

SIZ**A**TLAS

BOUÇA HOUSING
COMPLEX



- | | | | |
|---|--|----|-----------------------------------|
| 1 | Boa Nova Tea House and Restaurant | 10 | Beires House |
| 2 | Ocean Swimming Pool | 11 | Malagueira Neighbourhood |
| 3 | Alves Costa House | 12 | Borges & Irmão Bank |
| 4 | Alcino Cardoso House | 13 | Avelino Duarte House |
| 5 | Bouça Housing Complex | 14 | Setúbal School of Education |
| 6 | Faculty of Architecture of the University of Porto | 15 | Reconstruction of the Chiado area |
| 7 | Santa Maria Church and Parish Centre | 16 | Viana do Castelo Public Library |
| 8 | Portugal Pavilion, Expo'98 | 17 | Pinto & Sotto Mayor Bank |
| 9 | Serralves Museum of Contemporary Art | 18 | Adega Mayor |

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INTRODUCTION

CONTEXT

Twentieth-century heritage is particularly vulnerable because of its formal and material solutions, but also due to the fact of having scarce recognition among the civil society and heritage safeguarding bodies. Considering this background, the ICOMOS study “The World Heritage list: filling the gaps – an action plan for the future” (ICOMOS, 2005) and the Global Strategy of the UNESCO World Heritage Committee (WHC) have encouraged State Parties to submit twentieth-century heritage nominations (UNESCO-WHC, 1994).

In this context, the ICOMOS-Portugal presented the “Ensemble of Álvaro Siza’s Architecture Works in Portugal” to the World Heritage (WH) Tentative List, in 2017, later submitted to the WH List by the Faculty of Architecture of the University of Porto, in 2024, under the title “Álvaro Siza’s Architecture: Modern Contextualism Legacy”. This nomination proposal expresses Álvaro Siza’s outstanding architecture spanning across the second half of the twentieth century, which testifies to the critical revision of the Modern Movement principles towards a more contextual and humanist approach. This modern contextualism is an exceptional legacy conveyed by Álvaro Siza’s architectural works and his ‘School’, with major impact across different generations of architects, in distinct continents, addressing the needs and the aspirations of local populations. The component parts emerge as a result of the architecture development in the second half of the twentieth century, responding to the specific conditions of local contexts and producing

alternative responses to the prevailing axioms of the international Modernism, while also contributing to the Postmodern debate. Siza is a worldwide recognized architect with approximately five hundred projects and built works spread across four continents and sixteen countries, and the subject of more than one hundred distinctions and awards, nineteen Honorary degrees, and hundreds of dedicated publications.

Despite international recognition of the quality of Siza’s architecture, there is not yet a complete and systematic inventory and consistent documentation of his built works. The information is usually scattered, partial or incomplete. The existent literature focuses more on formal aspects of the designs, and little on the tectonics and material dimension of his works, including the building’s state of conservation and the potential threats affecting them.

With this framework, the project ‘SizaATLAS: Filling the gaps for World Heritage’ (SizaATLAS) was submitted and funded by the Foundation for Science and Technology (FCT) between 2021 and 2024. This research project aims to address: i) a collaborative platform for interactive dissemination; ii) a comprehensive inventory of all of Siza’s built works; iii) a detailed documentation of the 18 buildings selected for the WH Tentative List (which is the main focus of the present booklet); iv) Recommendations for the WH nomination; and v) Dissemination and knowledge transfer.

METHODOLOGY

The research methodology for the documentation booklets is supported by a cross-analysis of different methods and tools: i) archival and bibliographic research; ii) field work observation and surveys; iii) digital documentation such as photogrammetry, virtual tours through 360° photos, 3D BIM didactic model of representative constructive sections and details. This multi-method approach, combining traditional and digital techniques, aims at providing holistic, integrated and comprehensive documentation, providing accessible information for diverse audiences, ranging from specialists to the general public, and a robust framework for management and conservation informed by the attributes of Outstanding Universal Value (OUV) and Álvaro Siza's design principles.

i) Archival Research included the consultation of documentation held by the Serralves Foundation, the Calouste Gulbenkian Foundation, the Canadian Centre for Architecture, or Drawing Matter. In addition, municipal archives and libraries were also consulted to gather as much relevant information as possible. Research included textual and graphic documentation, such as licensing projects, written documents, technical drawings, sketches, photographs, models, and correspondence. Also, comprehensive literature was developed for each building documentation.

ii) Fieldwork encompassed a meticulous exploration of the building's spaces and discussions with staff members, which provided valuable context and enhanced

comprehension of the buildings. To ensure a comprehensive documentation process, an extensive photographic survey was conducted, employing drones to capture both aerial perspectives and detailed captions of the sites. Furthermore, this process included an in-depth analysis of construction details, with a particular focus on tectonic features.

iii) The digital documentation protocol was thoughtfully devised to facilitate the systematic organization and seamless integration of all gathered data, culminating in the creation of a comprehensive and easily accessible archive for future reference. The methodology for digital documentation, framed within the SizaATLAS research project, employs combined techniques to document Álvaro Siza buildings, namely: a) photogrammetry, b) 360° virtual tours, and c) BIM didactic models.

BOOKLET STRUCTURE

The booklets are structured in 9 sections.

The INTRODUCTION provides the background, aims and methodology of the SizaATLAS documentation booklets.

The HISTORY AND DESCRIPTION section provides a general context of the building analysed in the booklet, including the following aspects: place and date of construction; landscape, natural features and pre-existences; context of the building commission; design and construction phases; detailed description of the design process supported on archival resources; composition, volumetrics and geometry; programme and

functional organization; promenade and light; tectonics and constructive detailing; Integrated artworks and furniture; awards and recognitions; recent interventions; international impact of the work.

As regards the section CONSTRUCTION, it aims at providing a tectonic perspective of the buildings through a representative section and details focusing on its Structural System, Walls, Roofs, and Frames.

The DESIGN PRINCIPLES aim to clarify Álvaro Siza's original design intent, being a permanent reference for the conservation of the building and an instrument to manage proposals for change. It should also be considered when establishing planning controls for the surrounding landscape, ensuring the preservation of visual relationships and future long-term improvements to the setting. To remain faithful and respectful of Siza's thoughts and design approach, these design principles are based on his own words, namely on a selection of 'aphorisms' collected from his texts, design reports, and interviews.

The ATTRIBUTES section relates to the specific and unique qualities expressed in the OUV for the WH nomination proposal "Álvaro Siza's Architecture: Modern Contextualism Legacy", namely: i) Architecture responsive to a physical, social and historical context; ii) Integration of international and local references; iii) Sculptural volumetric expression; iv) Oriented spatial experiences; v) Total work of art including details, furniture and art works.

STATE OF CONSERVATION is a description of the building's current condition and recent conservation or reuse interventions. In most cases, the buildings have been submitted to recent conservation interventions which adapted them to current legal, sanitary, accessibility or comfort standards.

DIGITAL DOCUMENTATION results from an integrated methodology combining: i) photogrammetry; ii) 360° virtual tours (available through QR Codes); and iii) BIM didactic models. These techniques are adapted to each building with some limitations related with the photogrammetry conditions (vegetation, surface colours, and others) or to the access to the buildings, which was authorized in public buildings, and restricted in private houses and bank agencies.

SOURCES AND BIBLIOGRAPHY refer to the archives and specific literature consulted for each building under analysis.



HISTORY AND DESCRIPTION

The Bouça Housing Complex (1973-77) is situated on a plot of land in central Porto, between the railway tracks and Boavista Street, one of the main urban axes of the city. The neighbourhood was constructed as part of the SAAL (Local Ambulatory Support Service) social housing process, a government-led collaborative initiative between architects and city-dwellers in need of affordable housing, operating between 1974 and 1976.

The Bouça Housing Complex, with its public gardens and facilities open to the surrounding streets, is now situated very close to the light-rail station designed by Eduardo Souto de Moura and inaugurated in 2002, attracting a significant flux of people daily. Apart from its communal life, it serves as a point of reference for students and architects for its housing solution that highlights the individual unit within the context of the whole.

Built in the aftermath of the Carnation Revolution (1974), which marked Portugal's transition to democracy, the Bouça Housing Complex reflects a social commitment in which a close dialogue with the local communities played a key role. This participatory approach was what first promoted Siza's recognition abroad, leading to his first international experiences in Berlin, Venice and The Hague.

Bouça was part of the ambitious SAAL housing program created after the 1974 revolution by then-Secretary of State of Housing and Urban Development, Nuno Portas. This program aimed to address the housing problem associated with the outrageous social inequities of the Portuguese population.

It involved architects, engineers and social workers, among others, who organised themselves into committees or brigades. In the case of Bouça, Anni Günther led the team, which included architects Sérgio Gamela and Maria José Abrunhosa, who invited Álvaro Siza to take part in the project.

Architecture Design: Álvaro Siza. Collaboration: António Madureira, Francisco Guedes de Carvalho, Adalberto Dias, Miguel Guedes de Carvalho, Eduardo Souto Moura, Maria Manuela Sambade, Nuno Ribeiro Lopes and José Paulo dos Santos. Structural Design: João Araújo Sobreira and Jorge Malta. Contractor: Soares da Costa.

Working closely with the population, who were called to participate in the planning process, Siza implemented a model of spatial organisation he had previously sketched out for a housing development in Ovar (Barbara de Souza Housing, 1972).

The process involved a participatory approach with future residents to identify their needs and expectations, which then informed the development of responsive architectural design. However, despite only one-third of the intended housing blocks being completed, the construction process was interrupted in 1978. It wasn't until nearly thirty years later (from 2000 to 2006), that the complex was finally finished, thanks to the commitment of the Cooperative Housing Federation, the Municipal Council of Porto and the National Institute for Housing.

As Álvaro Siza states, Bouça was, from the beginning, an economically radical project – in 1974, it could not have been anything else. With SAAL program's premature end in 1978 only two rows of houses were partially built, and a provisional staircase was installed to provide access to the galleries. Political vicissitudes led to keeping the housing complex deliberately incomplete as a demonstration of what was intended to be seen as the program's failure.

The construction of the 2nd phase (2000–2006) aimed at completing the original design and incorporating necessary updates to the 1st phase buildings. In the meantime, significant changes occurred in building regulations and minimum living requirements.

The architect's intention was to ensure that the new blocks would form a cohesive whole, together with the existing ones, reconciling this commitment with some essential updates. The revision had to consider the changes in people's needs and expectations, such as security, parking, enclosed balconies and thermal comfort.

Beyond the reinterpretation of Porto's communal housing settlements, the design draws inspiration from modern European housing models, such as the Kiefthoek and Hoek van Holland by J. J. P. Oud in Rotterdam or the Hufeisensiedlung and Carl Legien Wohnstadt, in Berlin, by Bruno Taut.

This housing complex consists of four parallel four-storey blocks interconnected by a wall, which creates open courtyard spaces between the them. The neighbourhood has 128 two-storey dwellings, mainly

three-bedroom apartments, with a few exceptions, such as apartments with one to five bedrooms. Each apartment has a direct access from the exterior through common spaces between blocks at the ground level, or through the second-floor galleries. The internal layout of the apartments is distributed in two floors, with common areas like the living room and kitchen located on the first floor for ground-level dwellings and on the second floor for upper-level dwellings. The complex also integrates retail spaces open to Boavista Street, conceived as separate volumes facing each housing block. Initially planned to house communal facilities, these structures reinterpret international modernist ideals of the "civic center", a concept further explored in the Malagueira Housing Complex in Évora (1977-95). Each volume has a distinctive sculptural shape, establishing different relationships with the street.

The exposed concrete wall, which faces the railway tracks on the north side (now part of Porto's light-rail system) serves a dual purpose in the Bouça Housing Complex. Not only does it connect the four housing blocks through a series of exterior galleries and staircases, but it also acts as a protection barrier, mitigating the acoustic impacts of the transit infrastructure.

Given its social significance and considerable impact within the urban landscape, the public space and pathways hold significant importance in the design. The central courtyard, being the widest, fosters a strong sense of community, while the narrower courtyards offer verdant pockets nestled between the blocks. This design pays homage to the communal living found in the former *ilhas*,

where modest row houses were erected in the rear yards of middle-class residences, connected to the street via narrow corridors. This typology persisted as a traditional way of life for Porto's low-income families well into the 19th century.

In the Bouça Housing Complex, there is a strong connection between spatial and typological definitions and the adopted construction solution. The load-bearing walls in "Mecan" concrete blocks are understood as the foundational element of the formal composition, corresponding to the partition walls between dwellings and ensuring their vertical support structure. The dwellings, in turn, are developed over two floors (4 x 12 m, measured at the axis of the exterior walls), with each floor consisting of three-square modules measuring 3 m on each side.

Despite budgetary constraints inherent in social housing developments, Siza's design attains commendable standards. Elements such as the handrails and window frames, painted in a light colour, not only enhance aesthetic appeal but also exemplify thoughtful design considerations across various scales.

The first push to build the Bouça Housing Complex dates to 1972, still during the dictatorship, in the context of the *Fundo de Fomento à Habitação* (Housing Development Fund). The principles and models of the pre-revolution preliminary design were adapted and later included in the SAAL operations. Since its construction, the Bouça Housing Complex has been extensively photographed, filmed and published, transmitting the influence of Álvaro Siza in the

context of 20th-century architecture. Due to its significance, it is inventoried (Heritage Map – Municipal Master Plan of Porto, SIPA, IAP20, Docomomo Iberico) and is currently under the process of listing as National Monument.

The Bouça Housing Complex underwent extensive preservation from 2000 to 2006, encompassing the conservation of existing structures and the completion of previously unfinished blocks. Álvaro Siza recognised the importance of modernising the complex to meet contemporary needs, evident in the integration of functional and technical upgrades, even extending to a second construction phase decades after the initial design. Siza continued to engage in a dialogue with residents, incorporating their suggestions such as adding metallic entrance gates and enclosing balconies on upper floors. The dwelling interiors were updated to create a more open social area by integrating kitchens with living rooms. Functional flexibility was increased with the addition of sliding doors between dining and living areas, separate toilets from bathrooms, and reduced enclosed balconies. To accommodate the residents' vehicles, Siza introduced an underground car park.

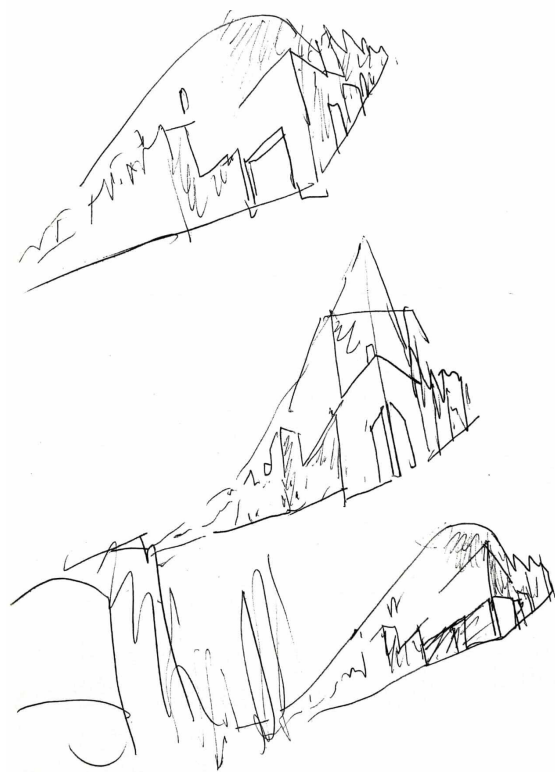
These updates improved construction technologies (reinforced concrete structures replaced concrete blocks) and current comfort and energy standards. Interior finishes and window frames remained consistent with the original materials, while the exterior coatings were modified for improved thermal performance using the External Thermal Insulation Composite System (ETICS) on the façades.

Álvaro Siza's recent interventions are an outstanding example of an architect preserving his work while respecting the component part's values and character. The site's functionality has been significantly enhanced through a combination of conservation efforts and the addition of a new extension.

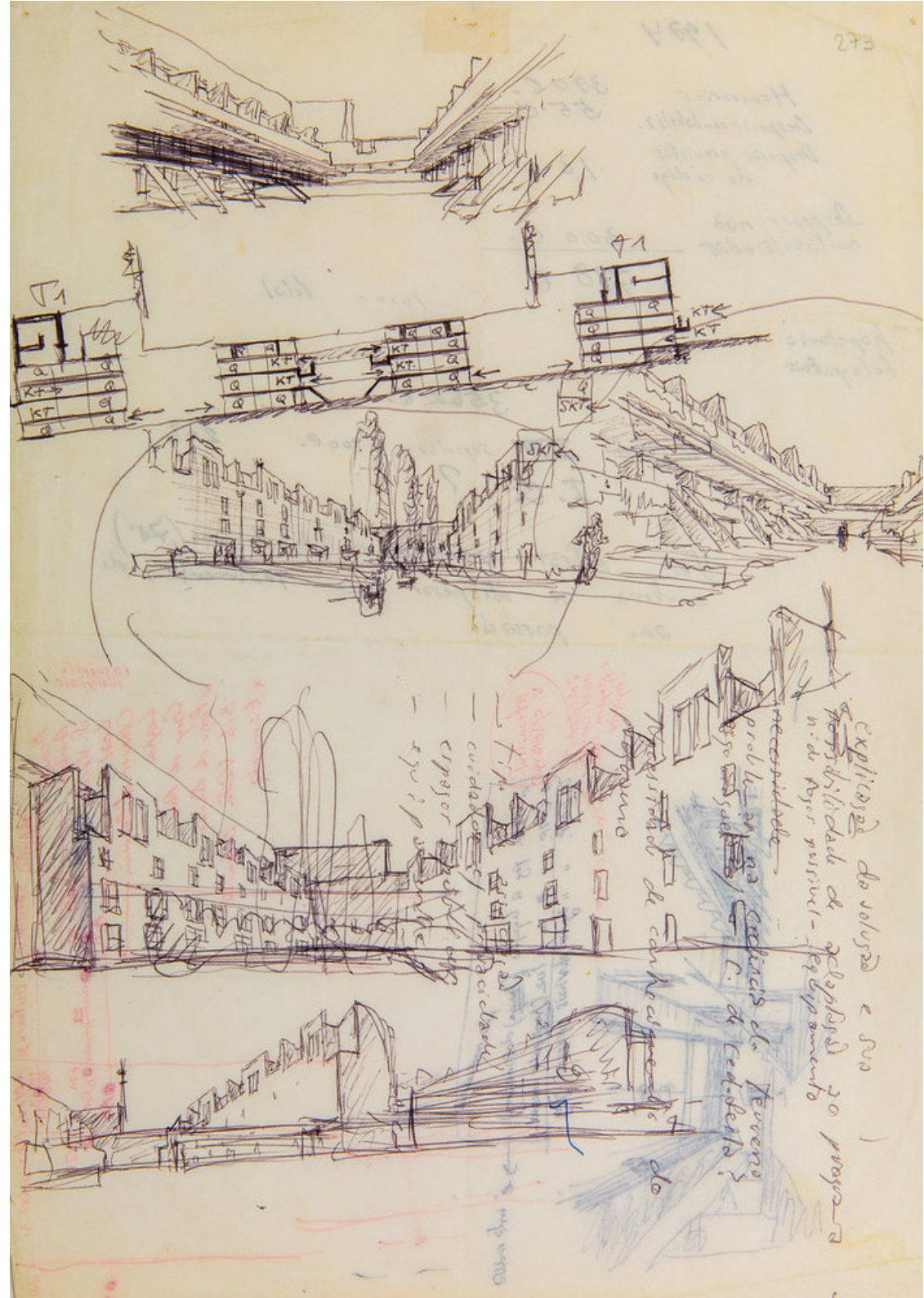
The Portuguese Revolution of 1974 had a profound impact on architecture, prompting the influential journal "L'Architecture

d'Aujourd'hui" to dedicate an issue to the topic in 1976, with the Bouça Housing Complex receiving significant attention.

Since its construction, the Bouça Housing Complex gained considerable visibility and received favorable reception internationally. Consequently, Álvaro Siza was invited to undertake projects for housing complexes in Berlin and The Hague following the conclusion of SAAL.

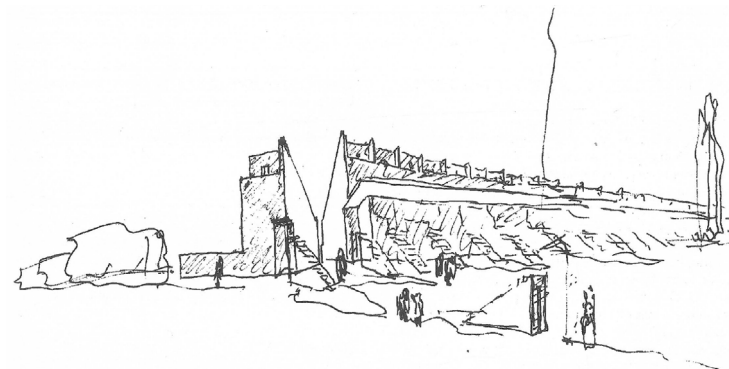


02. Study Sketches, 1977.





04. Compositional studies for the façades.



06. Relationship between the housing blocks and the corner



05. Preliminary design for the courtyard.



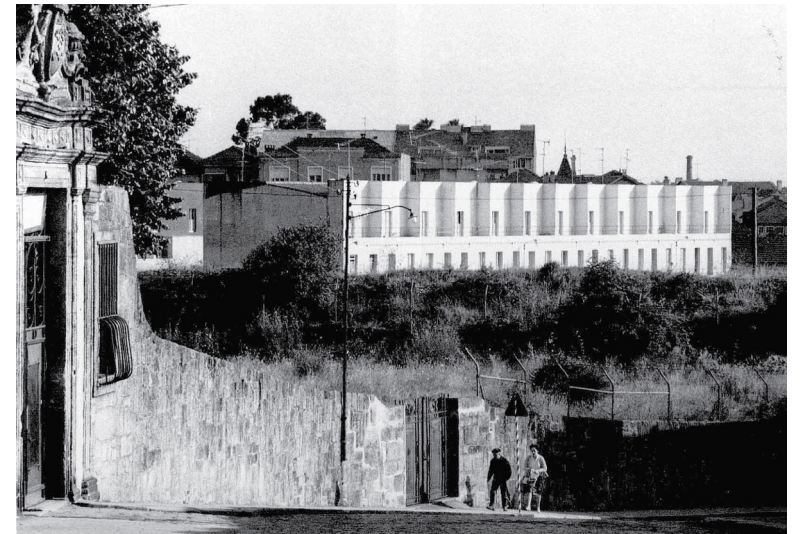
07. Preliminary design for the staircases.



08. The housing complex before the completion of the second phase.



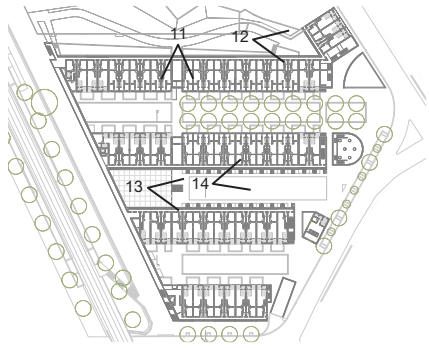
09. The housing complex before the completion of the second phase.



10. The housing complex before the completion of the second phase.



11. The housing complex before the completion of the second phase.



12. Passage through the housing blocks.



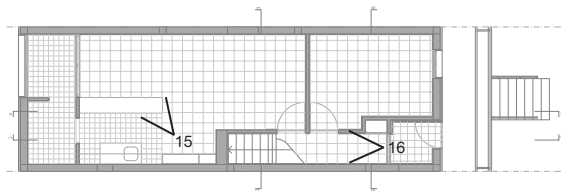
14. Central courtyard featuring individual staircases to access the dwellings.



13. Eastern façade.



15. Individual staircases to access the dwellings..



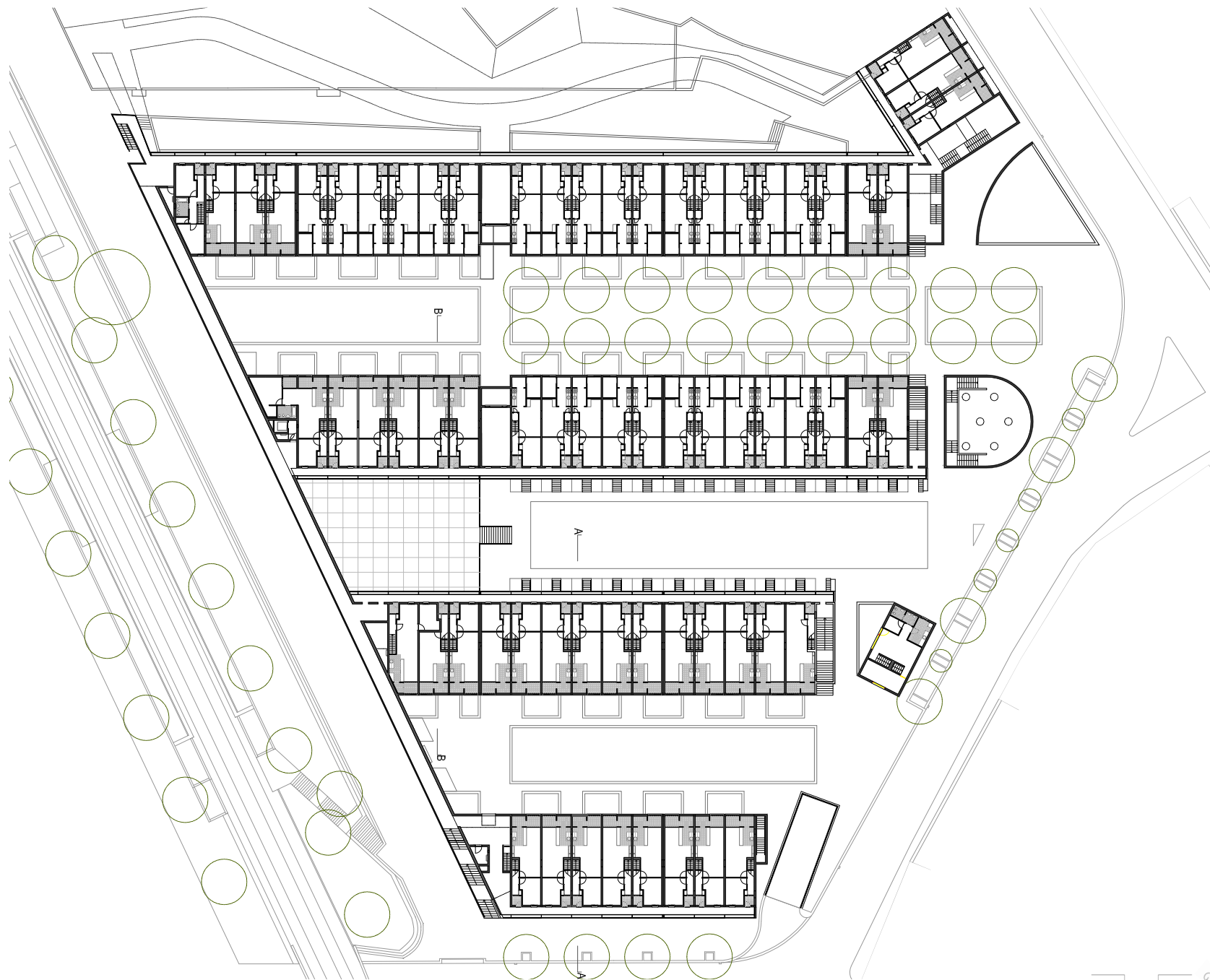
16. Kitchen.



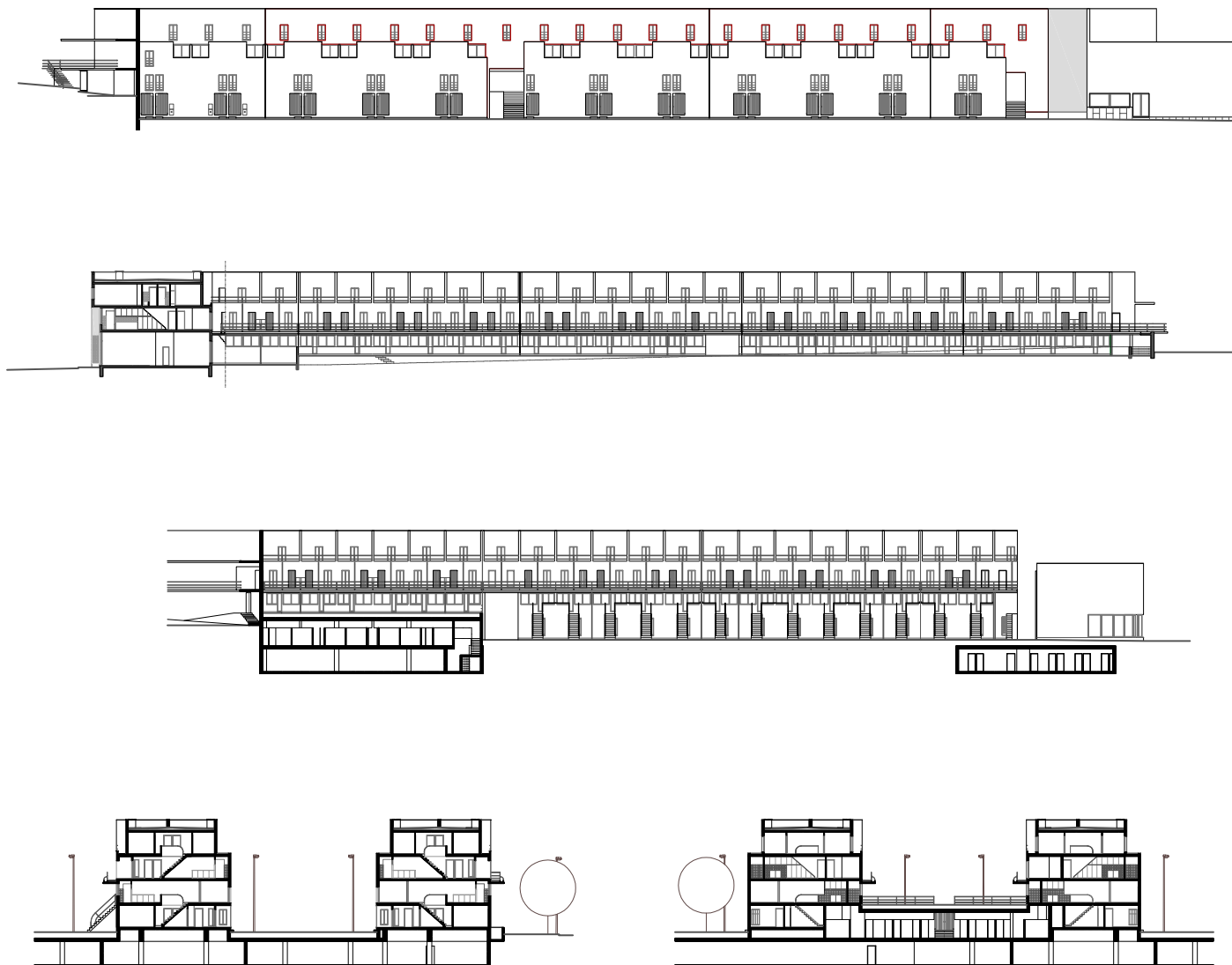
17. Apartment entrance and staircase.



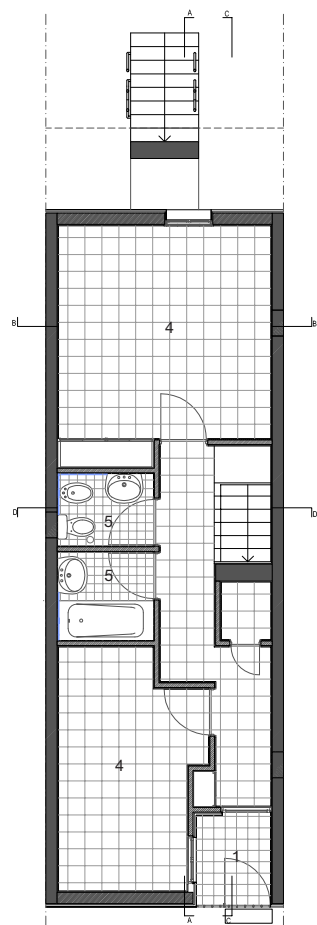
18. Bedroom.



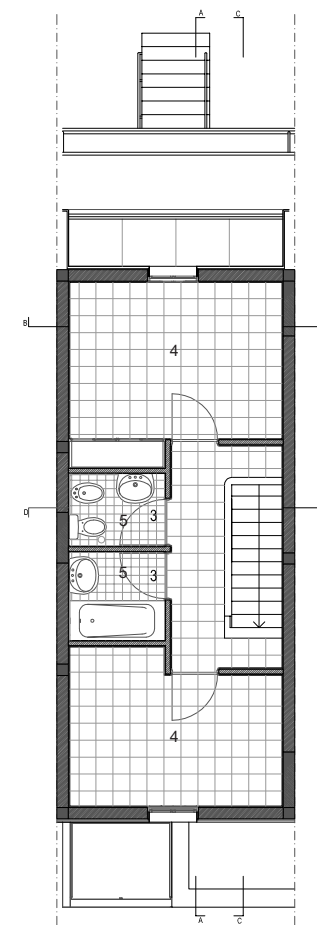
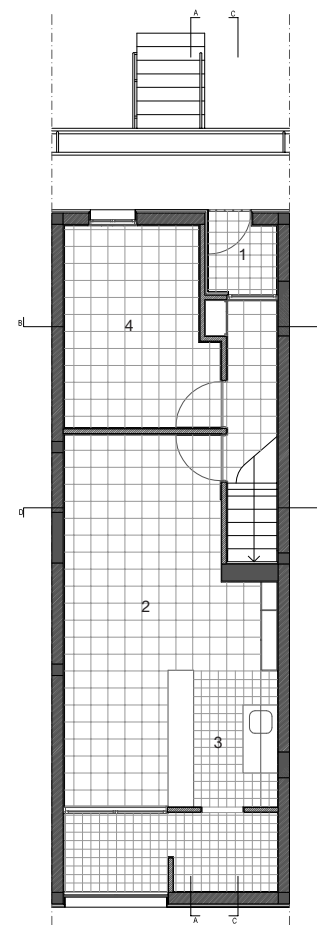
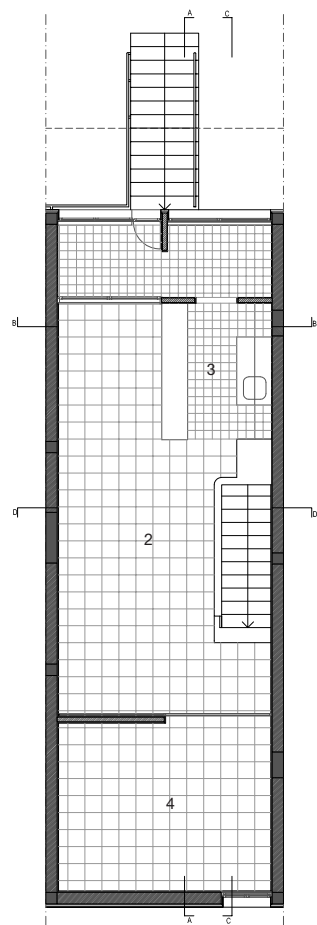
19. Second floor plan.



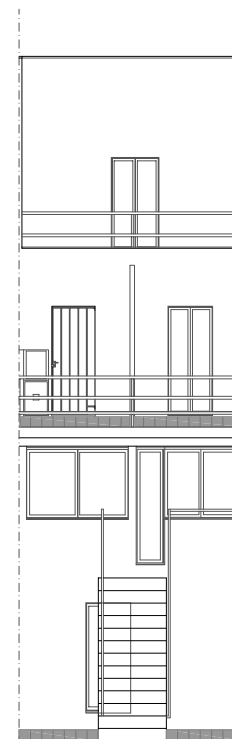
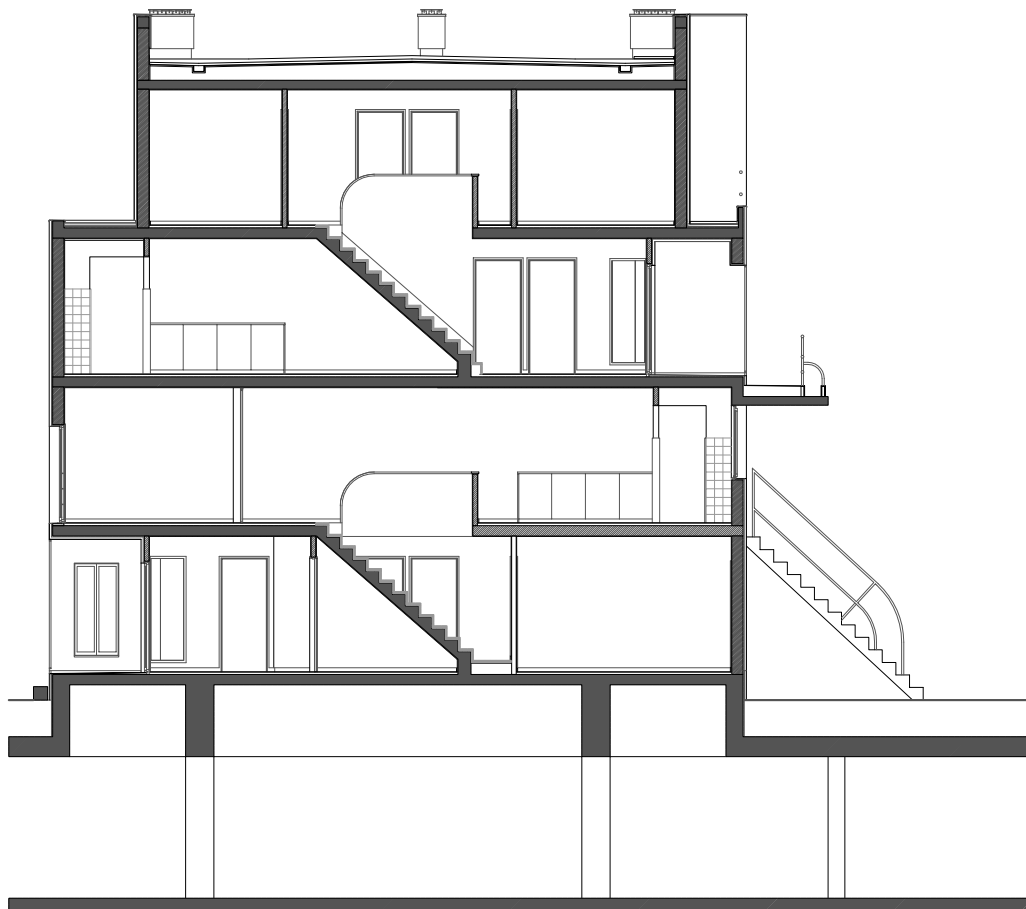
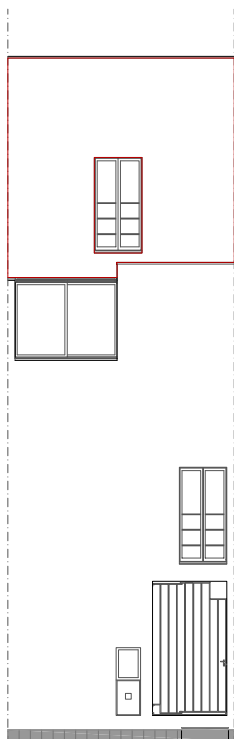
20. Elevations and sections.



1. Entrance 2. Living room 3. Kitchen 4. Bedroom 5. Bathroom



21. Apartment typologies floor plans.



22. Transversal Section and elevations.

CONSTRUCTION

STRUCTURAL SYSTEM

João Sobreira describes the initially envisaged structural system for the Bouça Housing Complex: “The 1975 project (...) conceived the buildings using traditional construction, with load-bearing block walls and slabs with prefabricated concrete joists, addressing the need for very economical construction” (2004). In this context, the use of reinforced concrete is virtually non-existent, with only shoring used and no formwork present anywhere in the construction. The exception is the foundation footings for walls and support structures, which are made of reinforced concrete with steel rebar (Sobreira, 1976-78).

The vertical structure consists of load-bearing masonry walls, spaced 4 metres apart, extending continuously along their height. Initially intended to be perpendicular granite, the walls were built with “Mecan” concrete blocks, series 300 (30x20x20). These walls provide vertical support and define the building’s formal composition and the division between the residential units. The non-structural main and rear facades contribute to the bracing of the building, along with the floor slabs (Sobreira, 1976-78).

The horizontal structure rests on the “Mecan” concrete block walls, with the roof load transferred through pre-stressed beams supported on piers. The floors are supported by these walls, reinforced with concrete bands, and rest on the soil, of soft rock, through continuous lintels (Sobreira, 1976-78: 1).

WALLS

Following the vertical structure, the four floors use a solution of load-bearing walls made of concrete blocks. To ensure adequate acoustic comfort, the blocks were “filled with dry sand” (Sobreira, 1979). The connection between the transverse walls and the longitudinal façades is achieved through a mortar joint approximately 1/3 the thickness of the wall and also through a concrete band. These two elements absorb the transverse force resulting from the relative compressions of the two connected walls.

In the 2nd phase, the exterior finish is done with External Thermal Insulation Composite System (ETICS), a “plastic coating (...), with the respective mesh, over thermal insulation made of expanded polystyrene” (Siza & Madureira, 2001). The façades are painted white, except for the upper floors, which are painted red in homage to the works designed by Bruno Taut.

The balcony guardrails are also made of ‘Mecan’ concrete blocks, series 450 (40 x 25 x 7.5cm), forming a 7.5cm thick wall.

The interior walls, which are free from structural constraints, are made of 10cm thick ‘Ytong’ blocks, and are subsequently covered with a layer of 2cm thick sprayed plaster. ‘Ytong’ blocks, known for their precise dimensions, lightweight, and excellent thermal properties, contribute to the building’s energy efficiency and reduce waste on the construction site.



23. First phase of construction.



25. Second phase of construction.



24. First phase of construction.



26. Second phase of construction.

FLOORS

The flooring system, chosen for its rationality and cost-effectiveness, is of the 'Daviga' type, considered "more economical than solid slab solutions" (Sobreira, 1976-78). These floors feature beams within the slab's thickness, lightened by brick blocks resting on prefabricated elements containing tensile reinforcement. This system offers advantages over pre-stressed joist floors: it eliminates the need for solid areas in the support zone, enhances fire safety, reduces the need for formwork, and simplifies reinforcement. Additionally, it significantly reduces the need for formwork, both for the floor and the bands over the walls, as the reinforcement is made from a prefabricated element, simplifying the process. Lastly, this system eliminates the need for lightweight concrete fill and suspended ceilings in the floor below (Sobreira, 1976-78).

The floor slabs have a thickness of 20 cm, instead of the 15 cm that was standard practice, allowing the sanitary equipment pipes to be accommodated within the thickness of the slab. The total weight of the flooring, including finishes, is approximately 350 kg/m², ensuring adequate sound insulation between floors. The housing units in the Bouça Housing Complex are spread over two floors, connected by a longitudinal internal stairwell. The stairwell is positioned against the party wall.

The cantilevered slab forming the walkway to the third floor is one of the few exceptions to the use of concrete in the construction (Sobreira, 1976-78).

ROOFS

The roofing of the buildings consists of a slab similar to the floor slabs, insulated with a 5cm layer of cellular concrete. On top of this layer, a ventilated covering was installed, composed of 'Super Habit' fiber-cement sheets, fixed with a rubber cord and three clips per sheet, resting on prefabricated and prestressed 'Civibral' joists, which are supported by small pilasters made of 'Mecan' blocks (22x20x20). These joists are placed on prefabricated concrete footing designed to ensure a regular placement of the joists. Furthermore, the chosen roofing solution does not introduce thermal expansions in the walls, as it only rests on the transverse walls through the pilasters. The gutters are made of 14-gauge galvanized sheet metal, and the downpipes are rigid PVC with a diameter of Ø90. This roofing system was revised and adapted in the 2nd phase.

OPENINGS

The windows play a crucial role in the composition of the elevations at the Bouça Housing Complex. The choice of vertical openings contrasts with the structure, as the facade walls do not have a structural function. Horizontal windows reflect the autonomy of the façade from the construction, a hallmark of the Modern Movement. On the other hand, vertical windows allow for more precise control of light, creating nuances and avoiding uniform lighting. This choice can be seen as a tribute to traditional construction methods, inspired by bourgeois houses in Porto. Siza acknowledges the

influence of English design on the window frames and attributes significant importance to them in defining the urban image of the city (Siza 2019).

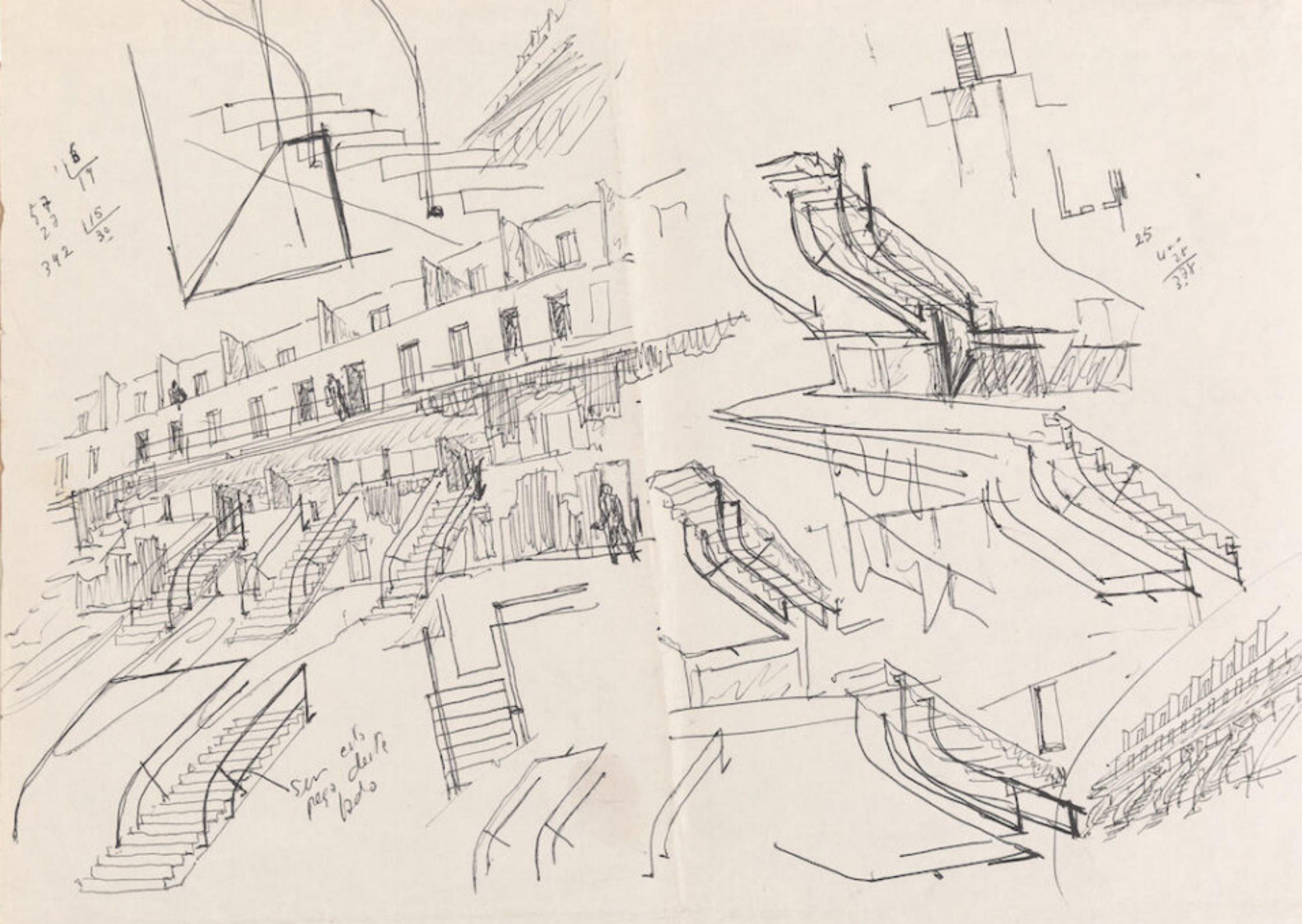
The exterior joinery is made of exotic wood and features glazed, openable windows. The window frames are composed of single glass panes and are painted yellow. They include wooden shutters. The handrails on the windows, galleries, and balconies are made of tubular metal, metalized and painted.

The sills vary in material depending on the location of the opening: white Estremoz marble, 50mm thick; white "NOR" tiles, 15 x 15cm; and metalized and painted iron, 35 x 5mm.

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DESIGN PRINCIPLES

THE TECHNICAL BRIGADE, TOGETHER WITH THE GROUP OF RESIDENTS, DEFINES THE PRIORITIES

On the method of work that the brigade, as a technical group, intends to operate. The brigade does not take simplistic positions as to learn from the people or teaching the people. The goal is that the inhabitants can control the degraded areas where they live, in terms of its ownership and recovery. The technical brigade, together with the group of residents, defines the priorities for each time, adopting a permanent criticism position. The rigor is not a limit to the dynamics of the process. The rigor is not a limit to the imagination. (Siza, 1976)

RECOVERY OF THE ILHA AS A BASIC ELEMENT IN THE URBAN FABRIC

At first and for these reasons, the possibility of recovery of the ilha as a basic element in the urban fabric was considered. (Siza, 1973)

INSIDE THE ILHA THERE IS A VERY COLORFUL ATMOSPHERE, HENCE THE USE OF COLOR

In order to understand the use of color in the Bouça housing, it is necessary to know the origin of the project, a housing cooperative for a community of inhabitants from the “ilha” of Bouça. Inside the ilha there is a very colorful atmosphere, not only in the buildings, but also in the people who live there; a colorful atmosphere with a predilection for light tones envelops everything when visiting it. Hence the use of color in the construction of the houses in Porto. (Siza, 2007)

DESIGNED TO BE A RADICALLY ECONOMICAL PROJECT

The Bouça scheme was designed to be a radically economical project; in 1974 it could not - and should not - be any other thing. (Siza, 2008)

ECONOMY OBTAINED FROM STANDARDIZATION PRINCIPLES

(...) adopt apparently costly criteria of comfort, but which are considered indispensable and available by the economy obtained from standardization principles regarding the adopted schemes, of the lot characteristics usage, with respect to the systems of association and of access, and with the architectural expression itself(...) (Siza, 1973)



ATTRIBUTES

ARCHITECTURE RESPONSIVE TO A PHYSICAL, SOCIAL AND HISTORICAL CONTEXT

The component part is exceptionally integrated into the urban and social context, resulting from participatory design with the residents. The building's form and the distribution of the architectural program appropriately respond to each of its urban fronts.

INTEGRATION OF INTERNATIONAL AND LOCAL REFERENCES

The building exemplifies an exceptional integration of local and international references by reinterpreting the ways of living in the “ilhas” and recalling European modern social housing neighbourhoods. The rationalist design is related to the social housing of the 1920s in Germany (Bruno Taut and others), while local references recall traditional elements, such as the balconies, the exterior stairs and the communal longitudinal patios (evoking the traditional “ilhas” of Porto). The use of colour maintains a strong relationship with Bruno Taut's social housing works.

SCULPTURAL VOLUMETRIC EXPRESSION

The sculptural volumetric expression of the component part is evident in the semi-circular building facing Boavista Street, where curved elements ensure the transition between the housing blocks and the urban grid. It features a series of retail spaces facing Boavista Street, seamlessly intertwining the project with the urban fabric. On the northern side, facing the railway, a perimeter wall with strategic openings protects the housing blocks, whose variations aim to adapt to the triangular shape of the plot.

ORIENTED SPATIAL EXPERIENCES

Given the social character of the component part and its significant presence in the urban fabric, the public courtyards and galleries, including access to the light-rail station, play an important role in the design, through oriented spatial experiences.

TOTAL WORK OF ART INCLUDING DETAILS, FURNITURE AND ARTWORKS

Even with budgetary limitations of social housing, the component part embodies a multi-scalar design with qualified construction solutions. Elements such as the handrails or the window frames, painted in a light colour, reinforce its aesthetic qualities.



AUTHENTICITY AND INTEGRITY

AUTHENTICITY

The Bouça Housing Complex preserves the overall authenticity of form and design. The completion of the project with the construction of the two missing buildings accordingly with the original design (2006), which had remained unfinished for thirty years, enhanced the global authenticity of the component site.

At the same time, conservation works were performed on the original buildings, respecting the initial materials and details. Small adjustments have been carried out to improve parking, security or thermal comfort according to the current living standards. In the interior of the dwellings some alterations were made by its inhabitants modifying the original layout proposed by Álvaro Siza, but without prejudice to the global lecture of the authenticity of the ensemble.

The Bouça Housing Complex maintains its original use and function with compatible contemporary adaptations, related with current living standards and legislation. While accommodating other types of uses (commercial and services), the Bouça Housing Complex has consolidated its character as a residential area.

The Bouça Housing Complex has maintained the essence of its urban location in the city centre after the completion of its second phase, enhanced by the development of the area caused by the opening of the Lapa light-rail metro station. The existence of a significant number of vacant plots, particularly to the north and west of the site, will

be monitored through the Bouça Housing Complex Management Plan to ensure the preservation of the authenticity of the location and setting.

The Bouça Housing Complex preserves its neighbourhood atmosphere while welcoming new residents and visitors. It also has a vibrant atmosphere connected with architectural culture, being occupied by architecture studios and a bookshop that nurture the importance of the complex for the history of architecture by supporting the community and its traditional festivities.

The Bouça Housing Complex maintains the authenticity of the techniques and the management system. The Águas Férreas Condominium manager is keen to preserve original documentation as well as perform careful annotation of any maintenance intervention.

INTEGRITY

The Bouça Housing Complex retains a very high degree of integrity as it is maintained in good condition, including all elements necessary to express its values and significance. The component part retains a high degree of original fabric, including interior fittings and fixtures.

The component part limits defined by the Buffer Zone include all the necessary elements that express the significance of the Bouça Housing Complex namely the urban context and metro railway, essential to the component part's distinctive setting.

Aside from the installations and device updates related to normal wear and tear, the housing complex has not undergone any significant change since its construction and does not suffer from adverse effects of development or neglect.

The housing complex has undergone conservation works supervised by Álvaro Siza,

along with completion of the second phase, in 2006, and does not suffer from adverse effects of neglect. Recent conservation has included some adaptations to the current living standards (security gates, car parking, thermal insulation, closed balconies), which have fully respected the original design principles and the integrity of the whole.



STATE OF CONSERVATION

The Bouça Housing Complex has maintained excellent conservation conditions since its recent intervention (2000–2006). This included the conservation of the existing buildings and the conclusion of the unfinished blocks foreseen in the original design, with Siza recognising the importance of incorporating functional and technical improvements to meet contemporary needs and expectations. This commitment is consistent with constructing the second phase, even three decades after the initial design.

The decision to undertake the second construction phase was an opportunity to enhance the existing buildings, review and adapt them to contemporary needs, ensure they maintain their integrity, and respect the original design principles. As before, Siza engaged in a dialogue with residents, incorporating their suggestions, such as the metallic entrance gates and the enclosed balconies on the upper floors. Dwellings saw minor updates, including a more open social area with the kitchen integrated into the living room. A

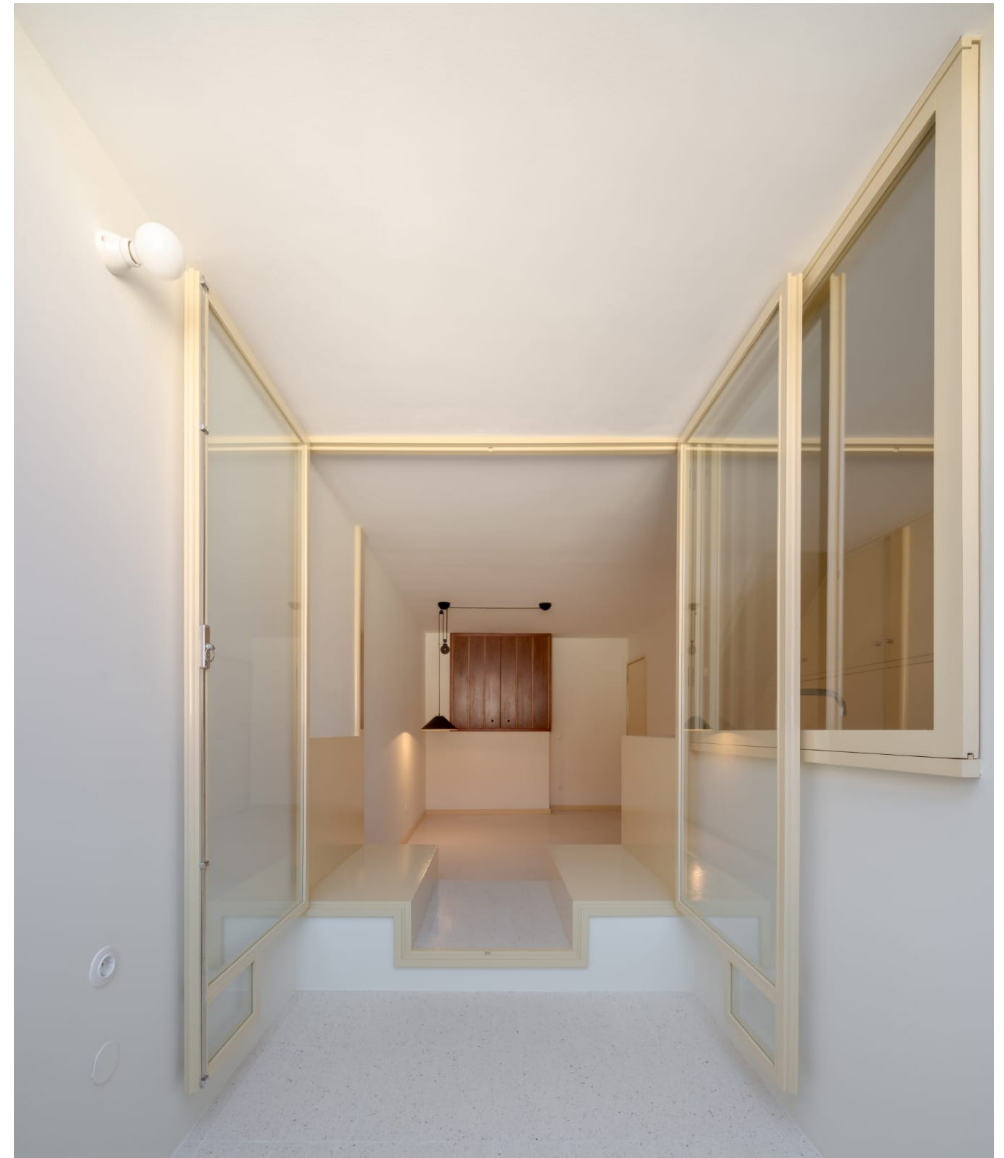
sliding door between the dining and living areas added functional flexibility, the toilet was separated from the bathroom, and the enclosed balconies were reduced. To accommodate the residents' vehicles, Siza introduced an underground parking.

These updates incorporated improved construction technologies (reinforced concrete structures replaced concrete blocks) and current comfort and energy standards. Interior finishes and window frames remained consistent with the original materials, while the exterior coatings were modified for improved thermal performance using the External Thermal Insulation Composite System (ETICS) on the façades.

Álvaro Siza's recent interventions are an outstanding example of an architect preserving his work while respecting the component part's values and character. The site's functionality has been significantly enhanced through a combination of conservation efforts and the addition of a new extension.



31. Exterior after conservation works.



32. Interior after conservation works.



DIGITAL DOCUMENTATION

The digital revolution significantly impacts Cultural Heritage safeguarding offering advanced documentation and communication techniques. Modern heritage presents a rich opportunity for study and interpretation due to its diverse documentary, physical, and oral resources.

The methodology for digital documentation, framed within the SizaATLAS research project, employs combined techniques to document Álvaro Siza buildings, namely i) photogrammetry, ii) 360° virtual tours, and iii) BIM didactic models.

The development process involves is supported on previous analysis of archival and bibliographic documentation and field work observation. This integrated methodology provides holistic and in-depth analysis of the architectural works, expressing their design principles and OUV attributes, spanning from the relation with the context, the local and international references, the oriented spatial experiences, the volumetric expression and multiscalar approach, including construction and details. Also, it aims at info-accessibility and didactic dissemination of Siza's Architecture, allowing for interactive experiences to users all over the world.

360° VIRTUAL TOURS

Virtual tours are an increasing instrumental in the documentation and preservation of cultural heritage, contributing communication, and conservation monitoring.

The development of the 360° virtual tours captions was guided both by the OUV attributes and the design principles of each building.

Images for these tours were acquired by a Ricoh Theta camera, ensuring precise timing and favorable weather and light conditions. Subsequently, the virtual tours were processed and enabled using software developed by detalhar.pt. The QR codes in the booklet allow for interactive virtual tour experiences of the buildings, focusing on the main attributes and design principles.

SIZA ATLAS

SOCIAL HOUSING
SAAL BOUÇA

ÁLVARO SIZA



33. 360° Virtual Tour.



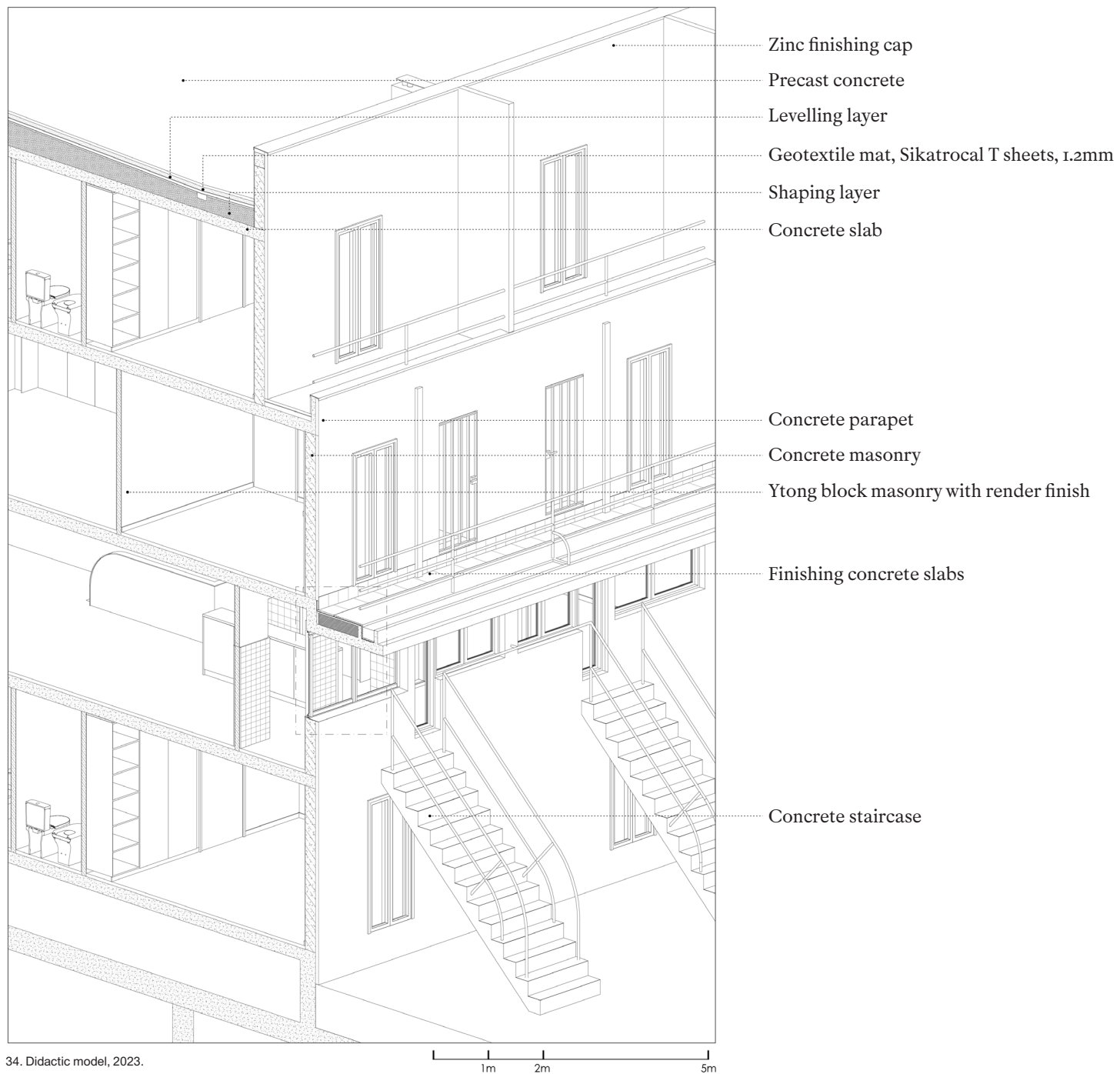
Virtual Tour

DIDACTIC MODELS

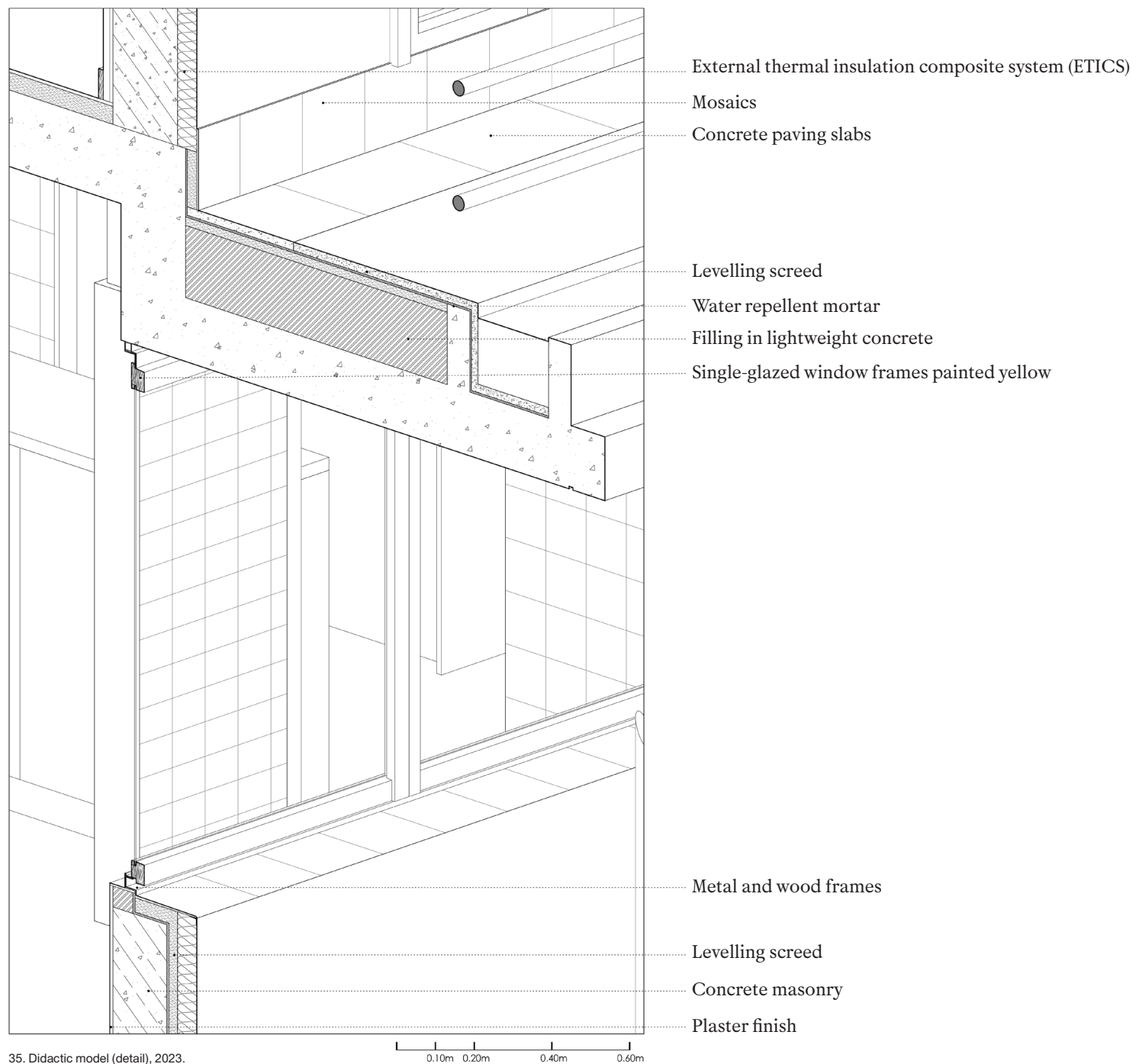
BIM didactic models have as their main objective to conduct a thorough tectonic perspective of a representative section of the building, namely on its construction and material features. Also, by comparing diverse solutions proposed for different buildings within the SizaATLAS research project, the models enable a holistic evaluation of Siza's architectural achievements, emphasizing the integration of form, function and construction.

Drawing representation takes inspiration from Edward Ford's "The Details of Modern Architecture" these models prioritize clear language to disseminate knowledge effectively. The development process of the models involves cross-referencing analysis between archives and bibliography research combined with field work observation.

The Didactic Models offer an integrated approach to examining the architectural tectonics of Siza's designs. Hence, they meticulously detail material layers and construction methodologies, encompassing structural system, walls, roofs, frames and the respective intricate details.



34. Didactic model, 2023.



35. Didactic model (detail), 2023.

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