
Property	Sant Hipòlit de Voltregà City Council
Designer	Carles Crosas, architect and Gemma Domingo, architect at SOG design; Josep Baquer, technical architect & structure consultant Architecture collaboration: Oriol Ribas, Lorena Hernández, Marta Medina, architects at SOG design; Laia Vilaubí, Heman Lleida, architects. Other Agents: Miquel Autet, technical architect; Clusells & Roca, MEP engineers Building Contractor: Calam Tapias Construccions SL
Date	Project: 2014; Works Phase 1, 2: 2017-2018; Works Phase 3, 4, 5: 2018-2019



Background to the intervention

At the end of the 20th century, the original building was in a very precarious state due to its abandonment, at which time it was acquired by a real estate group to proceed with its complete demolition and construction of a new multi-family building with six houses and simulation of the original facade. Fortunately, the economic crisis (2008) and the courage of the City Council and the municipal technicians, allowed the in-extremis acquisition of the house and its inclusion in the heritage catalogue as BCIL-Cultural Asset of Local Interest.

Prior to drafting the architectural project, a Program Planning was developed through a citizen participation process to establish what activities could be accommodated, taking into account both the opportunities and the limitations of its spatial configuration. The conclusions were that the new project should not only host a monofunctional program (museum or library, for example) in order to turn both the building and the adjoining public space into a real engine for the regeneration of a decaying urban environment. Precisely the inclusion of this area in the official rehabilitation regional program "Pla de Barris" (Neighbourhood Plan) provided the funds for the execution of the project.



Fig.1: Project's scale model.



Fig.2: Site plan.



Fig.3: Before and after of the main façade.

Description of the building

The house of El Mallol, of Baroque origin, was a landmark building in the municipality of Sant Hipòlit de Voltregà (north of Barcelona, with around 3,000 inhabitants) from the 18th century onwards, due to its location on one of the access roads to the small-town urban center.

The floor plan of the building illustrates a unique typology resulting from the mixture of the traditional (isolated) farmhouse and the urban baroque house. A gallery was added to the original building in the south part and later a new wing was attached to the southwest quadrant, which deformed the original rectangular geometry.

Previous state: Ground floor + 2 floors. Total Built up area: 1160sqm; *Refurbished state:* Ground floor + 2 floors. Total Built up area: 915sqm.

The diagnosis of the building (values and state)

Some of the main decisions of the project were based on an initial historical study and the pathologies report. Given the lack of resources and having a well-limited functional program, a constriction principle guided the first steps of the project: Tearing down those non-essential damaged parts, in spite of the surface reduction of the building.

The architectural project opted for preserving the structural logic to avoid the introduction of a new resistant steel framed structure. It consolidated those structural elements that allowed it: the rammed earth walls, generally in good condition; the ceramic vaults on the ground floor rooms, all different and which were reinforced internally; and the only wooden beamed floor that had characterized the most noble room on the first floor in the original construction.

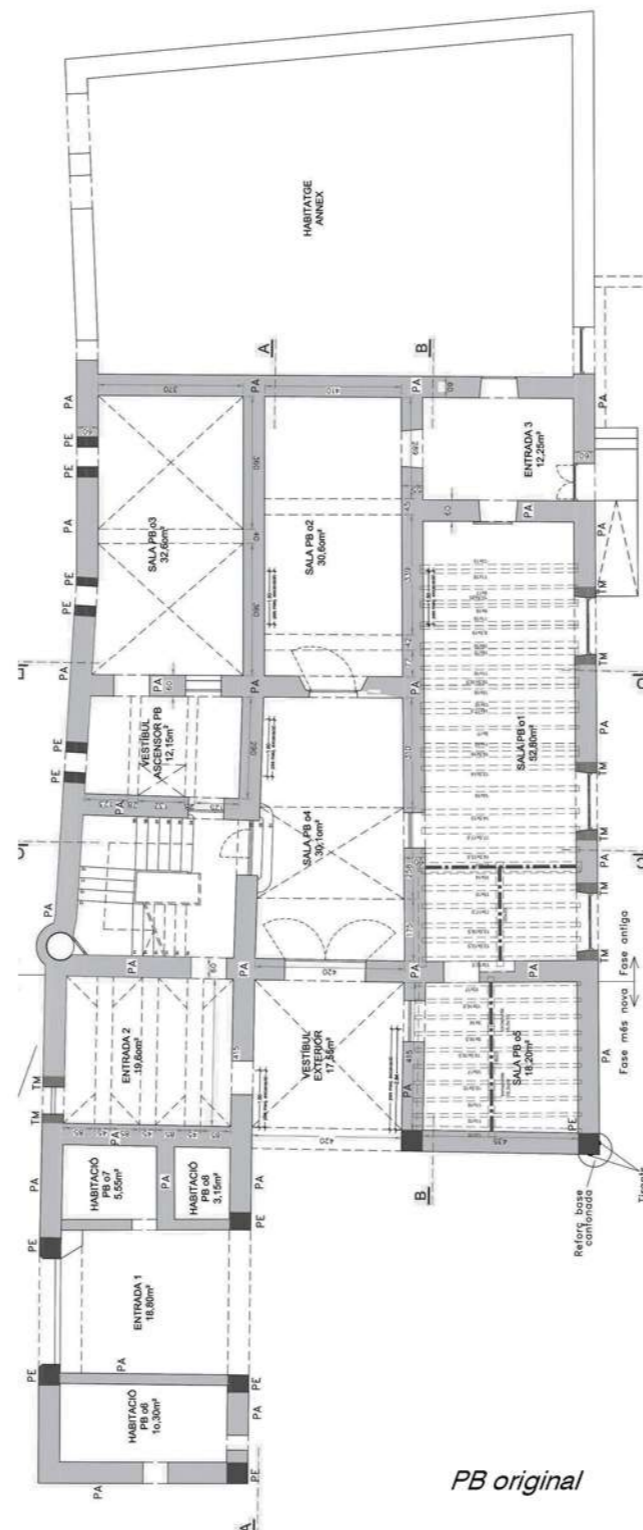


Fig.4: Original ground-floor plan.

Rehabilitation works

Resistance, cohesion, and connectivity tests were combined with comprehensive modelling of the original construction system, to adapt to the new demands for use in terms of loads. In the commissioning, the walls have been kept in their initial composition, mostly of rammed earth with some external baseboards with stone ashlar that are supported by the characteristic marl rocks of the area as foundations. The horizontal planes are treated as rigid diaphragms and locked with the vertical bearing walls. The replacement of the old slabs in the eastern sector has been done with exposed reinforced concrete slabs.

On the one hand, the non-reconstruction of some of the slabs damaged by water filtration allowed introducing air and light into the interior. On the other hand, the demolition of the volume attached to the main façade implied recovering the original volume of the building: a symmetrical body with a gabled roof, substantially improving the conditions of the surrounding public space.



Fig.5: Rehabilitated south façade.

On the upper floor, the integral replacement of the original remains of the roof (totally damaged by water) is done with a perimeter lock where the new steel girders that support the same gabled roof are supported, now made of a structural insulated panel with a wood batten acoustic ceiling. In the central space of the old ridge, a skylight is opened to give a special lighting quality to the double-height central space, where a new staircase that defines an exhibition and transit space is located.

Externally, the building maintains its traditional character with three different facades. The west facade, on the street, preserves its opacity and original composition. The east façade opens up to the views and the new public space on the ground floor and consolidates the marked character of its balconies.

To the south, the demolition of the old annexed volume, as well as the open lobby on the ground floor and the porticoed space on the second floor shows the double façade that the building has had at different times. Precisely the “double façade” with two separate 4m planes is an optimal solution regarding sun protection and makes the building more energy efficient.

Work phases:

Phase 1&2: Demolishing, structural consolidation & new roof

Phase 3: Facades

Phase 4: Interiors & MEP

Phase 5: Biomass energy installation

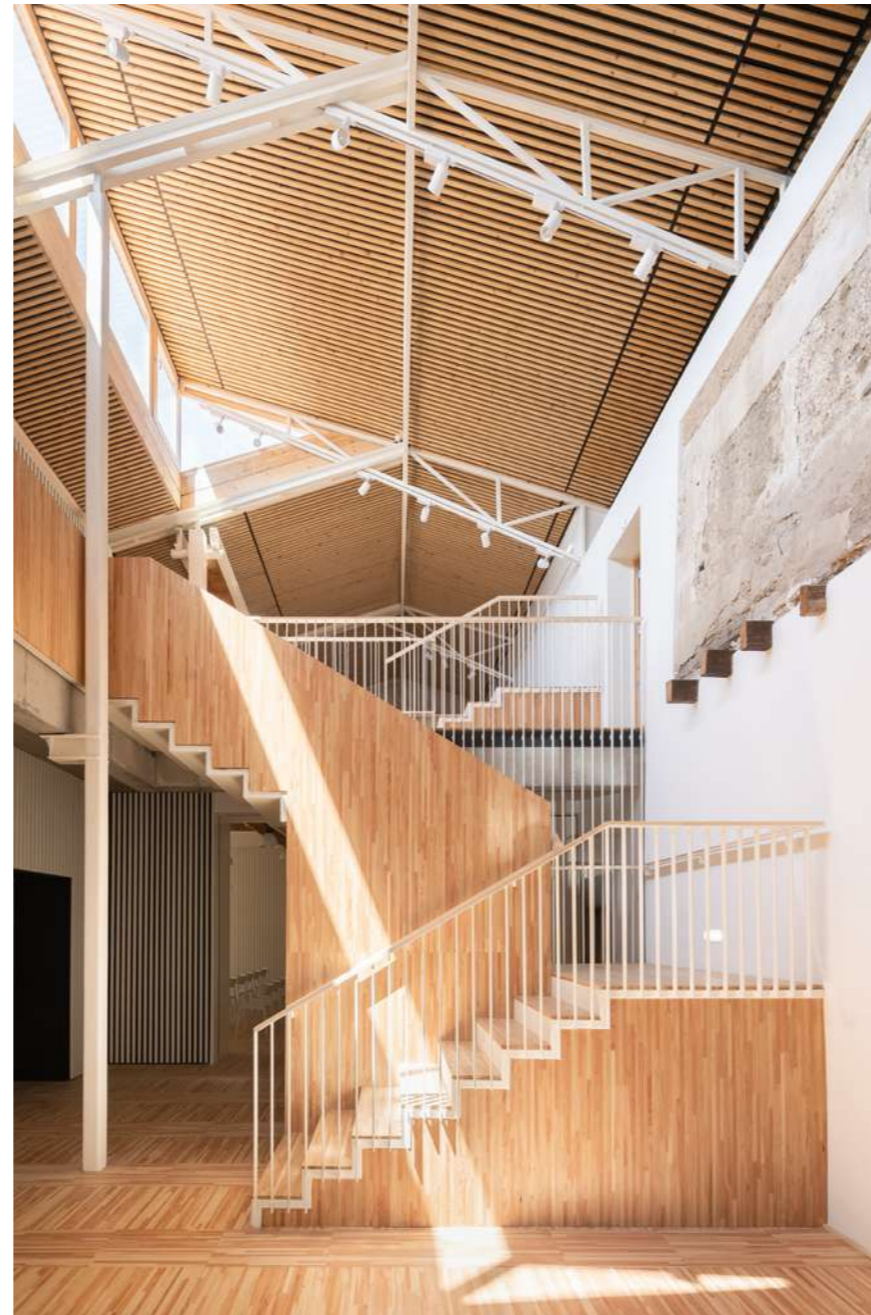


Fig.6: Central communications hall, looking towards main staircase.

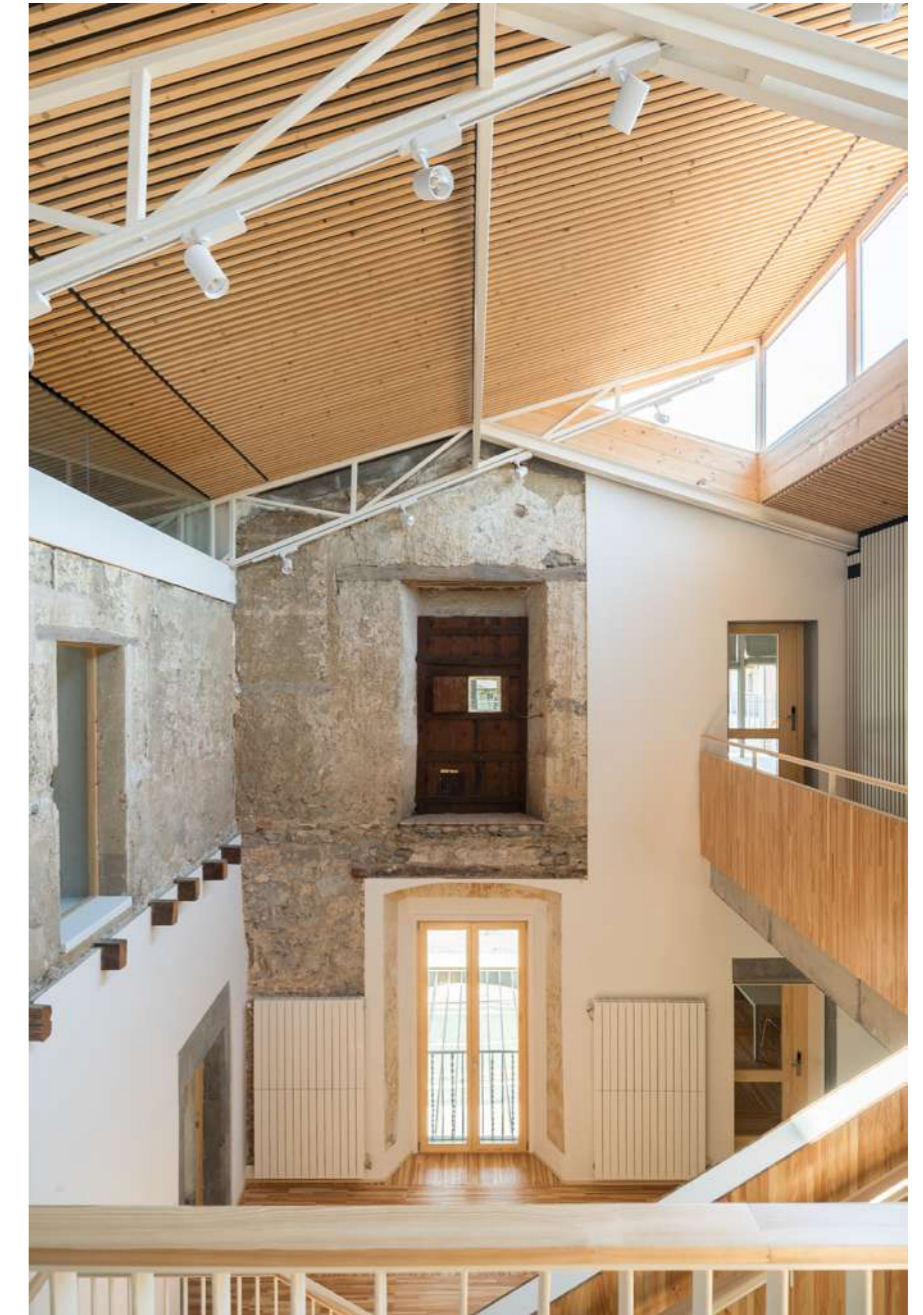


Fig.7: Central communications hall, seen from the upper level.

Assessment of the results

The reconstruction of an urban hamlet badly hurt by water and abandonment inspires the location of a new collective and multi-functional program through the opening of new interior spaces. The light and air inserted into the building generate a new spatiality that transforms the rigid structure of rammed earth walls and dark rooms.

References

JDigital publications:

<https://informatiu.apabcn.com/blog/una-llico-de-construccio/>
Published in Archdaily, Metalocus, Archilovers among others

Paper publications:

Josep Baquer: La seguretat estructural de les parets de tàpia.
L'Informatiu 338. December 2013.

Josep Baquer: Parets de tàpia: avaluació quantitativa.
L'Informatiu 366. December 2020.

Josep Baquer: Parets de tàpia Avaluació Quantitativa.
Quaderns d'Estructures (ACE) 70. December 2020

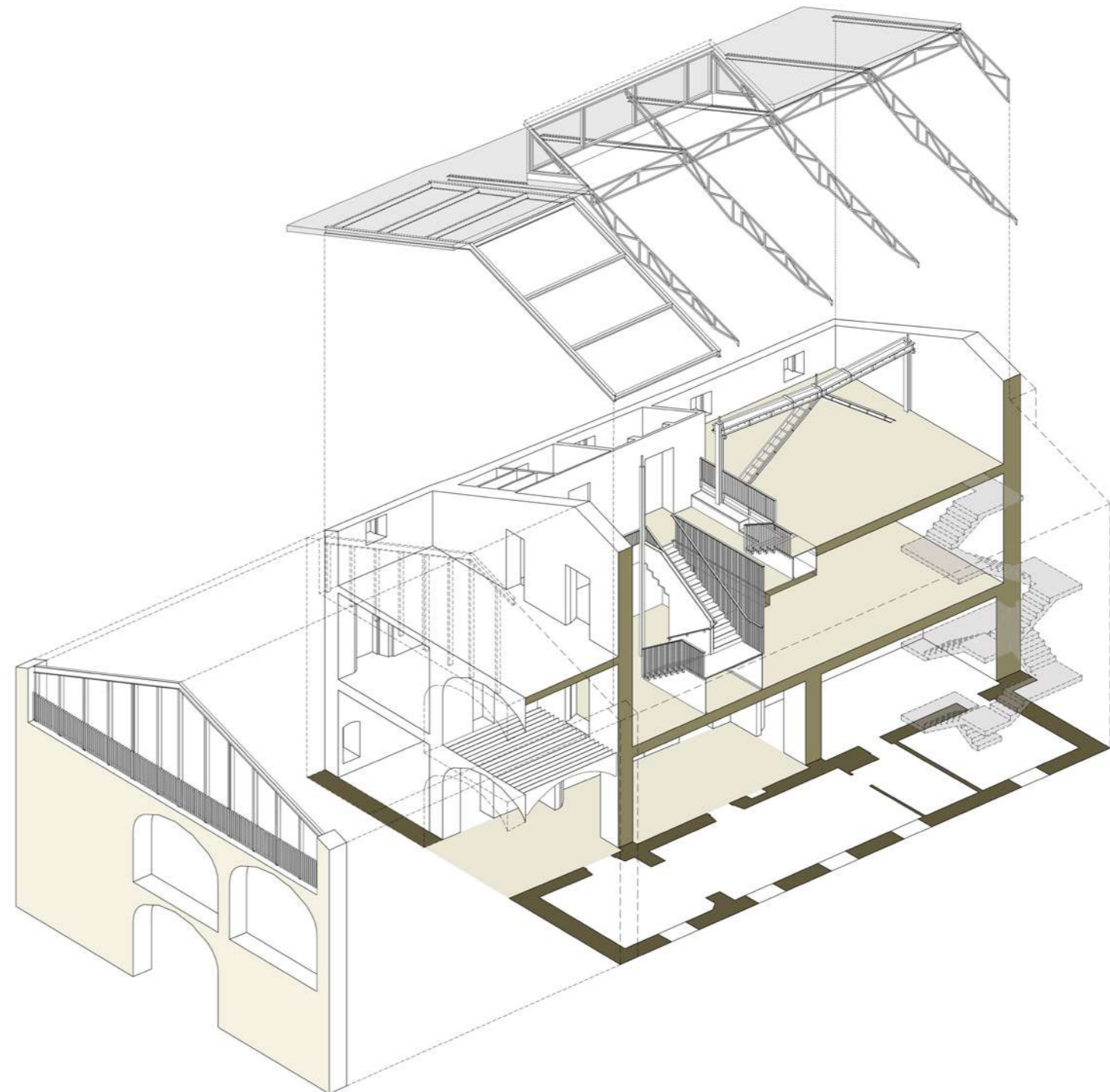


Fig.8: Axonometric diagram of the intervention.

Photos and drawings of the completed intervention



Fig.9: West façade.



Fig.10: West façade.

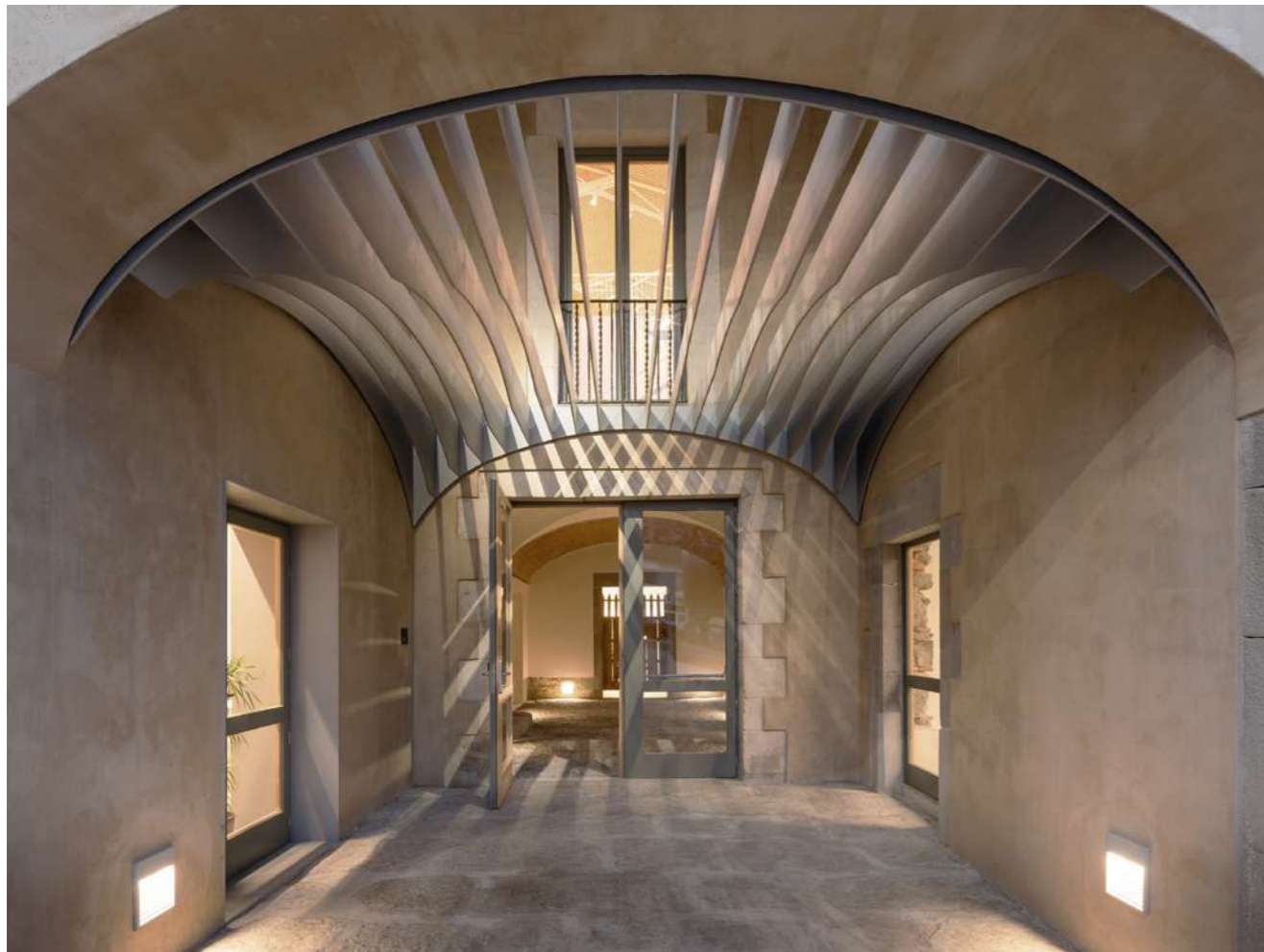


Fig.11: Exterior entrance: Detail of the double height exterior vestibule with a reinterpretation of the original demolished vault as a diaphragm of visual connection with the double height interior space and the skylight.



Fig.12: Interior entrance: Lobby closed on the ground floor, with double access and restored original construction elements (round pebble paving and ceramic vault).



Fig.13: Project's finishing materials and compositions.



Fig.14-15: Multipurpose room: Noble room on the first floor with preserved and reinforced slab of wooden joists and interior facing of the original facade.



Fig.16: Floor below deck: Recreational space.



Fig.17: Before and after of interior spaces:

A) Second floor: Co-working space with a wood batten acoustic ceiling.



B) Floor below deck: Recreational space: reconstruction and reinforcement of unique planar wood truss that supports the roof and the lower floor.



C) Ground floor: Social space: bar with exposed concrete slab and new openings to the landscaped public space.

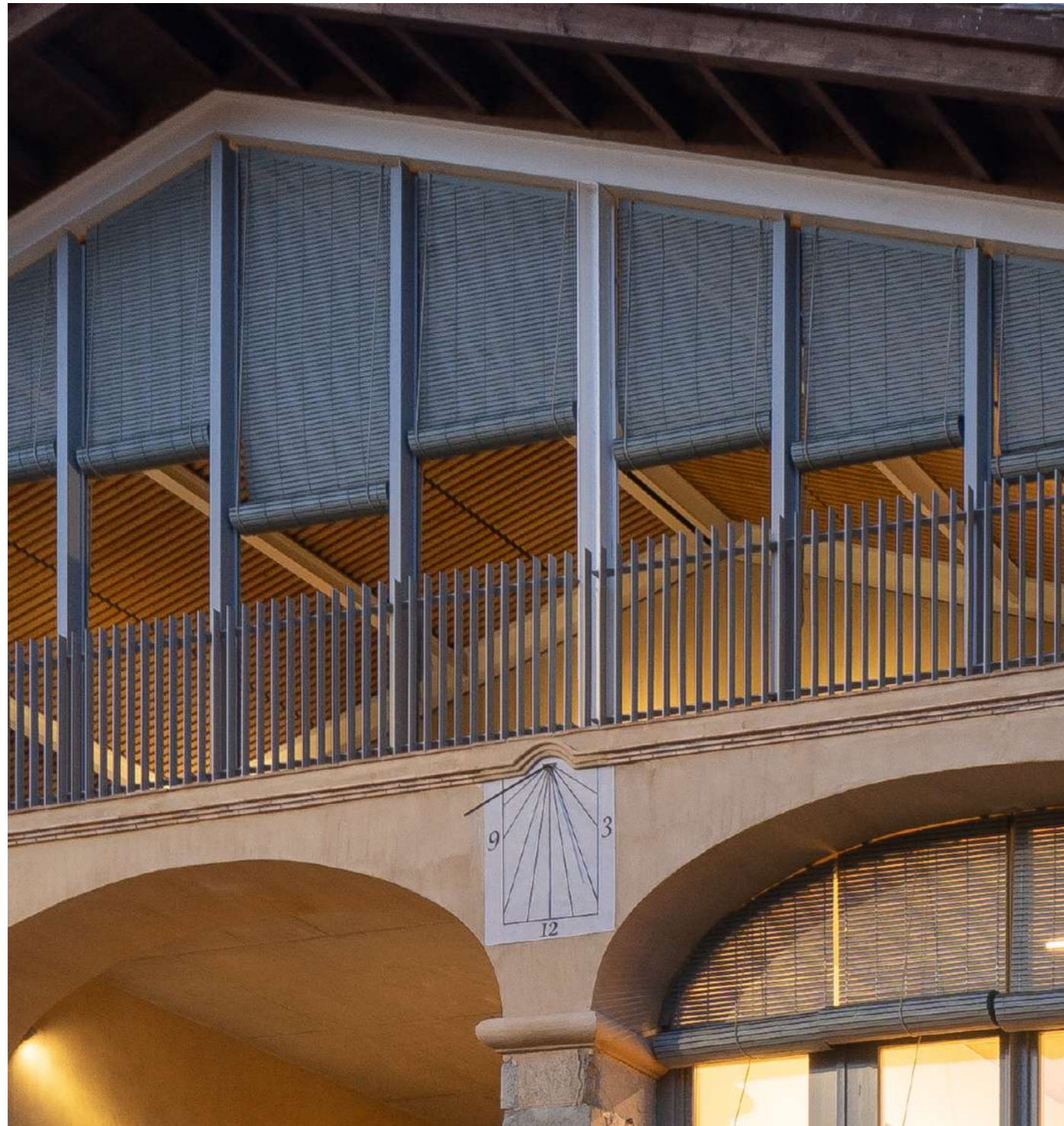


Fig.18: Terrace's exterior.



Fig.19: Terrace's interior.

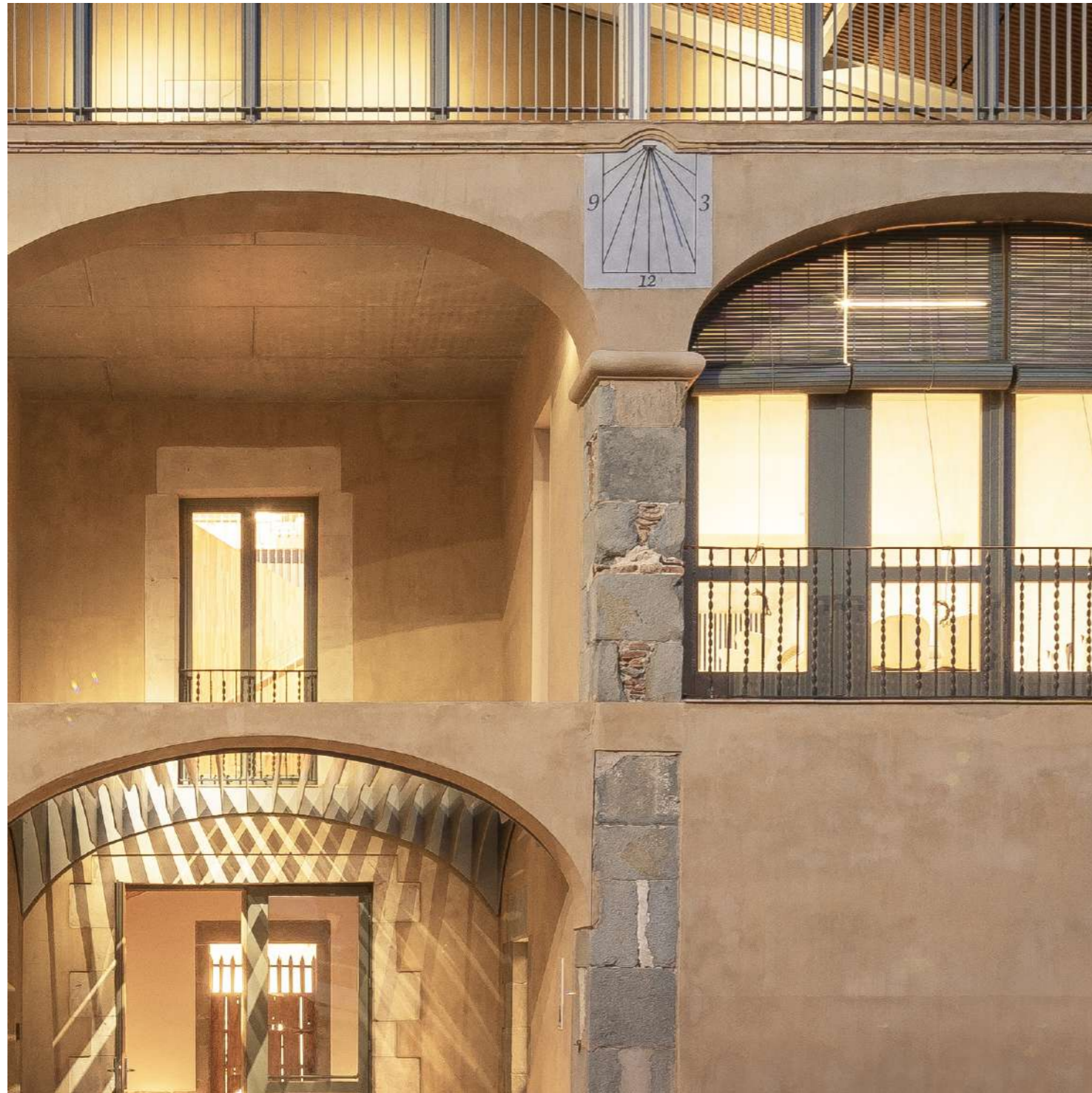


Fig.20: Detailed view of the south façade.



Fig.21: Detailed view of south façade and terrace.

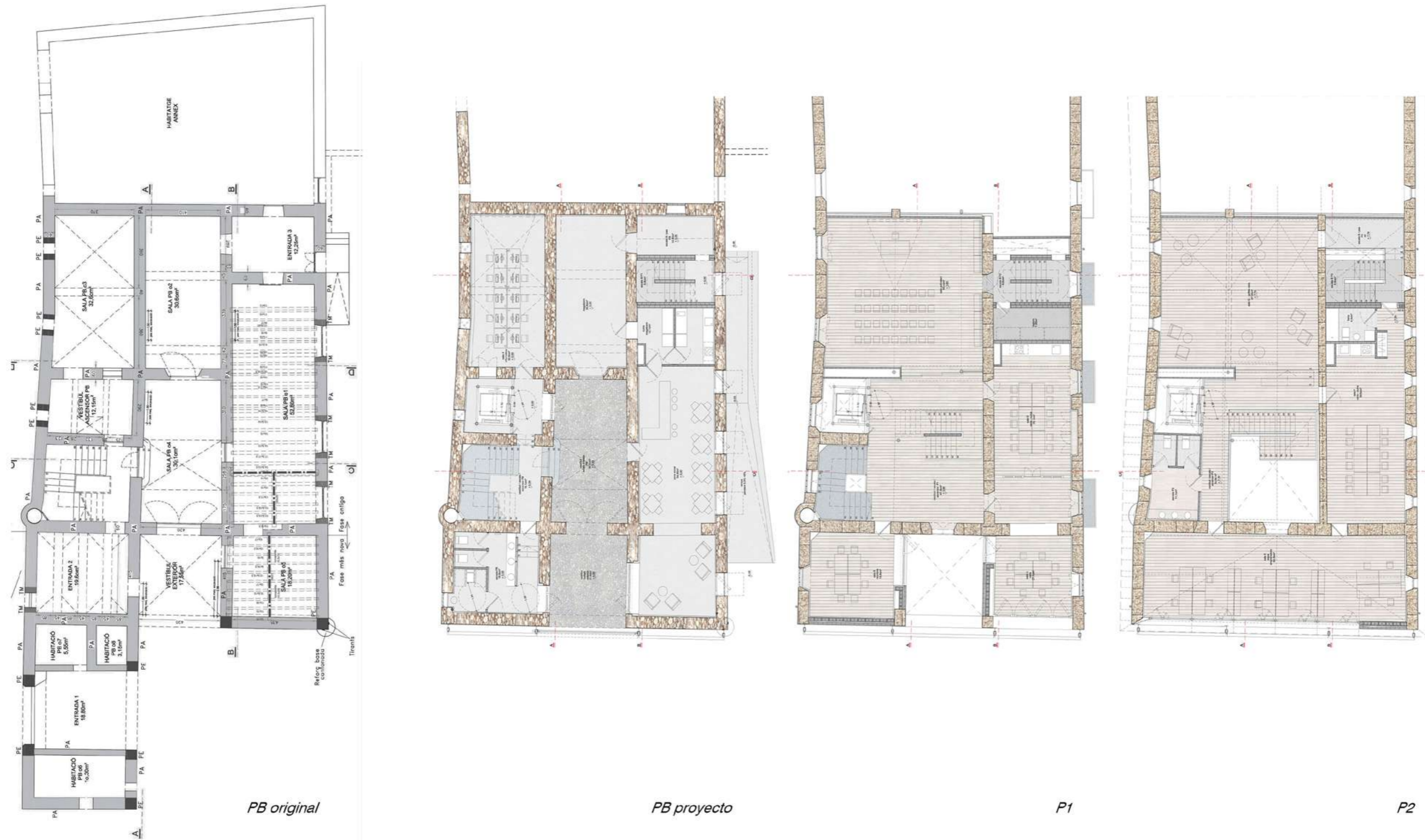


Fig.22: Floor plans (from left to right: Original ground-floor; Project's ground-floor, First-floor, and Second-floor).



Fig.23: Longitudinal section with the concatenation of double height spaces: main access and new void under the skylight.



Fig.24: Cross-section in the relation between the old, restored staircase and the new staircase in the central space under the skylight.

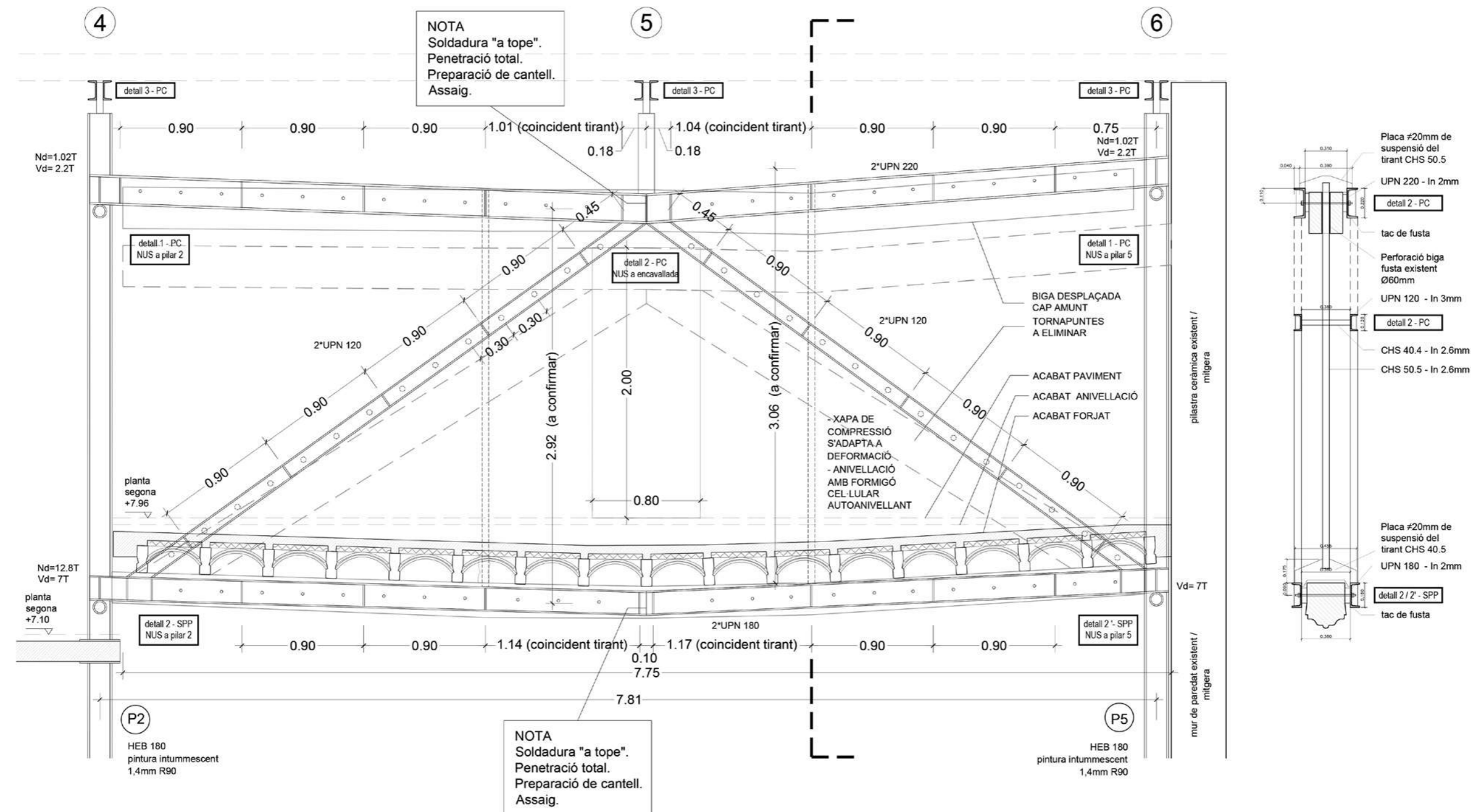


Fig.25: Detailed drawing of the wood truss.



Fig.26: Signage: Catalogue of rooms and halls that recovers the names of the ancient common offices in the population (in Catalan).