SIZATLAS

AVELINO DUARTE HOUSE

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

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INTRODUCTION 4

HISTORY AND DESCRIPTION 10

CONSTRUCTION 46

DESIGN PRINCIPLES 58

ATTRIBUTES 62

AUTHENTICITY AND INTEGRITY 66

STATE OF CONSERVATION 70

DIGITAL DOCUMENTATION 74

SOURCES AND BIBLIOGRAPHY 80

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) 360º 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 preexistences; 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) 360º 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.

DESCRIPTION

The Avelino Duarte House (1980-84) is situated on a rectangular plot measuring 40 x 15 metres on the outskirts of Ovar, a Portuguese city in the district of Aveiro within Porto's Metropolitan Area. It is adjacent to Régua Avenue, a tree-lined avenue, and in close proximity to the sea.

The immediate surroundings of the house consist of rows of large single-family houses and an undeveloped area. The construction itself is immersed in the greenery of the meticulously designed garden, adorned with flowerbeds. In an environment that might otherwise seem uninspiring, the architect drew upon architectural history for inspiration, incorporating elements, such as marble in the walls, staircase and columns, as well as unique features like the fireplace and the vaulted roof.

Centrally positioned within the plot, the house recedes from the street and opens at the back to a garden with large trees. It has two entrances: a pedestrian access located in the northwest corner, flanked by lush vegetation, and a car access on the northeast side, leading to a garage at the rear of the property. Its isolated placement within the plot enables unrestricted movement around the house and ensures privacy from neighbouring properties.

The house was commissioned by the lawyer Avelino Duarte, with the request for the design of a two-storey house and a studio. Inserted in a somewhat desolated context, the Avelino Duarte House references the history of architecture. It would be in the work of Adolf Loos that Siza would find these references, specifically in the Moller House and the Steiner House located in Vienna.

In this work, Álvaro Siza initially made a deliberate decision to allow the pigmented plaster to showcase its natural plastic qualities, abstaining from painting it white. This choice was not only an artistic expression but also a statement against the notion that all of his works adhered to a uniform white aesthetic.

However, the client required him to paint the house white, altering this initial vision, thereby making more explicit the citation to the work of Adolf Loos, known for his advocacy of plain white surfaces. Some architectural historians have identified zoomorphic features in the exterior design. Specifically, they note resemblances to a giraffe in the outdoor garden and a cat on the street front.

Siza imbues the spaces with dynamic depth, which is notably evident in the triple-height staircase and false ceilings within service areas. Characteristic of this house is the pursuit of interiority and a profound commitment to a minimalist volumetric expression. Moreover, its design reveals Siza's adept navigation of pre-modern and modern architectural influences, drawing inspiration from his own works namely Malagueira Housing Complex, as well as others from remarkable figures such as Josef Hoffmann, Bruno Taut, Hugo Häring, Le Corbusier, and Alvar Aalto.

Its shape emerges from the juxtaposition of two volumes: one with a rectangular base and three stories high, and another with a square base and two stories high, to which a volume in the form of a lowered vault with

a rectangular floor plan is attached. A series of additions were incorporated into this volume to delineate accesses or exits to the patio and to allow light to enter the domestic space. The two most significant openings are nearly identical, positioned at the access to the house and at the door to the patio. Elongated floor-to-ceiling openings define the façades. The rear opening curves as it ascends, ultimately expanding to reveal the garden beyond. The design embodies a dynamic interplay between apparent symmetry and floor variations, between the austerity of the exterior and interior materiality.

In this project, Siza intended to clearly differentiate the spaces without sacrificing its flexibility and adaptability to the user's needs. The programme is spread across three floors, with the entrance level consisting of the kitchen, bathroom, dining room, and living room, being the social areas directly connected to the rear garden. The second floor accommodates four bedrooms positioned in the corners of the house, with bathrooms centrally located in relation to the staircase and a terrace generated atop the kitchen extension volume. Despite being smaller, the third floor boasts significant spatial qualities due to the shape of the back wall, ample natural light, and its connection with the larger terrace facing the street.

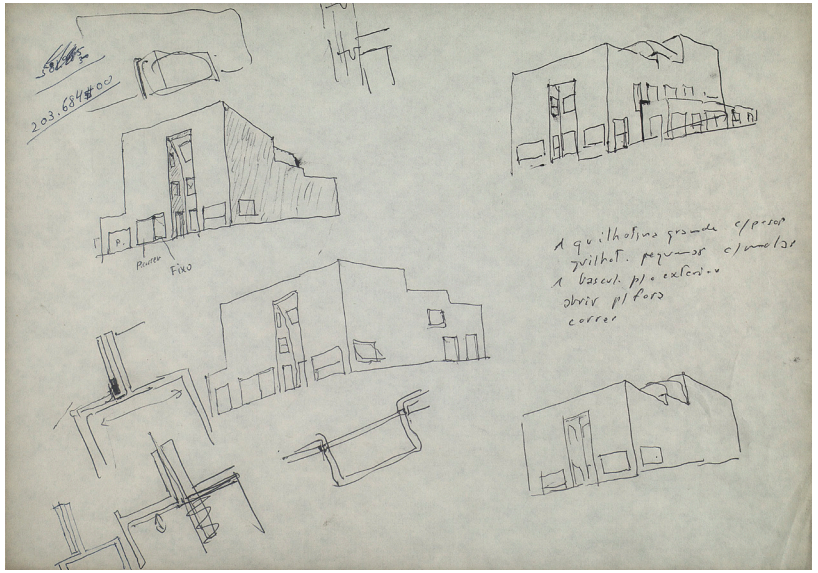
Central to the house's organization is a staircase, which not only facilitates visual relationships between all floors but also effectively addresses the challenge of integrating service areas with the same prominence as social spaces. The pathway is illuminated by a series of windows that fill the interior with natural light, casting reflections on the staircase's marble and wood. Various architectural interventions, such as the vault in the study or the main entrance and garden, introduce zenithal light and enhance the character of each different area. The interplay of light, achieved through volumetric additions and subtractions, guides the journey from the exterior to the study on the top floor, creating visual continuity throughout all spaces in the house.

The austerity of the exterior contrasts with the elaborate detailing and material quality in the interior (exotic wood, marble, mirrors). Wood on the floor dialogues with the paintings' light colours and the staicase's marble.

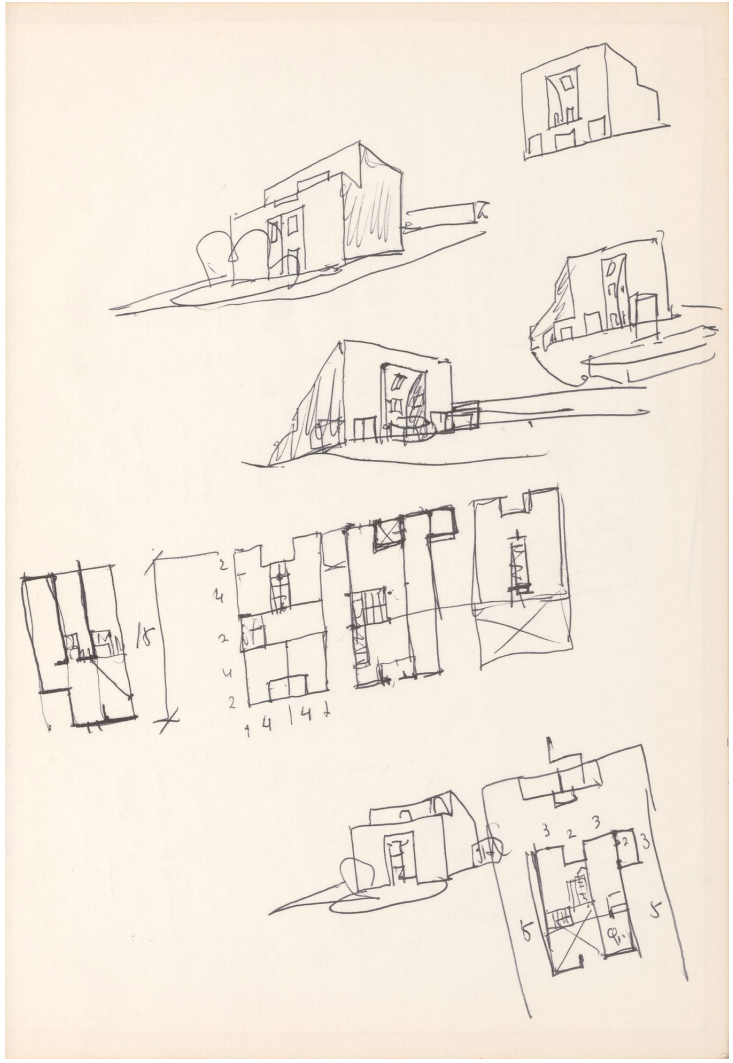
The Avelino Duarte House stands out as one of Siza's most iconic works from the 1980s, garnering extensive publication and scholarly attention. Architects from around the world, spanning from the Americas to Japan, have visited this house. Notably, the Basque architect Anatxu Zabalbeascoa featured it in her work "As Casas do Século" (The Houses of the Century).

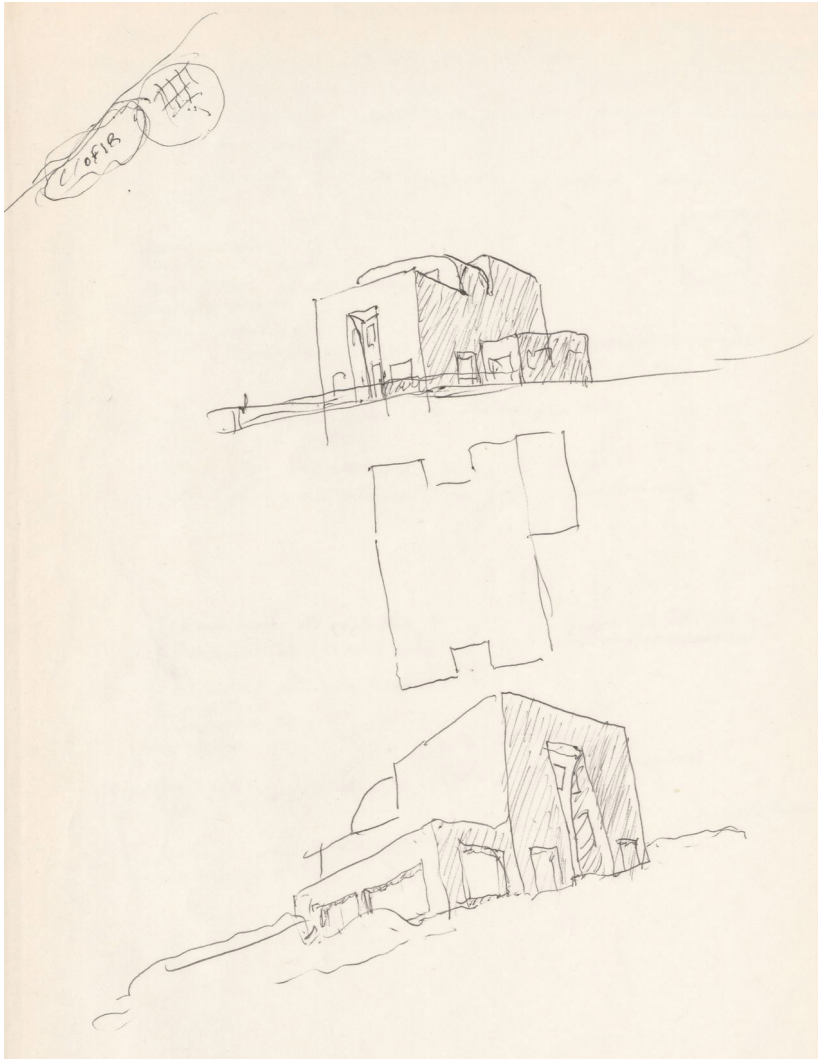
The Avelino Duarte House stands in a good state of conservation, with all its elements and systems carefully maintained to a high standard. During the commemoration of its 20th anniversary in 2003 (the International Year of Architecture), Siza had the chance to inspect the property and verify its well-preserved state, including the retention of all original features, including the colour of the window frames.

The Avelino Duarte House stands as one of Álvaro Siza's most influential works, gaining recognition even during its construction phase when it was featured in "Quaderns d'arquitectura i urbanisme" (1983). The following year, it was showcased in the "Cairo International Exhibition Catalogue" (1984), and in 1985, it was published in Casabella, a highly regarded international architecture magazine

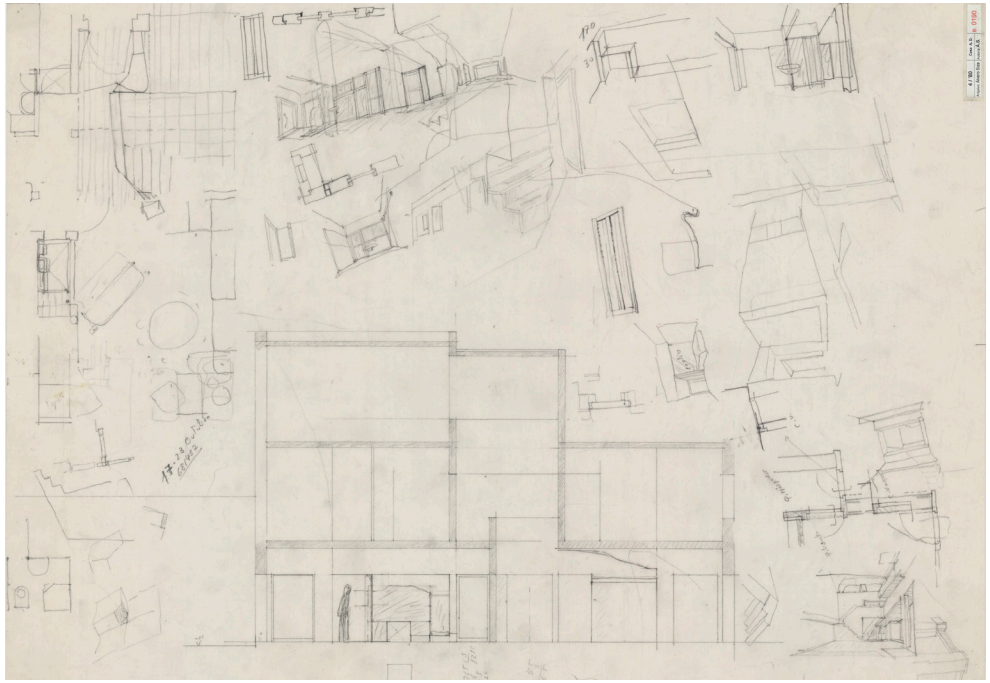


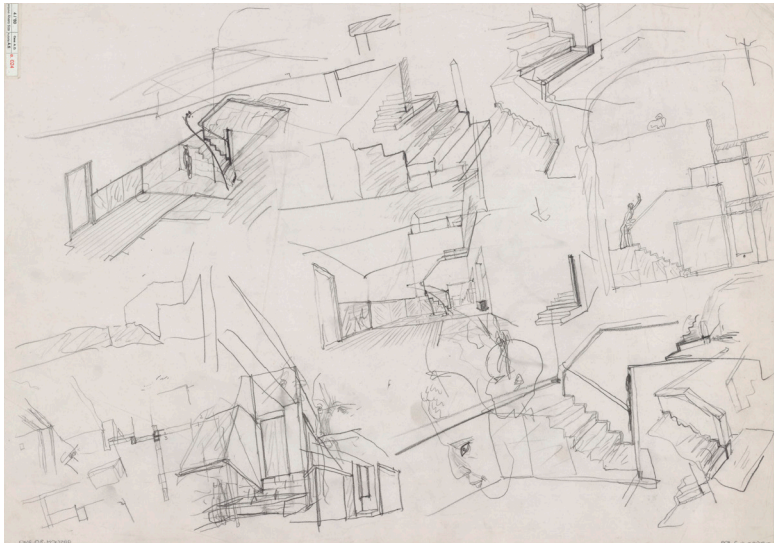
02. Studies for the house.



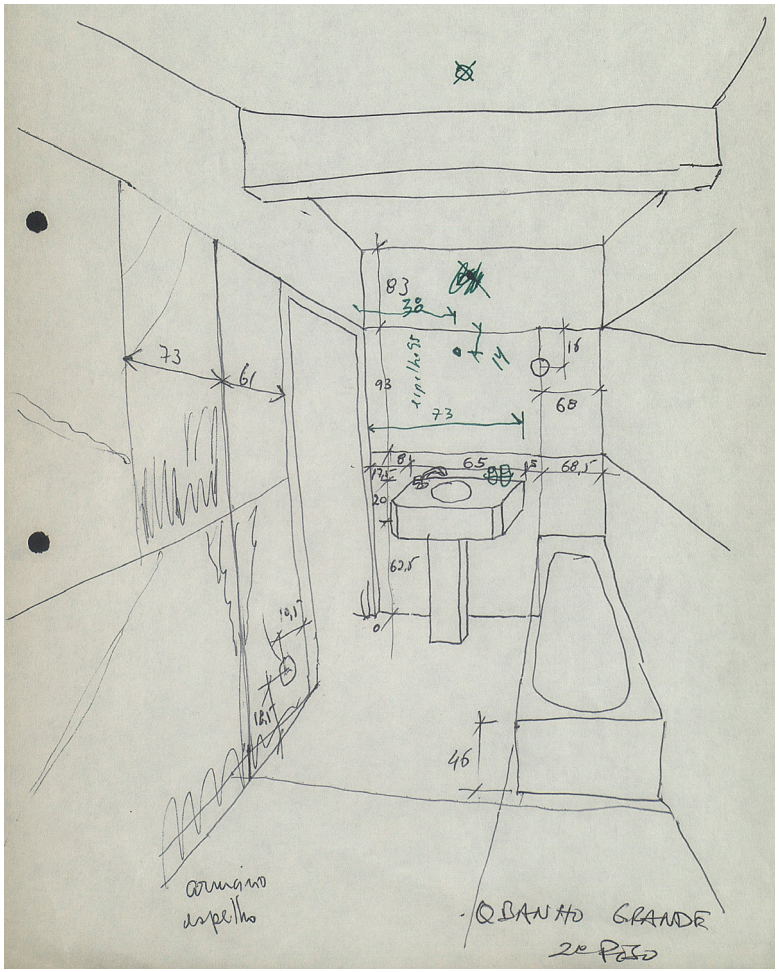


03. 04. Studies for the house: perspectives and plans.

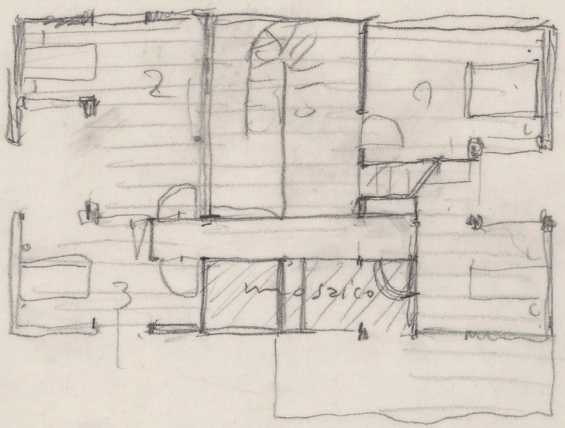


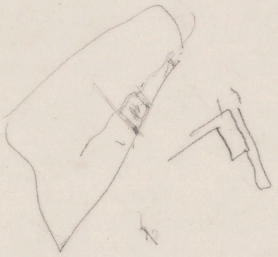


05. 06. Section and interior perspectives.



07. Study for the bathroom.





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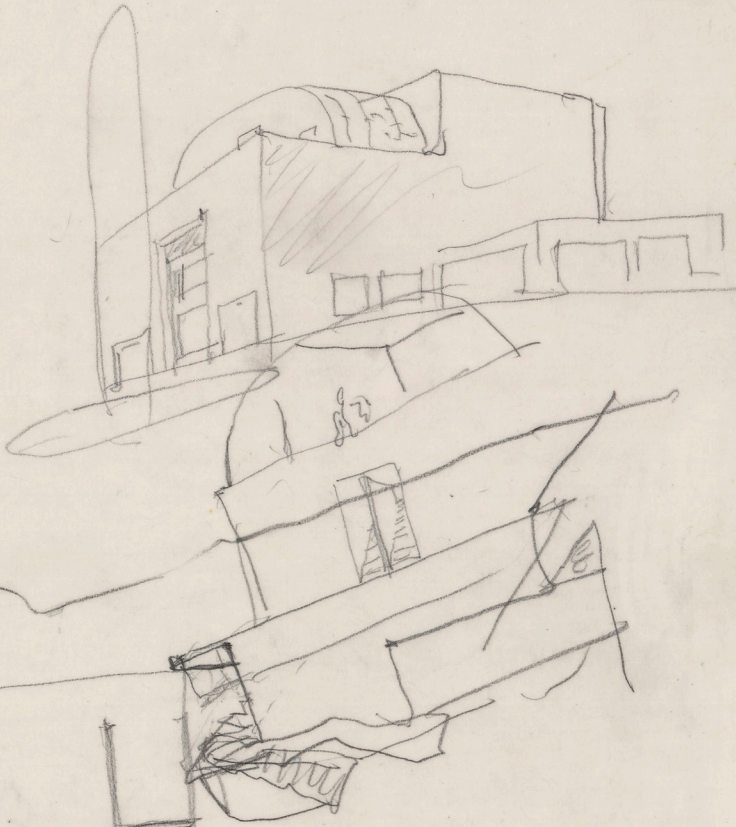
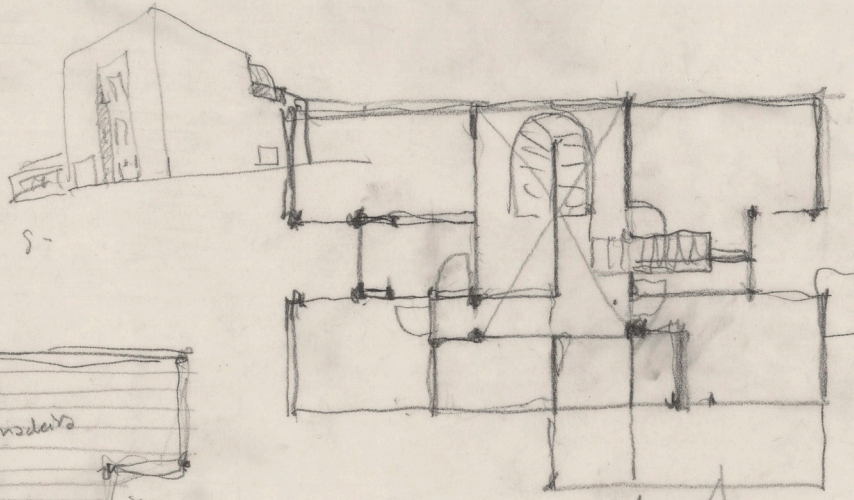
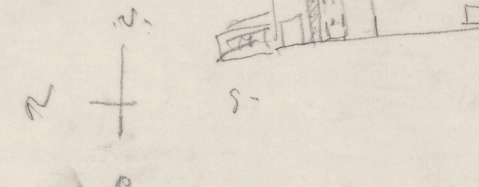
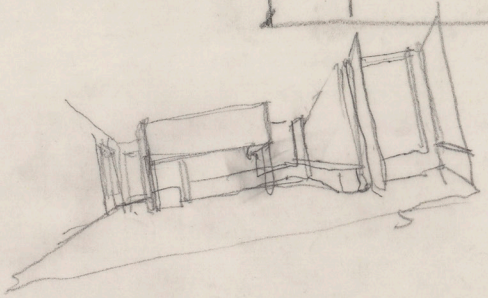
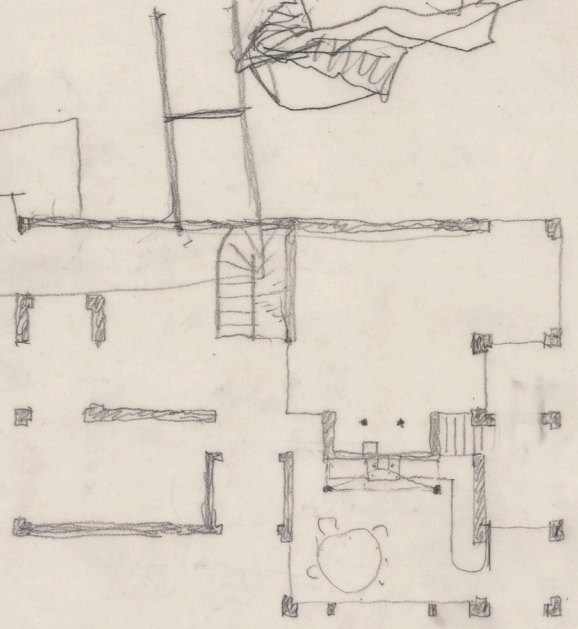
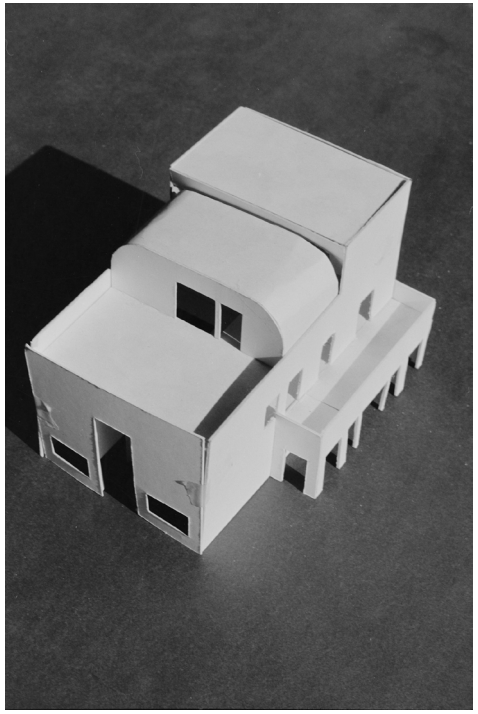


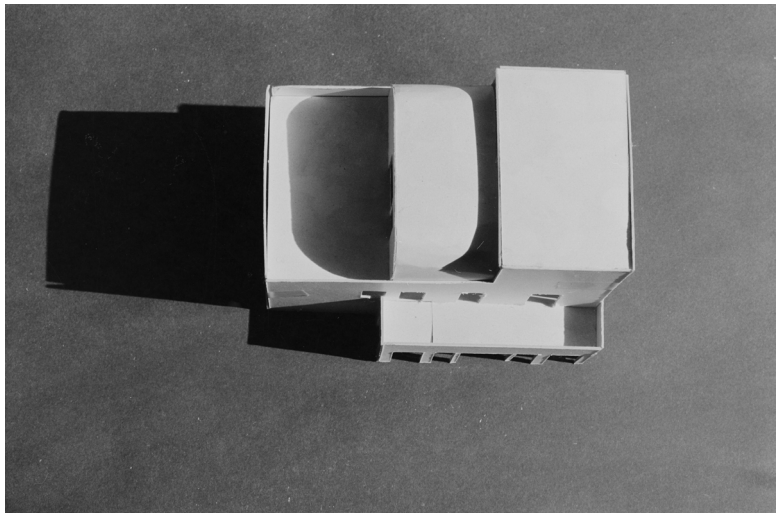


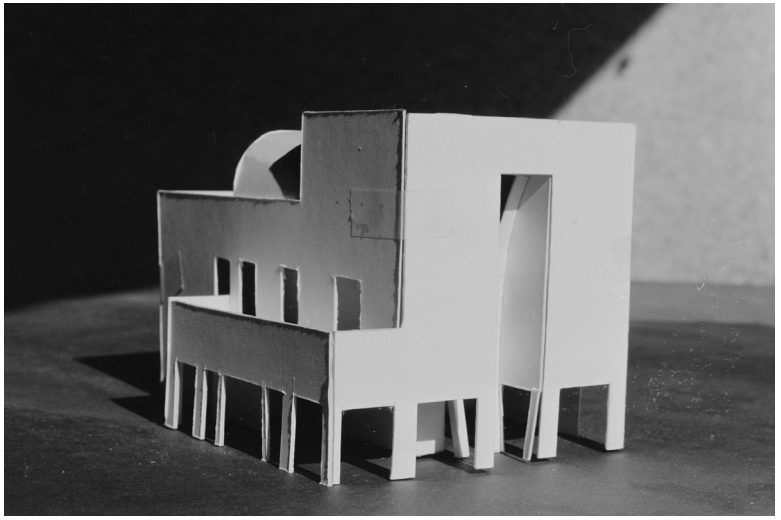


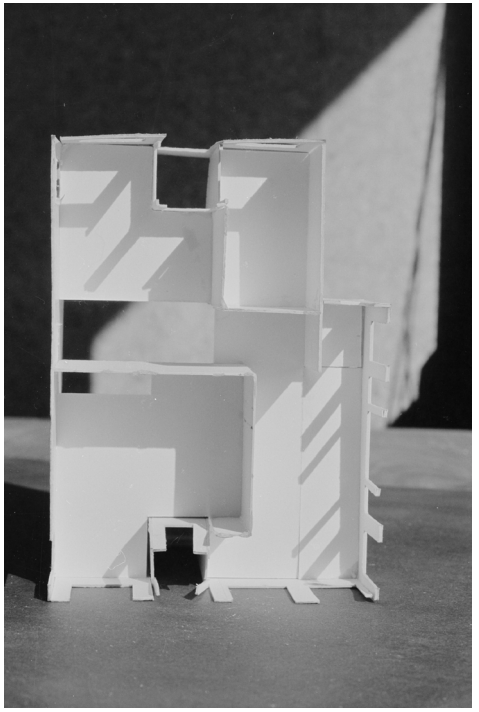








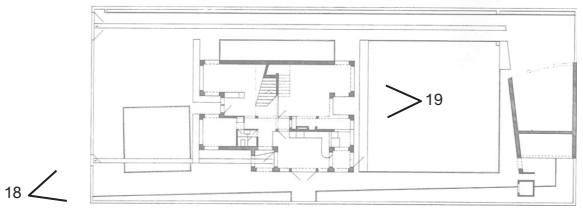




09. 10. 11. 12. Views of the model.

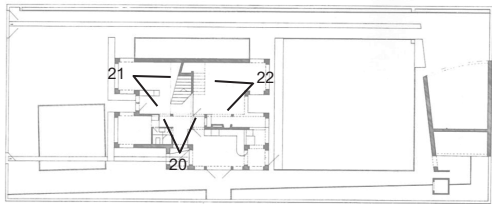
13. 14. 15. 16. Views of the model.

17. Context of the house in the surroundings of Ovar.

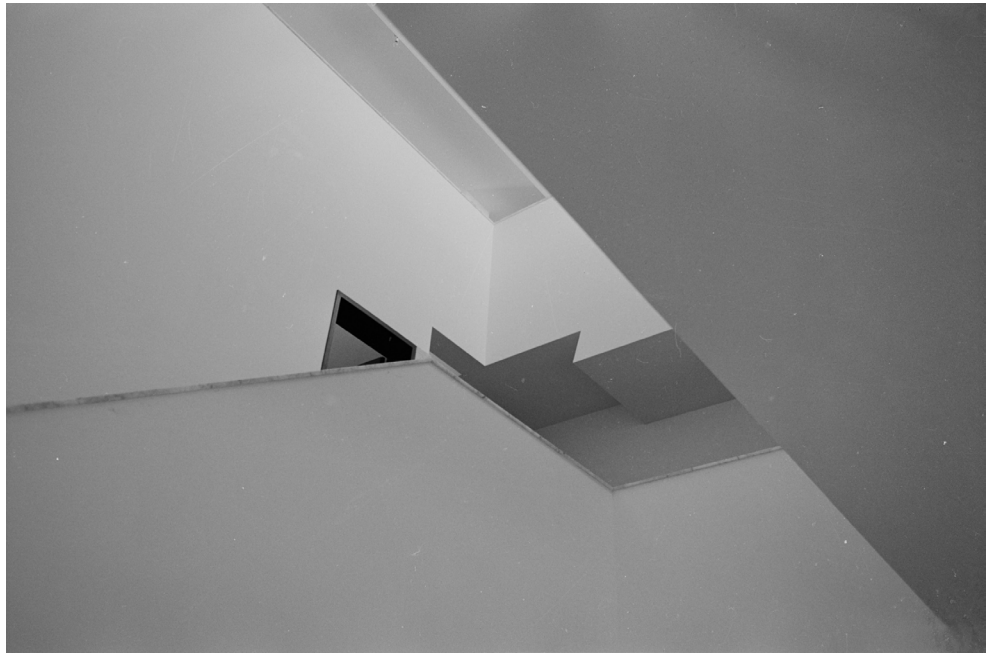


18. Façade of the house facing Régua avenue.

19. Openings in the rear facade.



20. 21. 22. Interior view of the living room and staircase.

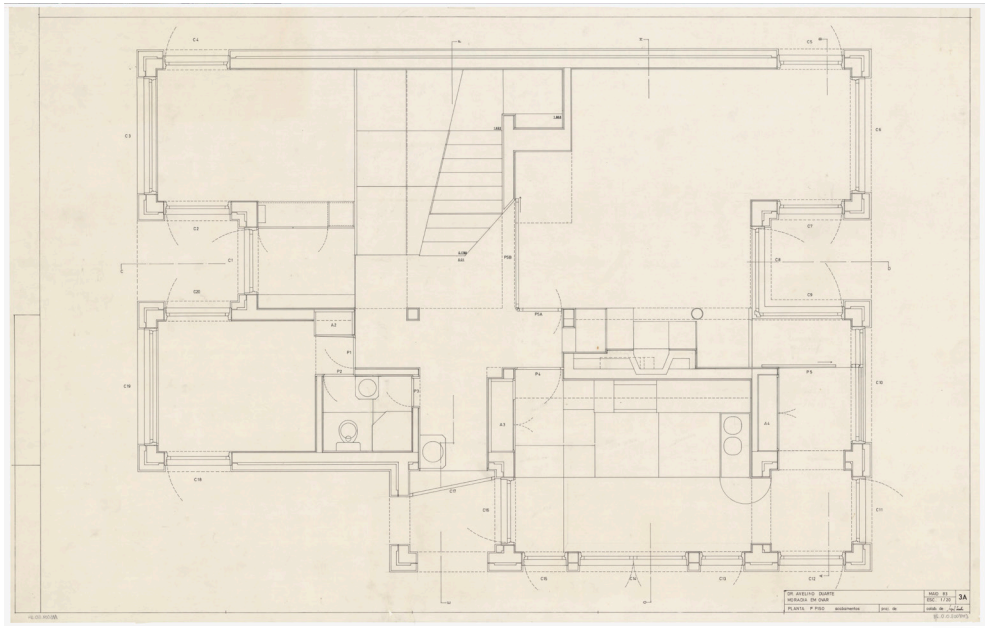


23. 24. 25. 26. Interior view of the void space.

27. Interior view of the top floor.

28. Bathroom.

29. 30. Staircase with marble cladding.



31. Plan of the ground floor, 1983.

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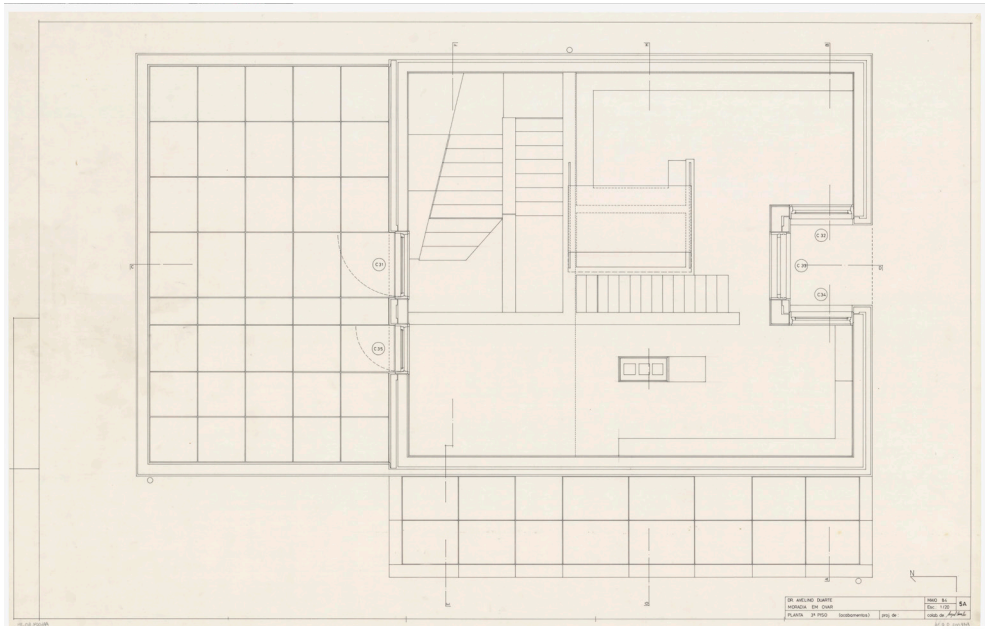

33. Plan of the second floor, 1984.

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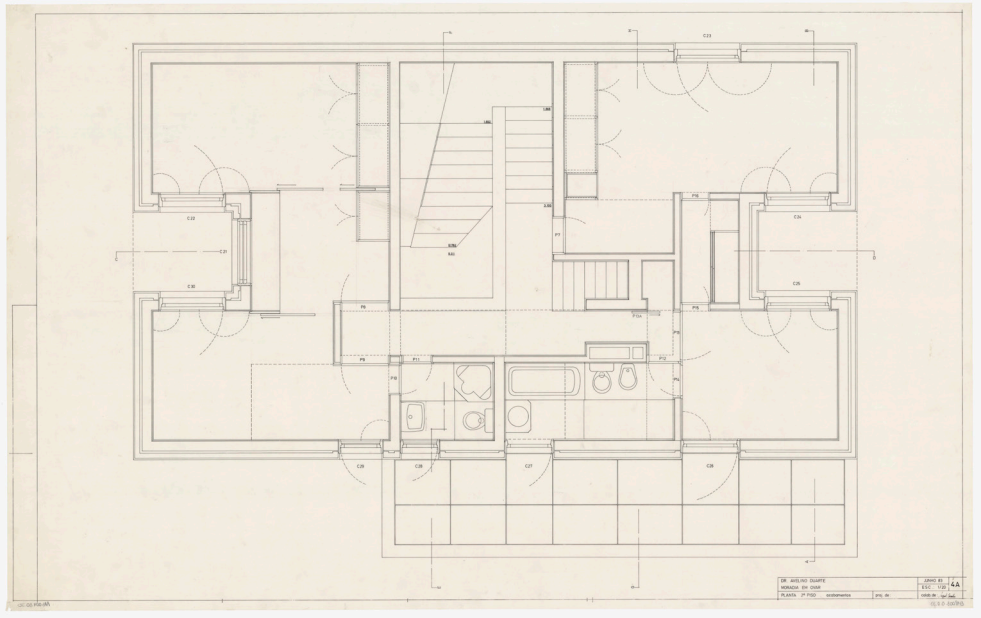

32. Plan of the first floor, 1983.

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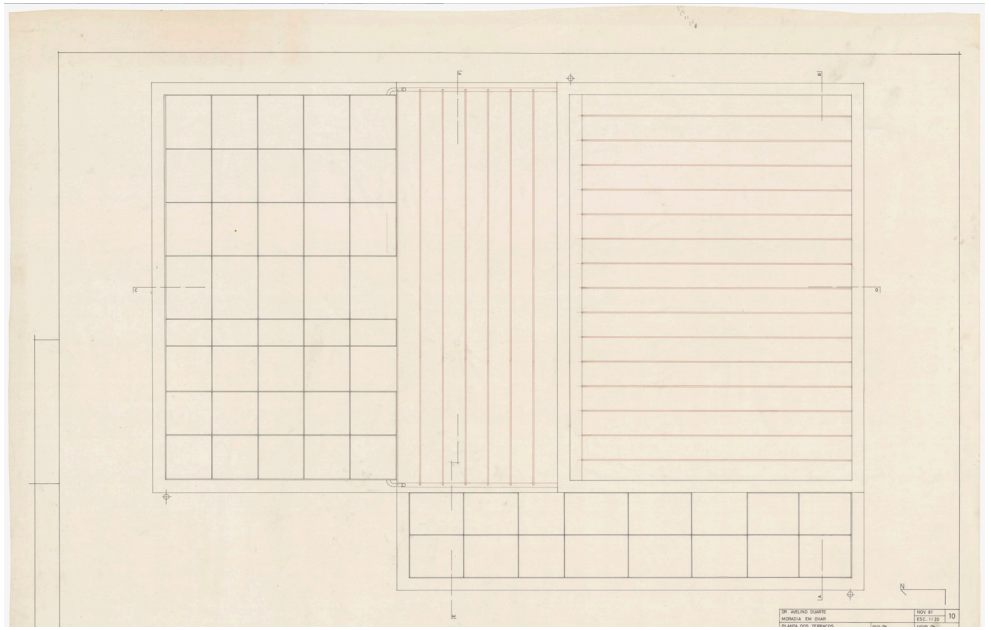

34. Plan of the roof, 1981.

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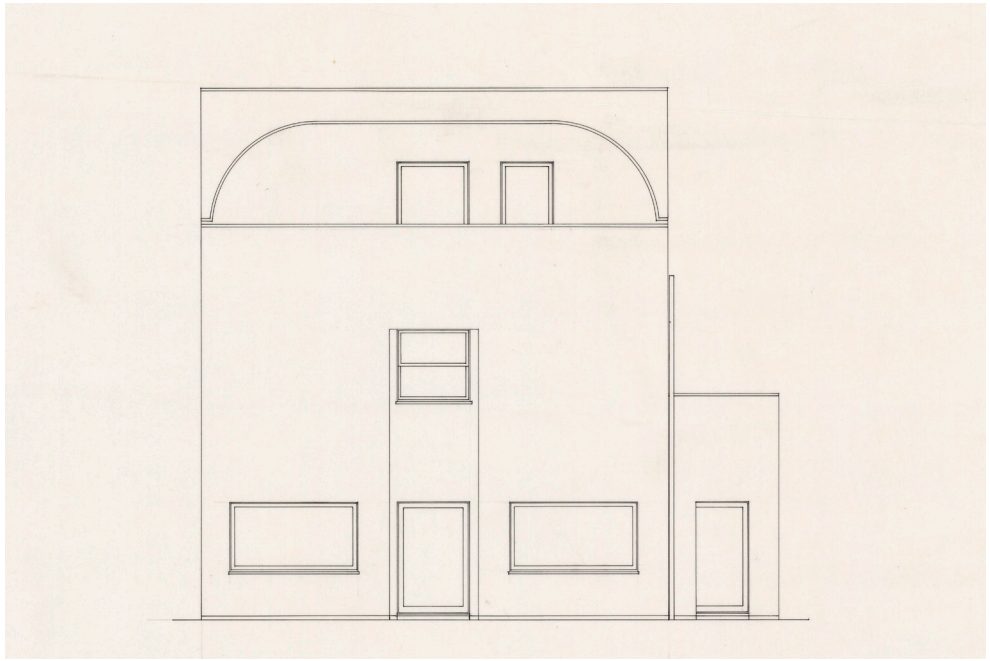

35. North façade, 1982.

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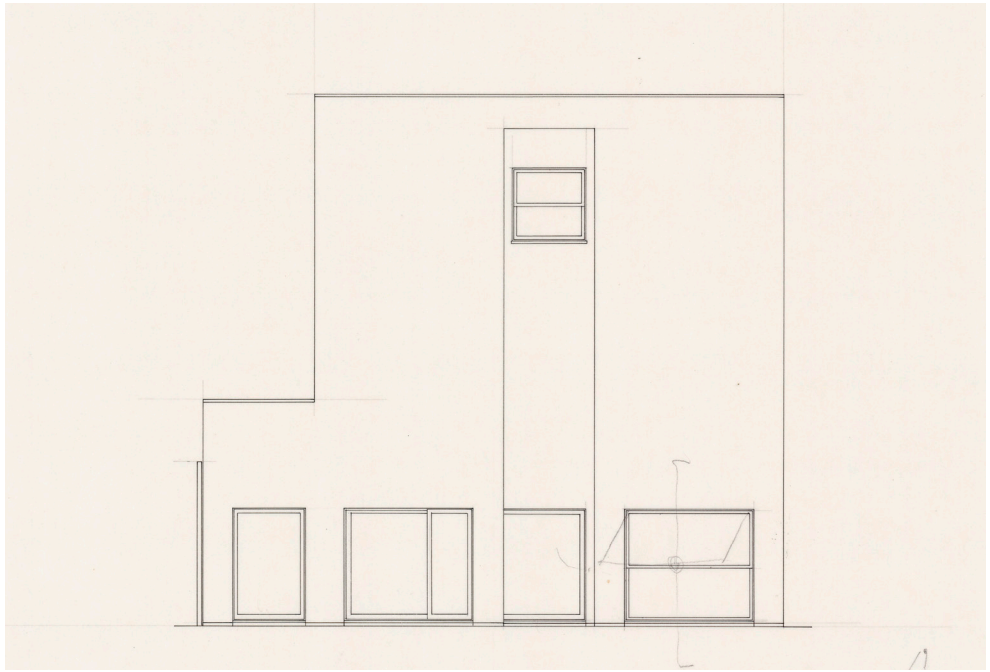

36. South façade, 1982.

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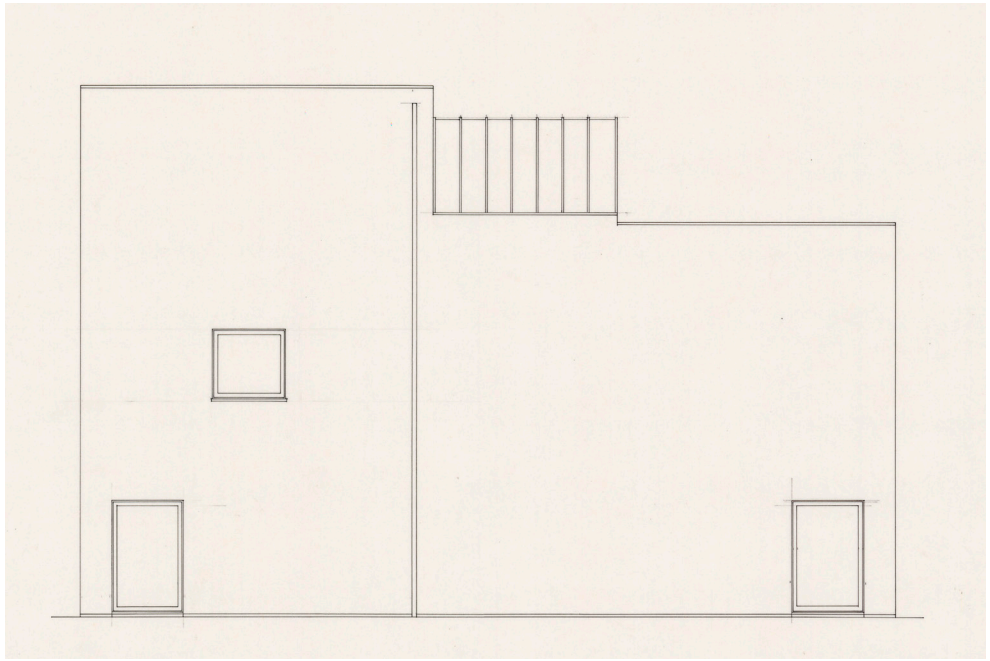

37. Eastern façade, 1982.

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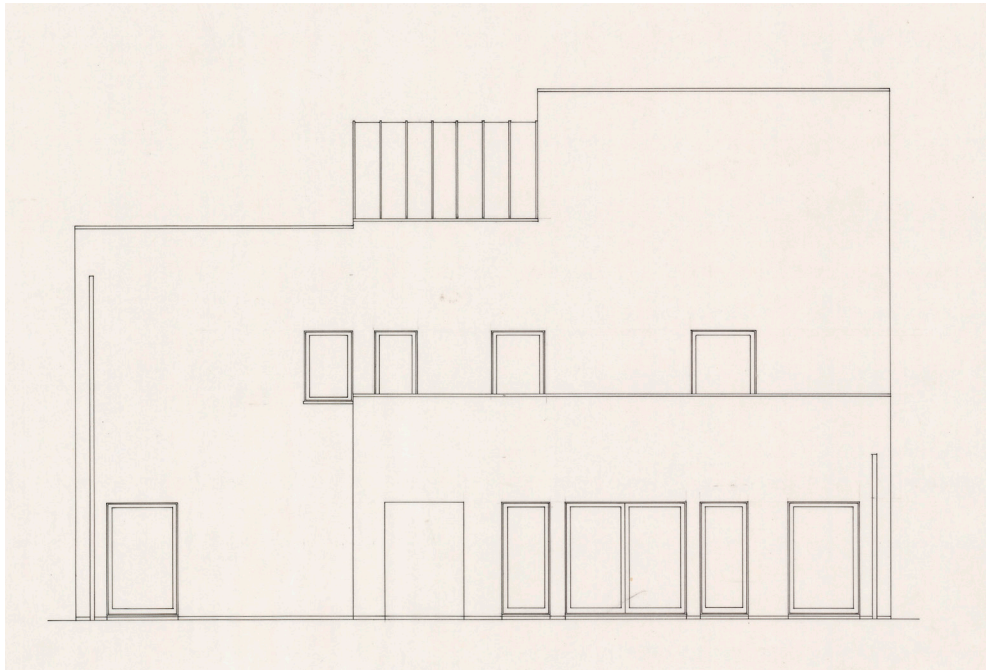

38. Western façade, 1982.

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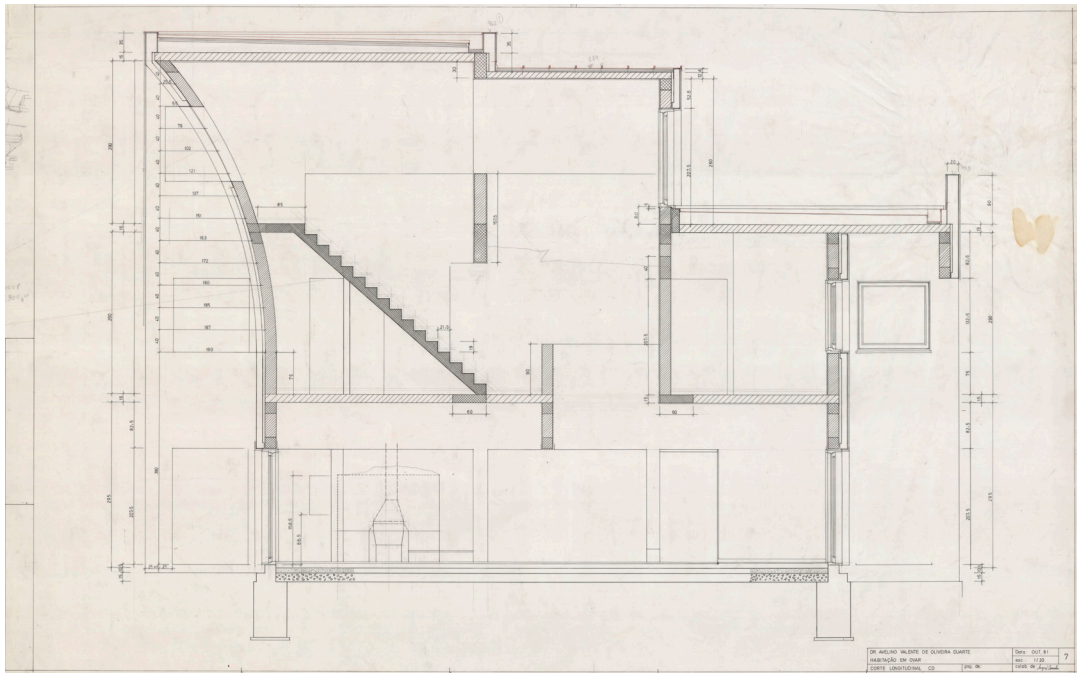
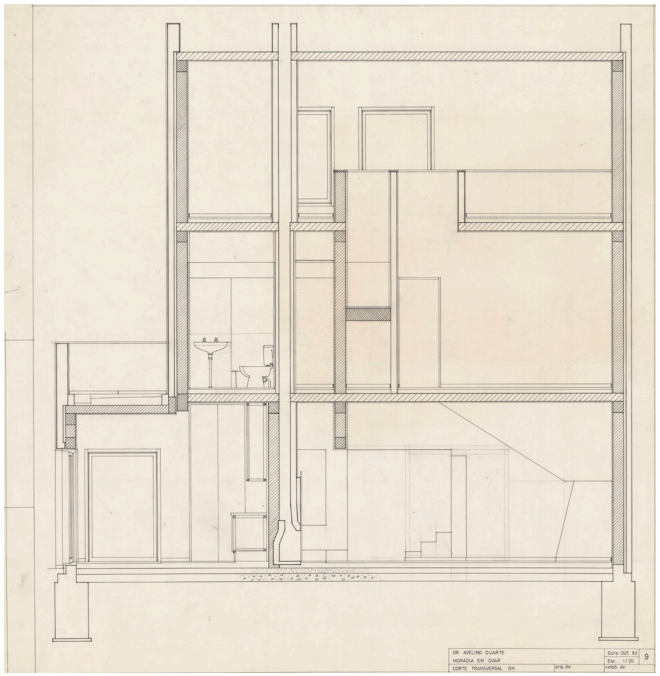
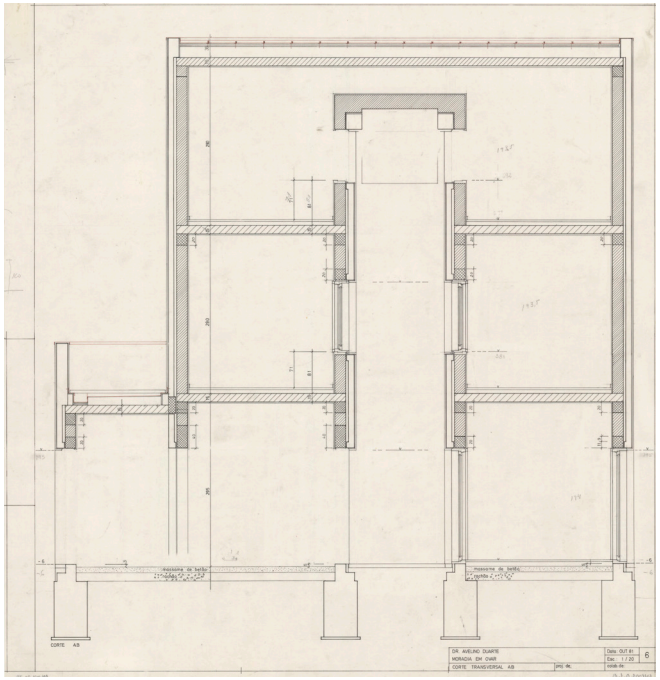
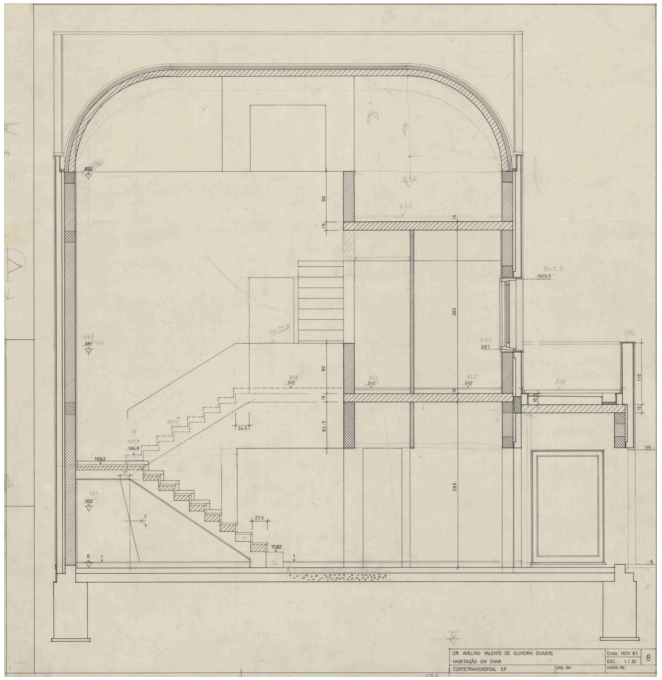




39. 40. Sections, 1981 and 1982.





41. 42. Sections, 1981.

CONSTRUCTION

STRUCTURAL SYSTEM

In the Design Report, Siza emphasizes that "the materials and construction processes used correspond to factors of economy and quality" (Siza, 1981).

The vertical structure consists of load-bearing exterior walls made of concrete block masonry, 20cm thick, supported by cyclopean concrete foundations, 1.00 m high. All surfaces of the foundations are coated with 'Flintkote' bituminous paint. The continuous structure of the outer walls and some interior walls is complemented by four reinforced concrete columns, with a section of 20 x 20cm, located along the house's central axis.

The horizontal structure is composed of reinforced concrete beams along the perimeter, which consolidate the masonry walls and ensure the connection with the slabs, interior reinforced concrete beams supporting the slabs, and lintel beams over the façade openings.

According to the structural project, with the exception of cantilevers and stair flights, all the slabs consist of pre-stressed concrete joists lightened with brick" (Duarte, 1981: 1). Therefore, all floor slabs have a constant a thickness of 15cm, except for the vaulted roof slab, which has a thickness of 12cm.

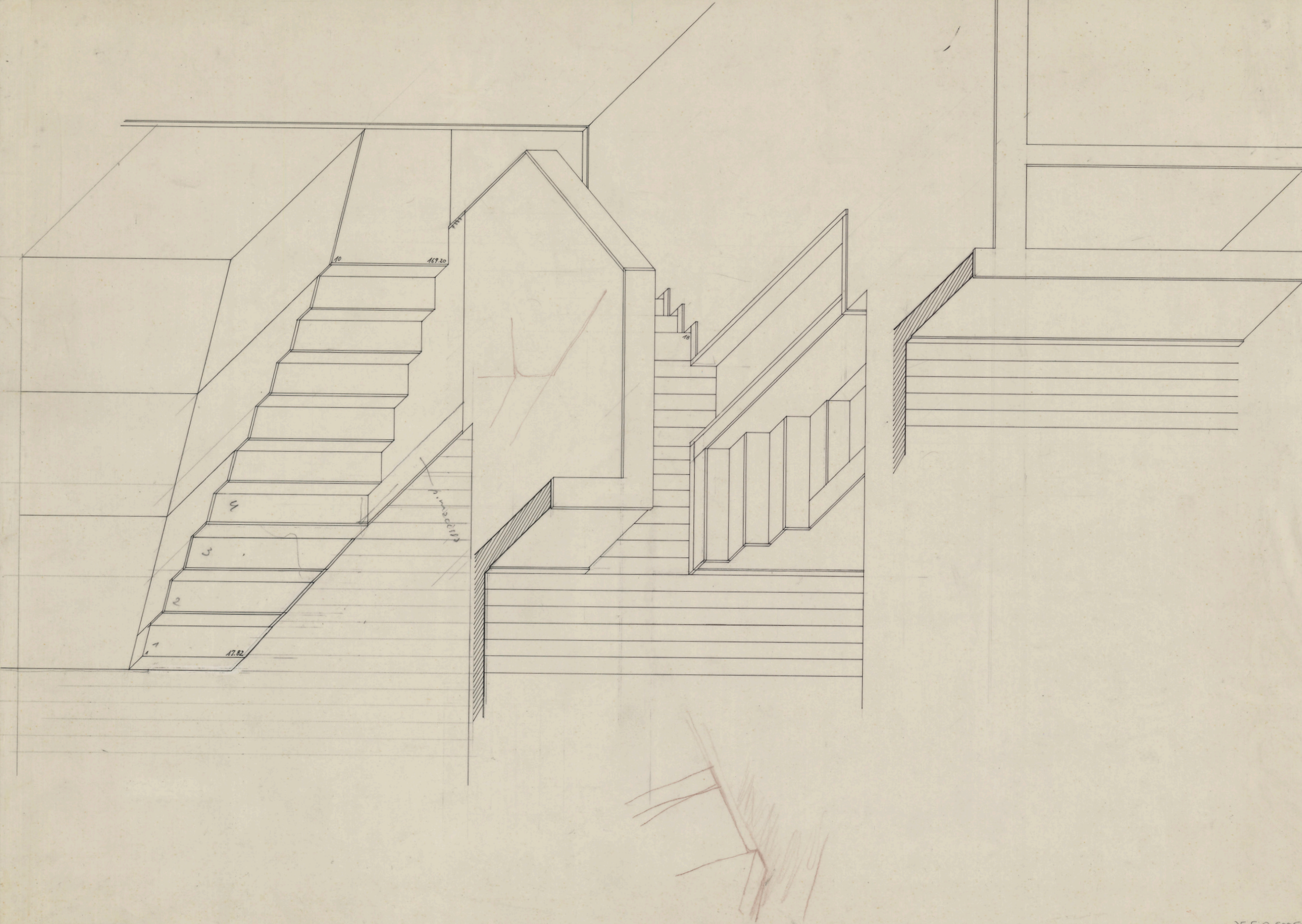
WALLS

The exterior walls of the Avelino Duarte House are double-layered, consisting of a load-bearing layer of concrete blocks on the interior and an outer layer of hollow brick, 11cm thick, separated by an air gap 4cm wide, filled with rockwool thermal insulation .

On the exterior, the walls are coated with 1cm of water-repellent plaster and finished with 1.5cm of finely painted sanded plaster. At the junction with the floor, the exterior walls feature a 7cm high trim strip in blue stoneware.

On the interior, the walls are finished with 1.5cm of plaster, either with a smooth, stuccoed, and painted finish or with marble cladding.

The internal partition walls, which also have a structural function, are built with 20cm thick 'Mecan' blocks; the remaining walls are made of perforated ceramic bricks, 11cm thick. Their finishes are similar to those of the previously described walls, either with plaster and painted or with marble cladding.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18

FLOORS

The flooring on the first floor consists of a layer of crushed stone 15cm thick, applied over properly compacted ground, consolidated by a 10cm layer of water-resistant concrete screed, and levelled with a screed of varying thicknesses, depending on the type of finish. The finishes for this floor include a 2cm thick wooden flooring nailed to 3cm thick wooden battens, and 3cm thick marble in the bathrooms and kitchen.

The slabs of the upper floors are similarly levelled with screed of variable thicknesses, depending on the type of finish, identical to those specified for the first floor.

The stairs are also levelled and covered with marble.

The Avelino Duarte House features ceilings executed directly under the floor slabs, consisting of a screeded surface with a plastered and painted finish, and suspended ceilings constructed with wooden battens, covered with 'Estafe' plasterboard, finished with plaster and paint.

The exterior pavements are covered with curbs and stone cladding and fine gravel. Both finishes are laid over a bed of aggregate, with the stone cladding requiring a layer of concrete screed for its application.

ROOFS

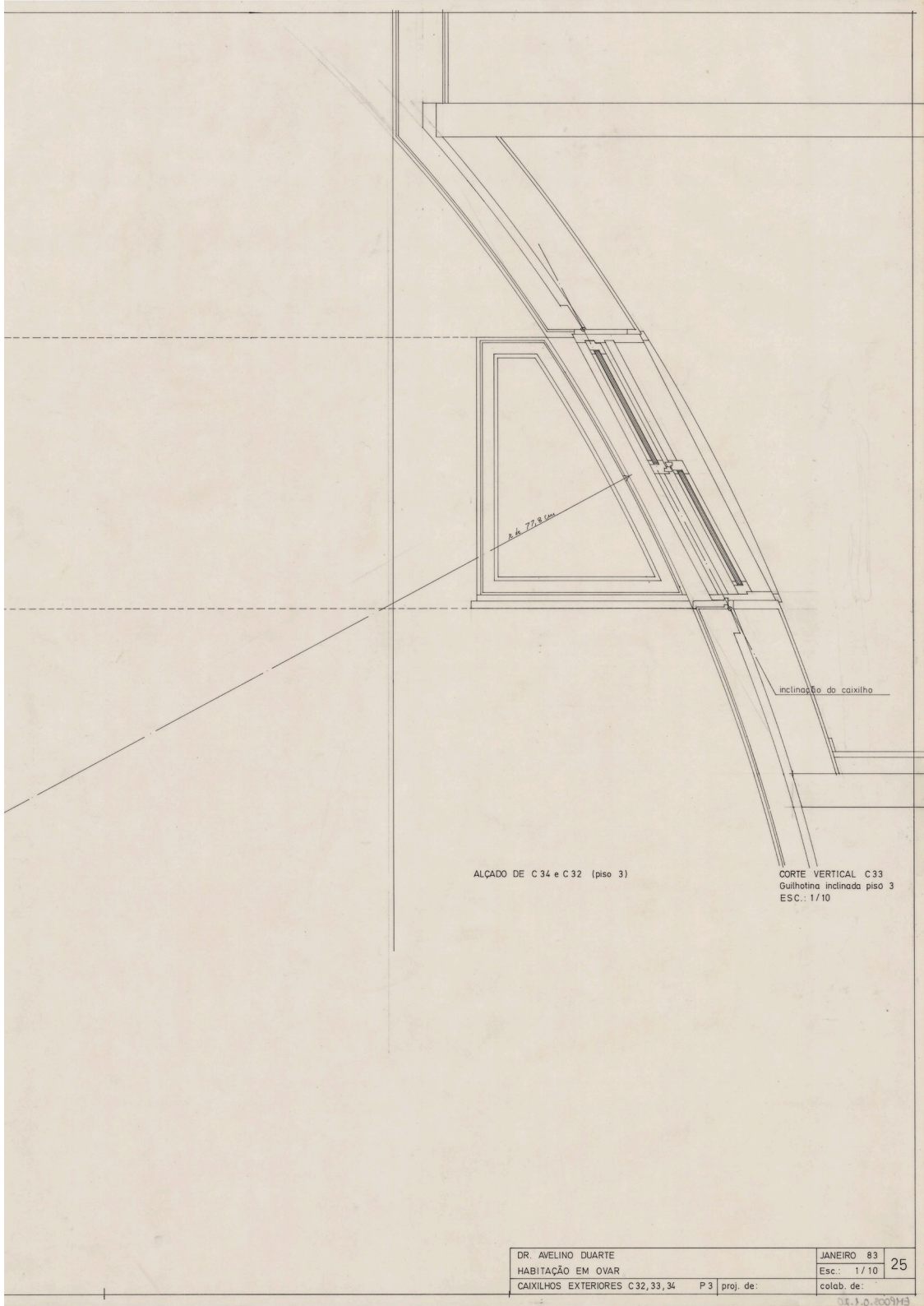
The Avelino Duarte House features both accessible and non-accessible flat roofs, each with different finishes. The non-accessible roofs, corresponding to the third floor, include one with an arched shape. These roofs are covered with zinc sheeting applied over thermal insulation made of cork with a thickness of 4cm and a sloping layer of cellular concrete. The gutters and all the detailing of these roofs are also made from zinc sheeting.

The accessible roofs correspond to the terraces on the second and first floors, the latter being above the service volume. The floors of these terraces are finished with tiling with open joints for rainwater drainage. Beneath these horizontal and permeable floors, the roofs have a sloping layer of cellular concrete and thermal insulation made of cork and are all waterproofed with bituminous membranes, including gutters.

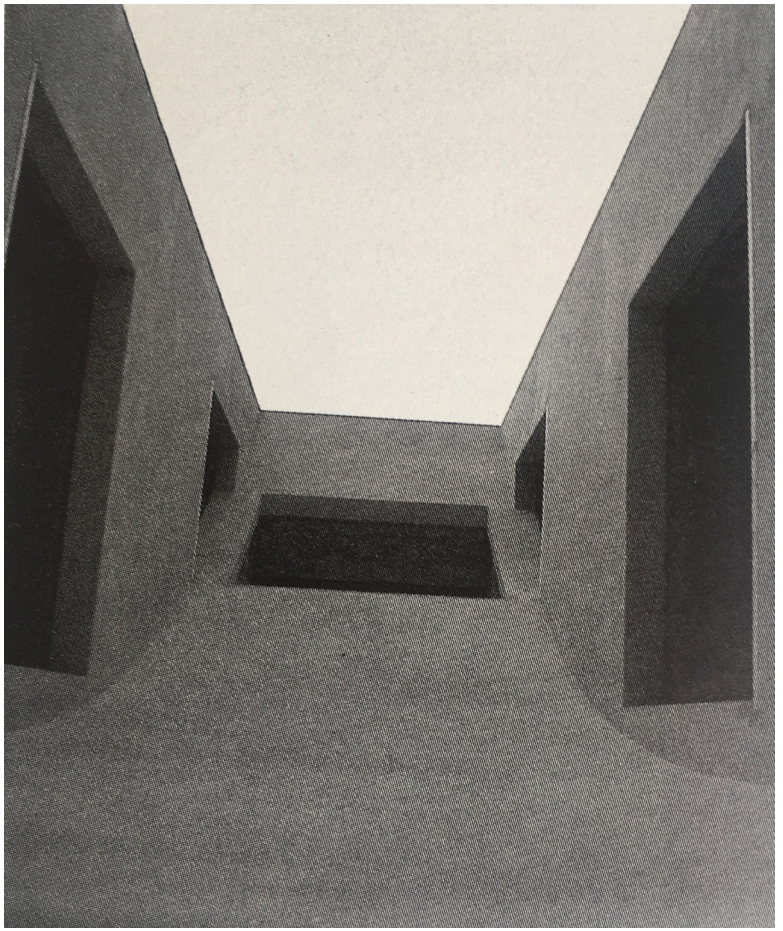
OPENINGS

All the exterior window frames have double glazing and operate as either casement or sash windows. The frames are made of wood, painted light grey, with yellow fittings. On the interior, the window linings are finished in varnished wood, matching the interior window frames.

The interior doors are solid wood, with matching solid wood frames and linings, all finished with varnish.



45. Wooden scaffolding used for external plastering.

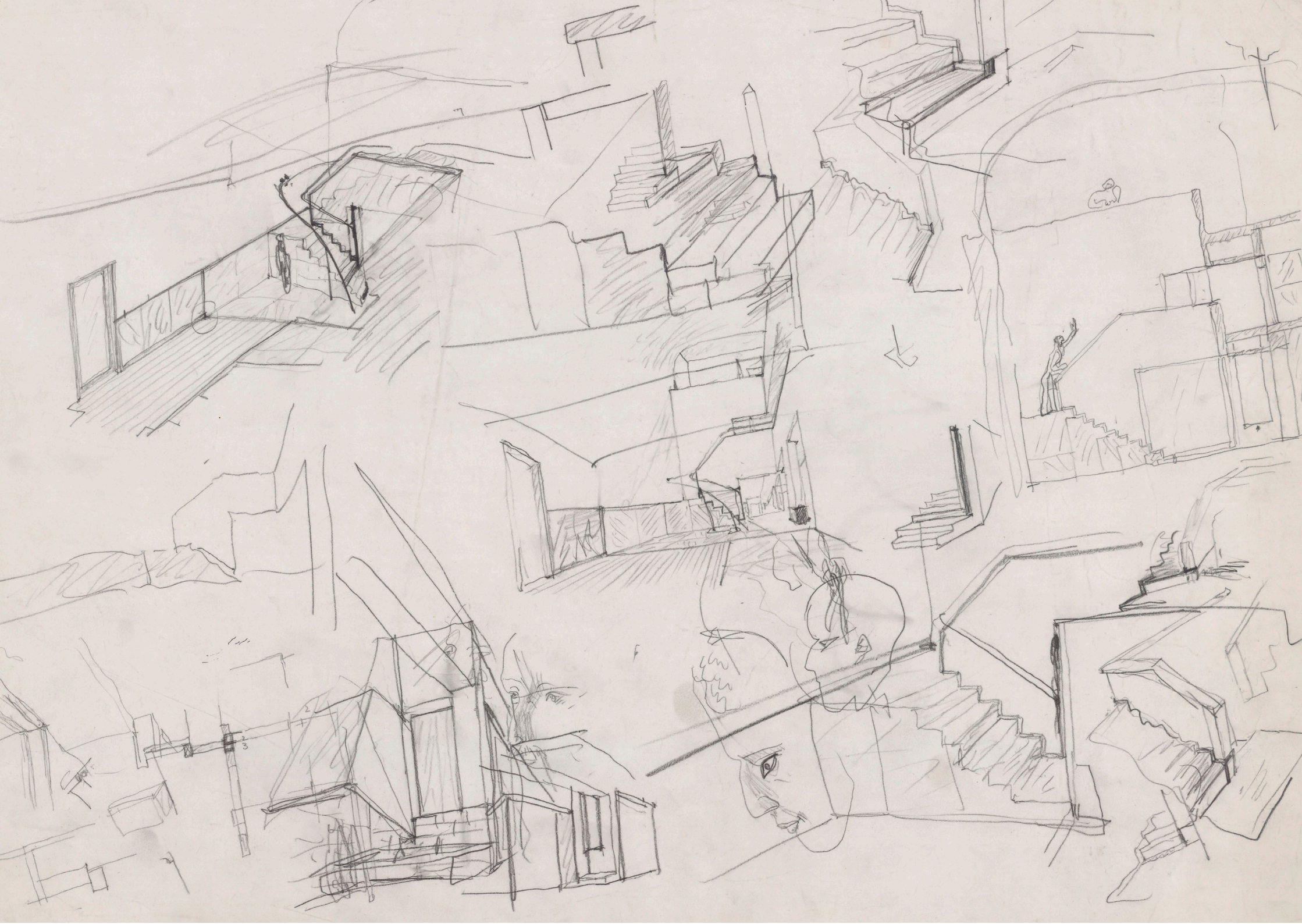


46. Rear façade during construction, n/d.

47. 48. Rear façade during the finishing phase of construction, n/d.

49. Siza, at the centre, observes the work during the finishing phase of construction, n/d.

50. Exterior pavements for garden circulation.



DESIGN PRINCIPLES

INTEGRATION IN THE PLACE

Response to the (...) nature of the place

The roof is flat and vaulted, in response to the windy nature of the place. [SIZA, 1981]

QUALITY OF THE SPACES

Economy and quality

The materials and construction processes used correspond to factors of economy and quality. [SIZA, 1981]

AUTONOMY OF THE BUILDING

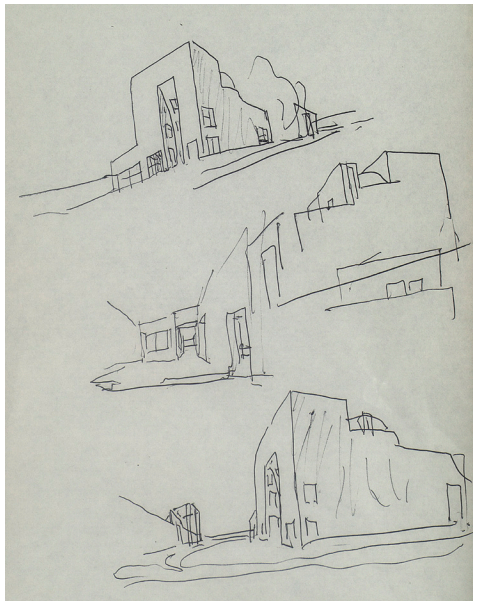
It's a house that was built to be isolated

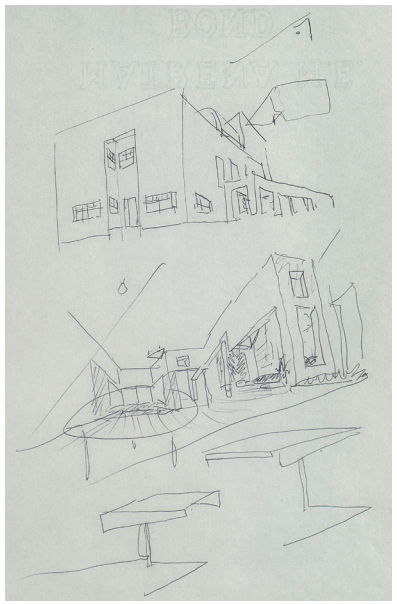
At the time the house was built, there were no others in the area. They were all dispersed and, therefore, there were no references, as happens in a historic centre, for example. I had to look for other references, in this case Nordic ones. It's a house that was built to be isolated and to remain so when neighbours appeared. [SIZA, 2003]

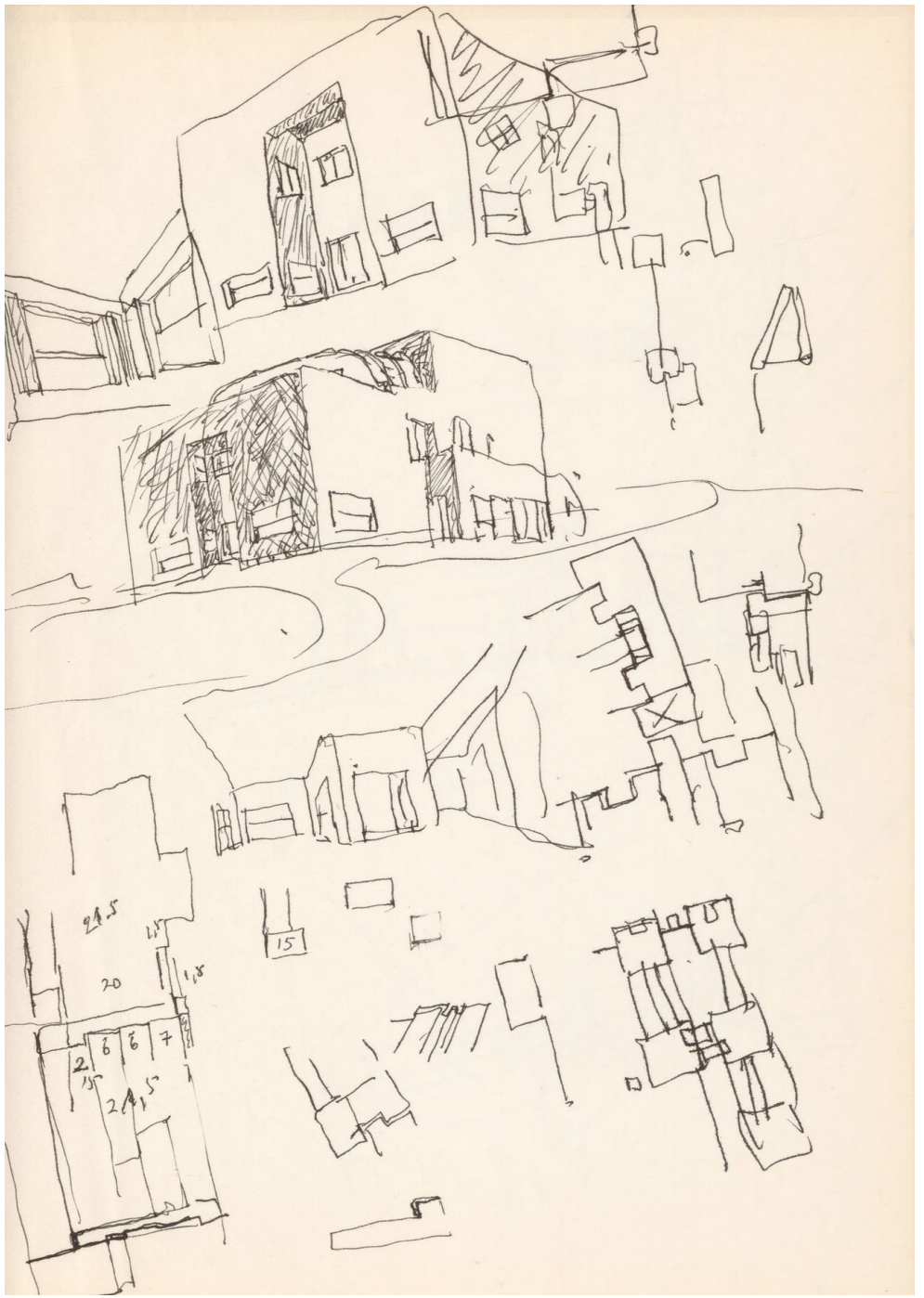
FLEXIBILITY OF SPACES

There is great duplicity here

There is great duplicity here. The rooms inspire privacy, but at the same time there are connections between them, which gives the house the illusion of a greater dimension. [SIZA, 2003]







52. 53. 54. Studies for the house: exterior and interior perspectives, plans and details.

ATTRIBUTES

ARCHITECTURE RESPONSIVE TO A PHYSICAL, SOCIAL AND HISTORICAL CONTEXT

Despite being situated in a context characterized by a lack of significant references, the house designed by Siza is differentiated from its neighbours by its geometry and the absence of roof tiles.

On the other hand, the volumetry, the setback in relation to the street and the separation of the garage from the house follow the pre-existing typology of the context in which it is implanted, reflecting the need to adapt the architect's response to the demands of its context.

INTEGRATION OF INTERNATIONAL AND LOCAL REFERENCES

In the early 1980s, with architecture taking multiple paths, Siza resorts on his pre-modern and modern inheritances, including names such as Adolf Loos, Josef Hoffmann, Bruno Taut, Hugo Häring, Le Corbusier and Alvar Aalto. Crossing them with multiple references, he calls upon local and international history, combining it with popular or erudite mentions.

As stated by the author, the house in Ovar is a reflection on a discovery made, after traveling to Vienna, when Siza had visited some works by Adolf Loos.

SCULPTURAL VOLUMETRIC EXPRESSION

The austerity of the exterior contrasts with the elaborate decoration and implementation of materials in the interior. This house demonstrates the architect's concern for achieving a clear differentiation of the spaces without sacrificing its flexibility and adaptability to the users' needs.

ORIENTED SPATIAL EXPERIENCES

The effect of light through volumetric additions and subtractions punctuates the path from the exterior to the studio on the top floor which is visually related to all the spaces of the house. This project shows the interplay between the apparent symmetry and the variations of each floor, between the austerity of the exterior and the interior materiality.

TOTAL WORK OF ART INCLUDING DETAILS, FURNITURE AND ART WORKS

The design of furniture and the details in the stairs or in the transition of materials contribute to the harmonious environment of the building. Wood on the floor creates a contrasting relationship with the light colors of the paintings and the marble of the staircase.

AUTHENTICITY AND INTEGRITY

AUTHENTICITY

Avelino Duarte house maintains the authenticity of its form and design, with no major interventions since its construction.

Avelino Duarte house maintains the fabric of the original materials.

Avelino Duarte house fully maintains its original use and function.

The urban setting of Avelino Duarte house has been developed in accordance with the urban plan defined for the site, consolidating its character as a low-density residential area, so it does not face significant development pressures.

The building maintains the original formal relationship with the urban plan defined for the site.

INTEGRITY

Avelino Duarte house hasn't received any change since its construction and doesn't suffer from adverse effects of development or neglect. It fulfils the conditions of integrity and has all elements necessary to express Outstanding Universal Value.

The area of building is of an adequate scope for presenting the attributes and the cultural significance of the whole.

STATE OF CONSERVATION

The Avelino Duarte House is in a very good state of conservation. It has undergone systematic conservation and maintenace works, ensuring the best stability and safety conditions for its users. Remarkably, no structural repairs were necessary, attesting to the high-quality of the original construction.

Given its landscape setting, the natural degradation and weathering of the Avelino Duarte House's fabric and material components are normal, requiring localized maintenance of its elements, including roof repairs and window restoration.

All interventions carried out by the owners respected the integrity and authenticity of the original building.

57. Main façade.

58. Garden and annexes.

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) 360º virtual tours, and iii) BIM didactic models.

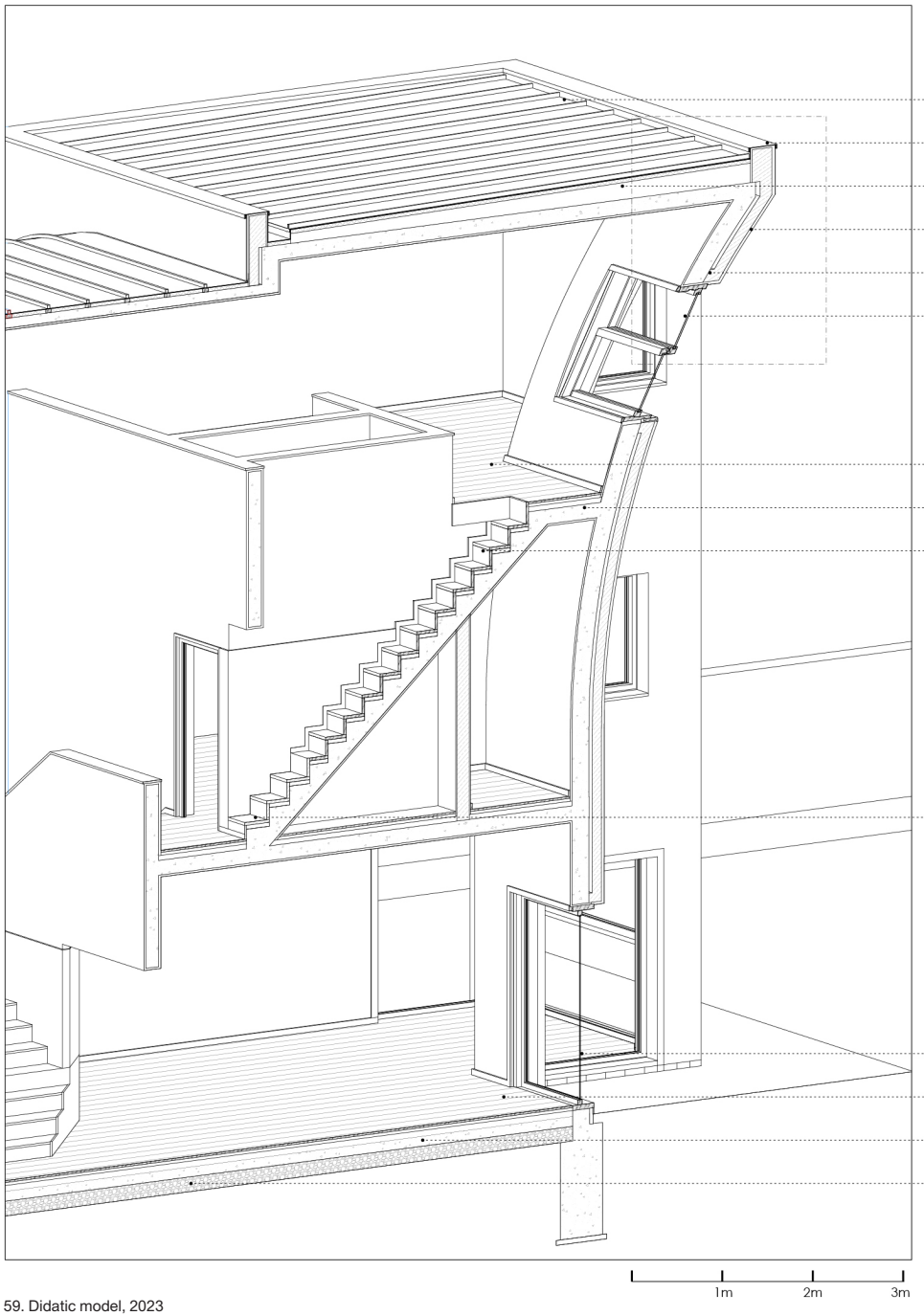
The development process involves is supported on previpus analysis of archival and bibliographc documentation and field work observation. This integrated metholodology provides holistic and in-depht analysis of the architectural works, expressing their design principles and OUV attributes, spanning form 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 word.

DIDACTIC MODELS

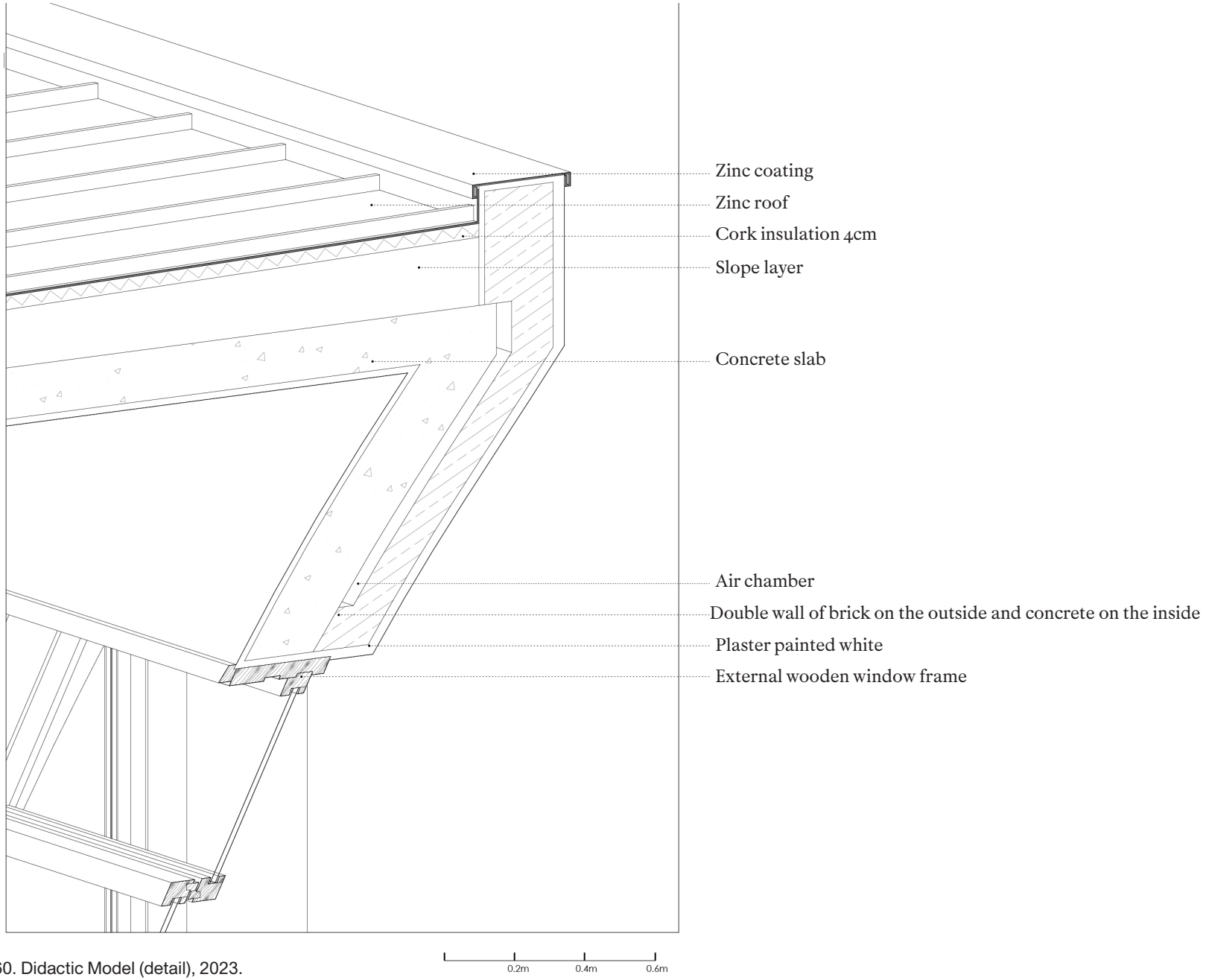
BIM didactic models have as their main objective to conduct a thorough tectonic perspective of a representative section of the building, namely on its construction and material features. Also, by comparing diverse solutions proposed for different buildings within the SizaATLAS research project, the models 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.



59. Didatic model, 2023



60. Didactic Model (detail), 2023.

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Siza ATLAS: Filling the gaps for World Heritage

FCT Project SIZA/ETM/0023/2019

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