SIZATLAS

OCEAN SWIMMING POOL

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

Scale 1:100.000
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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) 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.

HISTORY AND DESCRIPTION

The Ocean Swimming Pool (1961-66) is in the Leça da Palmeira parish, a former village in the northern part of the Matosinhos municipality. The first construction phase was led by the engineer Bernardo Ferrão, with the collaboration of Álvaro Siza, in 1960. From 1961, Siza assumed the coordination of the design, and the Ocean Swimming Pool was built until 1973.

The landscape, characterized by the horizontality of the seaside and Liberdade Avenue running parallel to it, is marked by a concrete wall demarcating the boundary between sea and land. Siza's design for the bathing complex aimed to maintain this visual continuity between land, sea, and sky, minimizing the intervention by using preexisting rocks as the swimming pools boundaries. The building seamlessly integrates into the landscape, respecting its horizontality without obstructing sea views. The volume of the changing rooms' linear composition, embedded in the topography, takes advantage of a preexisting retaining wall. Blurring the distinction between natural and built spaces, the complex functions as a single organic whole, harmonizing with its surroundings.

In November 1959, the Municipal Council of Matosinhos commissioned a company specialised in maritime works, Ribeiro da Silva Lda., to study the feasibility of building a saltwater swimming pool by the beach of Leça da Palmeira. The chosen location, known as Meia Laranja, consisted of a platform of the coastal avenue that extended over the beach, where a rocky outcrop already formed a natural cove. To the south, there was a previous bathing pool limited by a low semicircular wall where people could bathe when the sea conditions were rougher.

Collaborators on the project included António Madureira, Francisco Guedes de Carvalho and Alexandre Alves Costa.

Even though the initial project, presented in 1960 by engineer Bernardo Ferrão, proposed the construction of a single swimming pool, a sanitary need for water treatment was soon identified, preventing the use of the tides to supply the pool. The understanding that it would be desirable to study the urban arrangement of the place led to the indication of the architect Álvaro Siza to collaborate on the design since the initial phase. Consequently, in 1962, a first preliminary design was presented, consisting of two pools nestled among the rock outcrops (one for children and one for adults) and a building equipped with changing rooms, toilets and a water treatment room, running parallel to the avenue's retaining wall. Hygienist concerns, such as the separation of shooed and barefoot circuits, were evident at this stage. Construction is thought to have taken place between 1963 and 1965.

The Ocean Swimming Pool opened in May of that year, with minor changes to the 1962 design. In the same year, Álvaro Siza presented the first draft of a restaurant located to the north of the complex, set on a rocky massif and forming a 45º angle with the retaining wall of the avenue to accentuate the boundary of the enclosure and shelter it from the prevailing winds.

In 1966, the need for a clear design for the bar and toilets for shooed users led to the enlargement of the enclosure at its northern and southern ends to solve the embedding of the buildings in the retaining wall of the avenue. The definitive construction of the bar, now featuring a terrace protected from the prevailing winds by a wall oriented at a 45º angle relative to the changing rooms' building, began in 1971. Additional works in 1973 contributed to the present-day design of the Swimming Pool, including the installation of the shooed users' toilets to the north and storage and personnel areas to the south, under the avenue's retaining wall. The southern end of the complex was formalised with an amphitheatre-shaped staircase facilitating level transitions. The project also included plans to extend the complex northward to accommodate the restaurant, but that aspect was never realized.

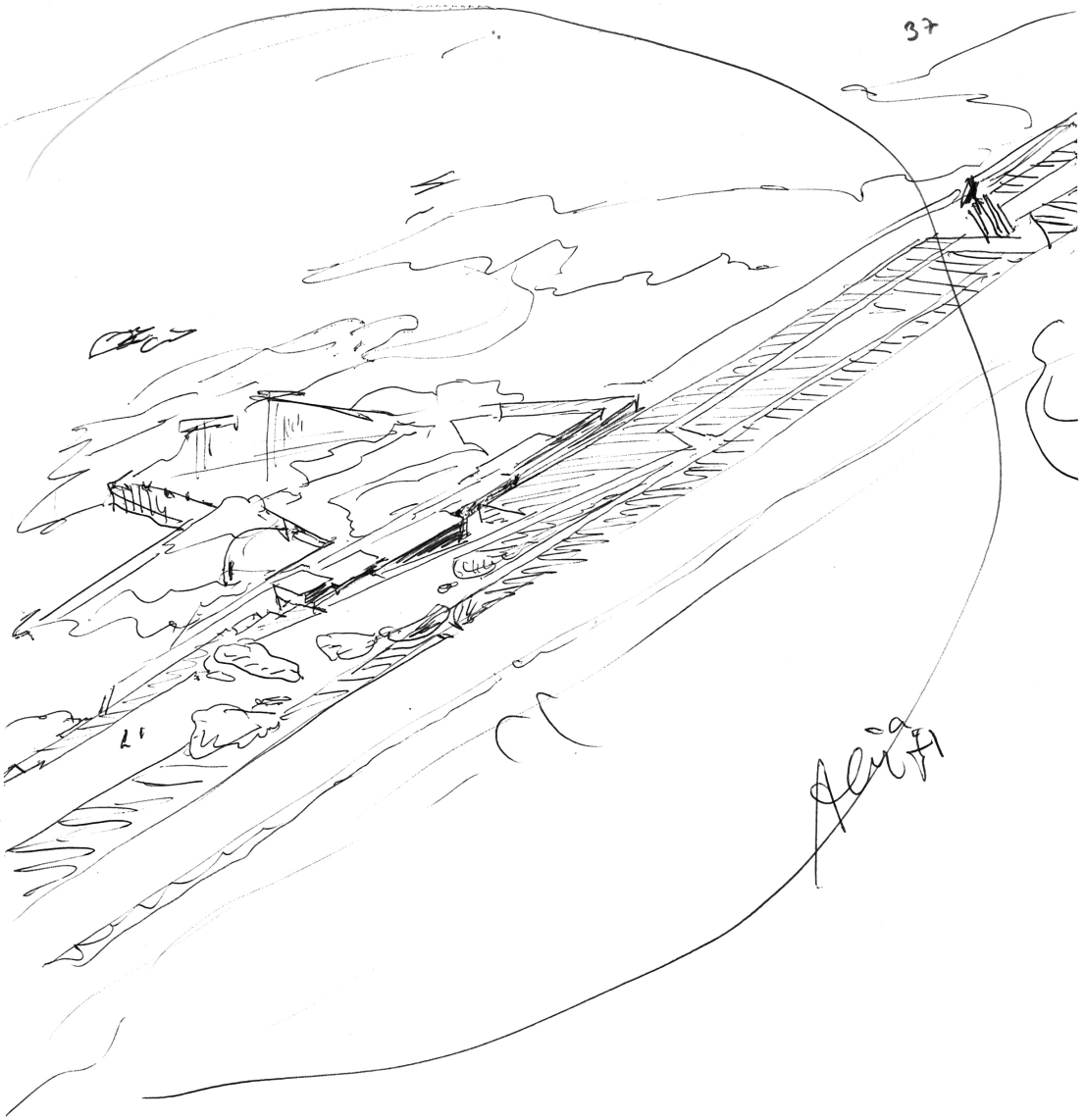
The architecture of the Swimming Pool features abstract language, characterized by a sequence of parallel walls along the seaside, covered with low-sloping roofs. Furthermore, the Swimming Pool responds to a unique setting and position: the pool tanks blend into the landscape merging into the preexisting rocks, while the building of the changing rooms almost disappears, in a dialogue with the preexisting wall.

Positioned at beach level, roughly two meters below the bordering road, the changing rooms volume is almost invisible to passing pedestrians. Siza envisioned this structure to be anchored "like a boat, in the avenue wall", blurring the boundaries between the building and its site, resulting in a cohesive, organic whole.

The building complex comprises the adults' swimming pool, the children's swimming pool, changing rooms, bathrooms, sunbathing platforms, and a bar with a terrace area. Additionally, these public spaces are complemented with restricted technical areas devoted to water treatment, water collection and security, storage rooms, the kitchen, and the staff's service areas.

To compensate for the building's shallow depth, Siza devised a zigzag path within its linear design. This architectural feature is accentuated by variations in lighting between the exterior and interior spaces. As visitors descend the entrance ramp, they find themselves enclosed by the building's walls, briefly disconnected from the surrounding landscape. However, upon exiting the changing rooms, they are greeted once again by the stunning vistas of the swimming pools, beach, and sea, marking the culmination of their journey through the complex. Despite revealing the building's fragmented character resulting from its phased construction process, this experience echoes traditional architecture strategies. It fosters a definitive sense of separation from the external environment, even entering an open area that faces the sea.

In terms of construction technology, Álvaro Siza selected materials to align with the site's atmospheric conditions and its maintenance. Hence, only raw materials are used such as exposed concrete, Baltic pine wood, copper, and brass, achieving a brutalist aesthetic character and satisfying long-lasting durability. The strategic use of dark wood within the interior spaces creates a sense of light deprivation, accentuating the contrast



between light and shadow that is essential to the path of the swimming pool's access.

The copper roofs in the changing rooms and annexes cover a sloping structure made of treated dark Baltic pinewood, fixed in place with galvanised fittings. This structural materiality extends to the partition walls and doors of this area.

The only exception in this building is the water treatment area, which deploys a reinforced concrete slab like the remaining covered areas at the northern and southern ends of the building. The latter areas' slabs support a seaside garden area.

The retaining walls are a combination of two layers: an interior layer of cyclopean concrete, also serving as the foundation, and a exterior layer of exposed reinforced concrete. Similarly, the building's walls are made of lightly reinforced concrete, which contains little cement and a lot of aggregates. The swimming pools were built using cyclopean concrete walls and a simple concrete bottom. The inner surfaces of these elements were waterproofed with plastic white paint. The paving of the changing room's building consists of white concrete slabs, while the remaining pavements present a troweled cement plaster finish.

The Ocean Swimming Pool conceives a workup to the detail in direct relation with the whole result, only resistant raw materials were chosen for this building, attaining a brutalist aesthetic expression. All the elements and technical devices are carefully integrated within the general design principles and construction elements

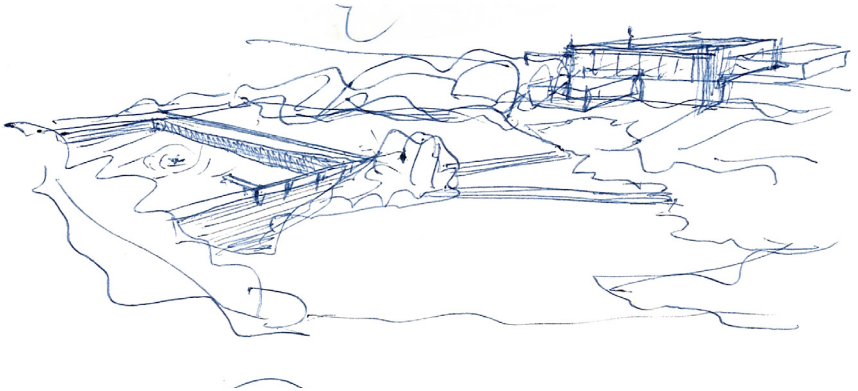
The Ocean Swimming Pool has been the subject of numerous essays and academic works, photographic reports and documentary films, becoming a place of pilgrimage for architects and scholars worldwide, conveying the influence of Álvaro Siza as a key figure of 20th-century architecture. Due to its significance, the component part is currently listed in several cultural heritage inventories (Heritage Map – Municipal Master Plan of Matosinhos, SIPA, IAP20, Docomomo Iberico, Innova Concrete).

On May 25, 2011, the building was listed as a National Monument by the General Directorate of Cultural Heritage (Direção-Geral do Património Cultural), and therefore, a Buffer Zone (Zona Especial de Proteção – ZEP) was defined (Automatic Buffer Zone with a 50 m radial perimeter, as determined by the Portuguese legislation).

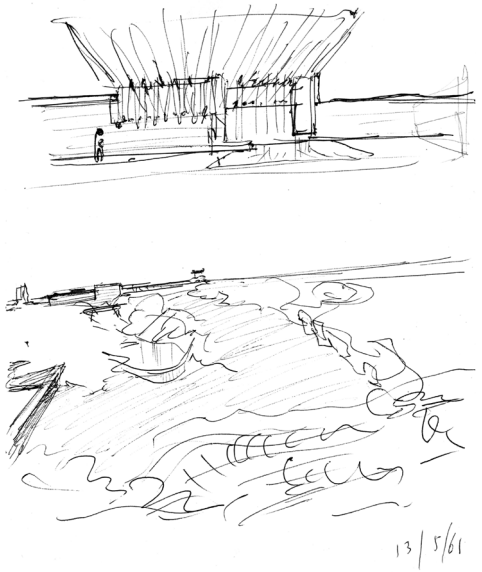
On October 24, 2012, under the 608/2012 Decree, a new Buffer Zone was defined, which included two works of Siza listed as National Monuments: the Boa Nova Tea House and Restaurant and the Ocean Swimming Pool. The joint definition of the Buffer Zone is attentive to the specificities of the place and its relationship with the buildings, displaying an understanding of the unity of location, topography and points of view, as well as the conditions defined by the current management and planning tools. The definition of the Buffer Zone also aims to safeguard listed properties and their surrounding landscape, ensuring the continuity of dialogue between the Boa Nova Tea House and Restaurant, the Ocean Swimming Pool and the seaside.

In 1993, the Municipal Council of Matosinhos entrusted Álvaro Siza with both the design of the restaurant and the technical oversight of pool conservation works. These works included, among other interventions, the complete replacement of copper sheeting, the repair of the swimming pools concrete walls, and the cleaning and stripping of the wooden surfaces. The restaurant was never built, even though the executive drawings were delivered, approved and awarded by the Municipal Council in 1995. Between 2018 and 2021, Álvaro Siza supervised extensive conservation works, such as concrete and infrastructure repairs respecting the integrity and authenticity of the preexisting building while preserving the original materials, including their texture and patina. The primary focus of these efforts was infrastructural, namely the update of the water plumbing system. Moreover, this same intervention envisaged the construction of a new extension to the north (including public toilets, employees' changing rooms and storage areas). In this intervention, the platform at the northern end was finally extended to where the restaurant would be, culminating in a 450 inflexion, in line with the set's original design principles.

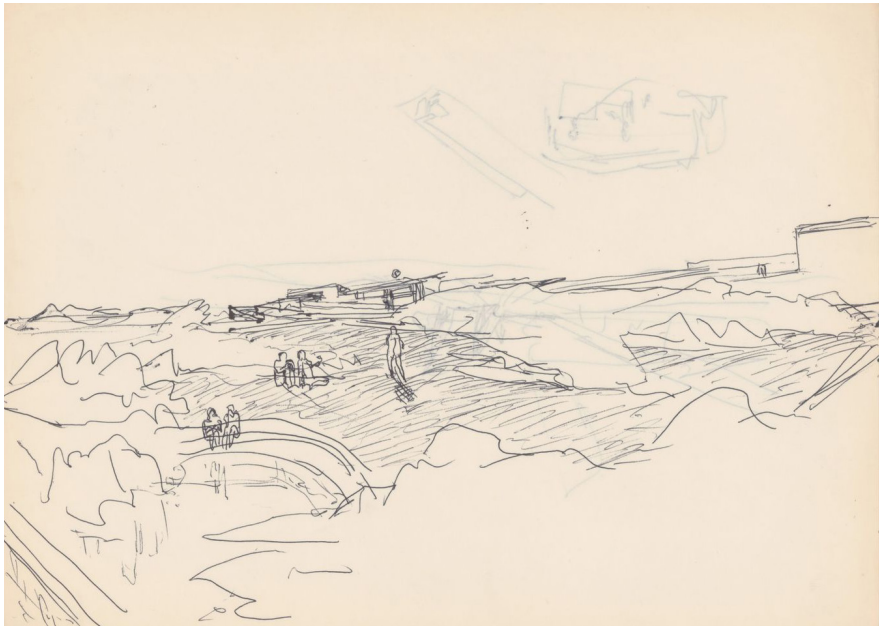
Accompanying the Boa Nova Tea House and Restaurant, the Ocean Swimming Pool holds the distinction of being the first 20th-century building in Portugal to be listed as a National Monument. This recognition not only underscores its importance within Portuguese architectural history but also positions it on the global stage.



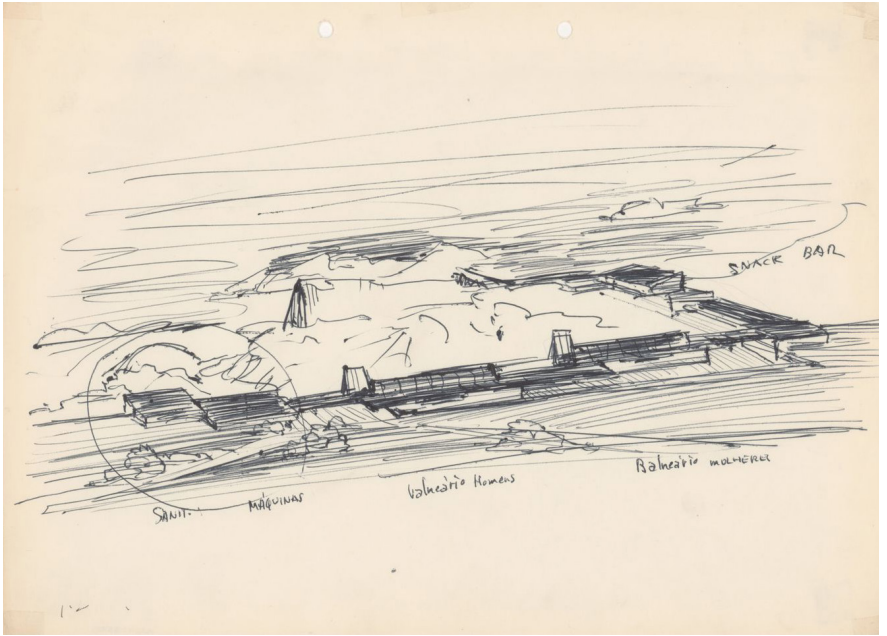
03. Preliminary designs for the water treatment plant and adults swimming pool.



04. Preliminary design for the bathrooms, 1961.

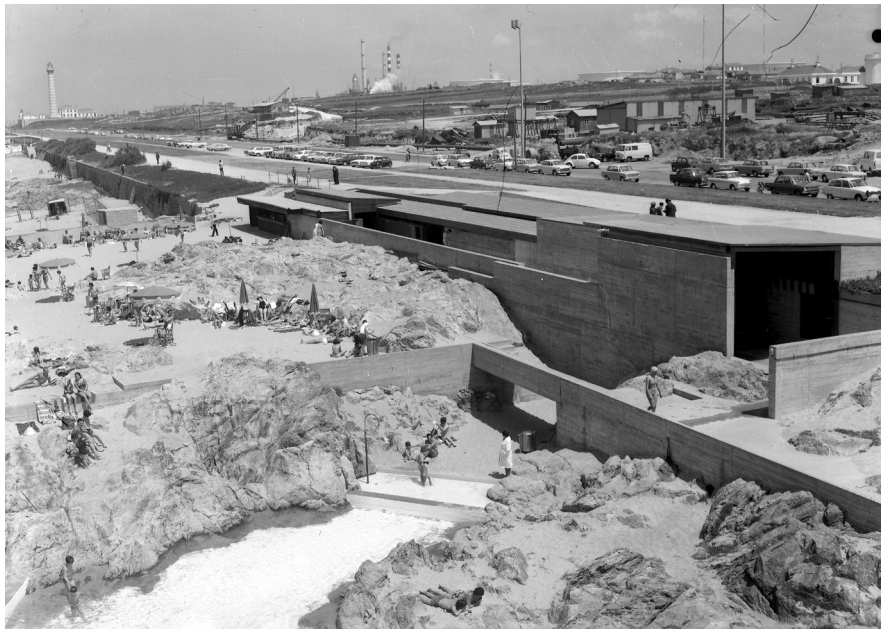


05. Preliminary design for the platforms along the beach.



06. Preliminary design for the changing rooms and restaurant.

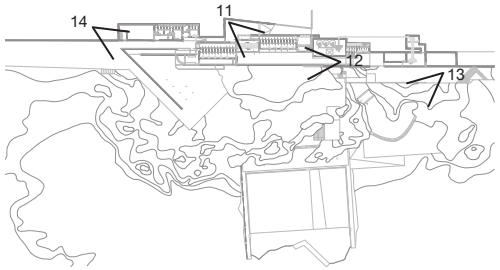
07. The site before the construction of the bar, 1967.



08. Children's swimming pool and changing rooms, 1968.

09. Swimming pools.

10. Adults swimming pool and changing rooms.

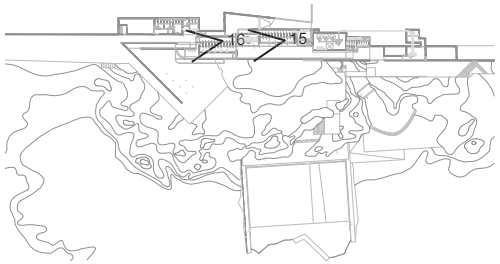


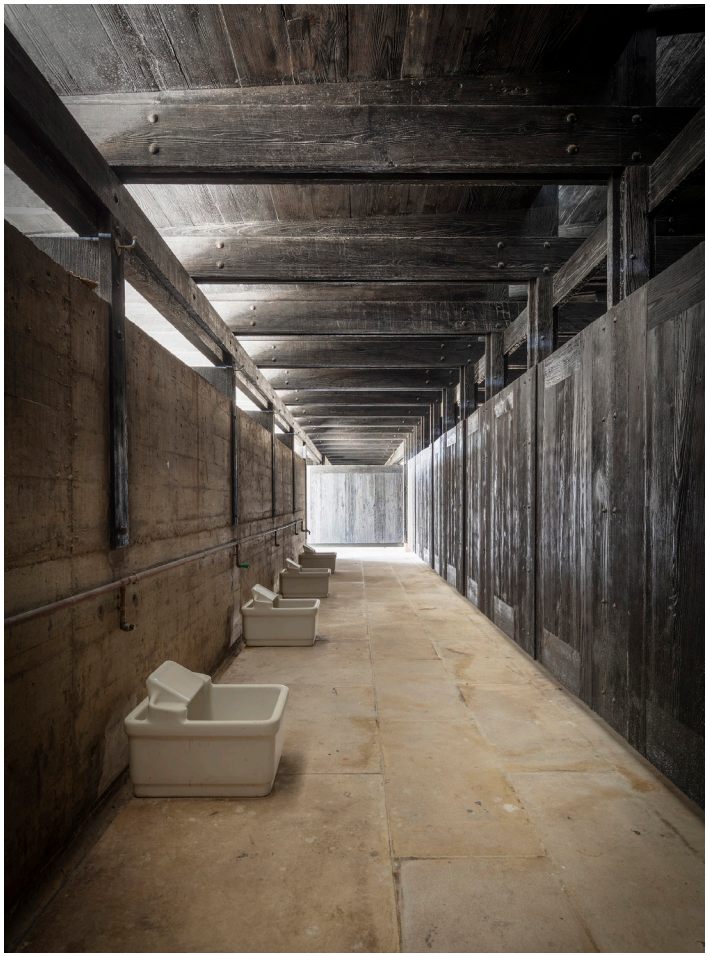
11. Changing room's entrance, 2021.

12. Changing room's corridor, 2021.

13. Swimming pools, 2021.

14. Bar terrace, 2021.

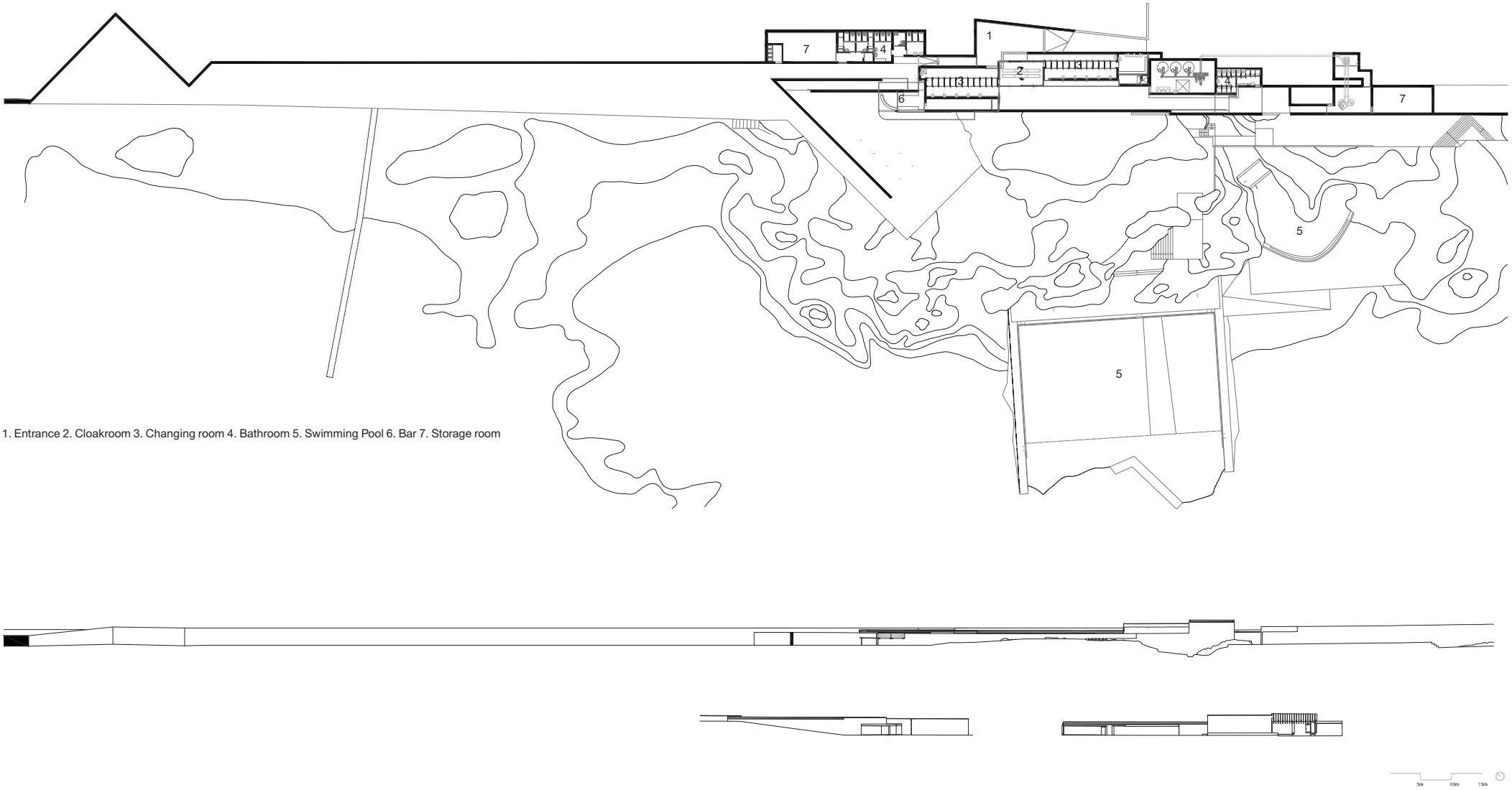




15. Changing rooms, 2021.

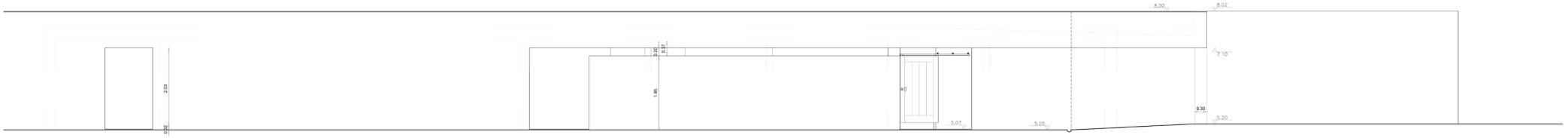
16. Collective changing room, 2021.

17. Changing rooms, 2021.

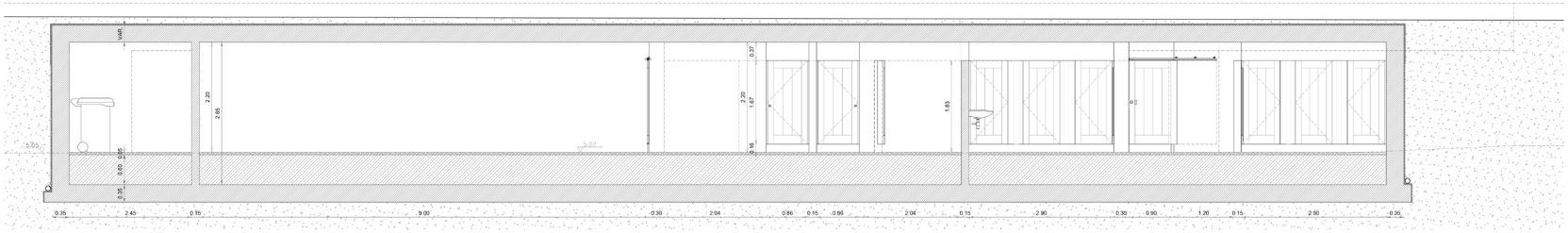


1. Entrance 2. Cloakroom 3. Changing room 4. Bathroom 5. Swimming Pool 6. Bar 7. Storage room

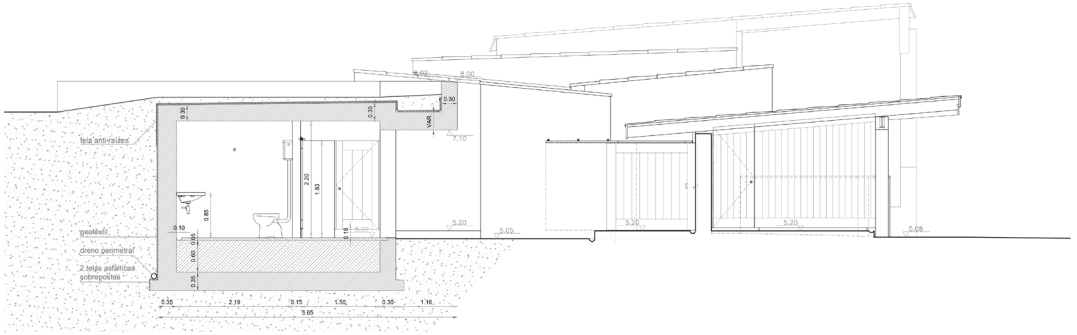
18. 19. Floor plan and elevations.



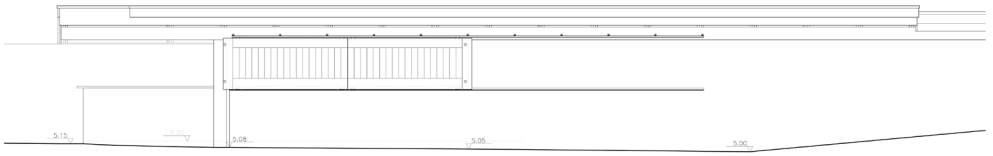
ALÇADO MURO (NOVAS INSTALAÇÕES SANITÁRIAS)



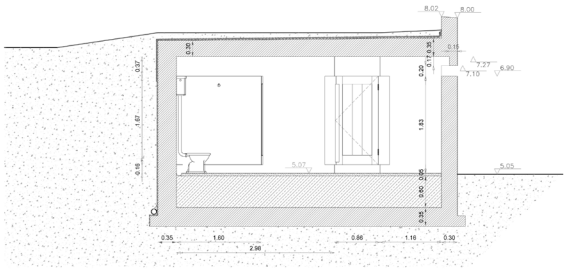
CORTE LONGITUDINAL EE'



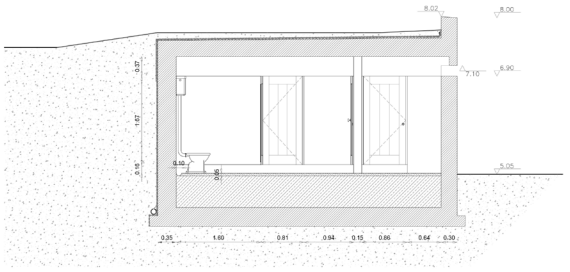
CORTE TRANSVERSAL AA'



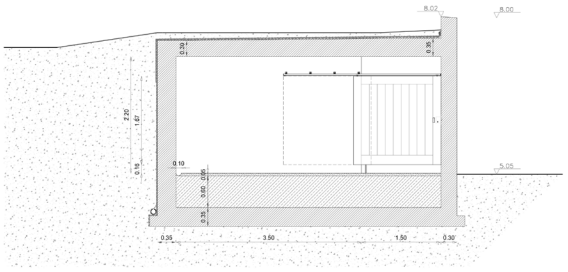
ALÇADO DA CAFETARIA (ESPLANADA)



CORTE TRANSVERSAL BB'



CORTE TRANSVERSAL CC'



CORTE TRANSVERSAL DD'

20. Elevation and sections of the north extension.

CONSTRUCTION

STRUCTURAL SYSTEM

According to the Design Report of the project, “The adopted construction system features non-plastered, low strength reinforced concrete walls, supporting a Baltic pine roof covered with copper over an asphalt membrane” (Siza & Ferrão, 1965: 3).

The vertical structure of the Ocean Swimming Pool consists of exterior concrete walls and retaining walls. Located between the building and the waterfront, these walls have two main layers: an inner layer of cyclopean concrete, which also functions as a foundation, and an outer layer of exposed reinforced concrete, with galvanized bars and formwork made from pine planks. In some areas, this structure has been integrated into the pre-existing seawall, which was made solely of exposed reinforced concrete when it was less than 3 meters high. The reinforced concrete walls supporting the roofs were constructed with less concrete and more aggregate.

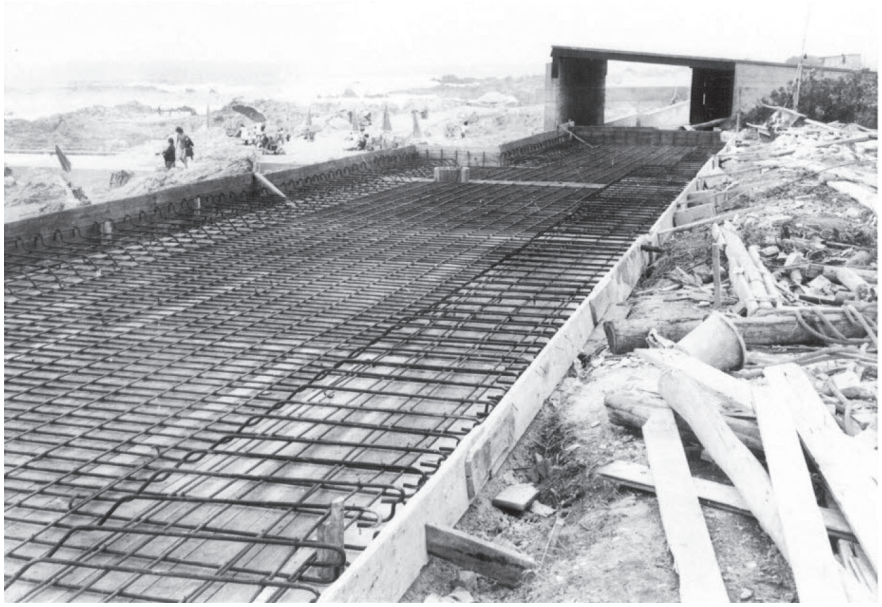
The horizontal structure of the building features, in the main spaces and exteriors, a sloped structure made of Baltic pine, treated with linseed oil and secured with galvanized fittings. In the water treatment area, the horizontal structure consists of reinforced concrete slabs, 20 cm thick, with varying reinforcement designs between the upper and lower faces.

WALLS

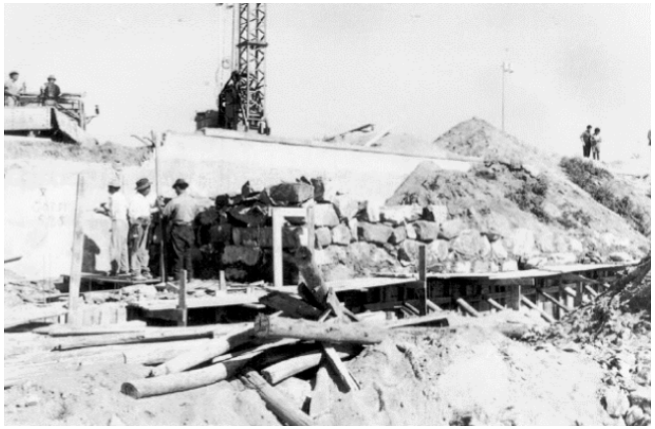
Following the vertical structure, the exterior walls are made of lightly reinforced concrete, which involves using a reduced amount of cement and a higher amount of aggregates, such as agate. The retaining walls that define the space between the building and the seafront have been waterproofed, coated with a hydrophobic plaster, and equipped with a drainage gutter containing a porous concrete pipe inside. In the water collection area, the walls are coated with plaster and painted white, with a metal ladder embedded into the southern wall.

In the changing rooms and in the southern bathroom cubicles, there are partition walls made of wood, fixed to the wooden ceiling structure and featuring the same material and finish. The partitions, made of Baltic pine, were treated with linseed oil and secured with galvanized fittings. These partitions are suspended from the ceiling structure in the changing rooms, locker rooms, and southern sanitary facilities.

21. Demolitions for the construction of the south storage room, 1971.



22. Construction of the south storage room's roof slab, 1971.



23. Construction of the avenue's retaining wall, 1971.

24. Construction of the terrace wall, 1971.

FLOORS

The floors in the changing rooms and the entrance ramp consist of pre-cast white reinforced concrete slabs. The floors of the platforms, paths, and stairways leading to the pools were constructed with plaster over a floor screed base. At the southern end, the platform finishes with a double concrete staircase at a 45º angle.

On the triangular terrace of the bar, in front of the children's pool, and on the ramp leading to the beach, the foundation is made of cyclopean concrete. In the most recent intervention, the northern pavement was completely removed, while the southern platform and triangular terrace had the betonilha removed. In the former case, excavation was carried out on the waterfront avenue to reshape the terrain and expand the northern area.

All new pavements were constructed with micro-concrete reinforced with stainless steel mesh, laid over a "tout-venant" foundation. A concrete ramp was also built to transition between the existing pavement and the new pavement in the northern area. The suspended concrete pathway had to be redone due to the corrosion of the reinforcements.

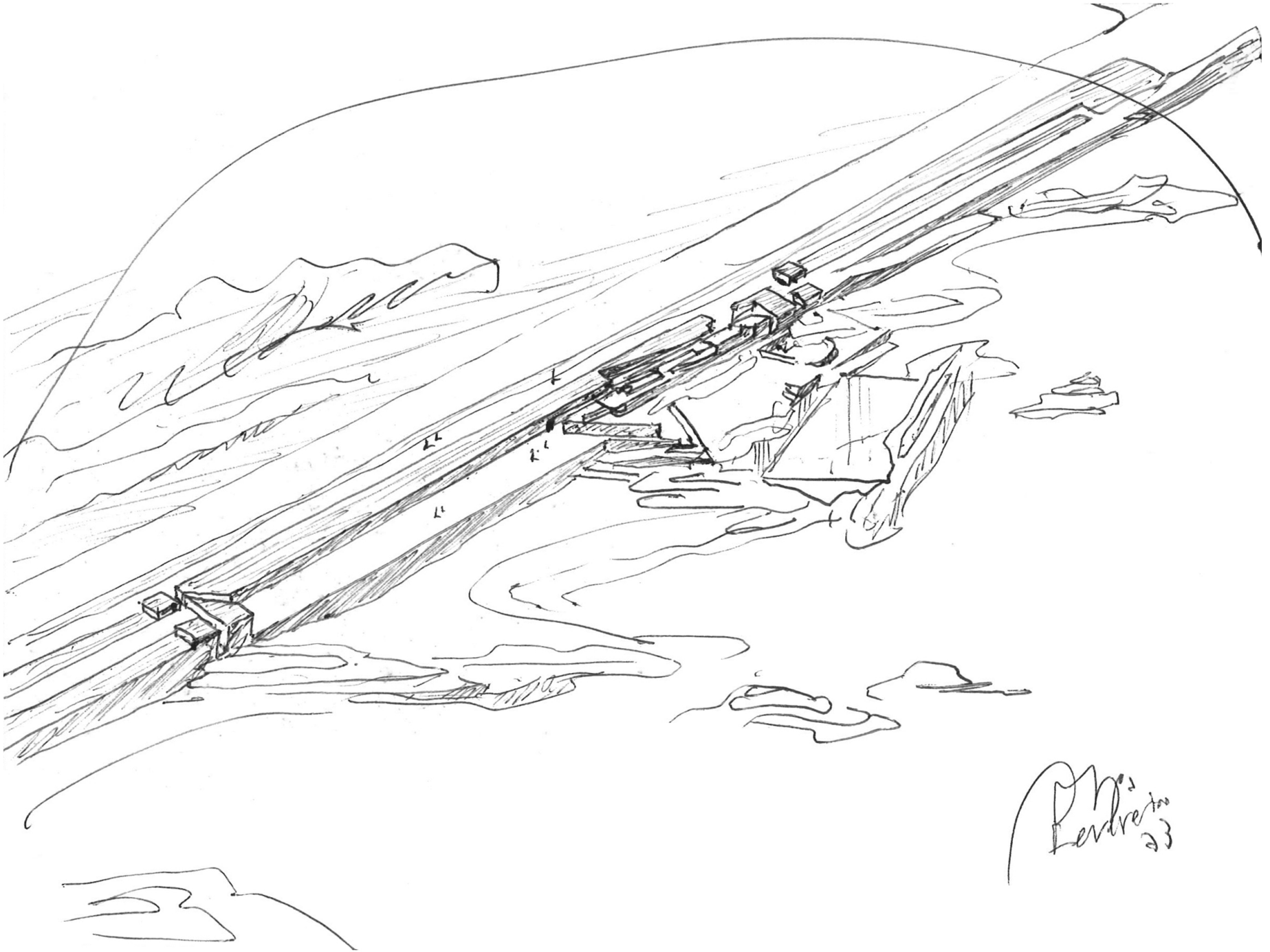
ROOFS

The roof's Riga pine structure and reinforced concrete slab are covered with copper sheeting applied over 1cm thick cork. All slabs have exposed concrete on the underside, displaying the texture of the formwork wood. The only exceptions are the security guard post area and the water collection area, which have been painted white.

The pool was originally covered with asphalt membranes, protected by a copper layer.

OPENINGS

The openings at the Ocean Swimming Pool are predominantly doors made from reclaimed Baltic pine planks, finished with linseed oil and galvanized hardware. In the storage areas to the south, the water treatment area, and the access to the north, the doors are metal. In the adult pools, the tops of the north and south walls feature metal frames for the installation of protective grilles. In the most recent intervention, a set of selected doors was dismantled and replaced with new doors made from the same material and design as the originals.



DESIGN PRINCIPLES

INTEGRATION INTO THE LANDSCAPE

In these complementary works, the principles initially adopted regarding the integration of the building into the landscape are maintained; integral conservation of the conditions of the site, where possible; and the superimposition of built areas, where necessary. (Siza, 1966, p.1)

OPTIMIZE THE CONDITIONS CREATED BY NATURE

Conversely, the idea of my project was to optimize the conditions created by nature, which itself had already begun to design its own pool. I thought it necessary to take advantage of the same rocks and restrict the use of walls to the absolute minimum to complete the containment of water. Thus, a far closer connection was established between the natural and built environment. (Siza, 1998, p.25)

OUTLINE A GEOMETRY ON THAT ORGANIC IMAGE

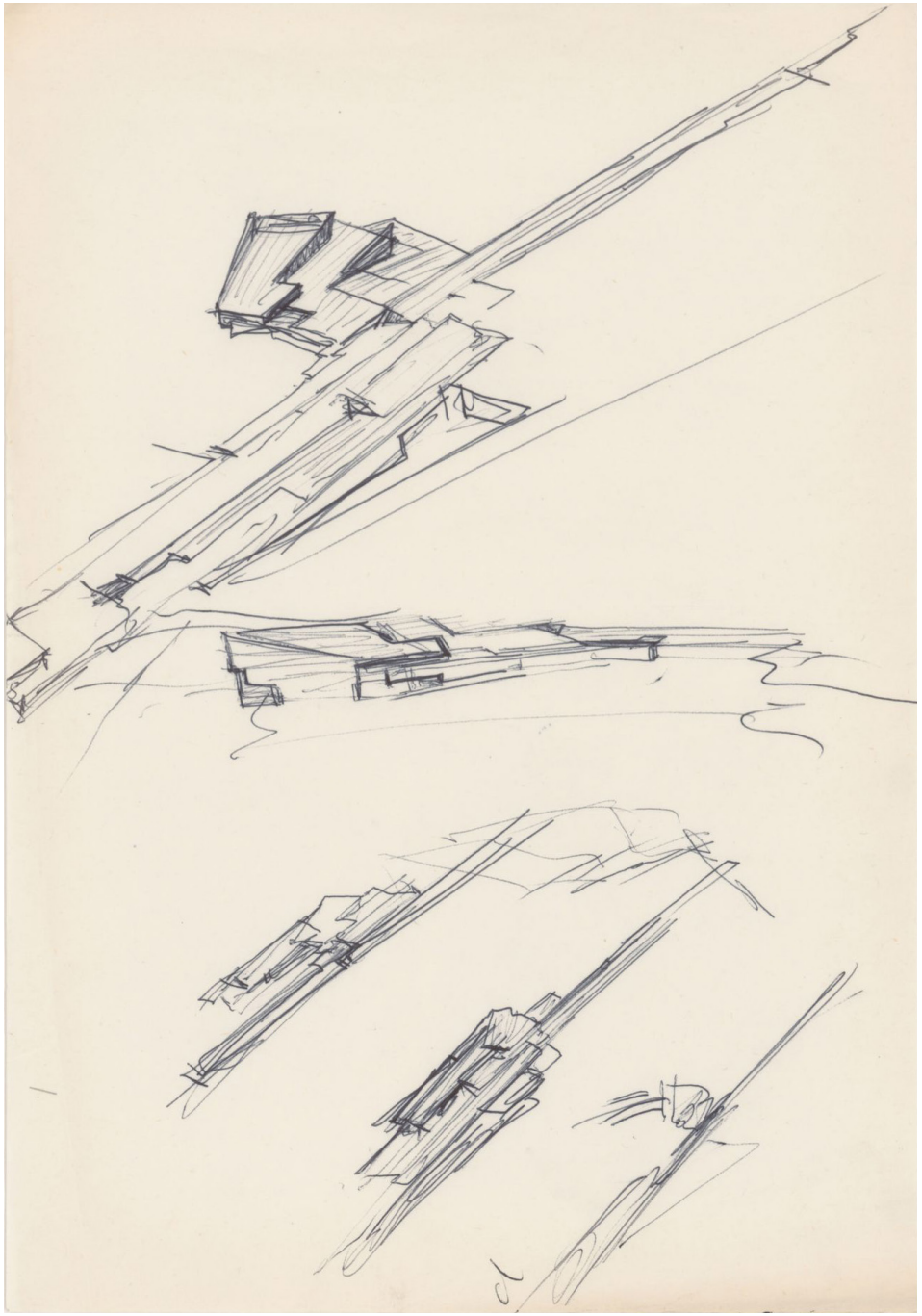
The aim was to outline a geometry on that organic image: to discover what was available and ready to receive geometricity. Architecture is geometrizing. (Siza, 1998, p.25)

WHEN EXECUTING THE DESIGN, THERE WAS NO INTENTION OF ORIGINALITY

We would like to emphasize that, when executing the design, there was no intention of originality. The circumstance of originality mentioned in the report of the Water Sanitary Board naturally reflects the circumstance of a certain location and the integration in certain previously defined principles for the development of the area. It was about making up for the inconvenience, in an area of beaches that was in many ways magnificent. (Siza, 1967, p.9)

SEPARATION BETWEEN SHOED AND BAREFOOT PEOPLE

In opting for the cabin system for changing clothes, with a central storage space and a separation between shoed and barefoot people, 24 cabins were found to be necessary, assuming that the number of hangers in the deposit should be close to 3/5 of the number of square meters of the pool, that the daily use of each cabin is 40 people, and that each cabin is used twice a day (Prof. Ernest Neufert, 'Architects' data). (Siza, 1962, p.1)



27. Preliminary design for the restaurant.

28. Joinery detailing.

ZIGZAG WALKWAYS, PRODUCING A CONTRADICTORY SENSE OF DEPTH

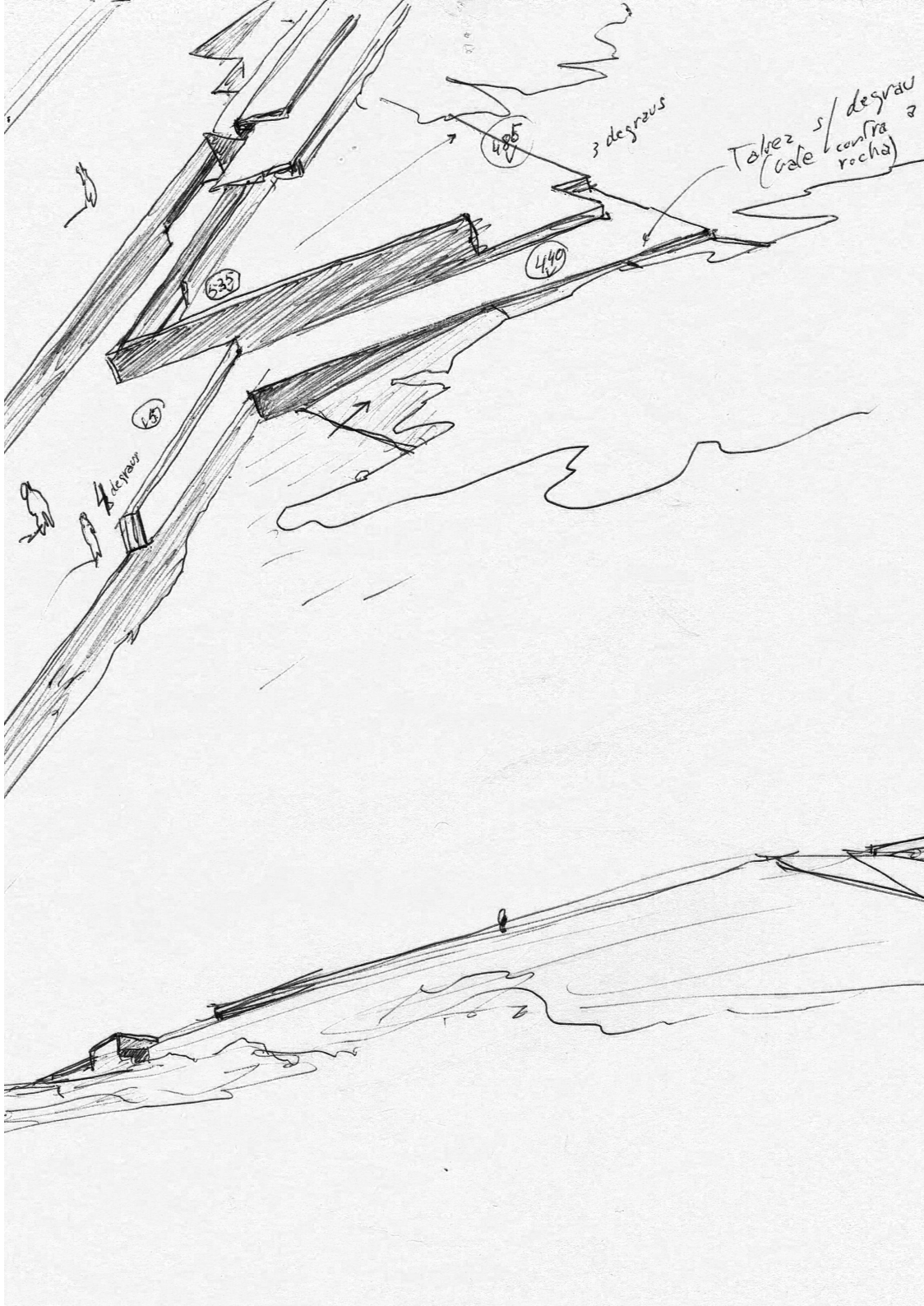
At the same time, resolving the problem of access was essential. There was little depth as the road was very close to the coast. Moreover, there was a plastered wall over a kilometre and a half in length, which clearly separated the coast road level from that of the beach. (...) The solution was to design zigzag walkways, producing a contradictory sense of depth which was crucial in defining the access point to the enclosure. (Siza, 1998, p.27)

RAW USE OF THE MATERIALS

One of the characteristics of brutalism is the raw use of the materials. Seeing the material for what it is. (Siza, 2019, p.21)

ONE NEVER COMPLETELY RESTORES

One never completely restores (...) the worst that can happen is establishing a contrast with an ambition of excessive perfection. And then, always counting on the factors, especially in a place like this, of time, because time will take care of the fusion between what is old and what is new, in this case. (Siza, 2021)



ATTRIBUTES

ARCHITECTURE RESPONSIVE TO A PHYSICAL, SOCIAL AND HISTORICAL CONTEXT

The architecture of Álvaro Siza provides a sublime and grounded way of understanding the places where it is settled. The buildings, their paths, and their connections to their surroundings are the object of careful study and interpretation. His architectural designs respect the specific conditions of the place, integrating pre-existences, topography and natural elements, and are deeply engaged by a critical analysis of the surrounding landscape. This contextual approach also comprises the intangible qualities of the socio-cultural background, resulting from a broader interpretation of history, traditions, social practices, culture, and ways of living. Building complexes frequently result from the geometrization of pre-existing elements and characteristics of the site to define viewpoints, alignments and composition principles, with the whole responding to a broader interpretation of the landscape and socio-cultural context.

INTEGRATION OF INTERNATIONAL AND LOCAL REFERENCES

The architecture of Álvaro Siza is able to congregate, allude to and epitomize, in a single project, every period of architecture, from the more archaic to Renaissance, Mannerism, Baroque, and even Modern references. Building complexes are able to renovate and reinterpret Modernism through a genuine and original architectural composition method, coherently non literally revisiting and summarizing styles, memories, building traditions and local references (including vernacular construction features), during a period of profound social, political and aesthetic changes.

SCULPTURAL VOLUMETRIC EXPRESSION

The architecture of Álvaro Siza has a sculptural quality that results from a very particular combination of volumes, rhythms, and curvilinear and asymmetrical shapes in the rigour and clarity of its outlines. This plastic dimension of his work is far from being superficial or an end in itself, as it is rooted in the ideas that beauty is the guarantee of absolute functional efficacy, and that form should not be limited to following function, but should instead transcend and free itself to be appropriated by users and adapted to new future uses.

ORIENTED SPATIAL EXPERIENCES

The architecture of Álvaro Siza is inseparable from the idea of movement and displacement of the body through spaces, with the use of movement, light and visual openings. His works are designed as sequential experiences of space, revisiting the rationalist theme of the promenade architecturale, taking it to new heights through zig-zag paths and an imaginative use of the section. The engagement of the body, in overlapping perspectives, long and short or up-and-down movements, open and closed or light and dark spaces, achieves exciting spatial experiences. Light, both natural or artificial, is of the utmost importance and takes part in the spatial experience in multiple ways, coming through horizontal slits set at eye level, very high clerestory windows framing the sky, continuous glass planes that dilute the separation between interior and exterior, strategically positioned skylights, or artificial lighting concealed in complex ceiling geometries. Besides bringing in light, these openings are carefully thought of in order to frame specific aspects of the surrounding landscape, or as components of long perspectives that go beyond the limits of the building and into exterior spaces, establishing a carefully planned visual indoor-outdoor relationship.

TOTAL WORK OF ART INCLUDING DETAILS, FURNITURE AND ARTWORKS

The architecture of Álvaro Siza is the result of a multi-scalar design approach, intertwined with the idea of gesamtkunstwerk ("total work of art"), in which every detail (from construction to furniture or artworks) is thought and designed by the architect as part of a whole. The whole and the parts generate and influence each other, introducing spatial tensions amidst the smallest elements, for their superimposition and interconnectedness. Finishings are drawn with exquisite attention to details, inventing trims, connections and transitions between materials and coatings, with exclusive solutions, at times provocative, irreverent and surprising. This particularity is significant and specific to his work, and originates in the "know-how" of Portuguese artists and artisans, imbuing finishings with a surprisingly familiar quality.

AUTHENTICITY AND INTEGRITY

AUTHENTICITY

The component parts have not suffered significant changes and maintain the general authenticity of the original design. Minor changes have been carried out to adapt to the current living standards and legislation in compliance with the preservation of authenticity. All conservation works have been carried out with the best methodologies to preserve their authenticity, benefiting from the supervision of heritage safeguarding bodies and Álvaro Siza.

The Ocean Swimming Pool mantains the overall authenticity of form and design over time. The conservation works carried out recently by Álvaro Siza have followed the design principles of the original construction, while reversing some incorrect interventions that took place in the past, even if they never significantly affected the building's form and design.The Ocean Swimming Pool maintains most of the original materials. Although some materials had to be replaced due to degradation, all the works were monitored by Álvaro Siza in close collaboration with specialists, achieving a conservation work that maintains the substance of the materials and their shape.

The materials that were added in the new project have been selected by the architect to be in keeping with the originals.

The Ocean Swimming Pool maintains its original use and function with compatible contemporary adaptations. The pools fully maintain their original use and operation as they have such a specific program. Although today the pools carry out other types of events such as guided tours and some social events, the main function of the swimming pool remains unaltered.

The Ocean Swimming Pool urban context has undergone some changes due to real estate development. However, the Buffer Zone has protected the urban context from invasive interventions. Furthermore, its location bordering the sea assures visibility towards the coast and is maintained without the impact from external factors. The new interventions in the building have been carefully developed by the architect and are respectful of the specificities of the site.

The Ocean Swimming Pool maintains an original and intimate relationship with nature, being in the rocky coastal area of Leça da Palmeira. The path that guides the visitors through different light intensities ensuring the transition between the urban and the natural is an important aspect in determining that the sensation and spirit that is lived in the building remains intact.

The Ocean Swimming Pool maintains the original traditions, techniques and management systems. The building's technical installations have been updated, including the replacement of the water filters in the water treatment area, pipes, the electrical wires and artificial lighting.

INTEGRITY

The Ocean Swimming Pool 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 building itself retains a high degree of original fabric, including interior fittings and fixtures. Even though the wider landscape has changed significantly, the immediate coastal setting remains largely intact.

The property limits defined by the Buffer Zone include all the necessary elements that express the significance of the Ocean Swimming Pool, namely the access ramp, the changing rooms' building, beach pathways and platforms, both swimming pools, and the immediate surroundings, essential to the property's distinctive setting. The building did not suffer any significant change during its lifetime, aside from the reconstruction and extension of the north area (2018-2021) carried out by Álvaro Siza, respecting the original design and fabric.

The repair of concrete elements implied the removal of previous inadequate interventions that were affecting the integrity of the original texture and colour. In some cases, the cracks were repaired with a carefully studied mortar that blends in with the original material. In other cases, when there were no structural implications, the cracks were left exposed as signs of the natural ageing of the building. Only when strictly unavoidable were concrete elements replaced, with close attention to the pre-existing concrete colour and texture, as was the case of a south storage room's roof slab in severe state of decay. These interventions, monitored by Álvaro Siza, had no impact on the building's integrity, given that the new concrete elements will blend in with the existing ones in time.

The Buffer Zone's limits include the extended landscape from the north side of Leixões Port to the Boa Nova Tea House and Restaurant. In this way, the views from the building towards its surrounding landscape are protected.

STATE OF CONSERVATION

The Ocean Swimming Pool is in excellent condition after having recently been the subject of a conservation and extension project (2018-2021). After many years of decay aggravated by its coastal location and the nearby oil refinery, the concrete structures suffered from rebar corrosion and spalling. Also, the obsolescence of its hydraulic infrastructure urged an intervention. Moreover, this intervention included the reconstruction of the north buildings to improve the bar's facilities, in order to meet current legal requirements governing the operation of catering areas.

Siza's conservation works respected the integrity and authenticity of the pre-existing building, restoring the original interior layout while maximizing the preservation of existing materials (timber structures, concrete and copper), including their texture and patina, and replacing them only when strictly necessary.

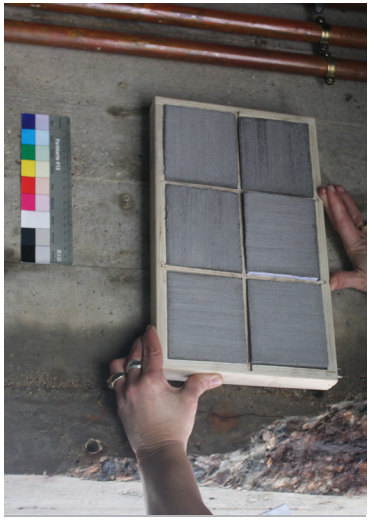
One of the greatest challenges in terms of conservation was the updating of installations to meet current requirements (water, electricity, internet, etc.). Existing electrical cables were replaced and inserted in copper pipes, carefully fixed to the building's structure, in order to respect the original layout. For the water network, technical galleries were created to enable access to the water pipes of the swimming pools, which had previously been embedded in the concrete slab. Furthermore, access to the existing galleries was improved. In the adults' swimming pool, new water inlets were created. When undertaking these changes, pool tanks had to be partially reconstructed, in order to respect the original design. Additionally, equipment in the water treatment area such as water filters was replaced. All of the exposed water supply pipes were also replaced, and thus they are all now made of copper.

Pre-existing elements in Baltic pinewood were inspected, cleaned of their former linseed oil coating, and treated with traditional paintwork to restore their original appearance. Some doors, metal fittings, furniture, and sanitary installations had to be replaced, respecting the original design and materials as much as possible (wood, brass, copper, etc.).

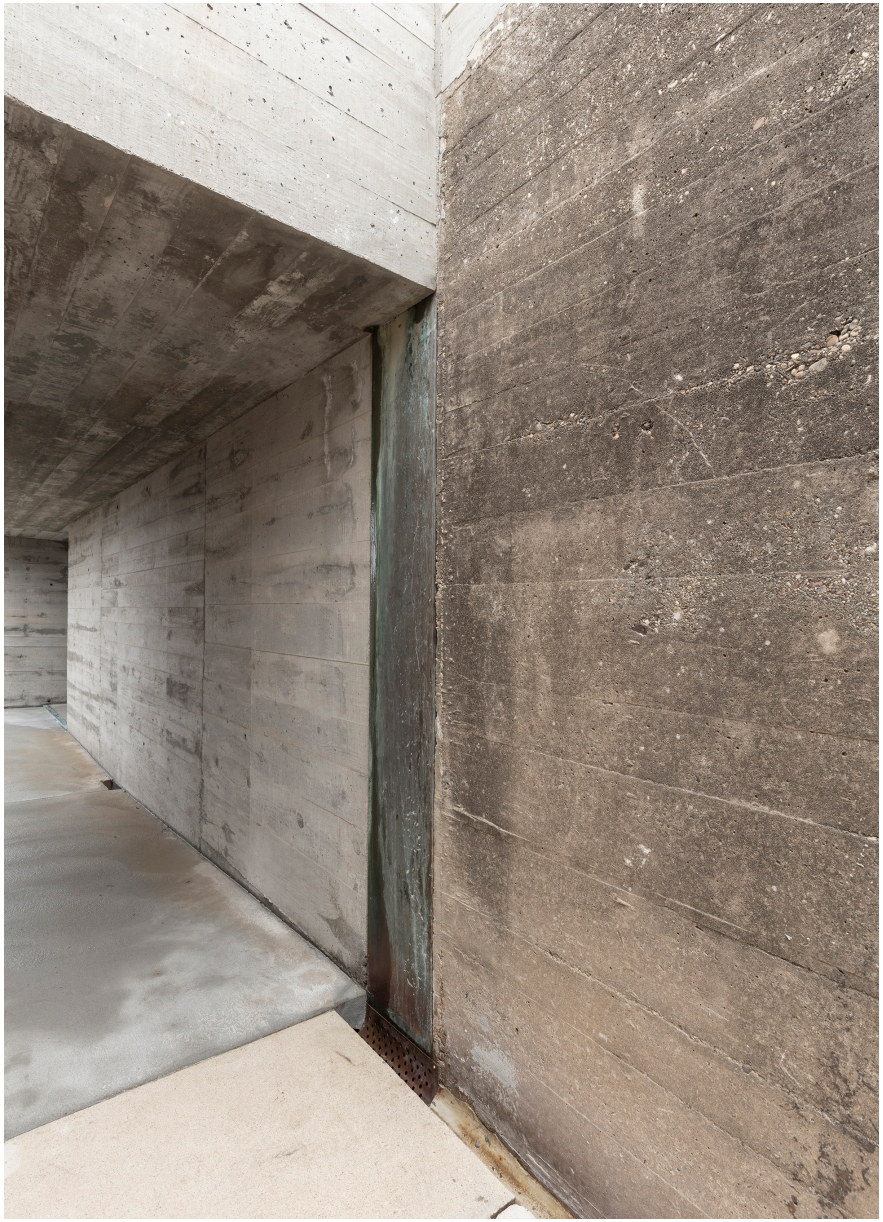
To improve functionality, as well as to ensure compliance with current legal requirements regarding such facilities, recent interventions involved the demolition of the bar's toilets and the construction of a new extension of the building to the north. This extension includes public toilets for people with reduced mobility, employees' changing rooms, storage room and waste area. The new building is located under the coastal avenue, revealing a concrete retaining wall with small horizontal openings, interior partitions, joinery, and details that follow the design principles of pre-existing buildings. In this intervention, the platform at the northern end was finally extended to the location of the restaurant, culminating in a 45º inflection, in line with the compositional principles of the set. This way, while preserving his own work, the architect finally and definitively completes the design of the building complex, enhancing its significance for the future generations.

Besides the management Plan for the World Heritage nomination, a Conservation Management Plan has been developed to implement more detailed conservation actions.

35. Walkway reconstruction, 2020.



36. 37. Concrete specimens, 2021.



38. Contact between the preexisting concrete wall and the new extension, 2021.

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.

PHOTOGRAMMETRY

Photogrammetry facilitates the three-dimensional representation of Siza's architectural works, interactively elucidating their relationships with the context and its volumetric dimensions. When combined with Building Information Modeling (BIM) and other digital tools, it establishes a robust documentation system.

In the last decade, photogrammetry has evolved as a crucial tool for the 3D documentation of cultural heritage, using various types of photos from both the ground and the air. Digital photogrammetry stands apart from traditional methods by employing digital images and computer systems, such as cameras, computers, and specialized software. With computer vision and automated processes, it is now possible to document very complex objects accurately and reconstruct the three-dimensional model with remarkable precision.

Utilizing drone photography from both DGI Air 2 and DGI Mavick Pro, alongside Map Pilot Pro software, comprehensive volumetric data was captured, providing insights into the buildings' integration with their context. This method not only captured the buildings' physical dimensions but also their visual impact on the surrounding landscape. Terrestrial photogrammetry further refined the models' accuracy, supported by Agisoft Metashape software for georeferencing. Employing a BIM approach ensured data interoperability and facilitated the creation of didactic models.

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

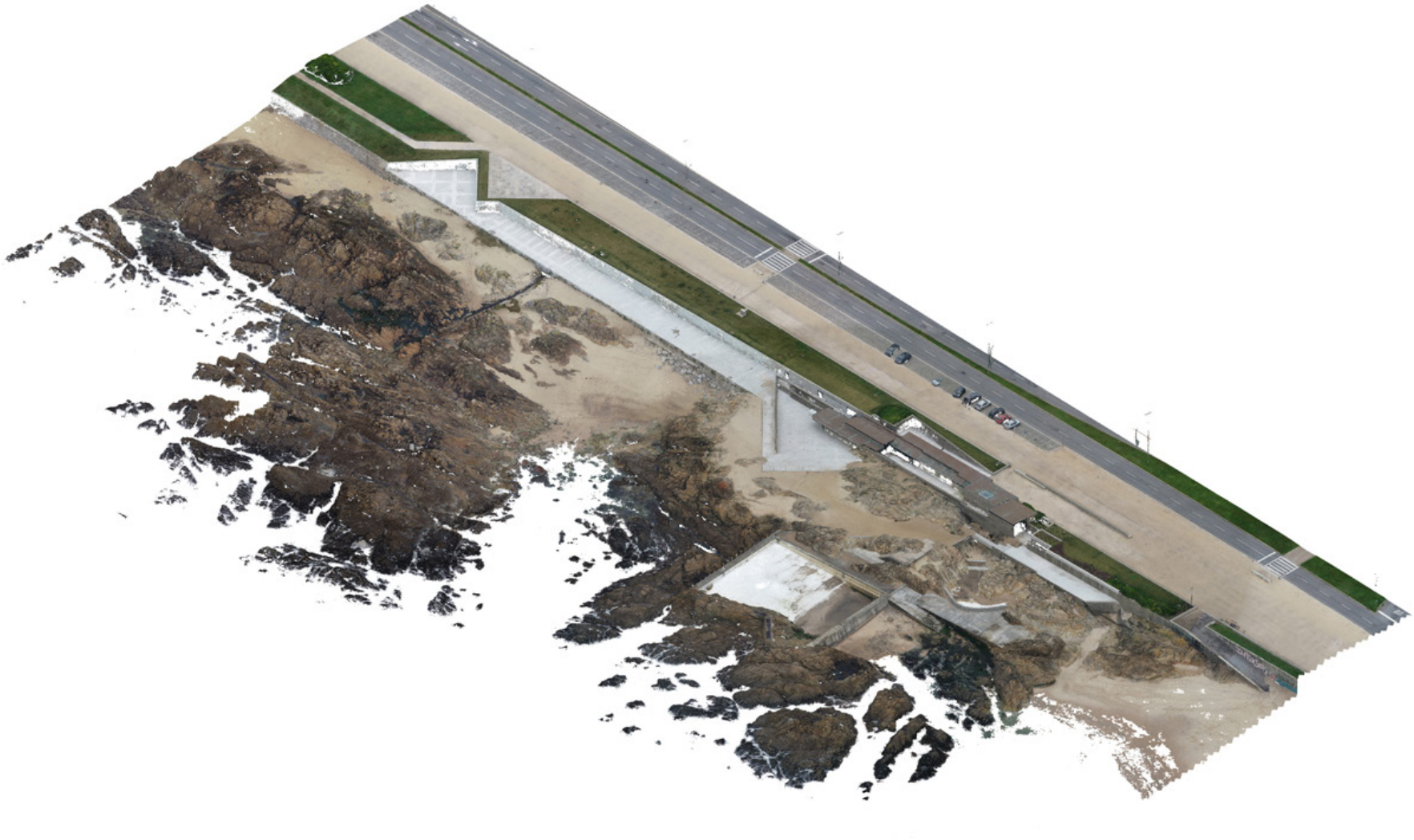
Images for these tours were acquired by a Ricoh Theta camera, ensuring precise timing and favorable weather and light conditions. Subsequently, the virtual tours were processed and enabled using software developed by detalhar.pt. The QR codes in the booklet allow for interactive virtual tour experiences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

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.



40. Photogrammetry.

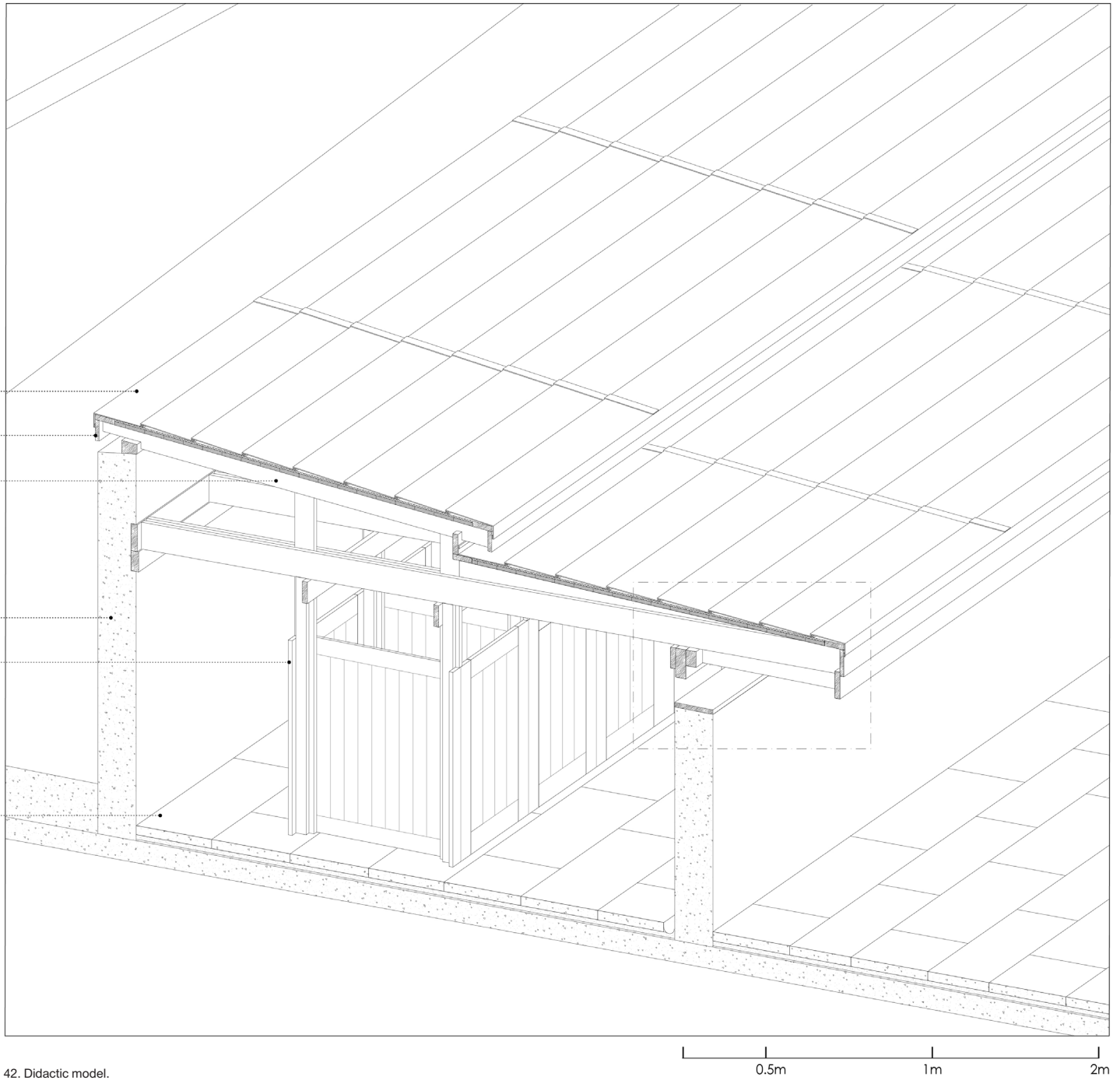
SIZATLAS

LEÇA DA PALMEIRA SWIMMING POOL

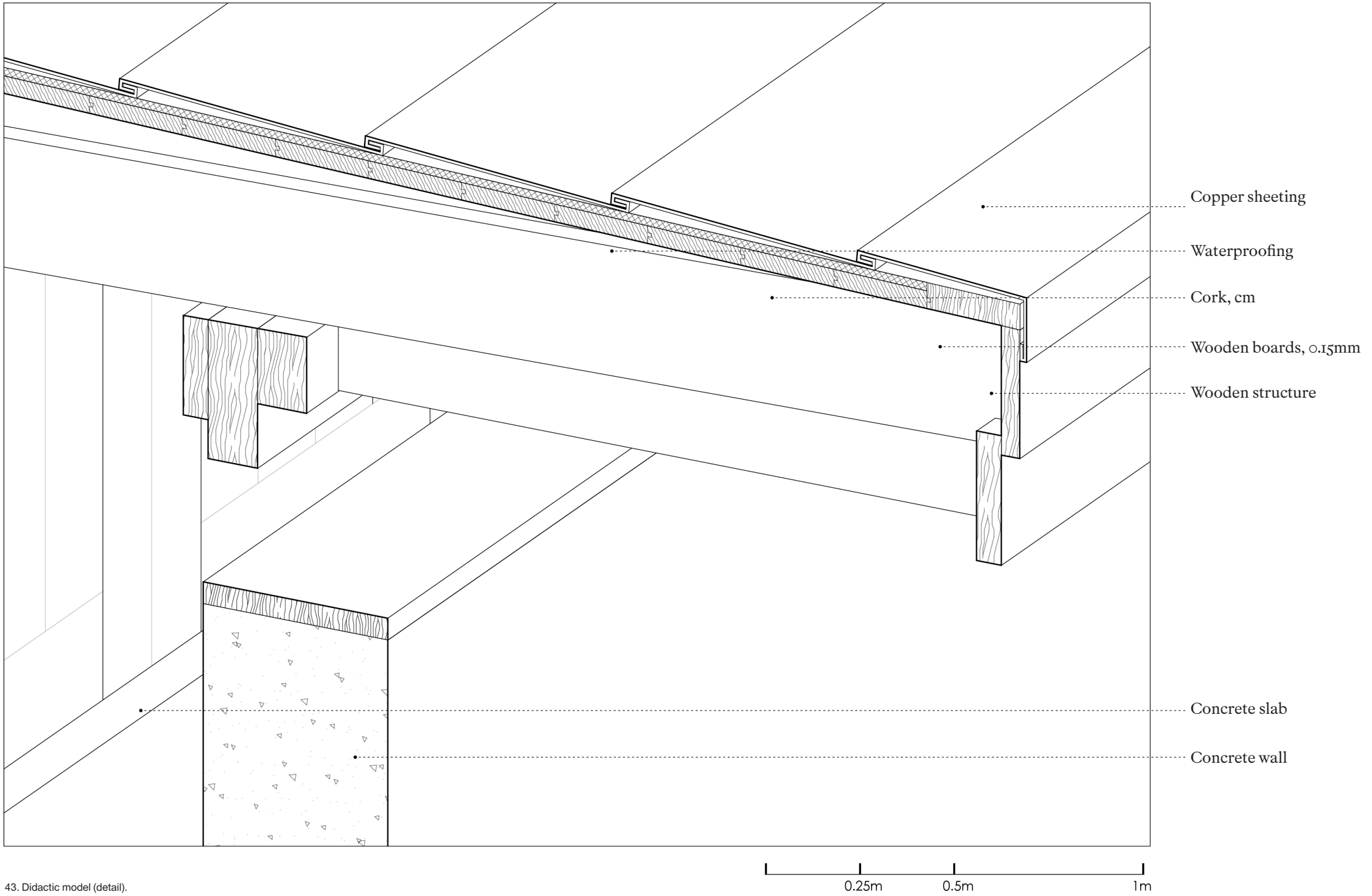
ÁLVARO SIZA

41. 360º Virtual Tour.

Virtual Tour



42. Didactic model.



43. Didactic model (detail).

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Siza ATLAS: Filling the gaps for World Heritage

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