RIALTO LIVING

Detailed Technological Analysis of Buildings of the Highest Environmental Quality

B. Zeynep Uzunoglu

01 Cover Image: Rialto Living © Bastidas Architecture

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Detailed Technological Analysis of Buildings of the Highest Environmental Quality:

Analysis of Rialto Living, Palma de Mallorca

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I would like to dedicate this thesis research to
my mom Gulden, and my dad Cemal ; whom they
supported me through my every decision,
and paved my way into loving architecture
both artistically and mathematically.
Thank you for being there every step of the way.

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Abstract

The rehabilitation of historic buildings can be a challenging task, as it requires finding a balance between preserving the cultural and architectural heritage while also ensuring environmental sustainability. This thesis aims to analyse the environmental performance of Rialto Living, a rehabilitated building located in San Feliu 3, Palma de Mallorca, which has a rich historical past and is considered a significant example of Mallorcan architecture. The study begins by providing an overview of the geological context of Mallorca Island and the architectural elements that define the city of Palma de Mallorca. The previous state of Rialto Living is described, followed by an examination of the design, construction techniques, and materials used. The role of architect Sergi Bastidas and his contributions to the field of New Traditional Architecture is also analysed. Life Cycle Assessment (LCA) is used to calculate the Embodied Energy and Embodied Carbon of the building and compare it to similar rehabilitation projects. The results show that Rialto Living is a sustainable project, and it is concluded that the trend of New Traditional Architecture can be considered environmentally responsible. The thesis demonstrates that it is possible to rehabilitate historical buildings while maintaining their architectural and cultural significance while also ensuring environmental sustainability.

Premise

This thesis aims to examine the environmental performance of Rialto Living, a rehabilitated building located in San Feliu 3, Palma de Mallorca. The building has a rich historical past and is considered a significant example of Mallorcan architecture. The thesis will begin by analysing the geological context of Mallorca Island and the architectural elements that define the city of Palma de Mallorca. It will then delve into the previous state of Rialto Living, detailing the design and construction phases, as well as the techniques and materials used. The role of architect Sergi Bastidas and his contributions to the field of New Traditional Architecture will also be examined. Through the use of Life Cycle Assessment (LCA), the thesis will calculate the Embodied Energy and Embodied Carbon of the building and compare it to similar rehabilitation projects. The ultimate goal of the thesis is to determine whether Rialto Living can be considered a sustainable project and whether the trend of New Traditional Architecture is environmentally responsible.

Acknowledgements

First of all, I would like to thank to the following people, whom I would not be able to complete my thesis analysis without:

Politecnico di Torino, for giving me all the knowledge about architecture I needed these past 6 years, and to be writing this dissertation, especially my thesis supervisor Prof. Andrea Bocco, for guiding me with his insight and helped me get through this process wherever I felt stuck, and also being there through a full year of hardships of trying to write a thesis abroad during Covid and not giving up on finding a possible location, which ultimately led me to this beautiful city called Palma.

Sergi Bastidas, the creative mind behind the Rialto Living, and a self-thought architect who inspires me and reminds me all the reasons why I love this profession. It was a real pleasure to be able to study a building with your signature.

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Many thanks to some of the people who have started this journey as my classmates, and became some of the people closest to me; Izel Karakurt, Nicolas Rapanakis, Gustavo Zapponi, and Alessia Garino. I’m so lucky to have you.

part I

01 Economic & Geographical Context

02 Cap de Formentor, Mallorca
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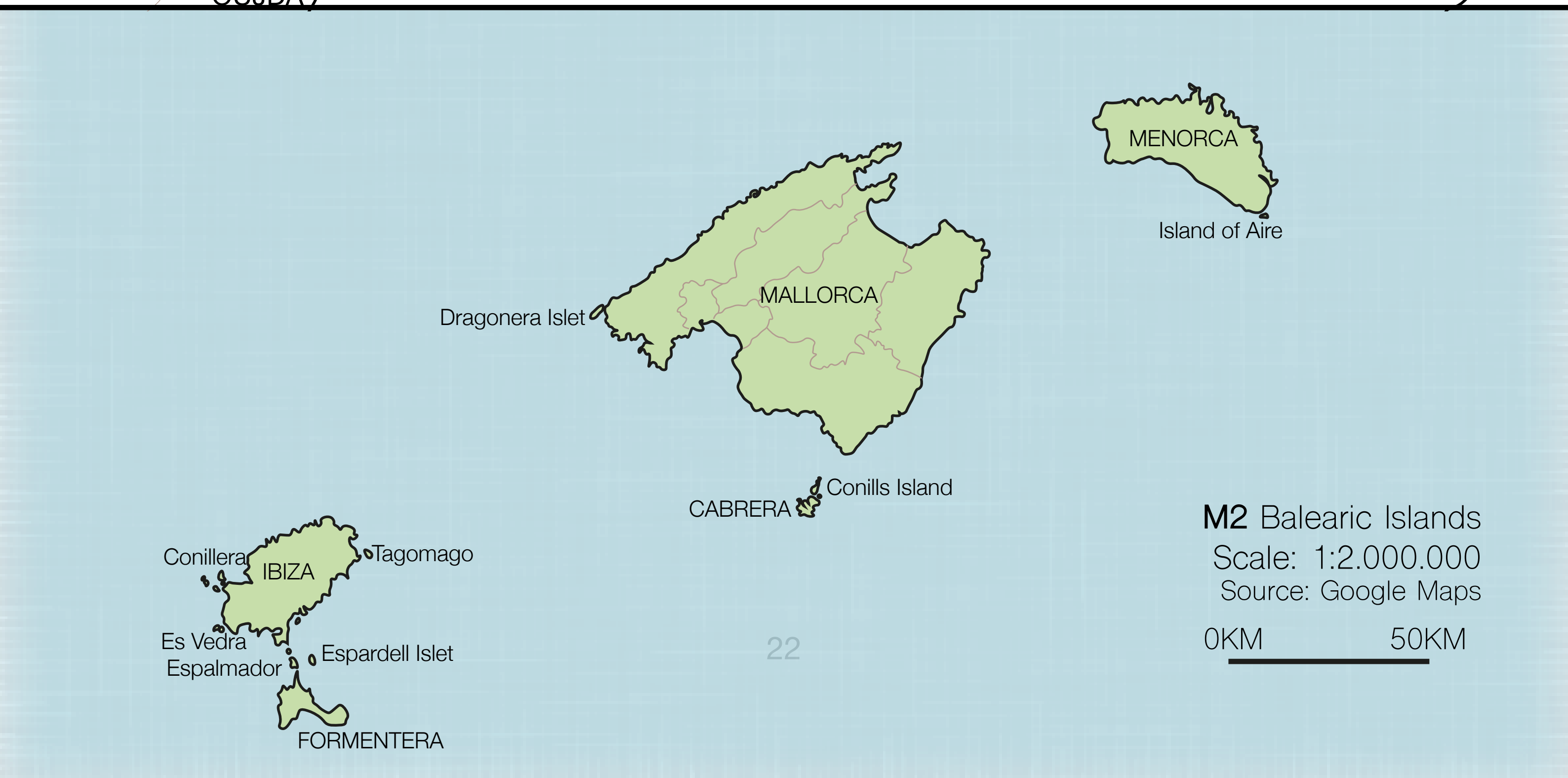
M1 Western Mediterranean Sea, Location of the Balearic Islands Scale: 1:5.000.000
Source: Google Maps



M2 Balearic Islands
Scale: 1:2.000.000
Source: Google Maps

1.1 Territorial & Historical Analysis of Mallorca

Mallorca, the largest island of the Balearic Islands, is located in the Mediterranean sea **(M1)**, and is a part of Spain, though it has been an autonomous community since 1983.

The island has an area of 3,640.11 km2 and a little over 950,000 (2022) inhabitants. The island has 53 regions, Palma is the capital region, and it is accessible by; two commercial ports via ferries coming from the mainland and the other Balearic Islands, the airport located in Palma, or by private boats, flights, or cruise tours. **(M3)**

The island's capital, Palma de Mallorca, is inhabited by 477,000 (2022) residents, meaning it hosts half its population. It is also the capital of the Balearic Islands which consists of 5 main islands; Mallorca, Menorca, Ibiza, Formentera, Cabrera, and a total of 151 inhabited smaller islands. Its name comes from the Latin word *maior,* meaning bigger, and it is a comparison to its close-by island Menorca. **(M2)**

A central geographical aspect of it, the Sierra de Tramuntana mountain range extends from southwest to northeast of the island, with its peak point Puig Major having an altitude of 1,445 m. The surrounding coast of the island variates with sandy beaches, coves, and cliffs.

> "For a Mediterranean island, Mallorca is unusually fertile and green."[1]

The formation of the Balearic Islands took place approximately 150 million years back and has a unique variety of elements, ranging from Sierra de Tramuntana mountains to fertile soils used for agriculture in the center and long sandy beaches with turquoise waters along the coastline.

Although the vegetation of Mallorca does not support a great variety of species, over 300 endemic species can be found, mainly small to medium-sized, such as mice, wildcats, and wild goats. Approximately 2000 bird species coming in during migration season make Mallorca a popular spot for bird watchers, specifically in the island's north.

The Mediterranean Flora, consisting of pine, buckthorn, rosemary, wild olive, lentiscus, and dwarf fan palms, have been the island's primary vegetation. The island's central area is dominated by agriculture **(03)** due to the flat land, while

03 Farm Alaro Agriculture
source: seemallorca.com

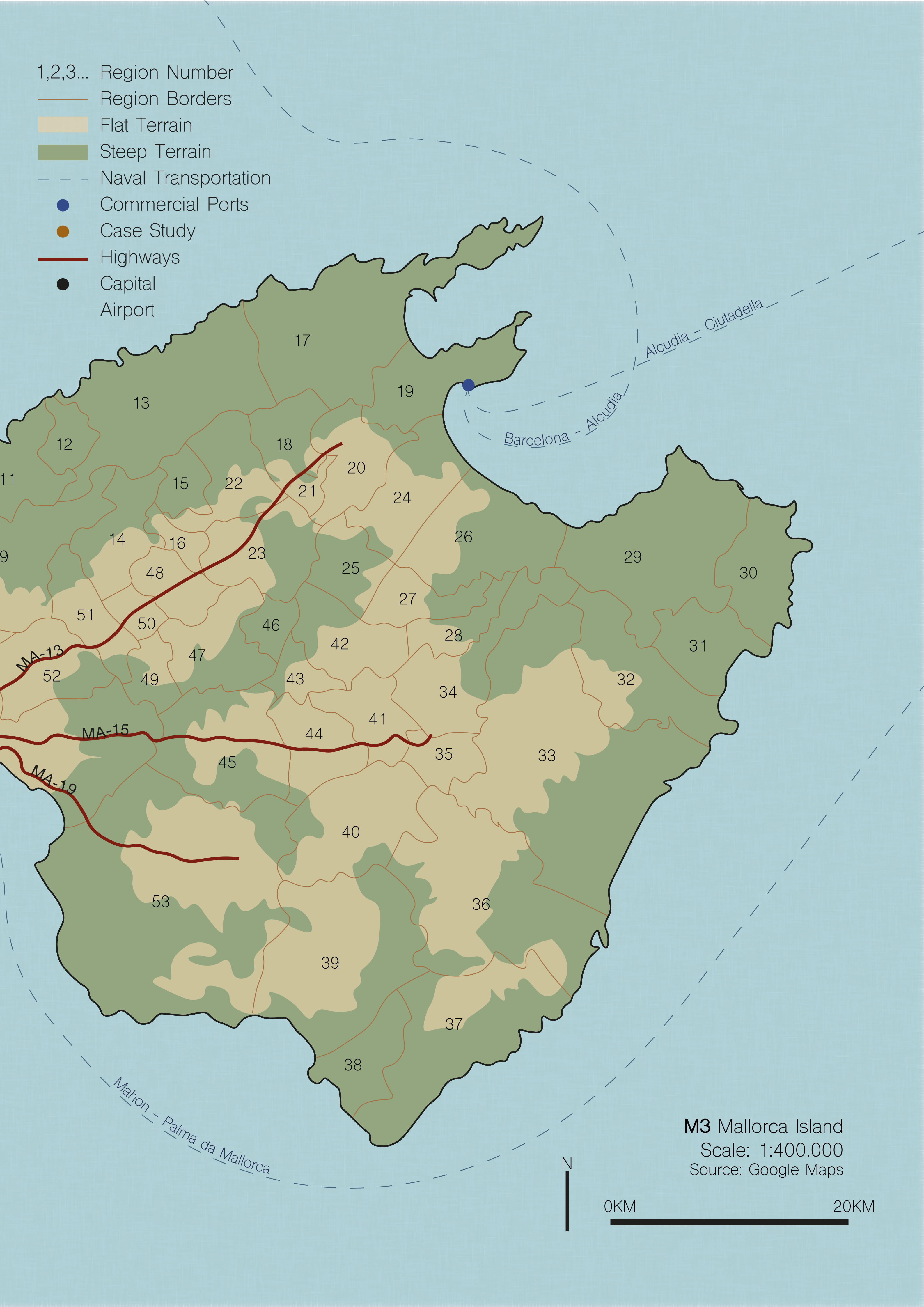
some of the steeper areas are caged for olive trees and vines. Citrus is another popular product that is locally produced.

Most of the island is made up of limestone, a type of rock that dissolves with water after exposure, thus creating ravines, coves, and underground caves, making the island famous for climbers. Limestone is also why the island has few lakes since the water is sweeping to underground water sources. The island having stone as a primary material also dates its usage back to its first human colonization.

The first human colonization in the Balearic Islands can be traced back to as early as 2500 BC, assumed as initially dwelled by the colonizers from Southern France of present-day and the Iberian Peninsula, towards the beginning of the Copper Age. However, there are no monuments for these 'First Mallorcans' due to the architectural material back then being mainly timber and other perishable materials. The Talaiotic Society ruled the island from 1300BC and left many monuments. Prehistoric settlements, called *talayots*, were made out of stone without any help of a wheel for transportation or any mortar for connection.

Later on, with the arrival of the *Phoenicians* around the 8th millennia BC, new colonies were established, eventually joined by Carthage, who took over the island's control. After the Second Punic War in the 3rd century BC, Carthage lost all control over its overseas possessions.

Romans took over control of the island in 123 BC. The current touristically famous towns Palma (Palmaria) and Pollentia (Alcúdia) were found. The local economy was based on growing olives, wine grapes, and salt mining. In 427, the island was captured by Gunderic and the Vandals and was being used as a looting center around the Mediterranean until the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M3 Mallorca Island
Scale: 1:400.000
Source: Google Maps
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restoration of Roman rule in 465.

In 534, Eastern Roman Empire recaptured Mallorca Island, leading to the accelerating number of churches built, thus, a thriving increase in Christianity.

From 707, the Muslim raiders from North Africa started attacking the island to the extent that the islanders asked for help from Charlemagne. The island got conquered by the Issam al-Khawlani in 902, making it a part of the Cordoba Empire known as *Medina Mayurqa.*

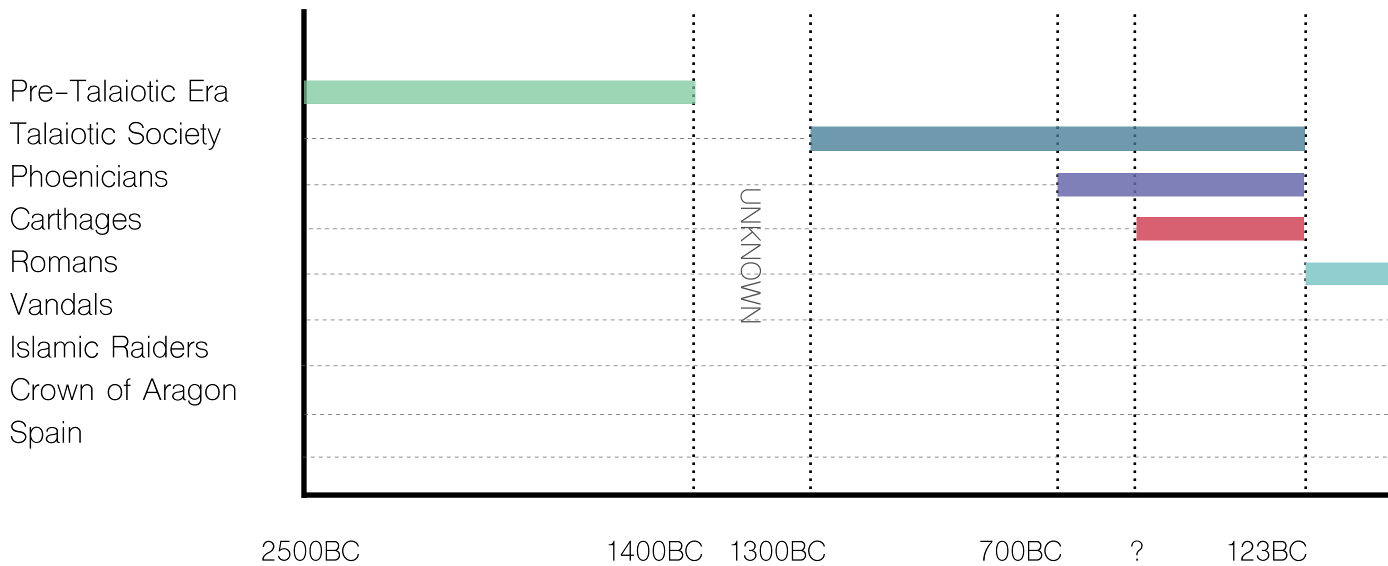
The Island got invaded in 1229 by James the Conqueror, annexing the island to his Crown of Aragon. From 1479, the Crown of Aragon was in a 'dynastic union' of Castille, and due to ongoing attacks from North Africa, watchtowers and fortresses got built on the island. In the early 18th century, the War of the Spanish Succession replaced that dynastic union with a unified Spanish monarchy under the rule of the new Bourbon Dynasty. The last episode of the War of Spanish Succession was the conquest of the island of Mallorca.

In 1716 the Nueva Planta decrees made Mallorca part of the Spanish province of *Baleares*. During Spanish Civil War, Mallorca was used to stronghold the Nationalists and subjected to an ambiguous landing in 1936 in hopes of reclaiming the island for the Republic. However, due to the strong air force of the Nationalists supported by Fascist Italy, Republicans retreated to the island, known today as the Battle of Mallorca. Since the 1950s, the island's booming tourism has been its primary cause. **(S1)**

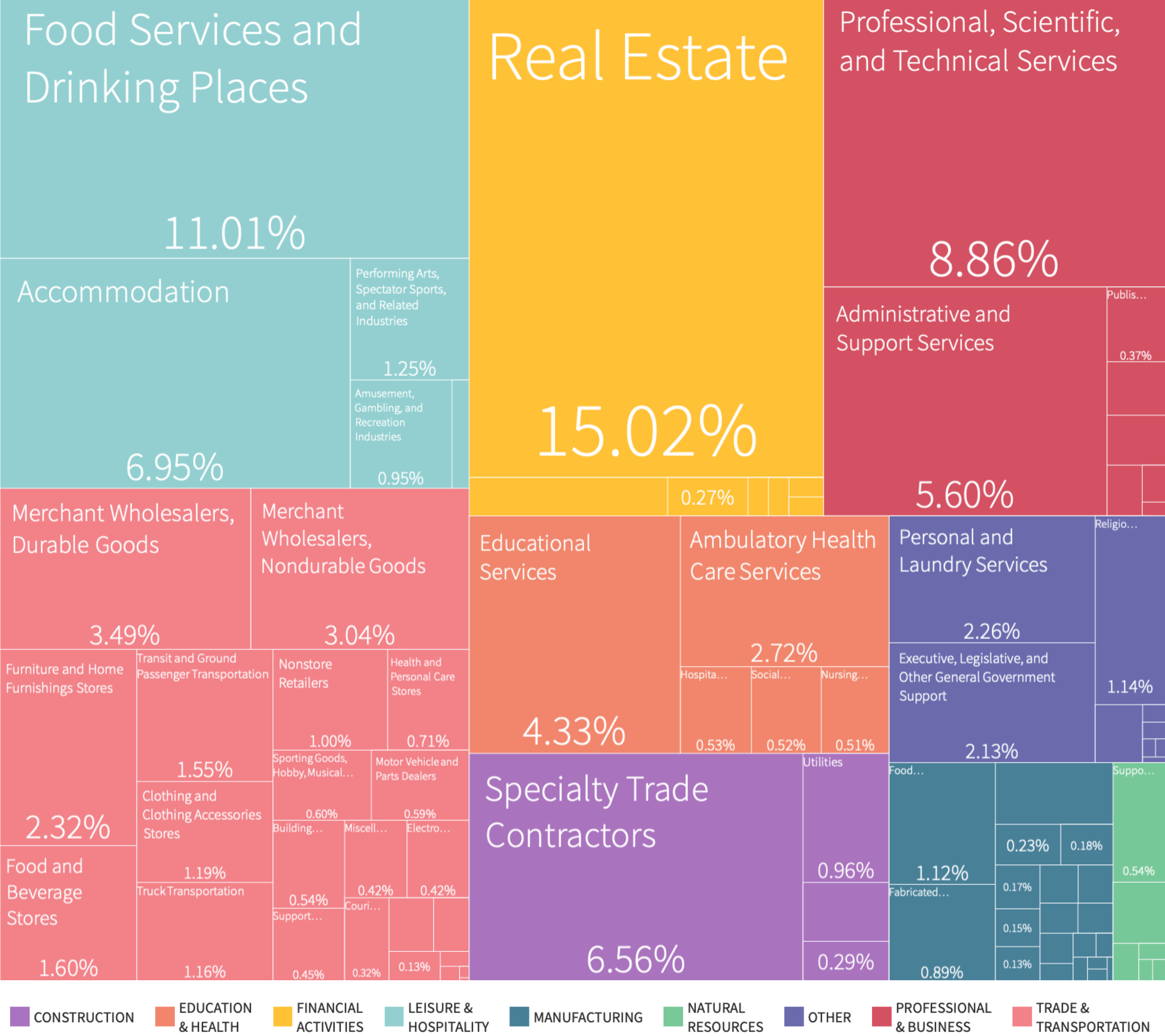
1.2 Economic Framework of Mallorca

As mentioned above, Mallorca has been a significant tourist destination, making tourism the primary source of revenue for the island. The most known characteristics of the island are its sandy beaches, warm weather, and diverse terrain type; it attracts a lot of tourists, cyclists, and sportspersons increasingly each year to the point that it caused locals to protest against mass tourism in 2017.

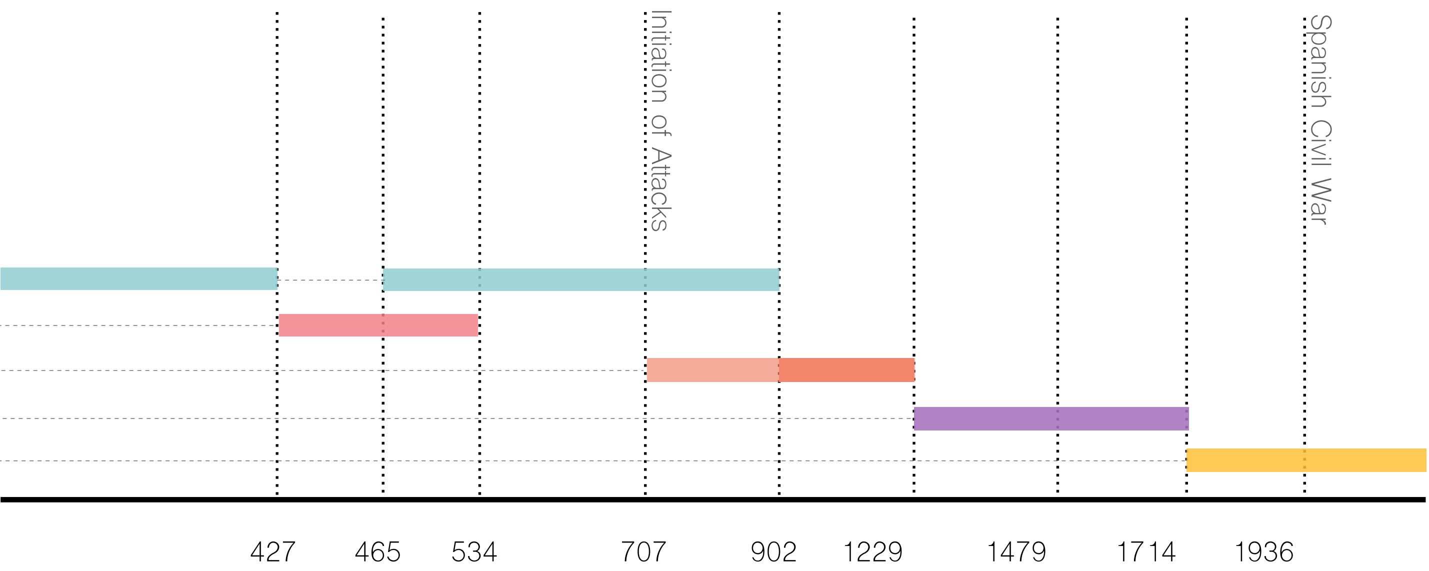
The most arrived countries were Germany, the UK, Spain, and Nordic Countries; consequently, an increasing percentage of the tourist deciding to settle down on the island caused the creation of Mallorca's own business hub economy due to foreign enterprises expanding their businesses to the island.

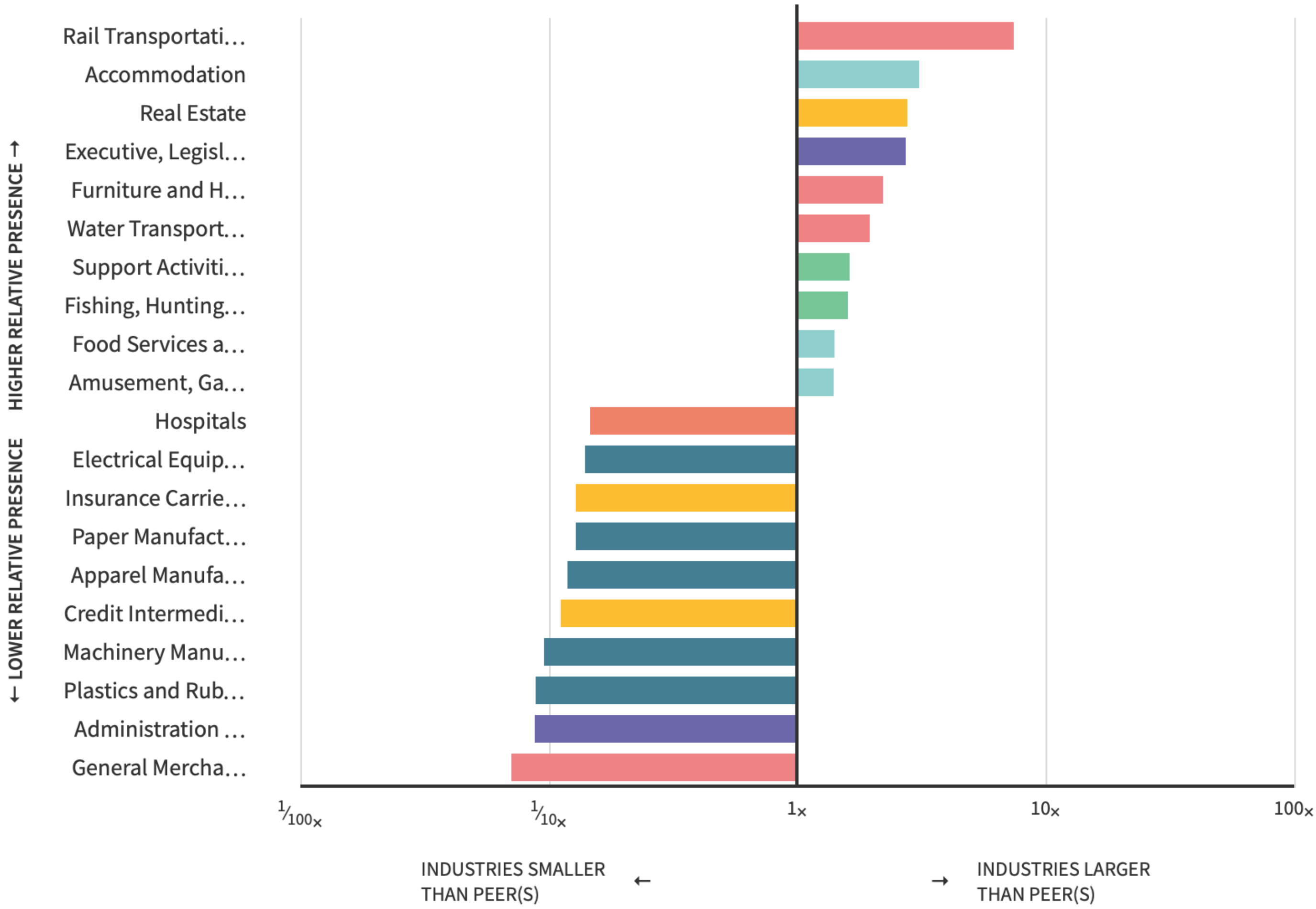


S1 A brief timeline of the civilizations which Mallorca was ruled by.



S2 Economic Composition Diagram of Palma de Mallorca (2020) source: Metroverse Harvard





S3 Economic Composition Comparison of Palma de Mallorca to Global Peers by Similar Economic Structure (2020) source: Harvard Metroverse

1.3 Economic Composition of Palma de Mallorca

Palma de Mallorca had a population of 496.8 thousand people in 2020 when the analysis took place, with a slight decline in 2022 and an estimated GDP per capita of $42.9 thousand for 2020. Out of the 290 cities covered in Europe in the Metroverse analysis by Harvard University, Palma de Mallorca ranks as the 129th most populated and displays the 102nd highest GDP per capita. Palma de Mallorca's labor force consists of about 281.7 thousand workers.

The largest sector in Palma de Mallorca comprises the Leisure and hospitality industries, accounting for 20.32% of employees in the city. A prime example is Food Services and Drinking Places, providing 11.01% of the city's employment. Similarly, it shows a significant presence in Trade and transportation (19.95%) in industries such as Merchant Wholesalers, Durable Goods (3.49%).
(S2) (Source: Harvard Metroverse)

1.3.1 Economic Comparison

For the industrial composition, there is a variety of available comparisons for the selected peer cities and Palma de Mallorca. Among the available criteria of what defines ‘peer cities’ options are; similar population, similar population, and income per capita, similar economic structure, or all available cities. For the thesis analysis relevancy, a similar economic structure was chosen, which filtered the comparison to 24 cities from 1021. Some cities considered to be ‘peers’ in the comparison are Zaragoza (Spain), Genova (Italy), and Brighton (UK), along with others with a similar GDP.

“For each industry, it shows whether it accounts for a larger or a smaller share of overall employment in Palma de Mallorca than in its global peers by similar population.
If bars run to the right, the industries account for a larger share of employment. They are, therefore (in relative terms) more essential employers in Palma de Mallorca than in its global peers by similar populations. If bars run to the left, the opposite is true.
The length of the bar shows how many times larger or smaller the industry’s employment share is in Palma de Mallorca than in its global peers by similar populations. **(S3)**

02 Palma Historical City Center

04 Carrer de Can Fonollar
© abc-mallorca


Map Legend
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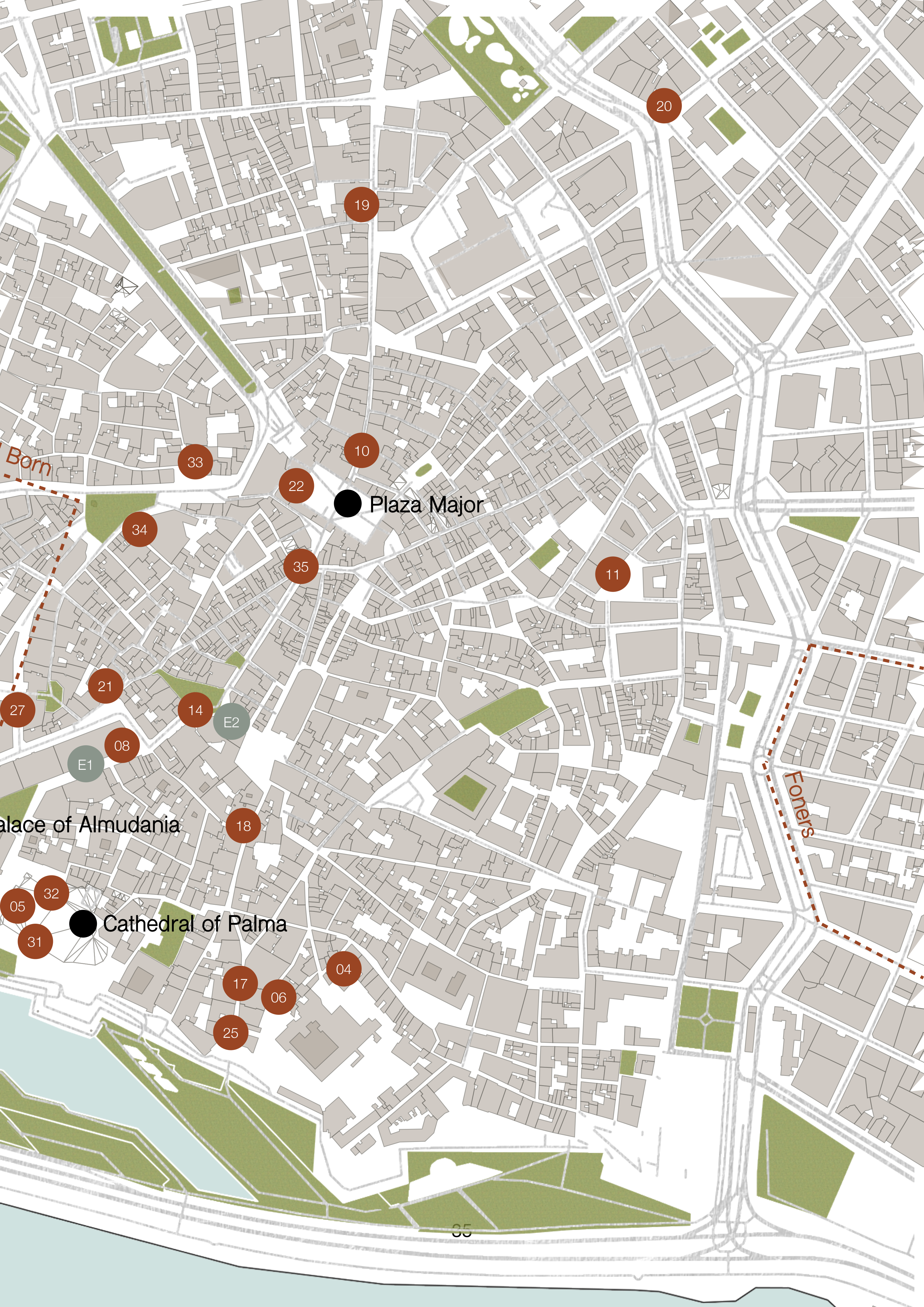
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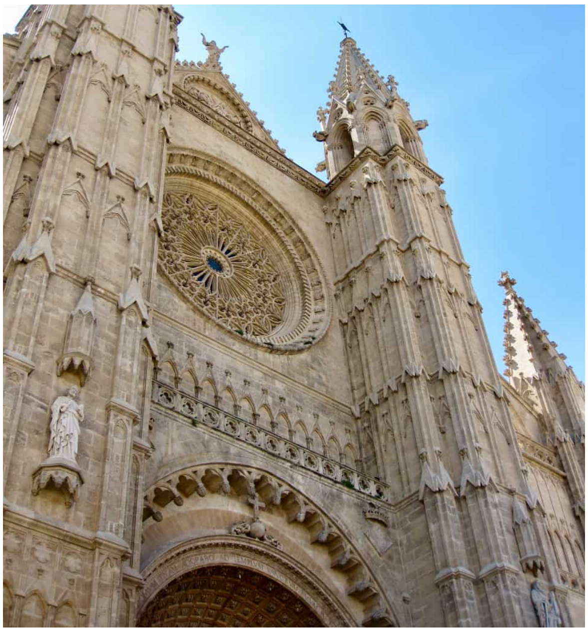
2.1 Palma Historical City Center

"The old Town of Palma is characterized by boulevards and narrow cobbled streets, small squares, cathedrals and churches, the main of which is the Cathedral of Palma."[2]

Palma is one of the oldest European cities, traces of humanity can be traced back to 2500 BC, and have was ruled by Talaiots, Romans, Byzantines, and some other powers. Besides historical knowledge, this can be seen in the architectural influences, especially in the historical city center.

One of the town's most significant landmarks, the Cathedral of Palma **(05)**, carries the characteristics of Gothic Architecture. At the same time, the Baroque façade of the Palma City Hall, neo-mudéjar influences in Can Corbella, and double-tiered arches of Moorish Architecture at Banys Arabs**(06)** can be seen.

One of the significant influences visible even by a quick stroll is the



05 Cathedral of Palma
source: abc-mallorca

Catalan *Modernisme*, Art Nouveau, and the imminent inspiration by the architect Antonio Gaudi. Arguably starting the *modernisme* in Mallorca, Domènech's Gran Hotel inspired many more buildings. Dramatic corner elements, floral patterns, and colorful tile usage are seen at the bakery Forn des Teatre, Can Casasayas & Pensión Menorquina (the two identical Art Nouveau buildings on the opposite sides of the street made by different architects), and a popular tourist spot Can Forteza Rey & Almacenes el Águila.

06 Columns of Banys Arabs
source: see-mallorca

Another interesting point is the Moorish structures, most famously Banys Arabs **(06)**, and it is possible to spot the different columns used during construction. The assumption is that they were salvaged from the ruins of Roman buildings after capturing the island, showing us a very early example of material recycling. With this diverse collage of architecture existing, some key elements can be found in the historical center of Palma that is repetitive and intertwining, thus identifying what could be described as Palma's architectural characteristic. Next up, there is a close-up analysis of some architectural elements that are very typical.

2.1.1 Typical Balearic Architecture Elements

GLASS COVERED BALCONIES

Glass-covered balconies, also called the “Spanish *Miradors*,” are one of the most common elements in the streets of the historic quarter. “A *mirador* is a Spanish term designating a lookout point or a place designed to offer extensive views of the surrounding area. In an architectural context, the term can refer to a tower, balcony, window, or other feature that offers wide views. The term is often applied to Moorish architecture, especially *Nasrid* architecture, to refer to an elevated room or platform that projects outwards from the rest of a building and offers 180-degree views through windows on three sides.” (Bloom, 2009)

It is primarily a considerable element in Nasrid architecture in *the Andalusian* region, even more popularly used in Mallorca after about 1885 after the rise of *Modernisme* style, and increasing with the influence wave *Gaudi* created with his stay on the island between 1903 to 1914.

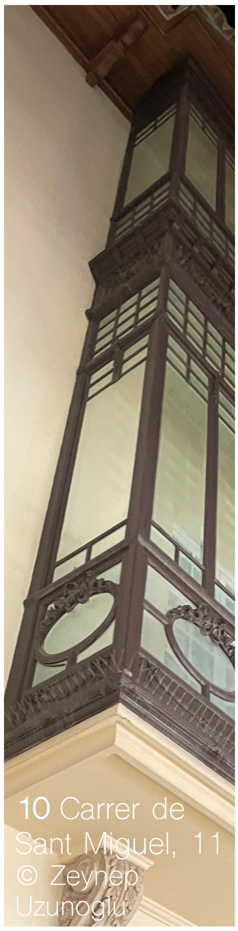
A photo-collage book capturing miradors of Palma named *Els Miradors en l’Arquitectura de Palma* by the City Hall in 1989.

E1 Mirador of Carrer de La Victoria, 11

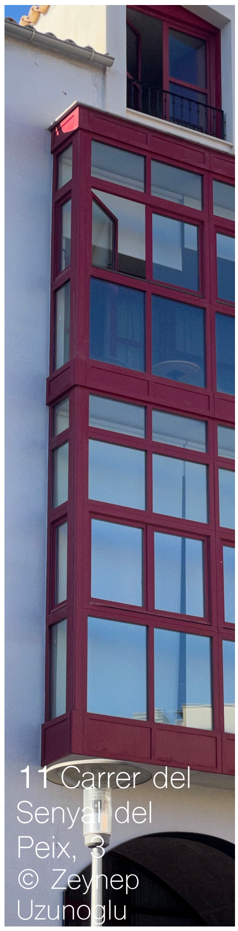
07 Rialto Living © Bastidas Architecture

08 Carrer de Victoria, 11 © Zeynep Uzunoglu

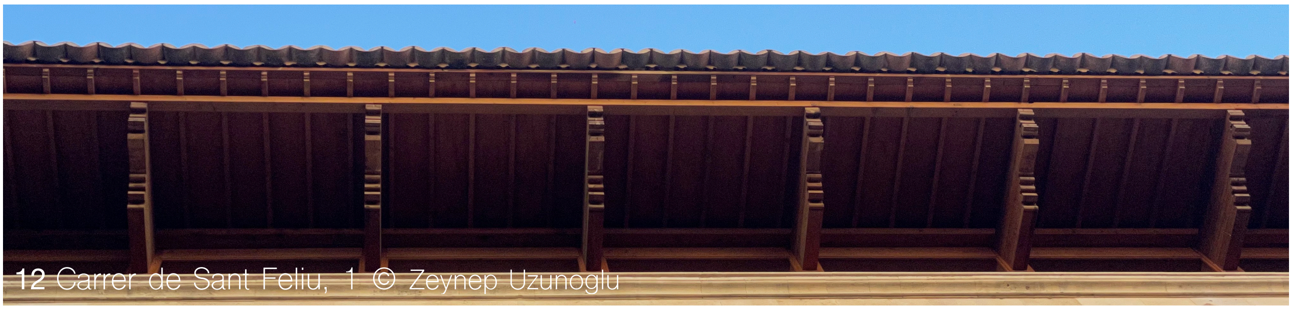
09 Carrer de Constitucio, 1 © Zeynep Uzunoglu



10 Carrer de Sant Miguel, 11 © Zeynep Uzunoglu



11 Carrer del Senyal del Peix, 3 © Zeynep Uzunoglu



12 Carrer de Sant Feliu, 1 © Zeynep Uzunoglu

13 Carrer de Sant Feliu, 3 (Rialto Living) © Bastidas Architecture

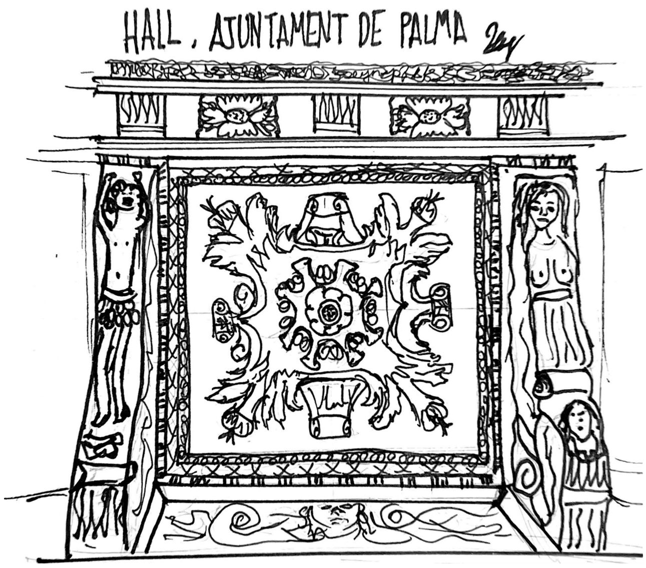
14 Plaça de Cort,1 (Ajuntament de Palma) © Zeynep Uzunoglu

15 Carrer Constitucio, 6 © Zeynep Uzunoglu

ROOF EXTENSION

Especially at historically significant buildings, it is widespread to see timber roofs overhanging at least a meter out, with gigantic cornices protruding. The purpose behind these roofs is to maintain shade and protect the façade from the rain, which is necessary for a warm climate with rainy winters like Palma has.

One of the most famous ones belonging to the Ajuntament de Palma **(14, E2)** protrudes 3 meters outwards and is considered a National Monument.



E2 Roof Decoration Ajuntament de Palma

ARCHED INTERNAL COURTYARD

During the 20th century, Palma was the Mediterranean city with the highest number of mansions and palaces. These arched internal courtyards are usually located at the center of the palaces in the old town, having a grand staircase or allowing a view from the upstairs with its arched envelope. These palaces represent the family's social status; thus, the courtyards are meticulously decorated for anyone to see the view.

Common characteristics of these courtyards are the natural light from above, columns and arches surrounding the courtyard, and the Renaissance elements like the large openings and portals.

Most of these palaces are separated into multiple apartments today, yet the elegance of the courtyard is still preserved.


16 Rialto Living
© Bastidas Architecture


17 Carrer de la Portella, 18, (Can Espanya Serra source: visitpalma.com


18 Carrer d'En Morei, 9 (Can Oleza) source: visitpalma.com


19 Carrer de Sant Miquel, 53 (Cappuccino Cafe) © Katrin

20 Avinguda d'Alexandre Rosello, 34
© Zeynep Uzunoglu


21 Carrer de Sant Domingo, 10
© Zeynep Uzunoglu


22 Plaza Major, 3
© Zeynep Uzunoglu

GREEN MALLORCAN SHUTTERS (PERSIANES)

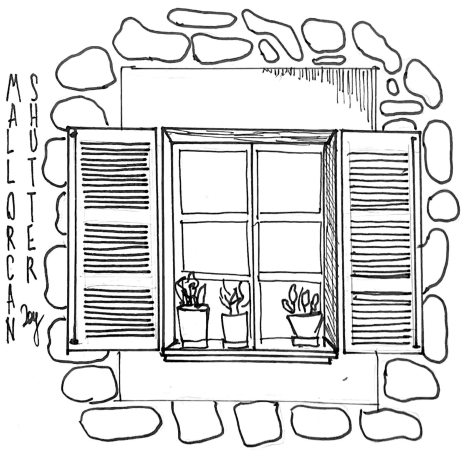
Green shutters are a very characteristic element in Mallorca, and they are all in a similar design, and this architectonic attribute that is also popular all around the country, if not the globe, took its name from the island of Mallorca, and it even could be found in the Spanish dictionary;

> "Majorcan shutter (f); Shutter formed by either fixed or movable inclined, horizontal slats."[3]

There are three general types of Mallorcan Shutters; the standard shutter, where the slats are rounded on both sides; the antique shutter, with sharp-edged slats on both sides; and the combined shutter, which has rounded slat on the inside and sharp on the outside.

Another name commonly used by the locals is '*persiana'* from the French word '*persienne*' due to the wood used to make the shutters from Persia, currently Iran.

Although there are examples of different colors around the city center, the initiation of dark green usage was with the refurbishment of the Foners **(M4)** area in the 17th Century, the reason why green color was used is unknown, but excess paint is one assumption by the locals.



E3 Window with a Mallorcan Shutter

23 Rialto Living © Bastidas Architecture

24 Plaça Rei Joan Carles,I © Zeynep Uzunoglu

25 Carrer de la Portella © Zeynep Uzunoglu

ARRAY WINDOWS

Another thing that captures the attention of a passerby is the arrayed windows on the attic floors of the apartments.

Although there is not much information about the specific purpose of these windows nor the specific relevancy of why they can be spotted all around the old town, when the architect of the case study, Sergi Bastidas, was asked for some information, he mentioned that just like Paris, back when these apartments were one complete residence belonging to the families of wealth, the attic floors were created solely for staff quarters or furniture storage. Furthermore, it creates good heat insulation and ventilation for the floors below where the family lived.

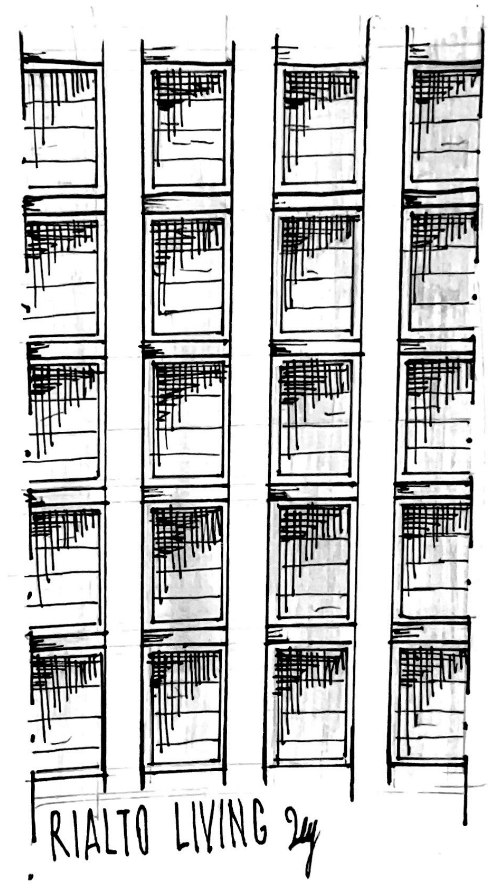
Currently, the attic floors are also a good accommodation space considering the high amount of daylight it is getting.

E4 Array Windows of the Case Study Building

COFFERED WOODEN CEILINGS

Coffered ceilings are a huge part of the hybrid architectural style of Palma, remaining from both the Moorish period and the Renaissance era. 'Coffer,' meaning a 'sunken place in the ceiling,' is used to hide imperfections and create an illusion of height in the room. As necessary as they are, exposed structural beams were considered unaesthetic in classical architecture, so other beams were built nearby to create visual symmetry and hide the structural beam.

'Although hollows are sometimes used for structural weight distribution, coffers have always been used decoratively. Historically, a coffered ceiling can make a room look larger and more regal' (J.Craven, 2018), and palaces being a symbol of social status for the upper-class families in Palma, it was a commonly used element.



E5 Coffered Ceiling Pattern of Rialto Living

26 Rialto Living © Bastidas Architecture

27 Oficines de Correos © Zeynep Uzunoglu

28 Carrer de Sant Feliu, 11 © Zeynep Uzunoglu

OJOS DE BUEY (PORTHOLES)

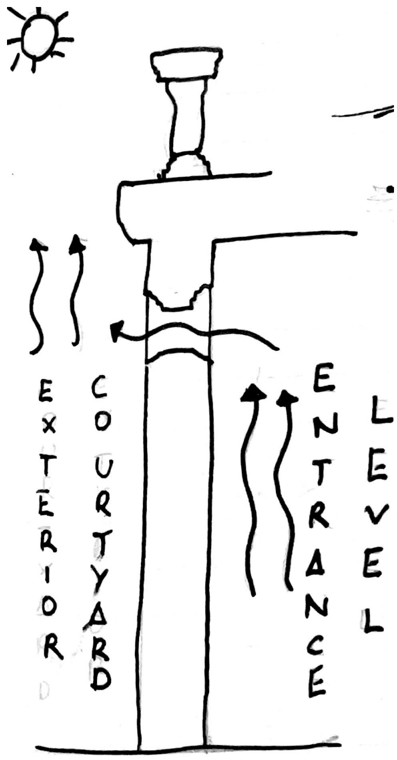
"Ojos de buey" is Spanish for "ox eyes," Ojos de buey are typically found in traditional Spanish architecture, particularly in houses and other buildings built in the Spanish colonial style.

They can be round or oval in shape, and are often decorated with intricate carvings or other embellishments. They were originally used as a source of light and ventilation in homes, especially in the upper floors where natural light was scarce. They have a practical function of providing light and air to the rooms, but also, they can be used as a decorative element, often located in the facade to break up the monotony of a plain wall.

They are also a common feature of the Mudéjar style of architecture, which is a blend of Islamic and Christian styles that developed in Spain during the Middle Ages.

Ojos de buey have a long history and are an important part of Spanish architectural heritage. They can be found in many regions of Spain, including Andalusia, Castilla-La Mancha, and Valencia. They are also found in Spanish-colonial architecture in the Americas, particularly in Mexico, Central America, and South America.

In recent times, architects and designers have been reviving the use of ojos de buey in new construction, both for their functional and aesthetic benefits. They are increasingly being used in contemporary architecture as a way to bring a touch of traditional Spanish style to a building while also providing natural light and ventilation.



E6 How Air Travels from the Porthole

29 Rialto Living
© Zeynep Uzunoglu

30 Rialto Living
© Zeynep Uzunoglu

MODERNISME AND GAUDI INFLUENCE

A convergence of Art Nouveau and Spain's political and cultural identity, the Modernisme movement started in the late 1800s. Palma is arguably one of the most significant cities, with some of the best examples after Barcelona.

Works done by some of the leaders of Modernisme, like Antonio Gaudi and Lluís Domènech i Montaner, not only helped Mallorca in the long run, it also imprinted itself to be one of Palma center's characteristics.

During the late 19th Century, Pope Leo XIII decided to modernize the churches in Spain by increasing their accessibility, meaning the removal of unnecessary altars and chapels. The renovation plan was already verified for the Palma Cathedral when the bishop met Gaudi during his visit to Barcelona and asked him to take over the project in 1899.

32 Baldachin of Cathedral of Palma
source: lionsinthepiazza.com

31 Retracted Lights of Cathedral of Palma
source: lionsinthepiazza.com

Antonio Gaudi traveled to the island two years later; with an effective initiation, he moved the choir from the church's central nave, restored the stained glass window **(31)**, designed new light fixtures, and moved around altars and chapels. He removed one of the 18th-century altars to reveal the Gothic one below, and a baldachin **(32)** was placed above, suspended to the ceiling to make it look like it was floating. Gaudi later used the design to model the baldachin at Sagrada Familia.

Later on, his out-of-the-box and radical ideas, like painting the stalls and placing ceramic tiles, unsettled the supervisors of the cathedral worried that the church would lose its original characteristics. Gaudi returned to Barcelona, abandoning the project to his protégé to continue until the bishop died and the project came to a complete stop. Although Gaudi's stay did not last long in Palma, his presence inspired many architects, and Domènech's

Gran Hotel **(33)** marked the arrival of the Modernisme to the island. Domènech was the only designer architect in the project, and he created a simple wrap-around façade with an ornamented corner detail.

"Domènech's other strength was his ability to collaborate with a veritable army of artists and craftsmen, blurring the line between architecture and art. Sculpture, mosaic, stained glass, ironwork, and countless other decorative arts melded into a single, exuberantly beautiful package."[4]

33 Gran Hotel by Domènech
source: lionsinthepiazza.com

34 Can Casasayas (Right) and Pensión Menorquina (Left) source: lionsinthepiazza.com

Across Gran Hotel, there are attention-grabbing twin buildings, Can Casasayas & Pensión Menorquina **(34)**. Interestingly the construction of these two identical buildings has not started in the same year, nor was it done by the same architect. Architect Francesc Roca i Simó designed the Can Casasayas in 1908-10. In 1909 another architect, Guillem Reynés, built the Pensión Menorquina identically across the tiny street.

Some tourists and locals agree that Can Forteza Rey **(35)** is the Palma equivalent of Gaudí's colorful Casa Batllò. It is not known when this Modernisme masterpiece was built. However, it is guessed between 1902-11 by its past owner, goldsmith Josep Forteza Rey, used as a residence for his family and a dental studio for his son on the second floor. It is heavily influenced by Gaudi's pioneered *trencadis* decoration.

35 Can Forteza Rey
source: lionsinthepiazza.com

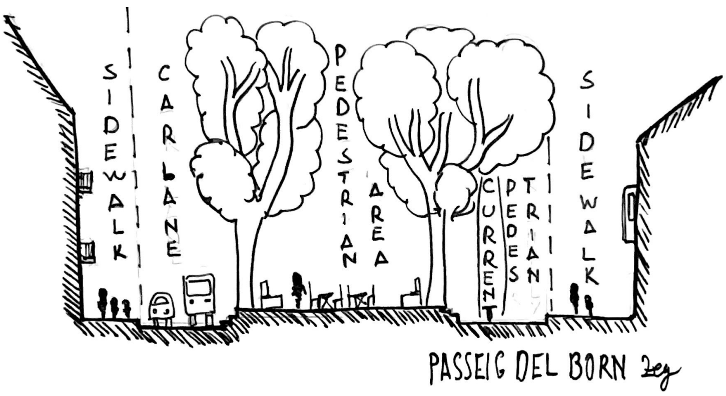
Map Legend
District/Area
Landmark
Location of the Image No.
Location of the Esquisse
Case Study (Rialto Living)
*Images no. 7,13,16, 23, 26, 29, 30 & esquisse E4 is not indicated due to being located in the case study. (CS)
0m
50m.
100m
N
M5 Passeig del Born
Scale: 1:2000
Avinguda de Jaume III
Plaça del Rei Joan Carles I
24
E7
E7'
Carrer de Sant Felui
28
12
CS
09
Passeig del Born
15
Plaça de la Reina
Avinguda d'Antoni Maura
Avinguda de Gabriel Roca
Palace of Almudania

2.2 Passeig del Born

Passeig del Born is a touristic boulevard with high-end fashion stores and cafes; it is arguably one of the most elegant avenues of Palma, which gave it the nickname 'Golden Mile.' It consists of a central pedestrian area with shading, trees, and benches; car lanes for each direction on its sides (currently, only one is active as a pedestrian passage) **(E7)**; enclosed by buildings of typical Palma architecture. It goes perpendicular to the port of Palma and is 100 meters from two of the most popular landmarks, the Cathedral of Palma and the Medieval Palace of Almudania. The total length of the boulevard is roughly 300 meters, and it was built on the old riverbed Riera. **(M5)**

The word 'born' means 'an area for games,' specifically in Spanish history games of jousting between the knights in the middle ages. The avenue was once a tidal mouth of a river, then the great flood of 1403 drowned the adjoining streets in a sewer. Years later, the waterway was moved to Torrent de La Sierra, leaving Passeig del Born free to be used as a public space.

The avenue underwent more changes after the medieval era, like the restoration in 1833 when statues of Sphinxes by Jacinto Mateu Sureda and the Turtle Fountain at Plaça del Rei Joan Carles I were added. Political alterations happened, though they did not last long; like the placement of Isabel II's



 E7 Section Sketch of Passeig Del Born

37 Statue of Isabel II, 18
© fotosantiguasdemallorca

statue **(37)** in 1880, which was demolished eight years later during the revolution in 1886, and Franco
named the avenue after himself, yet people still refer to the boulevard as Passeig del Born.

Today, Passeig del Born is still an important focal point, hosting most of the *fiestas* celebrated throughout the year. People gather around the boulevard to celebrate "turning on the lights for Christmas" celebrations in late November **(36)**, the celebration of the New Year, the display of the Mallorcan traditional devils for the celebrations of San Sebastian in January, and Palma Book Fair on May.

38 Casal Solleric
© M. Andrews

36 Lights Opening Celebration in Passeig del Born
source: abc-mallorca

39 Old Born Cinema, Passeig del Born, 25
© G. Salvà

Several buildings preserved their style and façade from the previous eras, like the old Palace of the Casal Solleric **(38)**, built in the late 18th century, during the transaction from Rococo to Neoclassicism, which the building carries both characteristics. The property back then belonged to the Marquis Solleric and is currently an art gallery and exhibition space.

A notable example is the old cinema Born **(39)**, which closed its shutters in the 1980s; currently, it is a 'Zara' department store, though it is still possible to see the inscription above its door writing 'Born.'

Although many labyrinth-like streets are on both sides of the boulevard, Carrer de Sant Feliu is probably the most packed one. The popularity of the street dates back to the 19th century when social clubs and casinos were the primary entertainment preferences. The street's entrance is between the luxury stores of the boulevard, and today it still attracts so many passersby due to the massive community of art galleries. The street is as narrow as 4 meters, and it is entirely pedestrian; respective to its popularity, all buildings are well conserved, such as wellness centers, restaurants, and exclusive lifestyle stores, like Rialto Living.

part II

03 An Introduction to the Case Study

40 Miradors of Rialto Living
© Bastidas Architecture

3.1 Can O'Ryan & Its History

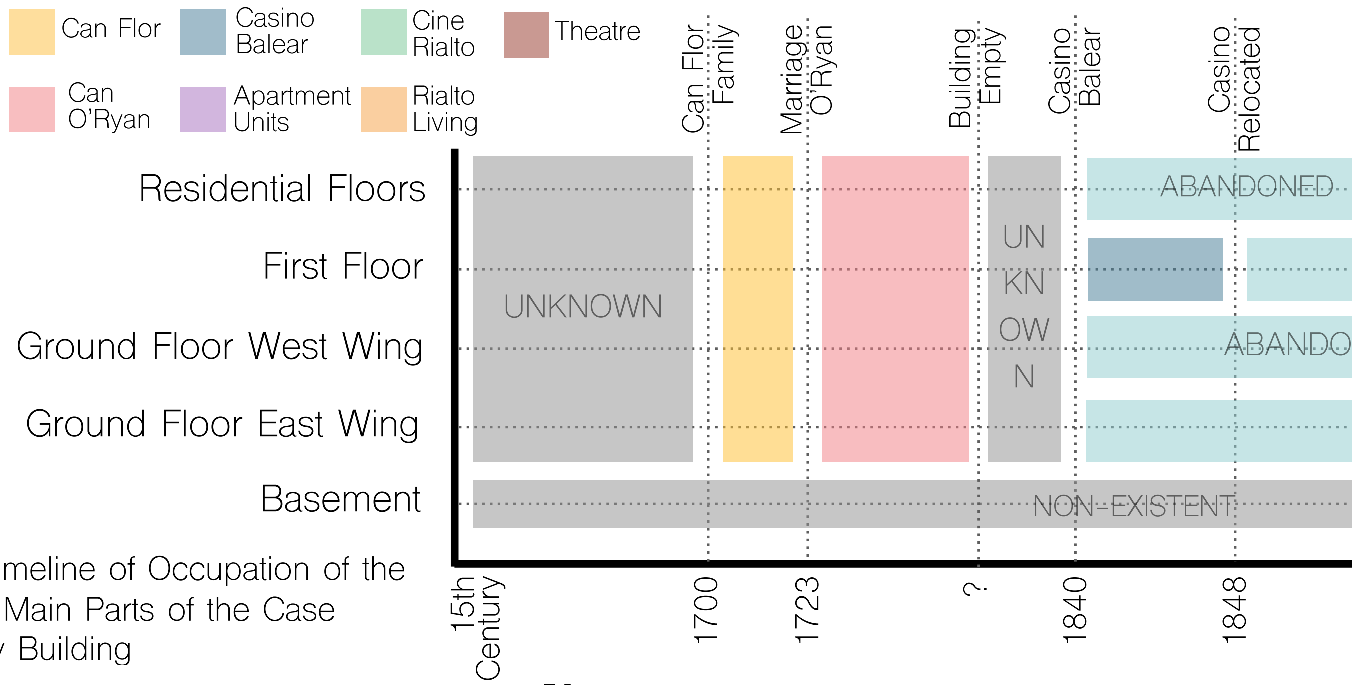
Can O'Ryan (previously known as Can Flor) is an 18th Century Baroque building located in Carrer de Sant Feliu, door number 3. The building has a vibrant past, and the original construction date remains unknown. The current building owners, Barbara Bergman, and Klas Kall, mentioned that during the archeological excavations before the last renovation project, the traces revealed that the original foundations of the building date back to sometime between the 15th to 16th Centuries. There are no available public documentations to clarify this information or how many changes were made until the 18th Century.

3.1.1 Beginning, Family Palace, & Casino

The information on the property itself, known as Can Flor at that time, is limited to the timestamp of the 18th century due to the building's architectural characteristics of the Baroque period. It is mentioned in many sources that the palace was owned by the local merchant family Flor's until John O'Ryan and Francisca Flor i d'Alemany got married, and the palace became theirs.

However, it is possible to achieve a more specific timeline by investigating the previous information on the two families. John O'Ryan (also known by the names Juan O'Ryan and John Higgins in the record) was the son of Cornelius O'Ryan, a soldier, and Elionor Mahoni, daughter of Cecilia Weld and Daniel Mahony, the Count of Mahony. Research online shows no records of when Cecilia Weld was born, and the only approximation for Daniel Mahony is that he was born after 1638. There is the death year of 1714 for Daniel Mahoni, 1708 for Cecilia Weld, and the birth year for Elionor Mahoni of 1671.

Cornelius O'Ryan, the father of John O'Ryan, died in 1707 in Spain, and John O'Ryan was born in Saint German in Laye, France; and studied to become a doctor in 1719, meaning he was born in 1701. Contemplating it with the text found in the book *Los Extranjeros En La Espana Moderna* (translated):



S4 Timeline of Occupation of the Four Main Parts of the Case Study Building

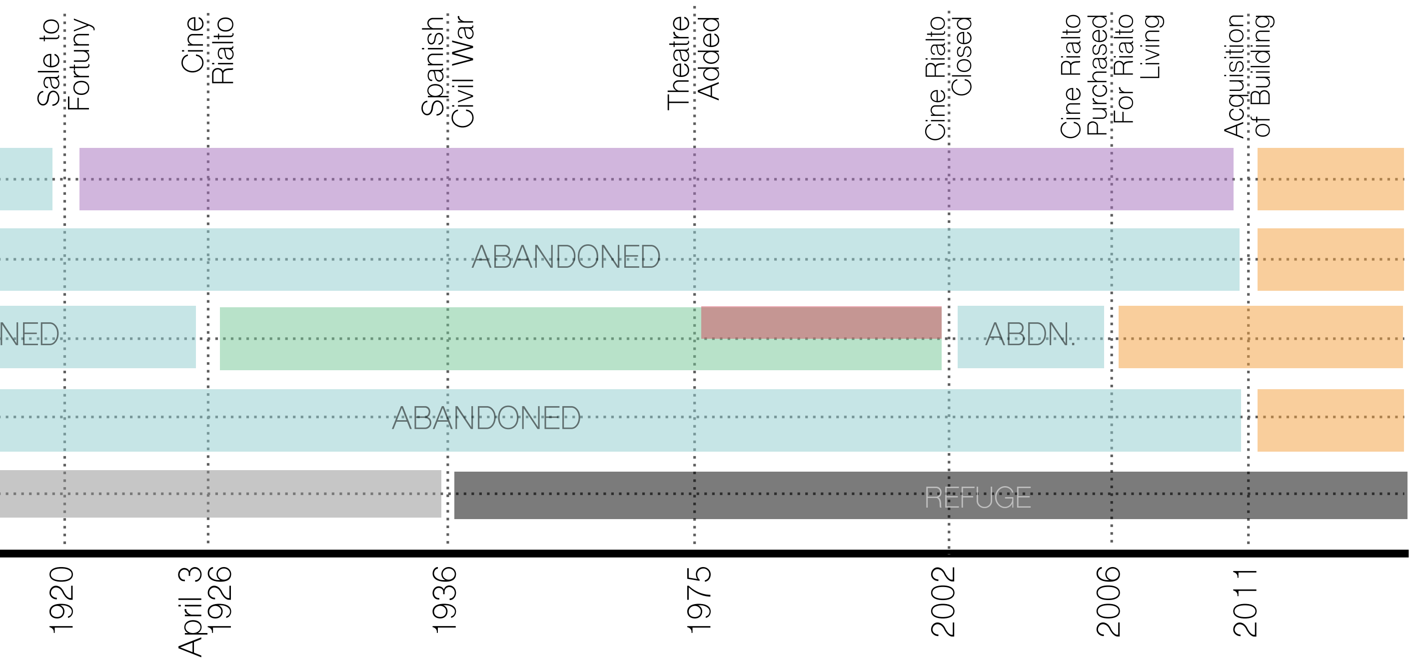
"Despite the fact that Lawless (Patric Lawless, general captain of Mallorca) quickly integrated into island society, as evidenced by the fact that in 1727 he sponsored Jorge de Oleza, second son of the island nobleman Nicolás de Oleza, one of the executors of his will, Lawless encouraged emigration of Irish Catholics to Majorca. These were the cases of John O'Sullivan Majoni, also Lawless's executor, or the doctor John O'Ryan Mahony, witness to Lawless's will, who, on his recommendation, obtained the jobs of protomedic of the army and kingdom of Majorca (1727) , and of the troop hospital (1732) .*

(Asterix about John O'Ryan)Born in the court of Saint Germain in Laye, he was the son of the soldier Cornelius O'Ryan and Elionor Mahoni Weld (daughter of Daniel Mahony, Count of Mahony), in 1725 he was called by John Higgins (physician of Felipe V between 1715 -1729), also ending his days on the island.[5]

we can specify the dates when he married Francisca Flor and moved in between the years 1723 to 1729.

The couple owned the palace for the following decades; thus, its name changed to Can O'Ryan from Can Flor.

At the beginning of the 19th Century, entertainment options were limited without modern-day inventions, so gatherings were the most popular events to host and attend in Mallorca. These meetings were initially held in the courtyards of the *Can tals* or *Can quals*, starting at 11 in the morning and lasting until one in the afternoon. Several elite families were famously making these gatherings in their private houses. These meetings started becoming so politicized that they broke



41 Original 'Moroccan Room' Remained from Casino Balear
© Bastidas Architecture

partnerships of common interests and friendships. The term casino was born between 1835 and 1850 as a solution to this complaint. These elite meeting centers were equipped with various activities, game rooms, libraries, and dance halls, permitted or not permitted by law (J. Arrom, 2019). Months after the first casino of Palma, Casino Palmesano was established; months later, Felipe de Puigdorfila established Balearic Patriotic Association and later changed its name to Casino Balear in 1840.

The first location and headquarters of Casino Balear were on the first floor of Can O'Ryan, already vacant by the time the Casino was opened.

"At that time, the first half of the 19th century, when there was no internet, no radio, no television, no cinemas, entertainment was limited to masked balls, 'confidence' dances, choral and orchestral concerts . Rounding out these distractions were gatherings, fencing lessons, readings in the library, pool games, and other illegal games."[6]

In 1846, some members of the Casino Balear proposed to buy a new plot from the esplanade available after the demolition of the Church of San Domingo. In 1848 the new plot was already purchased, with the execution of the project starting months after, leaving the building Can O'Ryan vacant.
There is no information on whether the building was occupied after, but it is still possible to see the tiled Moorish room on the first floor with offset double wooden Moorish arches**(41)**.

3.1.2 Modernization, Theatre, & Cine Rialto

In the period between the years 1848 and 1920s, Can O'Ryan was either vacant or

42 Carrer de Sant Feliu in 1888
© Fotos Antiguas de Mallorca - FAM

the activities were undocumented.
Beginning of the 20th Century, with the arrival of Modernist movements to Palma, some buildings were aimed to be

43 Engraving of Gaspar Bennazar's name on old cinema Born
© Zeynep Uzunoglu

modernized and repurposed.
In the same decade, Can O'Ryan was sold to Antonio Fortuny by, as the sources say, 'an unknown local Mallorquin.' Fortuny, with intentions of modernizing the palace's layout, hired the renowned architect Gaspar Bennazar. He is known for his interventions in some of the most famous buildings in Passeig del Born, like the old Born Cinema (current Zara department store)**(39)**, still observable today by his name engraved above the entrance door **(43)**. It could be assumed that, during these interventions of modernizing the building, the levels above the first floor were converted into individual apartments, as there is no other time on the timeline for it to be repurposed from the palace.

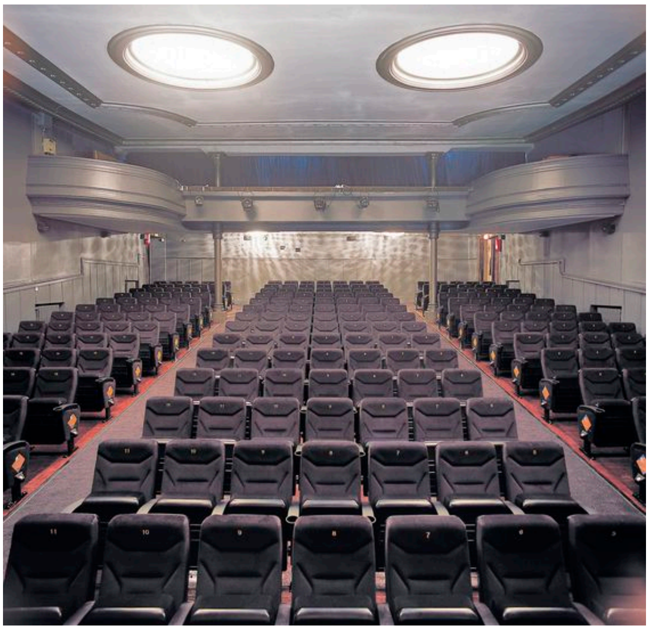
It was April 3, 1926, when the unoccupied ground floor of the building started to function as Cine Rialto **(45)** and made its first projection. **(44)** Can O'Ryan was once again a frequently visited location by the locals, to the extent that the plan for expanding the cinema by adding a second projection machine **(46)** was done by 1930.

One of the over 700 air-raid shelters was built in the basement of the building to hide civilians from bombing during the Spanish Civil War (1936-1939). However, no documentation indicates the precise time.

44 Cine Rialto Main Salon, Date Unknown © Fotos Antiguas de Mallorca - FAM


RIALTO

Decades later, Cine Rialto was still popular and coming closer to its 50th anniversary when the committee decided to adapt the floor layout to add a theatre scene; the mezzanine floor on the southern side was planned to be used as a backstage. Around a decade later, the committee agreed to reduce the capacity of 500 people of cinema to 300 to create a new space. It is uncertain whether this decision or the modern advances that arrived in the 21st century slowed down the business, but rumors of shutters closing were already heard. On May 2001, businessman Alejandro Bordoy announced that he would be programming new record presentations, theatrical performances, and live concerts. This effort to spark interest in Cine Rialto lasted only a short time. Almost a year later, in February 2002, TIC (Teatre Independent de Ciutat) officially closed the movie theatre shutters.



46 Cine Rialto Secondary Sala, 1990s
© prospectostdecine.com

3.1.3 Rialto Living, Full Renovation, & Clients

The property was empty other than the tenants living upstairs at the apartment units, assumed to be converted during the 1920s interventions for the next four years. According to the architect of the final rehabilitation, Sergi Bastidas, the first two floors and the mezzanine floor in between functioned as a public junkyard where the area residents threw away their unused furniture, considering the state he found the remaining areas of the building. In 2006, the current owners of the building, Barbara Bergman and Klas Kall, saw the 'for rent' signs on the doors of previously Cine Rialto and made a call to the Mallorquin owner, though the call hung up due to the owner not being very keen to sell the property yet. One of the initial reasons the Swedish couple wanted to buy this property was to 'save it from the urban rumors that the land was going to be converted into a parking lot.' After the negative response from the owner, they started planning to invest in another property in Santa Maria del Camí, closer to their house. During their celebration dinner for the purchase of the Santa Maria del Camí property, they received a call from the owner of Cine Rialto about him being ready to sell the property, ending up with the official purchase of the part of the building. **(D1)**

The owners' Barbara Bergman and Klas Kall**(47)**, are a Swedish Couple and have been coming to Palma de Mallorca since the 1980s. Klas, born in Sweden, studied School of Foreign Trade in London and acquired a license in design later on, pursuing his passion. Barbara was born in Brazil to Swedish parents, pursuing early education in Mexico, thus being fluent in Portuguese and Spanish by the time she moved to Sweden at eight. She later did her high school education in the US, pursued art studies in Granada, Spain, and started a career in advertising and graphic design in Sweden. The couple permanently moved to Palma de Mallorca with the acquisition of Cine Rialto.

The concept store, carrying the name legacy of the movie theater, Rialto Living,

45 (Left) Cine Rialto Entrance, Date Unknown © Fotos Antiguas de Mallorca - FAM

47 Klas Kall and Barbara Bergman source: theislander.net

was up and functioning less than a year later as a concept store. The main entrance of the palace, courtyard, mezzanine floor, and the first floor was still abandoned, and the store covered the passage on the west side of the building, where the old cinema and theatre used to be.

Bergman and Kall were very attentive to preserving the history of the building and conserving its heritage by learning as much about to building as possible. In their interview with Sarah Forge from the Islander magazine in 2016, Bergman said:

"We spent one year lovingly restoring Cine Rialto, finding many charming original features along the way, when we pulled down the artificially-lowered spot-lit ceilings we found one or two meters of extra height, when we dug down into the foundations we found stone pillars from the 1700s. It was a real voyage of discovery."[7]

The couple decided to expand the area they owned by purchasing the rest of the building in 2011, although they said that they would not have imagined they would be doing that initially.

During our conversation with Bergman and Kall, Bergman mentioned that the couple only wanted the shop and were not interested in the apartments. Later on, when they considered it from time to time, the number of different apartment owners would cause a negotiation problem, as they would try to increase the price each time a conversation took place about it. One of the main reasons Bergman and Kall started considering the acquisition more seriously was when they realized there was a leakage problem with the building. Every time it rained, the water was collected through the ground floor

where the store was. As Bergman simplifies during the conversation, “We kept saying no to the price raises, and then there came a moment, I think they also had to sell it. We just remained in control.”
Bergman and Kall officially bought the remaining parts of the building in 2012.

Once they removed the later additions to the building, the variety of periodical styles became visible. The marès walls and structure of the palace, and the iron beams and columns remaining from the cinema, are perfect examples of industrialization in Palma.

Getting the proper assistance to turn the building around, Bergman and Kall started meetings with self-thought prized architect Sergi Bastidas. Known for his applications of traditional construction ways and appreciation for materials, Bastidas, Bergman, and Kall worked meticulously along the project.

In a very respectful and curious approach to the building’s history, the first step was to hire an archeologist to examine the building, the safety, and the materials and create a plan.

The archeological examination took a year, and the project started in 2012 and finished at a rapid tempo lasting two years. The wall separating the unused part and entrance corridor of the movie theater was demolished, exposing the stone column carrying four stone arches **(47)** and false ceilings removed exposed between one to two meters more height.

The modernization/rehabilitation project was carried out by Sergi Bastidas and his studio Bastidas Architecture, paying as much attention to conserving the original identity of the building and repurposing the materials.

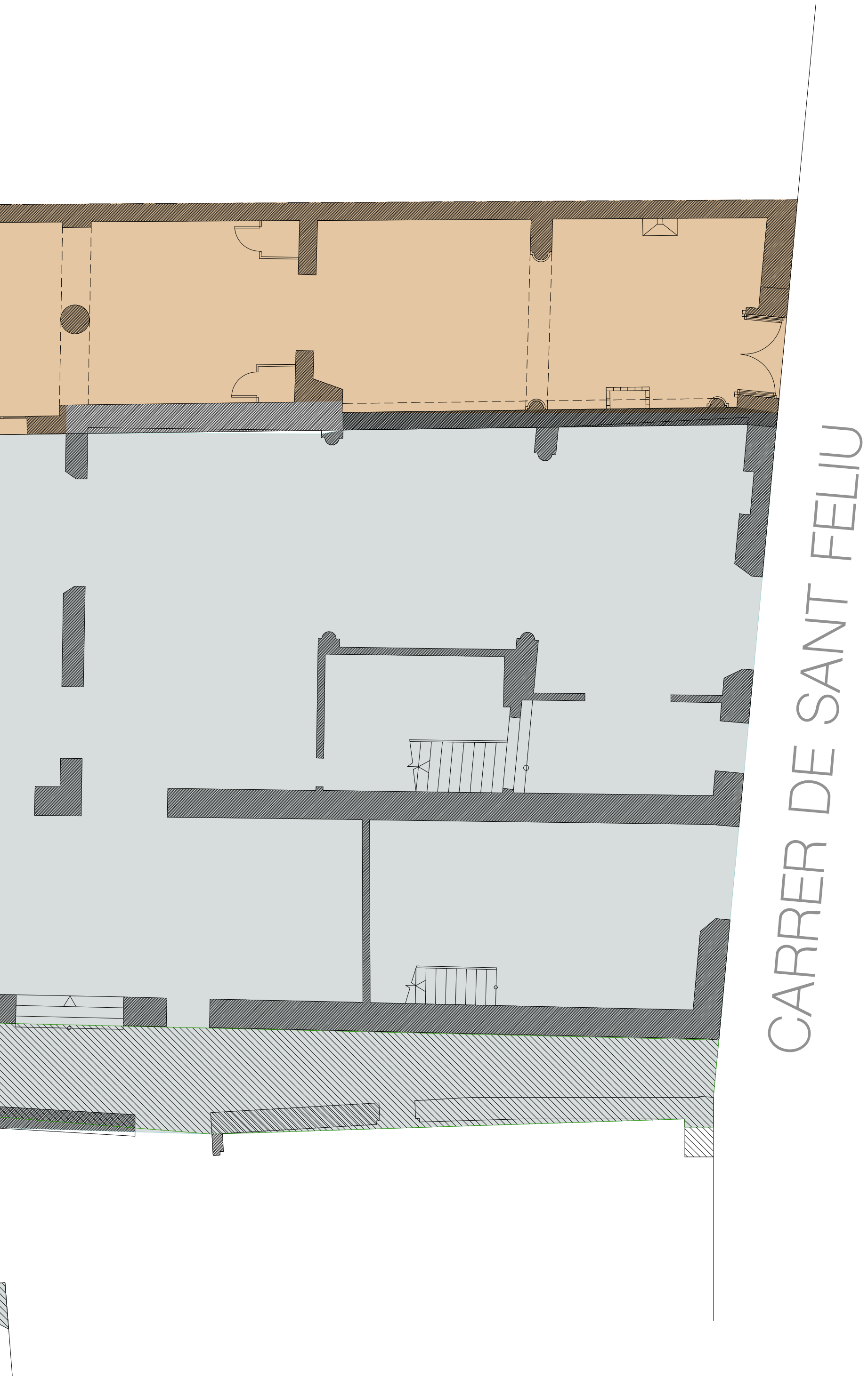
The lifestyle concept store Rialto Living has been functioning still. Despite its major transformation elements from its past, the iron beams and columns of Cine Rialto, marès stone walls of the palace, the Moroccan room of the Casino Balear, and typical Mallorcan elements like the coffered ceilings and miradors can still be seen walking around the store.

48 Rialto Living Concept Store © Bastidas Architecture

Previously Cine Rialto, Rialto Living between years 2006-2011

Previously public junk yard, area acquired for Rialto Living in 2011

D1 Rialto Living Ground Floor Plan Acquisition Diagram
Scale: 1:200


CARRER DE SANT FELIU

3.2 Sergi Bastidas & Bastidas Architecture

Prize-winning self-thought architect Sergi Bastidas carried out the rehabilitation of the building after the acquisition of the building by the owners. His knowledge of Balearic Architecture and architectural principles on appreciating the simplistic lines, high-quality materials, and prioritization of local labor made it possible for Can O'Ryan to turn into a modern-day 18th Century building.

3.2.1 Who is Sergi Bastidas?

Sergi Bastidas was born on 15th February 1954 in Barcelona; after high school, he attended *Arts Aplicades de Barcelona*. Later, he started his career at the renowned industrial designer Enric Franch Mire's studio in the 70s. After his marriage, he moved to the island of Mallorca, where he found the place he wanted to live indefinitely.

Being a self-thought architect, he found this passion from his father, who was indirectly involved in the profession and with whom he learned to channel his imagination with his discipline to pursue the career.

In 1980, in Artà, a northern city of Mallorca Island, Bastidas Architecture was founded by a young international team, including Sergi Bastidas. It was initially challenging to adapt to moving to a small village from a big city. In the beginning, they developed projects in the northeast of the island, and later on, the area expanded to include the rest of Mallorca and then mainland Spain, Paris, Marrakech, and New York.

Currently, the office is located in Palma de Mallorca, Proxitol neighbor, and he is directing the office by himself and his sons Gerard and Boris Bastidas; Gerard is also an architect, and Boris is the head of marketing and manager.


49 Sergi Bastidas © Bastidas Architecture

Today, where modern-day technological advances are taking over the course of architecture, he concentrates on the value, heritage, and sustainability of traditional construction systems, local materials, and labor. As he mentioned in one of our conversations;

> *"A couple centuries ago all the ornaments and labor was being done by specific workers and it was very easy to find someone to do it in a close radius.*

Currently its harder to find someone specializing on one particular element, knows its history, and its contribution to the local aesthetic. The value of being able to create something like that should not be disregarded.”[8]

His awareness of the importance of using textures, materials, and colors to create a resonating building with its surroundings made him renowned in vernacular architecture. The vernacular architecture here is used in terms of architecture characterized by the proper use of materials and knowledge of the region.

3.2.2 His Vision & Architectural Discipline

The basis of Bastidas’ philosophy is ‘respecting the environment, the simplicity of lines and the use of high-quality materials.’ For him, integration is more important than the ability to stand out. He prefers to achieve something balanced, proportionate, and with clean lines. This thought might be named elegance, but in his opinion, this is what having ‘harmony’ is.

In his interview with Carrie Frais in 2014, he defined his style as follows;

“Refined without being cold, with an emphasis on straight lines and symmetry. I especially appreciate high quality materials and I am careful to choose appropriate colors for warmth and personality.”[9]

Not only is this something that can be observed concretely in his projects, but he also prioritizes the reuse the existing materials in his rehabilitation projects and chooses from the local materials and traditional way of construction respectively with the past of the material.

3.2.2.1 Premio Rafael Manzano

Sergi Bastidas received the Rafael Manzano award in 2021 for New Traditional Architecture.

The award aims to promote traditional architecture and its construction methods as a tool to upgrade contemporary practice in Spain and Portugal. It highlights the ability of such discipline, based on local traditions, to 'harmoniously draw on the context where they are built.'

The award is addressed to the architects who 'contributed to the preservation, continuation, and adaptation to contemporary needs of the building, architectural and urban traditions which define the identity of the places where they were built.'

It is for architects who, 'instead of seeking notoriety and novelty through their works, play an important role which is not sufficiently honored because the results often remain unnoticed, precisely due to their evident continuity with the past.'

Sergi Bastidas was awarded the 10th Rafael Manzano Prize for his excellent use of traditional materials and techniques. The other reason behind the choice was;

"...his particular interest in integrating into his buildings the identity of the place to which they belong. The buildings he designs seem to merge with their setting thanks to his attention to local terrain, climate, materials and building traditions, the ways in which the place has been used traditionally and its vegetation and landscape."[10]

3.2.3 His Other Notable Works

Other works of Sergi Bastidas around Mallorca Island and the rest of the world are worth mentioning in terms of the vernacularity to highlight the possibility of using high-efficiency sustainable materials to create projects with an elegant, sophisticated outlook.

CAN FERRERETA (MALLORCA)

Located in Santanyi, a town founded by Jamie II in 1300, Can Ferrereta is a 17th Century manor. It is built next to a

50 Can Ferrereta from Above © Bastidas Architecture

51 School in Ameskar, Morocco © Bastidas Architecture

longitudinal wall to protect the building from pirates. Bastidas Architecture restored the manor in the summer of 2021 and became a luxury hotel. The central principle of Sergi Bastidas was to create maximum integrity of the old building with the new one. For this, he created a tonal continuity amongst the rooms, thus maintaining a perception of continuity.

Bastidas kept the original architectural elements of the building, such as; stone vaults, arches, wooden beams, stone ceilings, and dry stone terraces, and reproduced an authenticated 'shepherd's house' in the garden. He also chose vegetation that requires minimum water consumption; to integrate the restored building into the landscape and choose suitable greenery for the island's climate.

AMESKAR (MOROCCO)

Located in a small town named Ameskar in Morocco, the project was to reform, rehabilitate, and expand the town's school. The project was sponsored and collaborated with by architect Virginie Pauchet.

It was an exceptional project considering that the orography and Moroccan climate causes obstacles for sustainable projects to be long-lasting. There were hardships along the process of construction, reforms, and rehabilitation. The financial budget available was yet another impediment and required careful and specific management.

'A management that is not complex, but that requires the use of materials and structures of difficult accessibility for its inhabitants, as well as the subordination to the most convenient periods of the year for the execution of the project.'[11]

This quote by Sergi Bastidas highlights the conditions throughout the renovation of the school and the kitchen constructed for the teachers living there throughout the academic year. There was also an extension of a playground, partially covered for the possible bad weather conditions. Wood-burning stoves were equipped since there were no prior heating systems installed, and in the high mountains of Mallorca, the temperature can go as down as -20 ° C.

The concept of Sergi Bastidas was to 'create a habitat similar to the one the children were used to, hence the use of local materials (such as adobe), so that the children would feel at home and understand that this place is something to respect and preserve.

This approach is vital in terms of creating a vernacular and sustainable building that is continuous with its surroundings. It also eliminates most of the hardships during construction in possible future maintenance by creating availability to use local materials and labor.

3.2.4 Who Contributed to The Case Study Project?

The Rialto Living expansion and rehabilitation project was led by Sergi Bastidas, with a partial collaboration of Guillermo Reynes and Sandra Umipiérrez from Reynes Architects.

Quantity surveyor and legal procedure supervisor were Lucas Viñals; structure calculations were done by building engineer Roberto Merlo; and contractors were Lorenzo García, Pep Morell, and Manolo Gallardo; constructor, work coordinator, and foreman of works, respectively.
Tomeu Nadal did topography analysis and engineering from GN Grup, and Raimundo Gómez assisted in geologic engineering. The archeological excavations and analysis of the history of the building were done by archeologist and art historian Elvira González. Moreover lastly, the project management was assisted by Rafael Calparsoro.

3.3 New Traditional Architecture & Sustainability

Although there are many definitions in academia of what 'New Traditional Architecture' means depending on the context, in this thesis, the direction taken is the definition given by the Rafael Manzano Award community. It is the work that 'contributed to the preservation, continuation, and adaptation to contemporary needs of the building, architectural and urban traditions which define the identity of the places where they were built.'

Whether adaptive reuse, rehabilitation, and refurbishment is an environmentally sustainable direction has been discussed in the scholar community and has significantly risen over the past couple of decades.

Understanding the advantages, effects, and relevancy of conserving/reusing a building and its sustainability is significant to understand the importance of analyzing the case study, its history, and embodied energy.

3.3.1 On Rehabilitation of Historical Buildings & Its Sustainability

With the environmental crisis being one of the top global agendas, it is also the responsibility of the construction and building environment community to 'minimize their high negative impacts and maximize their contribution to sustainability.'

'Architectural design and construction have a long history that contains many examples of low environmental impact buildings, from vernacular architecture to more recent examples such as Gaudi's waste-based architecture.' (O. Valladares, 2020)

The rehabilitation of a building could be subcategorized into three. Restoration, where the objective is to preserve the historical value of the monument respective to the original materials and documents. Renovation and modification of the existing building to improve, recover, and increase its safety, usability, and habitability. And maintenance; preserving the condition, and retrofitting, the process of modifying after construction, reconversion.

Rehabilitation and sustainability complement each other as new uses are defined for the existing constructions, avoiding the disposal and consequent environmental impact of this action. (E. Qualharini, et al., 2018)

One of the significant purposes of sustainability is to compensate for what people have lost during industrialization and superficial development. The human involvement with the protection of ecosystems and the use of the optimum of the current skills of nature to sustain and defend them for future generations, along with the support and quality of life, human beings were prevented from destroying them. (Translated from Shafeeyan, 2014).

The search for sustainability is necessary; it acts directly in society's social, economic, and environmental spheres. However, 'for it to be achieved in the civil construction aiming at mitigating such impacts, it needs specific studies, since these impacts can occur in every phase of the life cycle of a building, whether they are: design, construction activity, use and operation, and, finally, actions of maintenance of the constructed facility.' (E. Qualharini, et al., 2018)

Social, economic, and environmental: the three axes of sustainability can all be found as purpose within traditional buildings' preservation, reuse, and renewal. Historical traditional buildings all carry traces of norms, images, information, and hints from the life of their time; the socio-cultural environment shapes them. The definition of *vernacular architecture* in the encyclopedia is 'the houses and all other buildings of the people that are usually built, by owner or community in respect with their environmental contexts by using available materials with traditional skills. Moreover, he adds that forms of this architecture are created to meet particular requirements. They contain the values, economies, and the living condition of their culture.' (Oliver, P 1997:xxii-xxiii)

Similarly, Brunskill defined *traditional architecture* as a "kind of building which is intentionally permanent rather than temporary, which is traditional rather than academic in its inspiration, which provides for the simple activities of ordinary people, their farms and their simple industrial enterprises, which is strongly related to place, especially through the use of local building materials, but which represents design and building with thought and feeling rather than in a base or strictly utilitarian manner." (Brunskill 2000, P.22)

This sentence suggests that heritage conservation is a sustainable practice in terms of social economics. Besides being discussed positively in the conversation of sustainability, building rehabilitation should also meet some requirements; one must analyze the motivation of the intervention in favor of other construction solutions and the following factors, which justify the practice of rehabilitation of buildings, are also highlighted:

-Use of existing infrastructure in the environment and its location;

-Impact on the urban landscape;

-Housing deficit and environmental sustainability;

-More economy and efficiency than demolition solutions followed by rebuilding.

Rehabilitation is part of the scope of sustainable solutions because of its vocation to reuse the existing building, which is expanded and improved rather than demolished and abandoned. The usable space recovered can be converted into a more efficient and healthy space, promoting savings in energy costs, avoiding the creation of tons of discarded waste, and avoiding the intensive consumption of new material required for a new structure. (E. Qualharini, et al., 2018)

Another economic/social aspect of the sustainability of rehabilitated buildings is its effectiveness in reusing buildings causes investors to invest in the project, creating continuity of the historical fingerprint of the area.

Some conditions could help assess the sustainability of a construction system, such as;

-If the construction system is made up of materials with very low/zero environmental impact, the materials should be made with renewable resources or derived from previous life cycles.

-If the materials are local, available within a close range to optimize the impact of transport.

-If the assembly of the construction system is controlled.

and more. (S. Gregorio, 2019)

Although, the rehabilitation of a building can be considered a more intensive and laborious activity than new construction since it requires more knowledge and experience in constructive techniques from the time of the facility's construction. On the other hand, it brings professional, cultural, and knowledge advancement benefits in learning sustainable construction techniques adapted to the old scenario.

The Sustainable Rehabilitation of Buildings has multiple aspects because it transits in the knowledge of the constructive techniques and the supply of the materials used in the construction. It also considers the knowledge of the constructive local culture versus the insertion of the facility in the historical heritage and the choice of how it should be rehabilitated. (E. Qualharini, et al., 2018)

In order to make sure the level of sustainability during the rehabilitation of a building or even to increase the degree of sustainability, it is requisite to analyze the management phase, the energy efficiency, and construction phases.

In terms for it to be considered sustainably, the case study analyzed should, on the one hand, 'contain materials/components that have low/ no environmental impact and, on the other hand, should be made using construction techniques that ensure the components remain intact and can be reused or that homogeneous product groups are obtained without lowering performance thereby allowing re-cycling or re-introduction into the environment.' (S. Gregorio, 2019)

3.4 An Immortal Material: Marès Stone

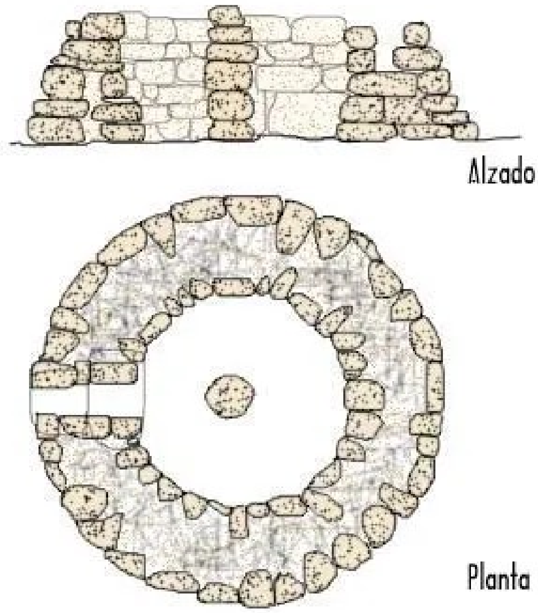
If the island of Mallorca were identified with a material, it would be stone. Besides the fact that most of the island is made up of limestone, the stone was the material that was used to make the *talaiots*, monuments, and barricades used to defend the island during the Talaiotic Era from 1300 BC until 123 BC.

Being the most accessible material to find on the island and convenient in terms of transportation, the stone is still one of the primary materials used in Mallorcan architecture. Notably, Marès stone, the same stone used in the talaiotic era, uniquely found in the Balearic Islands, traditionally characterizes the architecture in Mallorca.

3.4.1 Ancient Marès Construction Techniques: Talaiots

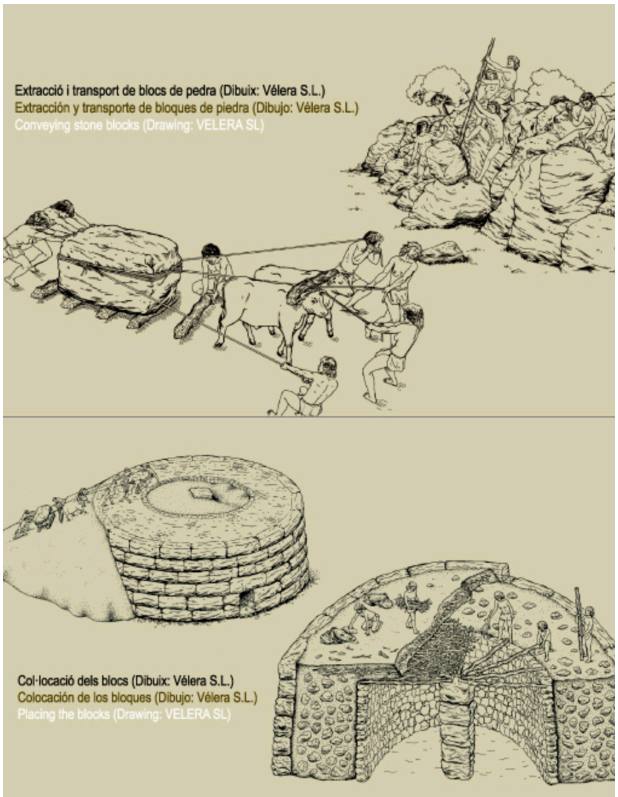
Although the first traces of men found on the island was in 3000 BC, the excavations suggest that habitants lived in the caves and used perishable materials as shelters, which would explain why there were no traces that lasted until the present day. Initially, the habitants continued to live in the cabins built with the mentioned perishable materials, though they gradually began to build using stone.

Around 1900BC, remainders of some dolmens, meaning collective burial structures, were found in Mallorca and

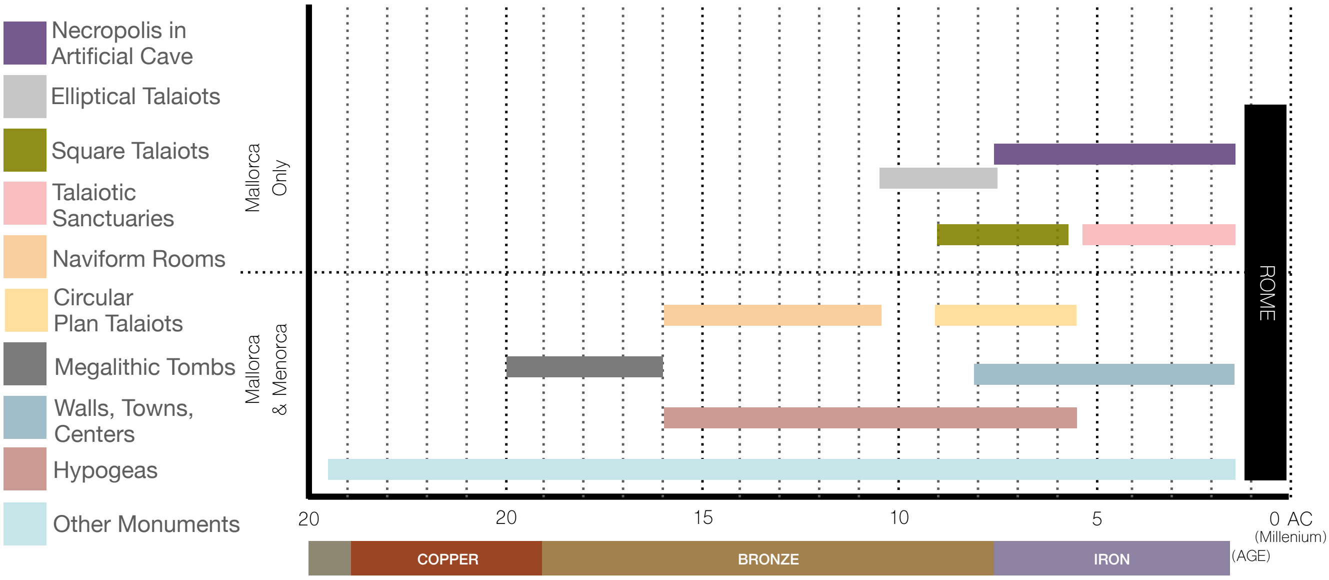


52 Plan & Section Illustration of Talaiots © esascosas.com

Menorca, which characteristically resembled the ones in southern France and the northeast coast of Spain. In the first centuries of the second millennium, stone construction techniques were already mastered and thus reached the present day. These constructions are *naviform* rooms made of stone, called navetas de habitacion (naveta rooms). On the contrary, the dolmens were done in



53 Illustration of Construction of Talaiots © Valeria S. L.



S5 Construction Types of Stone in Mallorca Timeline (Source: talaiots.es)

various ways; reusing previously built dolmens, taking advantage of natural caves, excavating artificial caves in the rock; which also variates between circular shapes, an elongated plan, additional antechambers, and side chambers.

At the beginning of the first millennium

54 Square Talaiot © Wikipedia

BC, Talaiotic culture boomed 'with a wealth of monuments. The stepped burial mounds begin to give way to an enormous number of *talaiots': frustoconical* tower-shaped constructions built with large stones. The distinction between Menorca and Mallorca talaiots got bigger as the ones in Mallorca got smaller, shaped circular or square, and with a chamber inside. Talaiots served as territory markers between different towns, and seeing many of them together could indicate a ceremonial center or community sanctuaries, burial mounds, or other constructions. The towns which are protected with walls were also built with large stones.'Often the perimeter of the walls takes advantage of the talayots to save a few meters of wall, giving them the appearance of defensive towers.'

Sanctuaries also proliferated in Mallorca; many resembled those of Menorca due to their horseshoe-shaped plan but without the central table-shaped monument that gives the *taulas* their name. At best, some sanctuaries had a large central column or a few evenly distributed inside.

Its construction technique is based on large stones embedded "dry," meaning without cement or mortar, and is currently called the "*cyclopean technique*," referring to the *Mycenaean* constructions of Ancient Greece.

'The construction of these monumental buildings it is reasonable that it was by dragging and sliding of the stone materials aided by logs. This system requires less time and effort invested when placing the stones than if it were built by sliding using a cobblestone, to which additional time had to be spent to carry it out and of which no remains have been found.' (N. García Beltrán, 2021)

Furthermore, in 2021, a dissertation titled 'The Question of the Balearic Prehistoric Construction: The Talaiot' was written by Beltrán, where she analyzed the soil from the talaiot excavation area and compared it with the marès sandstone components. Her conclusion was; 'For this reason (the comparison analysis) and given its physical appearance, it is considered that the stone used for the construction of the talaiots is calcarenite for the reddest sample corresponding to the southern talaiot of Ses Talaies de Can Xim (Can Xim 1) and the sample located in front of the best-preserved section of the Na Pol talaiot (Na Pol 1), it is a sedimentary rock similar to Majorcan marès…' (N., García Beltrán, 2021)

In the next subchapter, we will be studying the Mallorcan stone marès further, which is also the main material of the case study.

55 Marès Stone in Construction
© Wikipedia

3.4.2 Modern Construction Techniques: Marès Stone Buildings

Marès is the Spanish name of a local limestone found particularly in the Balearic Islands. It consists of the minerals calcite and aragonite (calcium carbonate $CaCO_3$), numerous fossil and calcareous fragments of other origins, in a micritic matrixare embedded. In simple terms, this unique rock was formed by the compression of the sea sand during the Quaternary era, initially formed by decomposing seashells of marine animals and seaweed.

As early as the Talaiotic Era, the stone was used for the Talaiots, and the monuments mentioned previously. It is also the primary material used for the protective walls surrounding the city of Palma. The stone is still used and has previously been used to build houses for more than 200 years. The raw blocks are mined from the quarries, with a standard dimension of 79 x 22 x 38 centimeters, and divided into smaller pieces later.

The stones are generally used for interior/exterior walls as bricks but can also be used as decoration, ornamenting, columns, capitals, and more. Marès has a low density and high porosity, making it perform well as a sound and heat insulator. It absorbs a lot of moisture, though not permanently; it releases it under sunlight. This quality makes it an ideal material for the summer climate.

It is a soft stone that is relatively easy to mine and work with than hard rocks. It is primarily used as a brick with rough surfaces and can be smoothed according to artisanal requirements. This ease of use

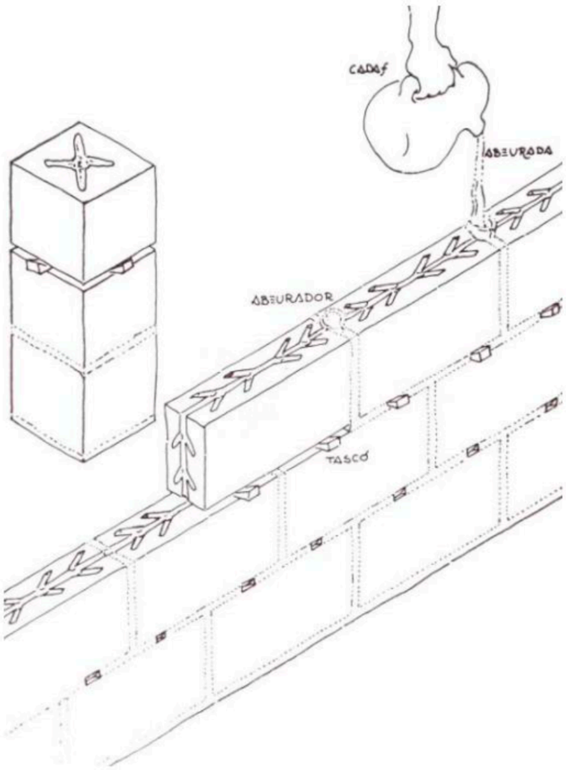
56 Marès Stone Coastal Extractions © Productes de Mallorca

makes it one of the most popular construction materials in the Balearic Islands.

There are different ranks for the quality of the stone, categorized by the thickness of its grain, its hardness, its color, and its density. Common marés, the most common category, is used for walls that will later be plastered, and higher quality ones are used for arches, cornices, and decorative elements that will be left exposed. There are 16 active *pedreres de marés,* meaning quarries, in Mallorca; six in Felanitx, four in Llucmajor, one in Manacor, one in Campos, one in Muro, one in Petra, one in Santanyi, and one another in Santa Margalida.

Although the quarries are about to be exhausted, there has been a recent decline in their use, 'due to the demand for speed and profitability in construction, the arrival of new technologies, and the introduction of concrete and other materials. Currently, the marés sandstone has left its structural function, in many cases, to be used as cladding or ornamentation. It is also possible to use barrel vault structures and arches at economical prices. Marés is a material linked to the culture and popular architecture of the Balearic Islands. For this reason, it continues to be used since there is a desire to maintain the typical aesthetics of the traditional buildings of Mallorca.'

'The traditional style was based on blocks of sandstone, very useful for the execution of walls and vaults. In the buildings of the upper classes, the blocks, or ashlars, were mostly rectangular in shape. The ashlars could be uniform or heterogeneous



E8 Building a Marès Wall
Source: Oliver & García (1997)

depending on the period. In the buildings of the most humble classes, the discarded marés residues were used to make cement for construction. It is a more manageable and cheaper format than blocks, and it is more frequent in modern times.

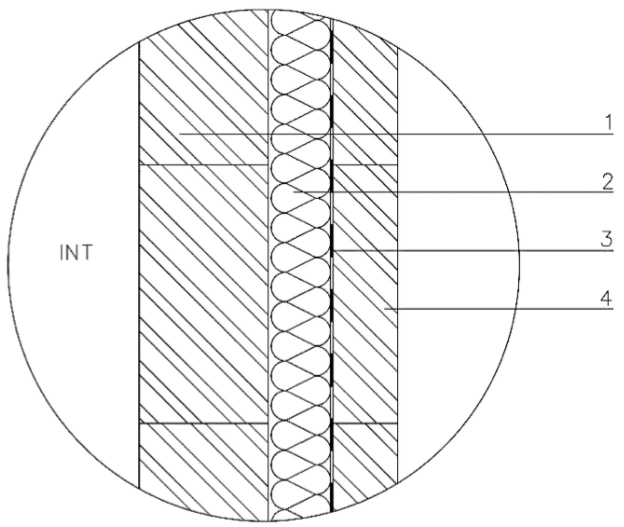
The marés obtained on the coast **(56)** were lowered into barges and transported by sea to their destination. In this way, the Cathedral of Palma was built with seawater from the easternmost part of the bay of Palma (Pedreres de la Seu), on the other side of the Regana cape.' (Source:ingeniaturagrupo)

The traditional way to build a wall with marès stone is to use *Mallorcan Cement,* a cement made with hydraulic lime of local production since Portland cement is incompatible chemically with the stone.

Once the foundation of the building is finished, the first row of marès is laid, approximating around 20cm, and a continuous herringbone line is created on the piece, where the Mallorcan Cement is poured and flow. **(E8)** The placement of the pieces must be done at the break joints to ensure the stability of the wall **(57)**, which works in compression, and is separated from the lower row by a series of wedges. The mortar has the function of joining the bricks together, providing more stability, and absorbing horizontal stresses of a certain magnitude. Once the parts that make up the wall have been placed, the thermal insulation, for example, recycled cotton or natural cork, should be placed, followed by a breathable polyethylene (PE) waterproofing sheet.

Finally, the 10 cm thick marès block must be placed the same way as the thicker first block of marès to create a partition for the rainwater. **(E9)**

The facades, in many cases, were covered with lime mortar, a job on the island known as *whitewashing,* to protect the marés stone from the environment and provide more impermeability to the enclosure. In addition, lime was used as a



1. Marès Block (approx. 20cm)
2. Thermal Insulation (approx. 10cm)
3. Waterproofing Sheet
4. Marès (approx. 10cm)

E9 Typical Example of a Marès Wall
Source: IBAVI(Instut Balear de l'Habitatge Govern de Islas)

bactericide and was also used to protect against heat since it is a cold-selective material.

Although this stone has a centuries-old past, its qualities are still unregulated directly. Ramón Sánchez-Cuenca was one of the first to realize the lack of specialized literature on the marés stone.
He researched the stone, and though the Architectural Association of the Balearic Islands was not interested in the research, he eventually published a book by himself on the matter named *The marès: its origin, history, properties, quarries, and currently available qualities (2010)*.

The stone is also recyclable after use as;

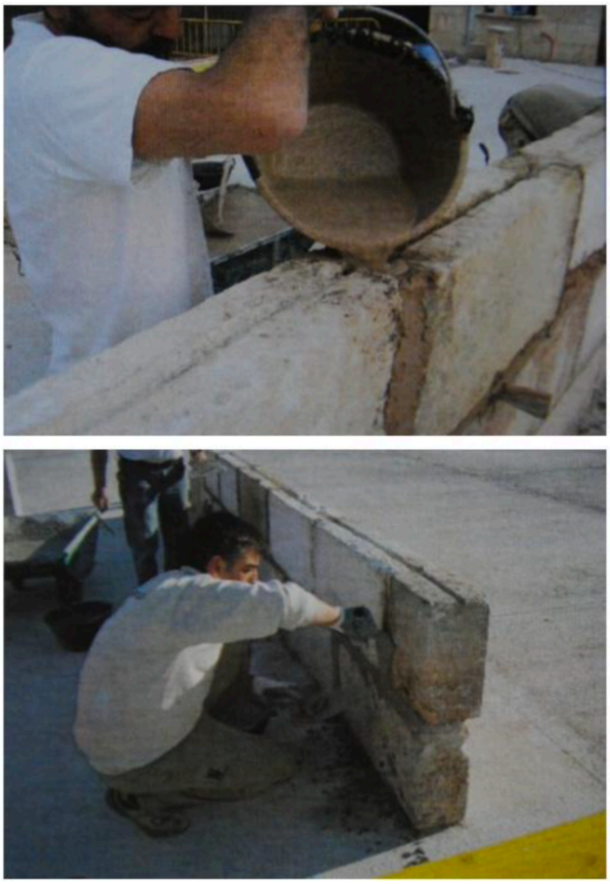
Picadís (Marés Sawdust): Used as aggregate in construction as a substitute for sand. The powder is sold directly or passed through a sieve to present a homogeneous granulometry.

Garbancillo (Marés Gravel): Gravel, the size of a chickpea (siuró) used for, concretes that do not have to carry excessive weight (such as roofs). It also builds lighter and more manageable drilling blocks for passing pipes and regattas.

To optimize the use of any material, knowing its properties in depth is essential, especially if it is used as a

Chemical Composition	Humidity at 150*C: 2.80%* Calcium Oxide (CaO): 50.50%* Carbon Dioxide (CO2): 40.60%* Magnesium Oxide (MgO): 3.40%* Alumina (Al2O3): 1.90%* Silica (SiO2): 0.35%* Anhydrous Ferric Oxide: 0.15%* Loss on Fire at 975*C: 43.00%*
Water Absorption:	19.20%*
Compactness:	43.00%*
Flexural Strength:	20.00 kg/cm2*
Poissons Ratio (y)	0.28**
Young's Modulus	400,000 tonne/m2**
Density	1.8 tonne/m3**
Torsion (G)	12.1915 tonne/cm2**
Shear Strength (t)	0.06 tonne/cm2**
Compressive Strength	40-60 Kg/cm2 (sic)**
Admissible Tension	5 Kg/cm2 (sic)**
Thermal Conductivity	1.64 W***

T1 Properties of Marès Stone
(Sources: *General Laboratory of Tests and Research of the Generalitat of Catalonia, **Socias and Sanchez(2008), ***IBAVI)



57 Building a Marès Wall
© Sanchez Cuenca (2010)

construction material. Understanding the benefits, what it offers, and the problems it can cause allows us to find solutions consistent with the material's characteristics. Marés is a type of rock with a very heterogeneous stratification, which means that its properties are difficult to quantify in a specific number since the values accessed for this study are very different. In fact, in many cases, the properties of calcareous sandstones or soft limestones are used to have an approximate reference to some aspect of the material. **(T1)**

However, the results of the trials published by R. Sánchez-Cuenca (2010) discussed in the coming paragraphs are the most reliable data consulted. The book explains the variety of results extracted from the same test with stones from different quarries or qualities, evidencing this lack of material homogeneity. Thus it is essential to keep in mind that the assumed properties are to give an idea, and these properties change according to the quarry of marès stone, perhaps one of the reasons that the studies on it were not done until the recent past.

The marés stone was' rediscovered' in the 1970s by no other than the renowned architect Jørn Utzon, the architect of the

58 Can Lis by Jørn Utzon © Vola

Sydney Opera House. He was designing a private house in Mallorca with marès stone as the primary material **(58)**. However, he could not find anyone with enough professional experience with this material until he encountered Jaime Vidal. Years later, Neus García Iñesta, a renowned architect who took up Utzon's thread, came across Vidal, who was also responsible for the restoration and who managed or accompanied the conversion of historical buildings, co-authored *The Construction with Marès (1997)* with her husband.

According to García Iñesta, this complexity of marès should be appreciated because it suggests a "living material."
In the following subchapter, we will be studying the Mallorcan stone marès further, which is also the primary material of the case study.

'The Marès has pores, just like everything living in nature has pores and can perspire. Its origin is the deposition of many things, including sea creatures, parts of shells, and therefore Marès carries within itself this dual information of earth and water.'[12]

However, 'there are no marketable laboratories where one can have Marès tested,' as García Iñesta mentions in her interview with Thomas Fitzner in 2021, 'the material is unregulated, there are no standards, and people, even professionals, do not know how to choose the right Marès." (translated from German) 'She does it herself like the old master builders by: "*making the stone sing*." Namely, by knocking on it and listening to the resulting sound.' This method is still used today and consists of giving a series of blows, with a metallic piece called *tascó,* to the sandstone block on one of its faces, the *cap,* since the piece is placed vertically. These blows produce a sound and a vibration that allows the stonemasons to determine the quality of the piece: if the sound is vibrant and clean, the block is considered to be of good quality; on the other hand, if the sound is dull, it is considered that the piece is of poor quality or that it has imperfections or defects inside.

On the other hand, the book by Sánchez-Cuenca, *The marès,* uses analytic methods to get as much information as possible on the characteristics and quality of marés. As mentioned, the characteristics and quality of marés changes for each quarry, and sometimes even two different extractions can differ in the same quarry. In the same interview by Fitzner, Sánchez-Cuenca explains that 'inferior quality (of marés) is easy to recognize. The Marès crumbles even when touched hard and sometimes even if looked closely, as long-suffering owners of old Mallorcan houses know.'

Not enough investigation on the material also can cause conflicts on the construction, such as redesigning the headquarters of the marine research institute Imedea in Esporles. The building, which used to be a pre-civil war school building, was to be redesigned with Marès. In doing so, the architect made the mistake of using both Marès and Portland cement, so often used in Mallorca, which is incompatible. The materials react very differently to temperature fluctuations; thus, a few months later, after the construction had been "modernised" with a cement structure, the Marès masonry cracked so large that the building had to be supported in a hurry.

Sánchez-Cuenca also examined material samples from 30 quarries on the island for their compressive strength. The results varied from a 'spongy' 20 kilos per square centimetre to a rock-hard 600. For an image of comparison, concrete achieves 300 to 400.

As a result, the characteristics and properties of the material present substantial variations. Nevertheless, this heterogeneity not only influences the vagueness of the characteristics of the material, which cover a wide range of values but also gives rise to a series of congenital disabilities that must be detected before assigning a function to the different pieces of marés. Although they present pleasing aesthetics, these imperfections may imply the expected lack of resistance or the danger of breaking the block.

In the book, Building in Marès (1997), the authors define the material in three' intrinsic imperfections' in it, which are, in reality, three characteristics of the most common marès that offer both advantages and drawbacks.

Porosity: Gives the stone lightweight as an advantage but permeability as a disadvantage.

Low Crystallization: Makes the stone quickly worked with but also low resistance and easy weathering.

Stratification (Layering): Gives the stone a natural cut but also increases the breaking lines.

Other defective situations, though not general, of marès, is also:

-*Argilós* (Clayness): Containing clay in different proportions.

-Blanc (Whiteness): It makes the stone dense and very fine-grained, not suitable for building walls because the material does not hold well.

-Brescat: Containing holes and cavities.

-Brevol: Name of very soft marés, which crumbles easily.

-Buidadís: Containing areas of poor foundation that, when in contact with air, quickly deteriorates, thus opening holes.

-Granat: Good quality marés that become unusable if it contains crystallized hard gravel (*revius or gavarrots*), making carving and cutting difficult.

-Llivanyós: Marés with clear stratification lines, especially suitable for cutting thick and thin (*llivanyas*). With the mechanized cutting system, this initial advantage becomes a problem if the cut is not parallel with said stratification lines (broken lines).

-Serrator: Not being very hard, without capillaries, whitish. It is used to cut *llivanya*.

In more recent modern construction, it is tough to use marès as a whole structure because the land regulations oblige that a rubble band should be passed from the top of the walls, and it is not made of Mallorcan Cement anymore. Thus the whole structure ends up being constructed in concrete. Marès are still used as cladding, enclosure, or ornamentation.

On a final note of the subchapter, the basis of construction in marés is found in the traditional architecture of the Balearic Islands, which uses a series of basic materials such as wood, *live stone,* and marés (Galvañ and Ferrer 1997). For this reason, the most famous buildings in Mallorca must be mentioned when discussing built cases. In these constructions, the sandstone functioned as a structure since it was used for the load-bearing walls, roof beams, and interior partitions, with partitions of 5 to 10cm. So although there were not many professional literary discussions on it until recently, the traditional construction has worked well with trial and error, and the buildings have been preserved until the present day with the required maintenance and rehabilitation.

3.4.3 Maintenance of Marès Stone Construction

For the maintenance of the oldest marès structures standing on the island, the talaiots, it is proposed to use stones obtained from quarries near the talaiots and with a physical appearance similar to marès stone. In her work analysis on the matter, *La Incognita de la Construccion Prehistorica Balear El Talaiot (2021),* García Beltrán have done some samples of the environment have been studied, determining their physical properties. Beltrán suggests that a roof can be built with stone slabs and covered with a mixture of branches and mud so that it maintains an external appearance as similar as possible to its original one.

Maintenance of the talaiots would be assumed of great importance for the touristic income of the Balearic Islands. However, after her months of research and study of the Talayotic monuments in the Balearic Islands, Beltrán has found "the ignorance that still exists about these constructions, as well as the poor state of conservation in which some are found. In the case of Mallorca, the abandonment in which they are found is even more remarkable. On this island, many of them are not accessible as they are found on private farms or are not an attraction for people, so they remain forgotten in the undergrowth as simple clusters of stones." (Beltrán, 2021)

On the other hand, as more recently constructed residential structures tend to be under an effort to be kept intact, there is some research on what could be done in case of typical deterioration. As mentioned earlier, marès have three construction characteristics; porosity, low crystallization, and stratification. These create three main deteriorations; permeability, easy weathering, and brake lines. Therefore, we have a lightweight material with a high water absorption capacity and low relative resistance to compression.

Most of the new constructions that use marés, meaning not rehabilitating an old structure, do so to provide the works with an aesthetic in keeping with the environment in which they are located. However, the use of marés as a finish means losing some of its properties, such as resistance to compression or porosity, since it does not act as a structure and is combined with other materials that often do not adapt to the needs of this stone. Building in marés without taking into account the characteristics of the material can lead to the malfunction of the entire façade or damage to the stone itself, as seen in the example of Imedea.

There is a variety of categories that could cause deterioration of marès stone through the analysis of García Beltrán (2021), of Sánchez-Cuenca(2010), and *Manuel Carbonell de Massy'sMassy's Conservación y restuaración de monumentos (1993):*

CHANGES IN HUMIDITY, PRESSURE, AND TEMPERATURE

Suppose the case is to use the marès stone as a finish for a newly constructed building, as mentioned two paragraphs ago. In that case, the necessary protection against the humidity of the marés stone are two treatments that can be applied to the material, both varieties of waterproofing: Impermeabilization and using a *hydrofuge.*

Waterproofing by impermeabilization consists of the application of a continuous patina on the pieces of marés that plugs the pores. By closing the pores that the stone presents, the porosity and its permeability to water vapor are modified. "The possible penetration of water or water vapor into the piece could cause problems since its expulsion would be more complicated since most of the pores are sealed." (García, 2021)

Using a hydrofuge to waterproof the marès façade is achieved "through impregnation with siloxanes in solution" (Sánchez-Cuenca 2010, p. 53), compounds containing silicon, achieving a coating that is immiscible with water. It does not practically affect the porosity of the marés, which maintains its permeability to water vapor, nor does it mean an essential contribution of material. On the other hand, capillary absorption does present a considerable decrease (Sánchez-Cuenca 2010), ranging between 98.88% to 99.15% depending on from which quarry the stone was extracted.

All carbonate rocks, including marés, dissolve in contact with water. This process is prolonged, around 15 mg per L of water; it increases in the presence of atmospheric CO2 (carbon dioxide) (60 mg/L) and by the combustion process (120 mg/L). CO2 acidifies the water forming carbonic acid (CO2H2), and dissolves the rock forming bicarbonate of lime. The deterioration of the limestone is due to the slow dissolution of the carbonate that acts as a binding cement and its migration towards the surface of the stone, forming a crust of *calcín*, that is, salts coming from the interior of the stone that comes out to the surface where they dry and therefore crystallize. The bicarbonate of lime dissolves in water; when it reaches the stone'sstone's surface and is in a dry environment, the water evaporates, forming a layer of limestone crystals, which we will all have seen in ancient stones. The crust turns black if this process is done in the presence of soot.

In principle, this is beneficial since the surface, having more ""cement,"" increases its hardness and loses porosity; it is less permeable to water. Nevertheless, after a specific thickness, an almost impermeable crust (calcín) is formed that retains moisture inside the stone, allowing the carbonates to continue dissolving and therefore weakening the stone. (Translated from de Massy, 1993)

The mineral water, with a high content of mineral salts, has ""impoverished"" the rocks, ""stealing"" these minerals from them. Though, chemically pure water, such as distilled water, without any mineral content, is ""thirsty"" for minerals, which is why it is sometimes used in restoration to dissolve calcín crusts. (Ramis, 2003)

BIO-DETERIORATION: PLANTS AND MICROORGANISMS

Water is also the cause of a series of alterations caused by the accumulated humidity that rises by capillarity from the ground: Interior cracks due to the action of roots, invasion of lichens and mosses, and Greenish and blackish scabs from lichen stem with roots in soft areas.

The characteristic orange hue of the south-facing Marés and Santanyí is due to microalgae that form oxalic acid, reacting with calcium compounds and producing white oxalate. This oxalate reacts with iron compounds that have migrated to the surface to form yellow oxalates, which, together with other reddish oxide compounds, give it this orange hue.

IRON OXIDES

Iron oxides or ""nails"" are found in almost every sandstone. This mineral breaks down into iron oxides that, in humid environments, decompose and significantly increase in volume, becoming an explosive in slow motion, which fractures the stone. The precautions to fracture the stone should be taken from the beginning; when a nail has to be hammered into a stone, it should be made of stainless steel embedded in an epoxy resin cover that insulates it from internal humidity.

SULFIN

The deterioration caused by sulfin happens due to uncontaminated environments like urban and industrial settings, which makes it a typical case in Palma de Mallorca. The salts resurfacing from inside of the rock, which crystallized on the surface of the stone, reacts with the acids present in the air:
SO2 is a gas from the combustion of fossil fuels, such as coal or oil. Upon contact with moisture, this gas forms sulfurous acid, and this, when oxidized in the presence of oxygen, sulfuric acid, which decomposes all carbonate rocks. The calcium sulfate that migrates to the surface from the rock's interior precipitates in a hydrated form as gypsum, SO4 Ca2 H2O (Sulfin), increasing its volume by around 30%. The Sulfin crust, blackened if soot was present during its formation, retains more moisture inside the rock.

THERMAL SHOCK

Thermal shock can be defined as a rapid change in temperature. The low thermal conductivity of the stone means that the surfaces exposed to the midday sun and the salt mist quickly acquire a different temperature than the stone a few cm inwards. Because of this, the pieces of marés facing south or facing the sea are the ones that deteriorate the fastest.

59 Alveolization of Calcarenite as an Example of the Phenomenon
© Ippolita Mecca (2016)

WIND

The action of the wind is not due to its erosive force but rather because it aggravates the crystallization phenomena by drying the surface. On the other hand, it drives these crystals into the holes in the stone, producing the so-called alveolization **(59)** (hollows or alveoli). (Ramis, 2003)

04 Rialto Living

60 Central Staircase Rialto Living
© Bastidas Architecture

Chapter 4 is the architectural analysis of the case study building, with its many names; Can Flor, Can O'Ryan, Carrer de Sant Feliu 4, and the one that will be mentioned throughout: Rialto Living. The timeline that will be documented is from 2012 to present date, where the rehabilitation of the building was done by Sergi Bastidas and his studio Bastidas Architecture, for the purpose of renovating the apartments upstairs, and conversion of the later-purchased parts of the building to the concept living store. To be able to understand the building fully, first, the existing state and plans of the building will be analyzed, followed by the basic phase of rehabilitation, the final and executive phases of the proposal, and the construction phases.

Later on, the important components of the building; the staircase, wooden skylight, Moorish room, and partially reused windows and doors, will be put under objective to be able to move on to the material analysis and classification, and note the cultural importance of the building in traditional Balearic Architecture.

For the calculation of the Embodied Energy of the building, the existing and new materials will be separated and architectural illustrations will be shown.

Finally, some maintenance regulations will be discussed to have an idea on the after construction phase of the building.

4.1 Previous State & Building Inspection

The first step taken for the rehabilitation of Can O'Ryan was the inspection of the beams, drilling into some of the marès walls to compare the correct thicknesses with the existing plans, and removing the false ceilings to have an idea of the amount of deteriorating structure. The initial action took place on the 27th of September 2012, according to the two volumes of the construction journal located in the Bastidas Architecture studio. The entire duration of inspections, rehabilitation, and construction took roughly two years, with the last touch-ups in July 2014. Barbara Bergman stated in our conversation, "(It took) Two years; we have done it super quick. We had at least 60 people working on-site. It was due to the shop; we did not want it to close due to construction." This duration is impressively short, considering the size of the building and the amount of meticulosity required.

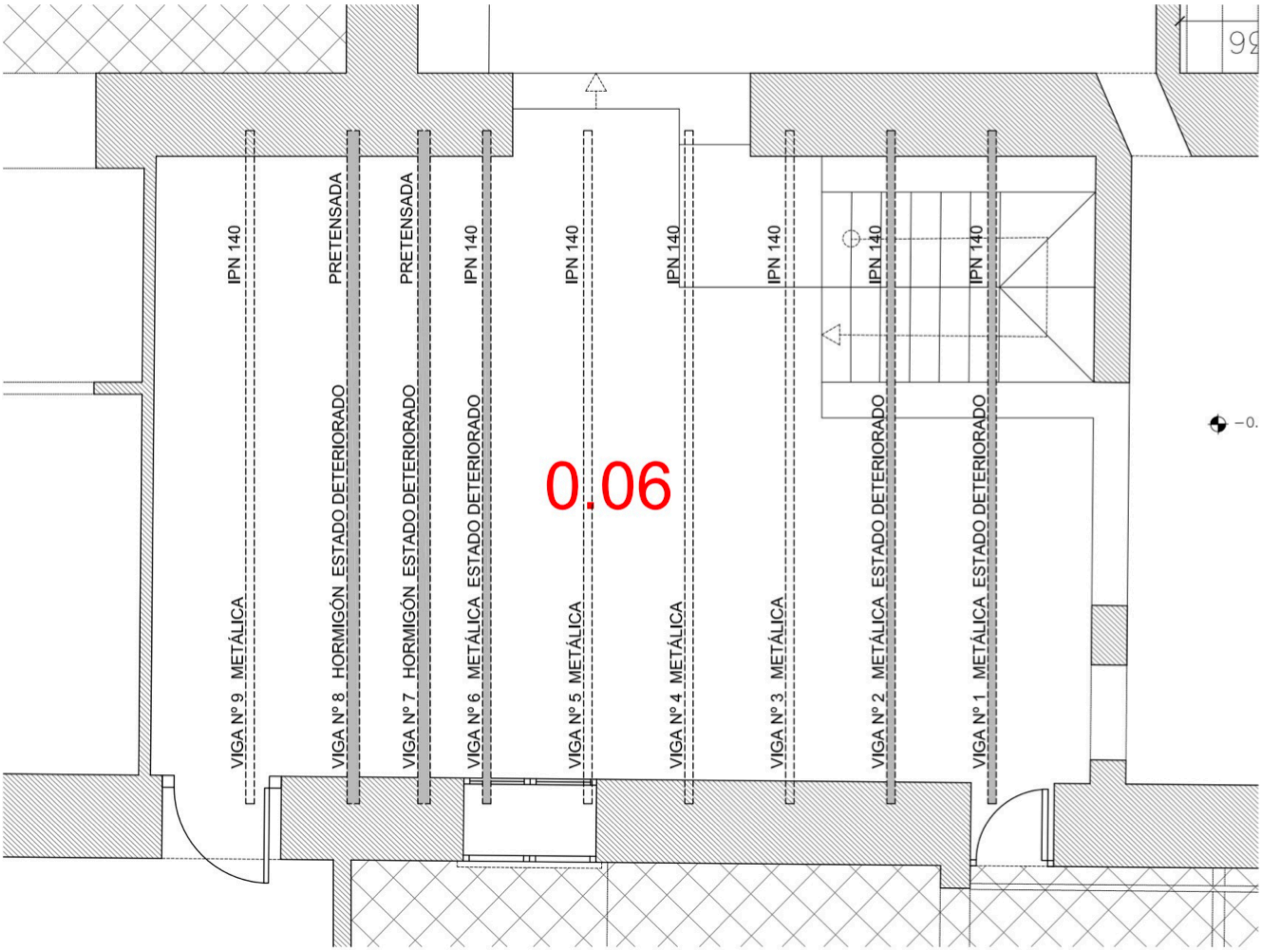
To better understand the inspection and construction areas, drawings numbered from D7 to D12 can be seen for the assigned room number in red color. The similar actions taken will not be described individually, though each general action

61 Drilling a Hole on the Wall of Rialto Living
© Bastidas Architecture

classification will be mentioned with an example.

The initial action was to drill a hole in the wall at room 0.08 (**D8)** to verify the thickness of the existing volume, which did not correspond to the plans archived at the COAIB. (Collegi Oficial d'Arquitectes de Islas Baleares)

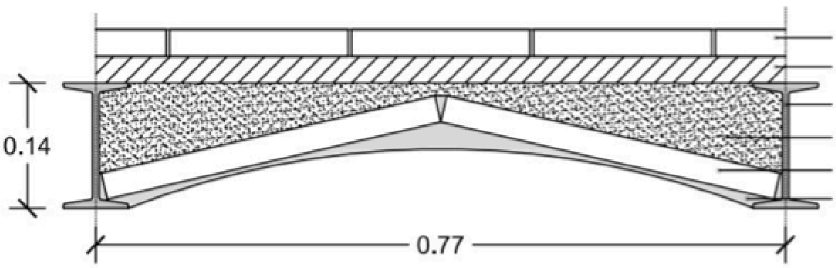
The second course of action was to inspect the existing metal beams in room



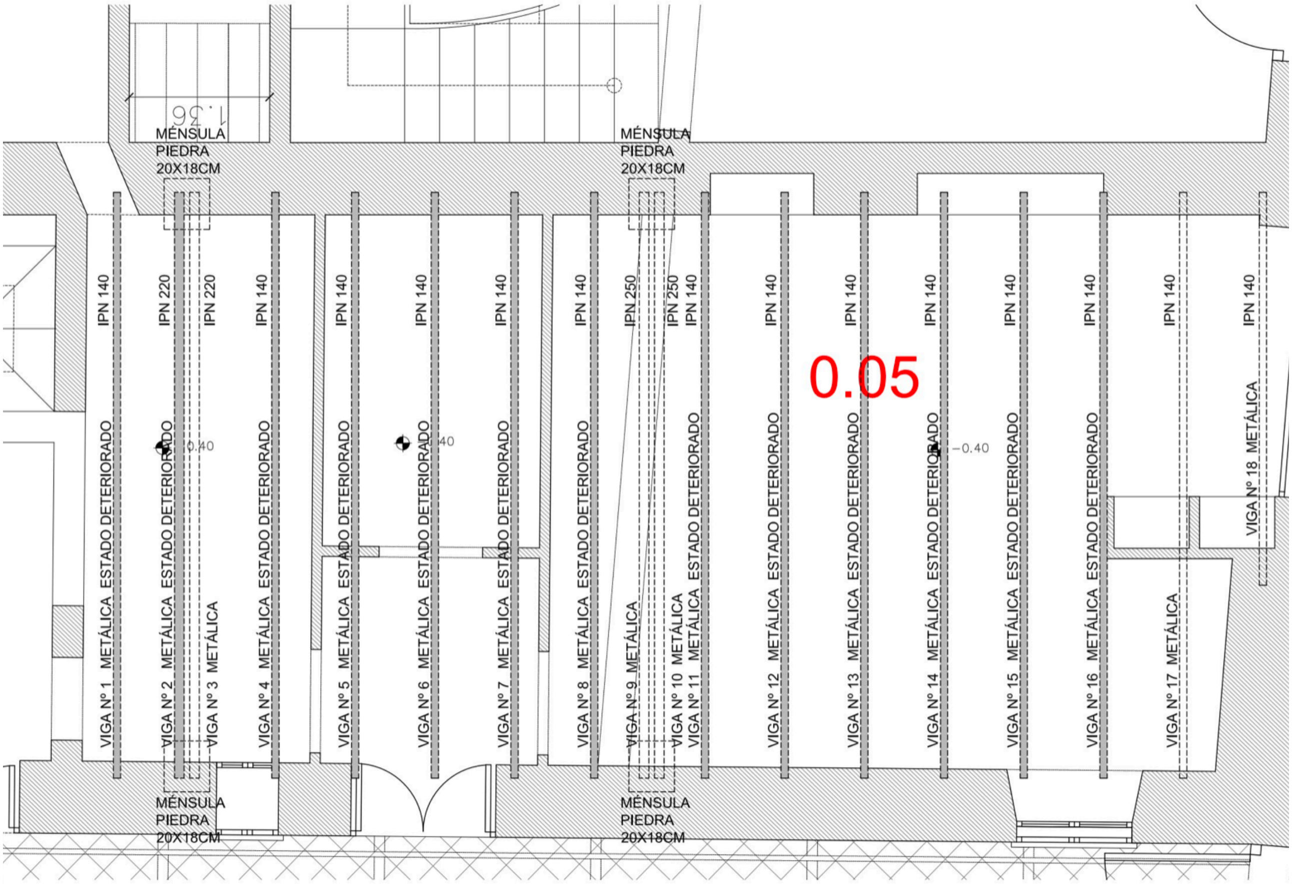
D2 Deteriorating Joists(Vigas) on Room 0.06 (Scale: Unscaled)
Source: Bastidas Architecture

0.10 on the east wing of the building; all seven existing beams were described as deteriorating. The inspection of the beams proceeded, followed by the metal joists inspected around the building; the drawing of the kitchen, room numbered 0.06, can be seen as an example where 5 out of 9 of them were documented to be deteriorating. **(D2)**

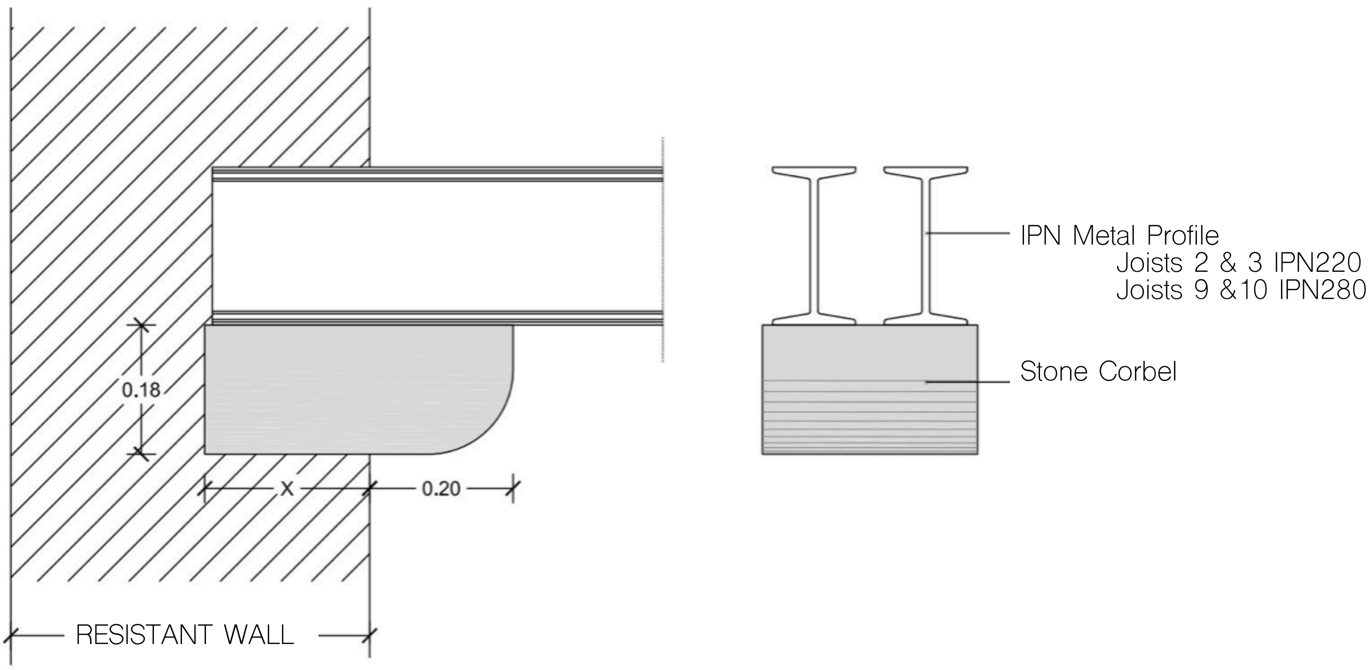
The condition of the metal and concrete joists on the garage ceiling, room number 0.05, is checked. Out of 18 metallic joists, 13 of them were reported to have deteriorated **(D4)(62)**, and four stone corbels sized 20x18 cm were in a healthy state **(63)**. Detail section of the lattice **(D3)** and a detail of the support of the joists on the stone corbel **(D5)** were added to understand the materials used in the original structure.



D3 Detail Lattice Section of Room 0.05 (Scale: Unscaled, Unit: m)
Source: Bastidas Architecture



D4 Deteriorating Joists(Vigas) and inspected Stone Corbels (Mensula Piedra) on Room 0.05 (Scale: Unscaled) Source: Bastidas Architecture

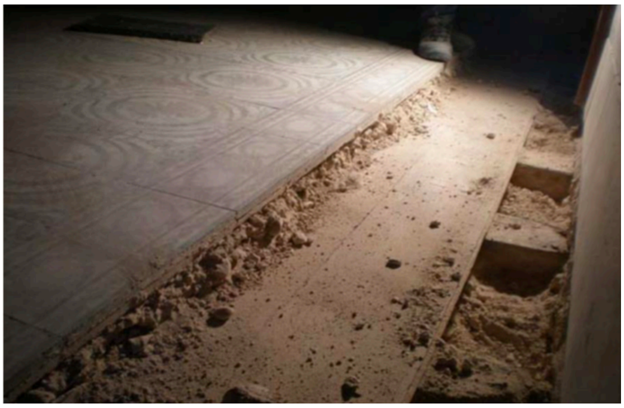


D5 Support of the Metal Joists on Stone Corbels (Mensula Piedra) of Room 0.05 (Scale: 1:10, Unit: m) Source: Bastidas Architecture

62 Deteriorating Metal Joists in Room 0.05
© Bastidas Architecture

64 Well Found in Room 0.03
© Bastidas Architecture

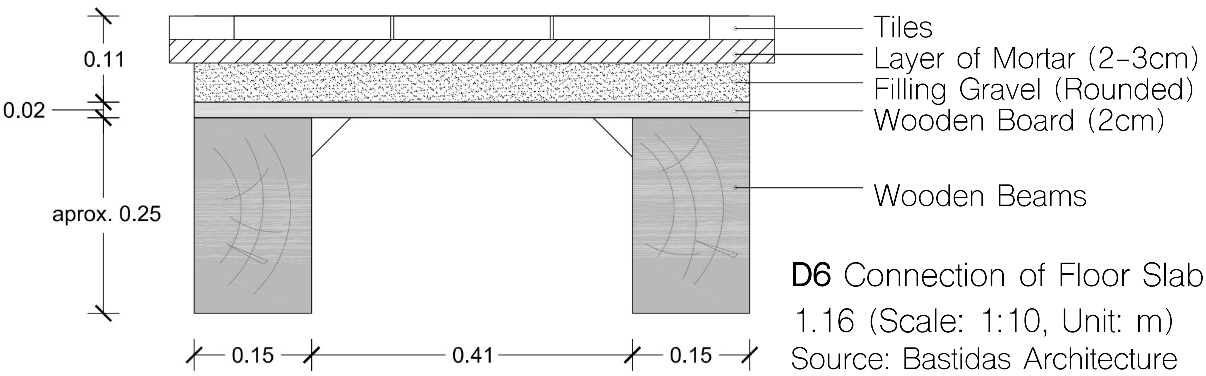
63 Stone Corbels in Room 0.05
© Bastidas Architecture



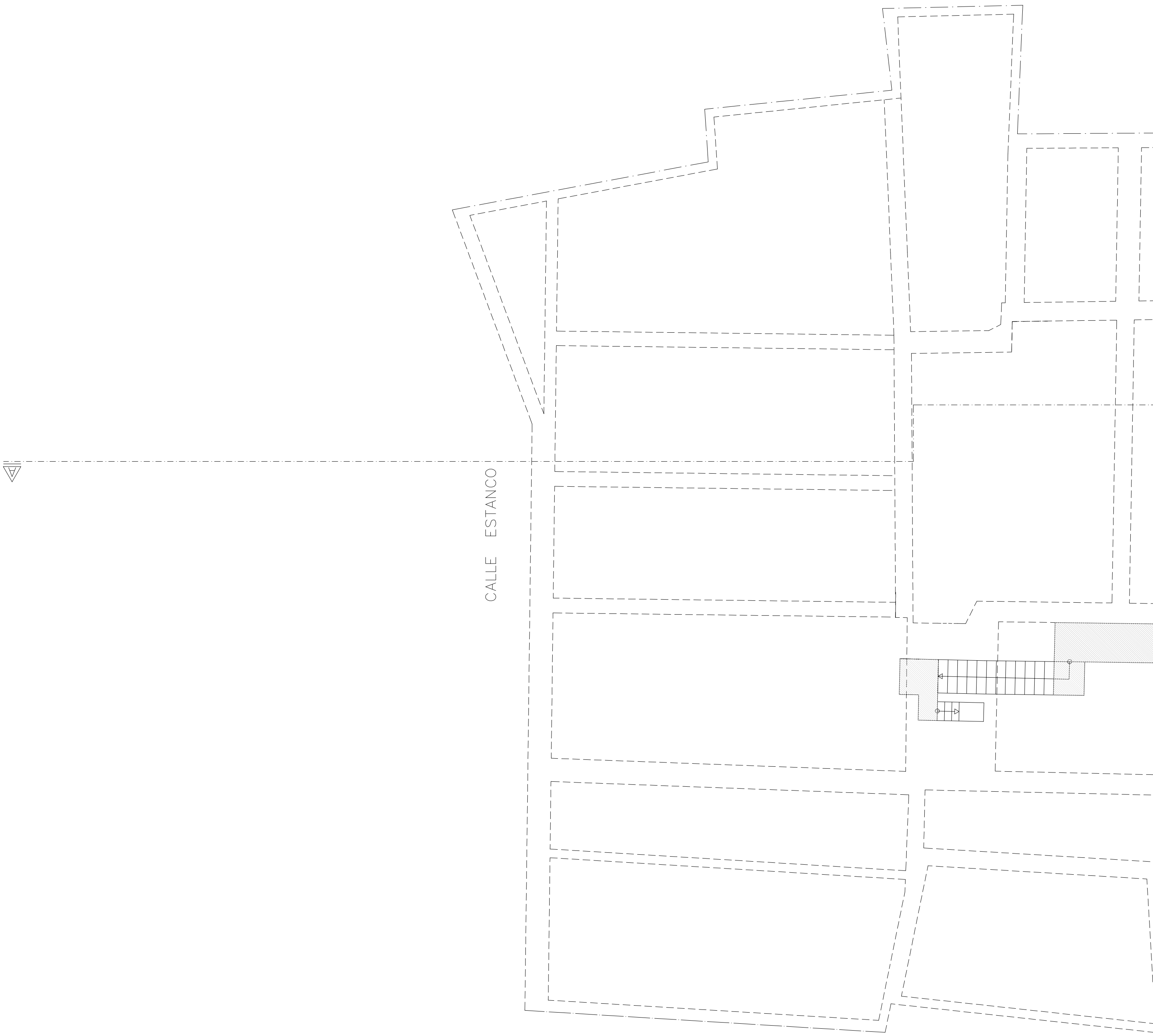
65 Meeting Between Coffered Ceiling with the Façade at Room 1.16
© Bastidas Architecture

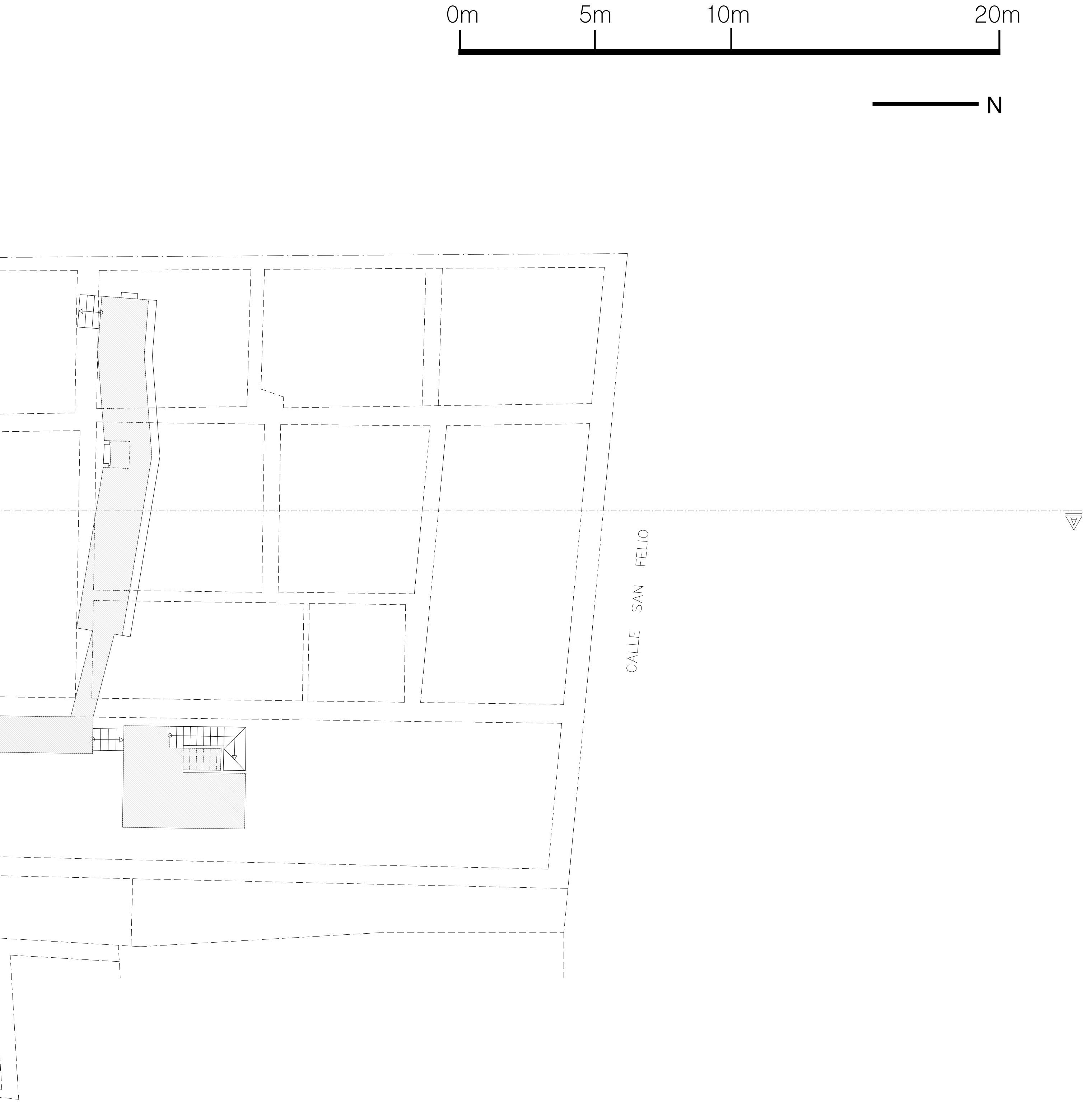
Also, a gate was uncovered in the patio, numbered 0.03, and a cistern or well was observed. Due to the limits not being visible and the seeming existence of “lateral caves,” it was emptied, and the next day the water level recovered. The report concluded that there was a well. **(64)** Currently, this well is located in the basement storage of Rialto Living. Although the owners Bergman and Kall wanted to elevate the system to the ground floor for visitors to see it, it was not permitted due to the historical value of the well.

Also, the condition of the joists and wooden coffered ceiling supporting the unit’s floor in room 1.16 **(D9)** is verified. Only the meeting between the structure and the facade of the building has been discovered, stating that the area was preserved in good condition **(65).** Also, the structure of the floor slab was established.

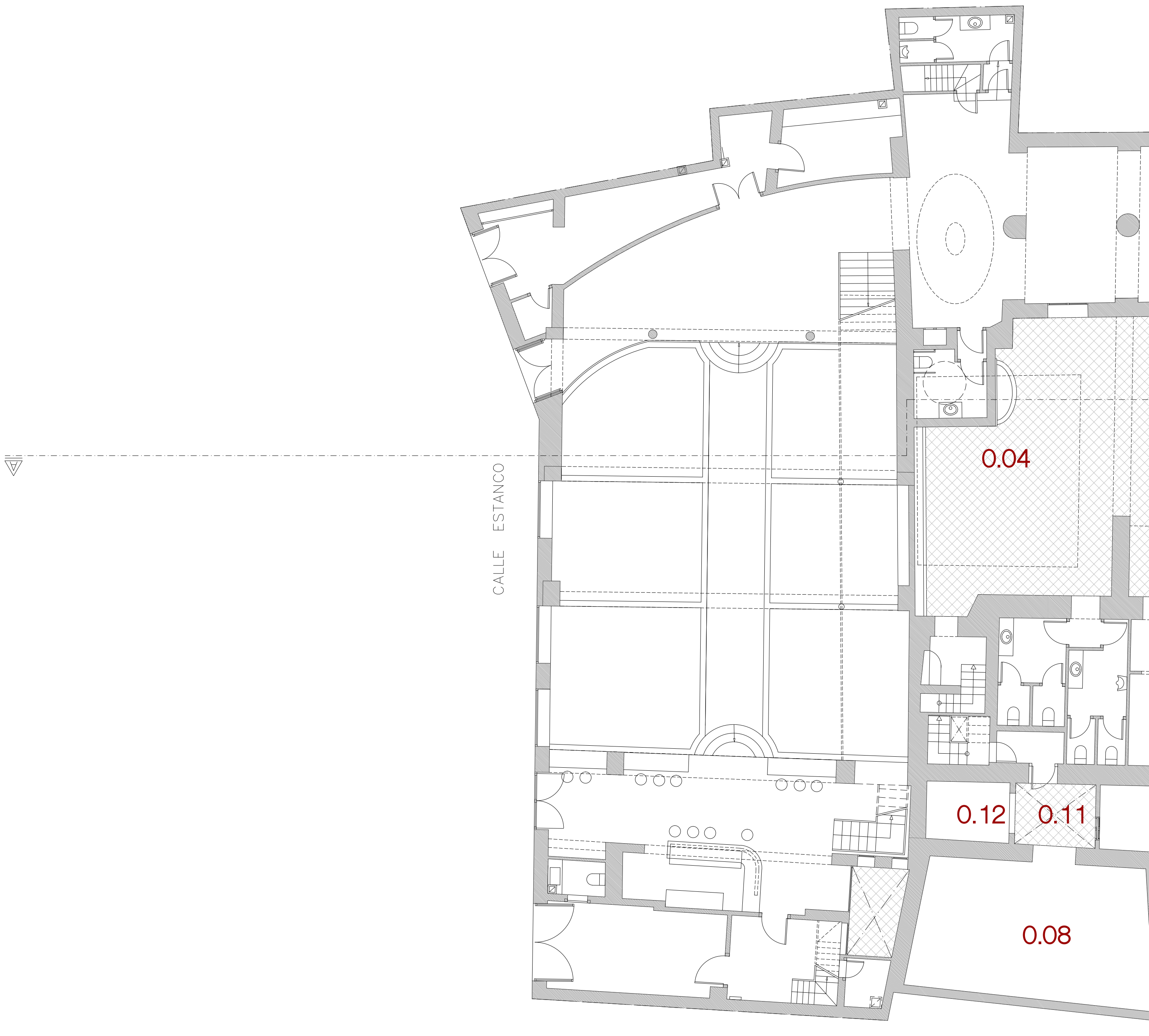


D6 Connection of Floor Slab of Room 1.16 (Scale: 1:10, Unit: m)
Source: Bastidas Architecture

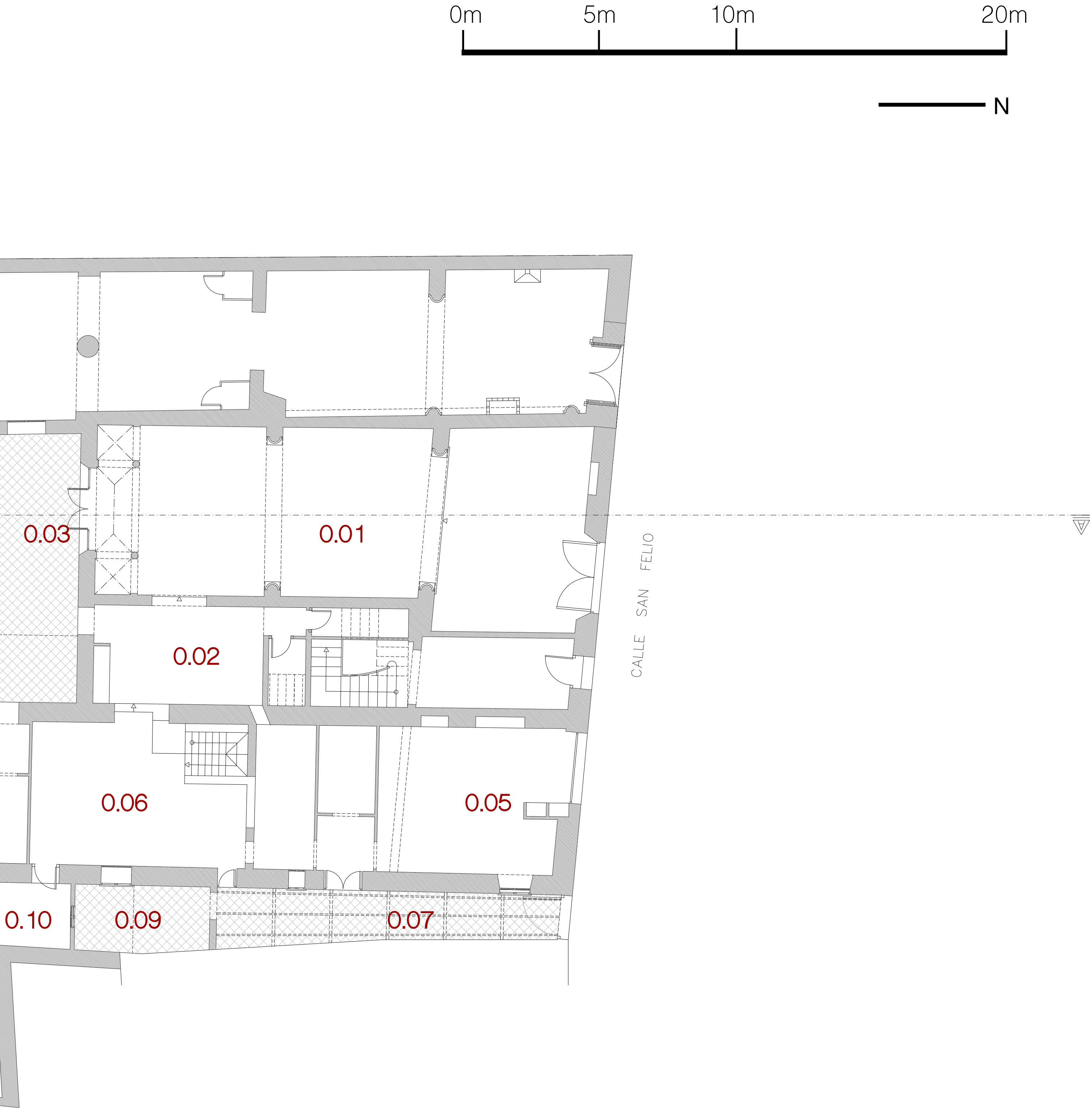

CALLE ESTANCO



D7 Rialto Living Existing State Basement Plan
Scale: 1:200

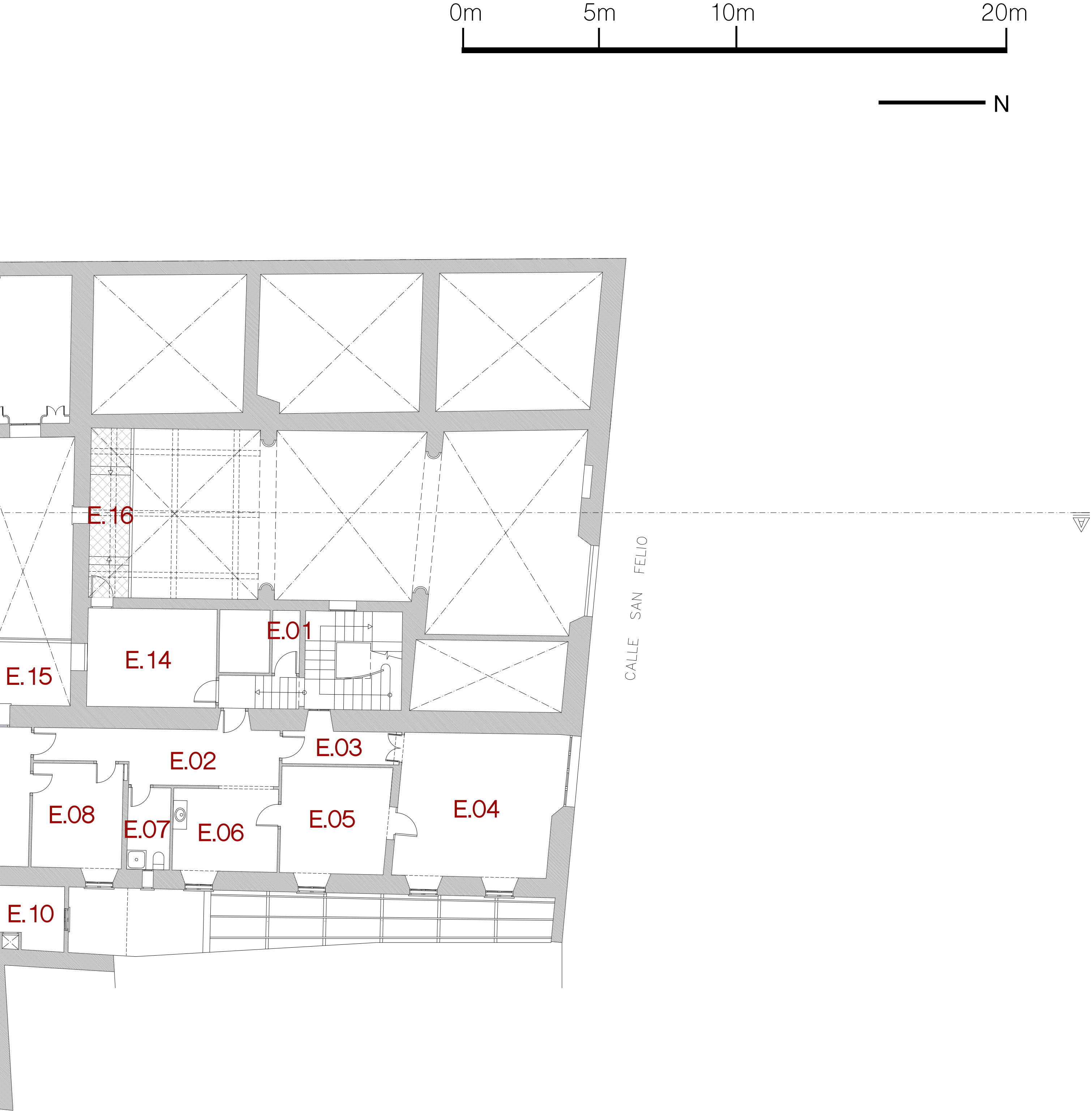


A
CALLE ESTANCO
0.04
0.12
0.11
0.08



D8 Rialto Living Existing State Ground Floor Plan
Scale: 1:200

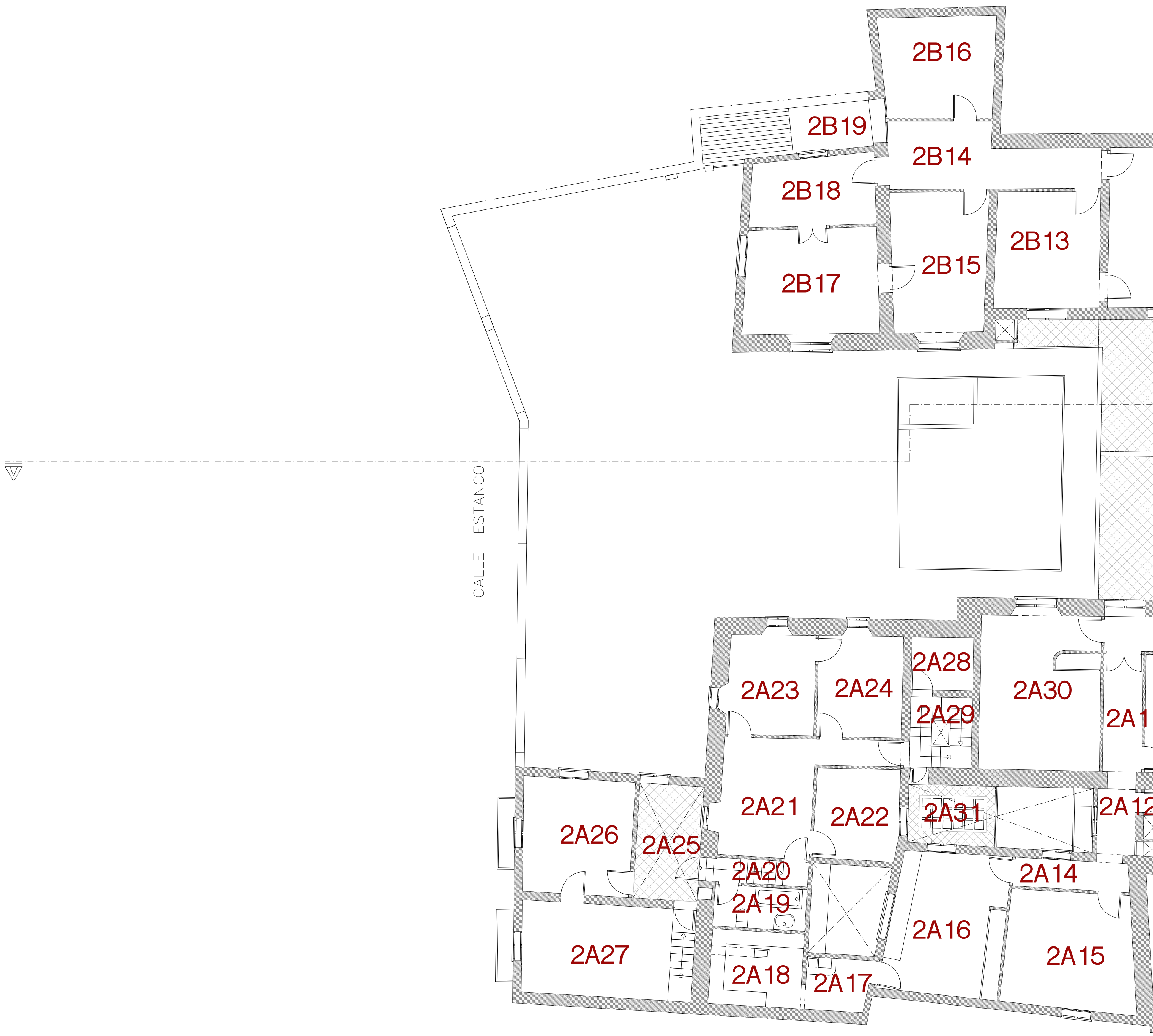
A
CALLE ESTANCO
E.13
E.09
E.12
E.11



D9 Rialto Living Existing State Mezzanine Floor Plan
Scale: 1:200

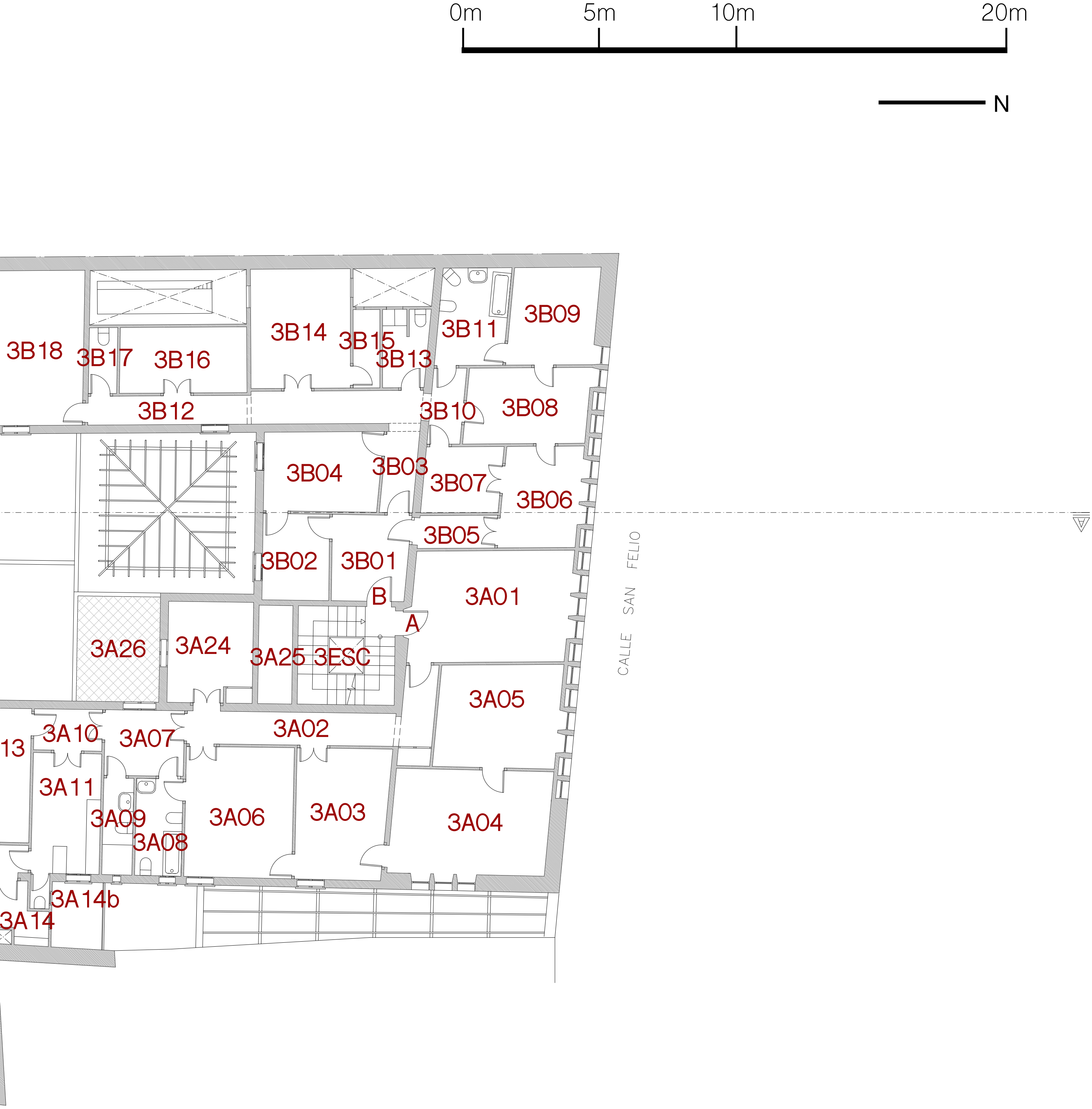
1.10
1.14
1.13
1.09
1.12
1.11
1.08
1.41
CALLE ESTANCO
1.29
1.28
1.27
1.30
1.31
1.26
1.40
1.25
1.35
1.38
1.32
1.46
1.12
1.39
1.37
1.36
1.34
1.33

D10 Rialto Living Existing State First Floor Plan
Scale: 1:200

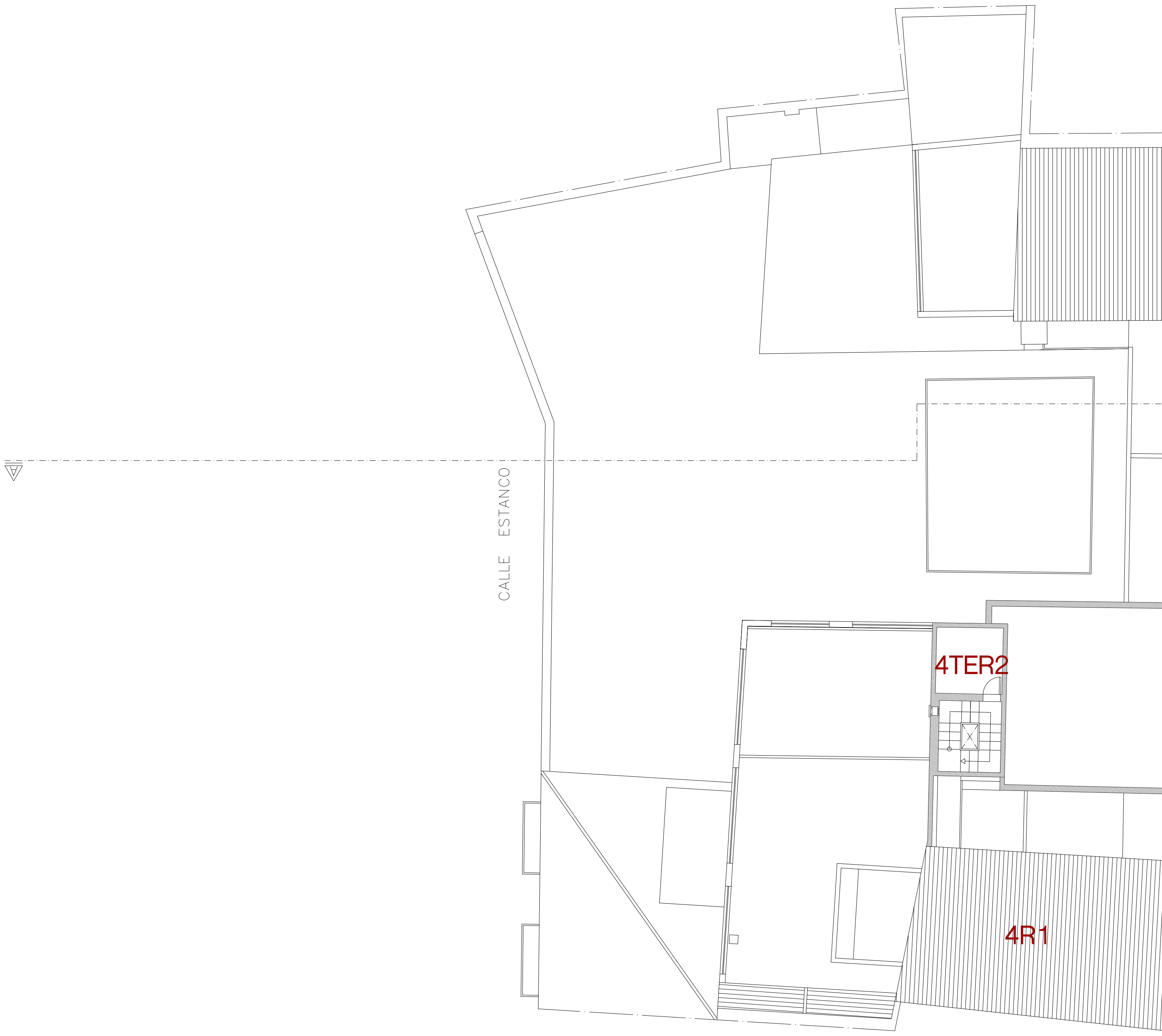

2B16
2B19
2B14
2B18
2B13
2B15
2B17
CALLE ESTANCO
2A28
2A23
2A24
2A30
2A1
2A29
2A21
2A22
2A31
2A12
2A26
2A25
2A20
2A14
2A19
2A16
2A15
2A27
2A18
2A17

D11 Rialto Living Existing State Second Floor Plan
Scale: 1:200


3B19
3B21
3B20
CALLE ESTANCO
3A17
3A
3A18
3A19
3A16
3A12
3A23
3A20
3A15
3A24
3A21
3A22
3A25



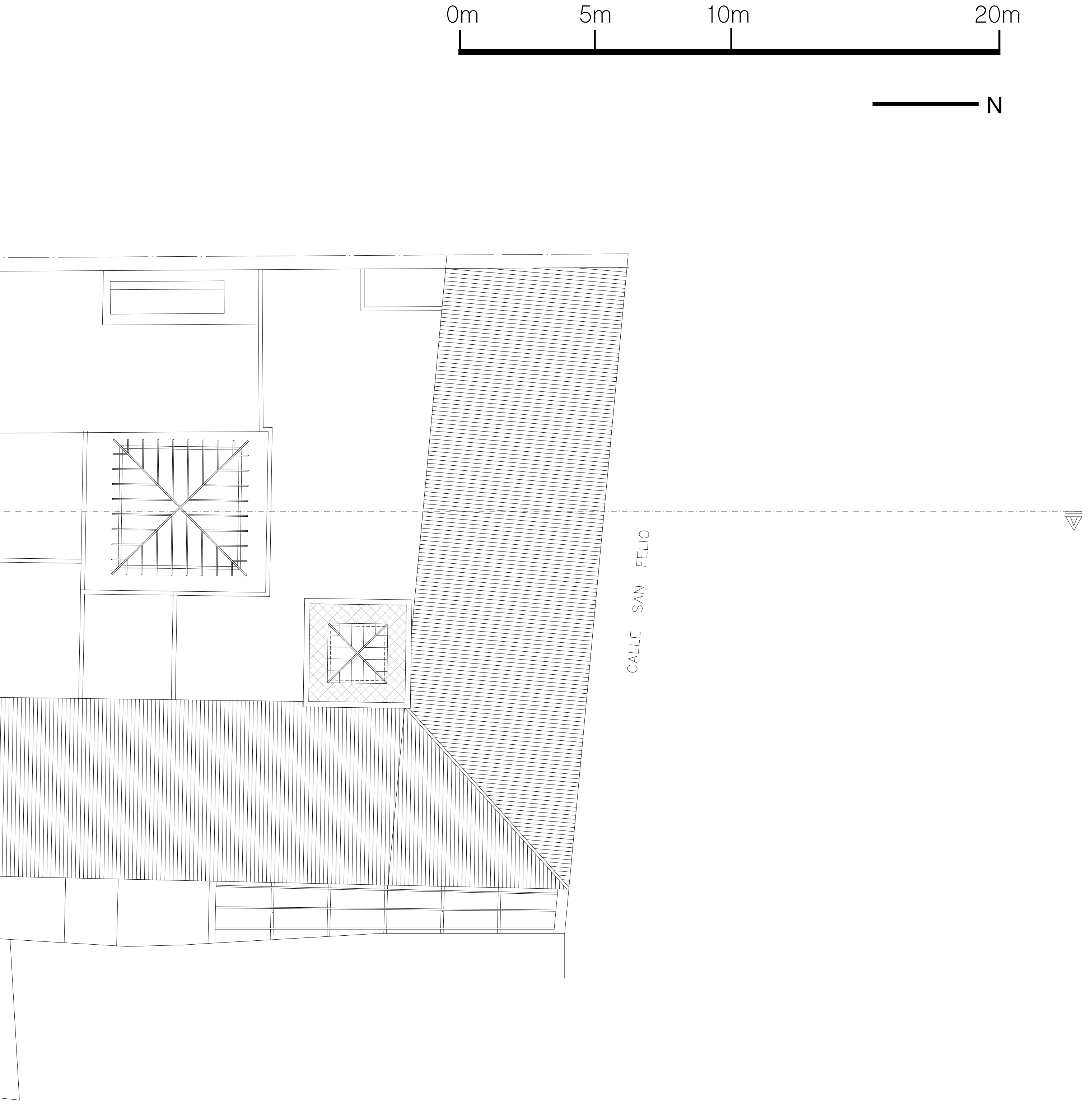
D12 Rialto Living Existing State Third Floor Plan
Scale: 1:200



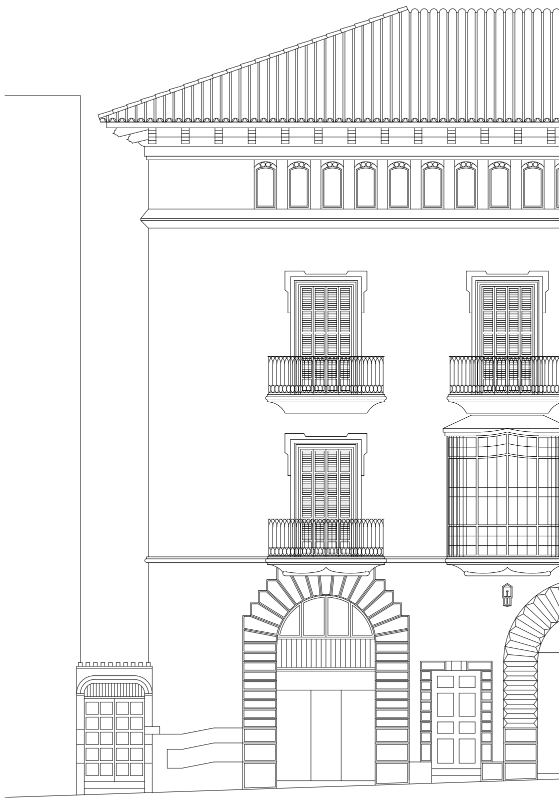
A
CALLE ESTANCO
4TER2
4R1

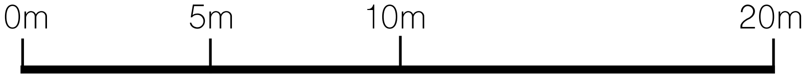
D13 Rialto Living Existing State Fourth Floor Plan
Scale: 1:200

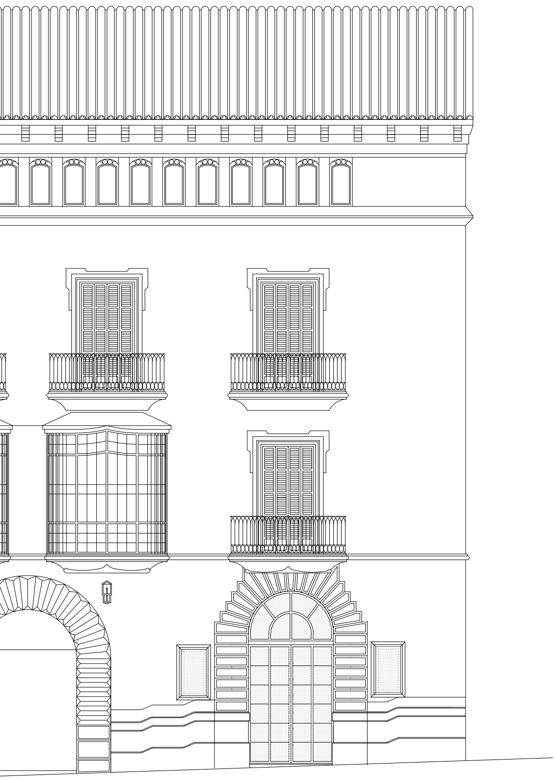

CALLE ESTANCO



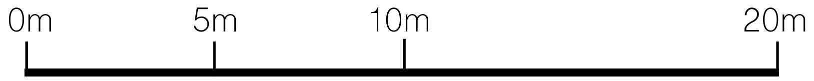
D14 Rialto Living Existing State Roof Plan
Scale: 1:200

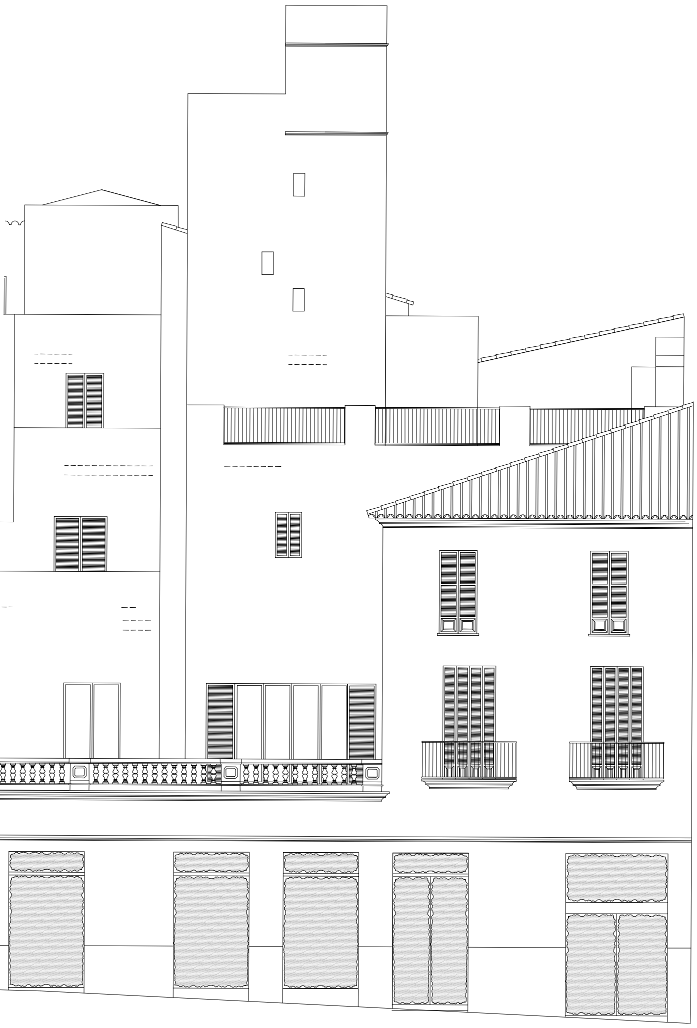






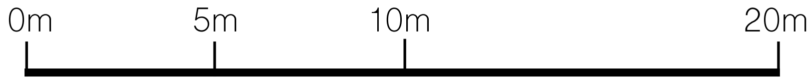
D15 Rialto Living Existing State North Elevation
Scale: 1:200





D16 Rialto Living Existing State South Elevation
Scale: 1:200

21.01
20.07
17.54
3.02
2.70
+16.65
+13.70
+9.60
+5.30
+0.00
+0.12
+11.20
+10.80
+3.03
-3.30



D17 Rialto Living Existing State Section A-A'
Scale: 1:200

The ceiling joists of the first floor were checked, and although there was a superficial layer of oxidation, the overall state was noted to be in a good state.

The starting date of inspection and construction ongoing simultaneously can be dated to the 10th of October as the excavations for the elevator pits started that day. However, new materials were brought to the site at a later date. Excavation work in the area of the elevator pits was strictly manual, under the supervision of an archaeologist. Previously, an unloading arch was carried out on the existing load-bearing wall, and an undersized metallic structure was

66 Partially Removed False Ceiling in Room 1.02 © Bastidas Architecture

propped up. As mentioned above, because the initial procedure of the rehabilitation was planned to be the inspection and demolition of the critical areas of the building, it was noted that "the work will continue during the first days of week 42."

False ceilings were removed to value each slab's overall state of conservation of each slab, not just specific areas **(66)**. In ceilings with unique decoration, a sample was left intact for later reproduction if so decided.
Since the project prioritized the reuse of the materials, 1m2 of various hydraulic tiles was cleaned **(67)** to assess the possibility of reusing them and integrating

67 Cleaned Hydraulic Tiles in Room 1.02 © Bastidas Architecture

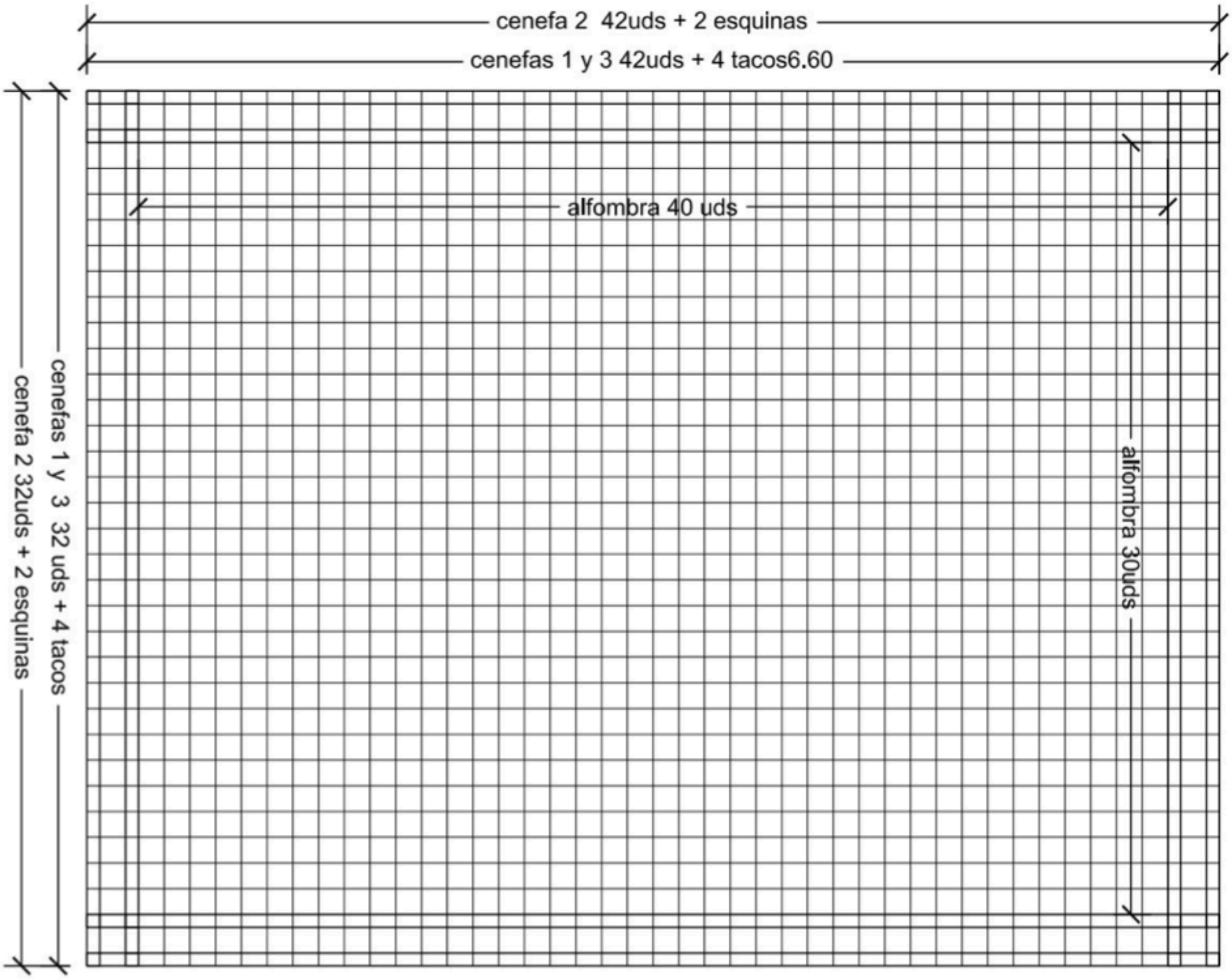
them into the design. The same procedure was applied for carpentry, especially the interior glass doors and windows **(68)**; they were removed and stored for possible reuse.

Scheme identification of the hydraulic tile patterns was documented for each room's actual state; as seen in the example of room 1.15, the dimensions and linings were written **(D18)(69)(E10)**.

The state of the existing wooden coffered ceiling was also checked. An area can be seen, precisely the one reinforced with metal girders, where its deterioration is documented to be "very pronounced due

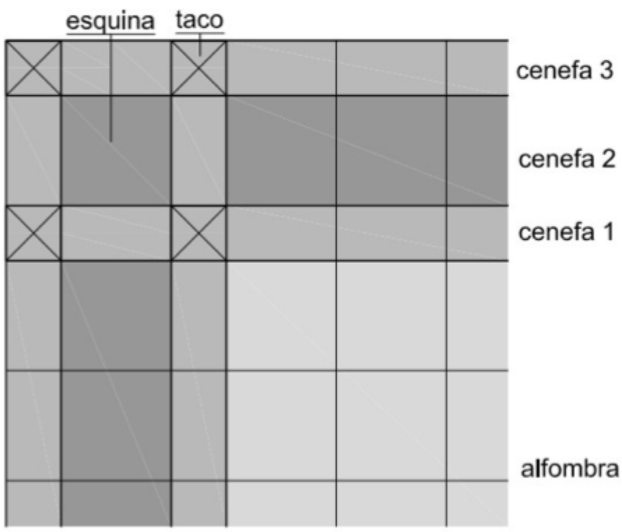
68 Removal of Carpentry in Room 1.12 © Bastidas Architecture

to moisture infiltration from the ceiling." The work was carried out to cover cracks with silicone and apply waterproof paint (IMPER and TECNOL) on walls and floor,



D18 Hydraulic Tile Pattern Identification of Room 1.15 (Alfombra:Tile Carpet, Cenefa: Borders, Tacos: Studs) © Bastidas Architecture

69 Borders and Studs of Hydraulic Tile Carpet of Room 1.15
© Bastidas Architecture



E10 Borders of the Tiling of Room 1.15
© Bastidas Architecture

on the coffered ceiling area, to protect the wood from water seepage from rainwater temporarily.

A significant fissure was observed in marés arches with particular affectation in the support area of the metal girder placed as a reinforcement for the wooden coffered ceiling. Preventive shoring of the zone was carried out. The healthy beam heads were discovered in room 2A30, the perimeter clearing was opened, and the beams were protected with an anti-woodworm product, plastic, plasterboard, and beam connectors were placed.

70 Beams at room 2A30
© Bastidas Architecture

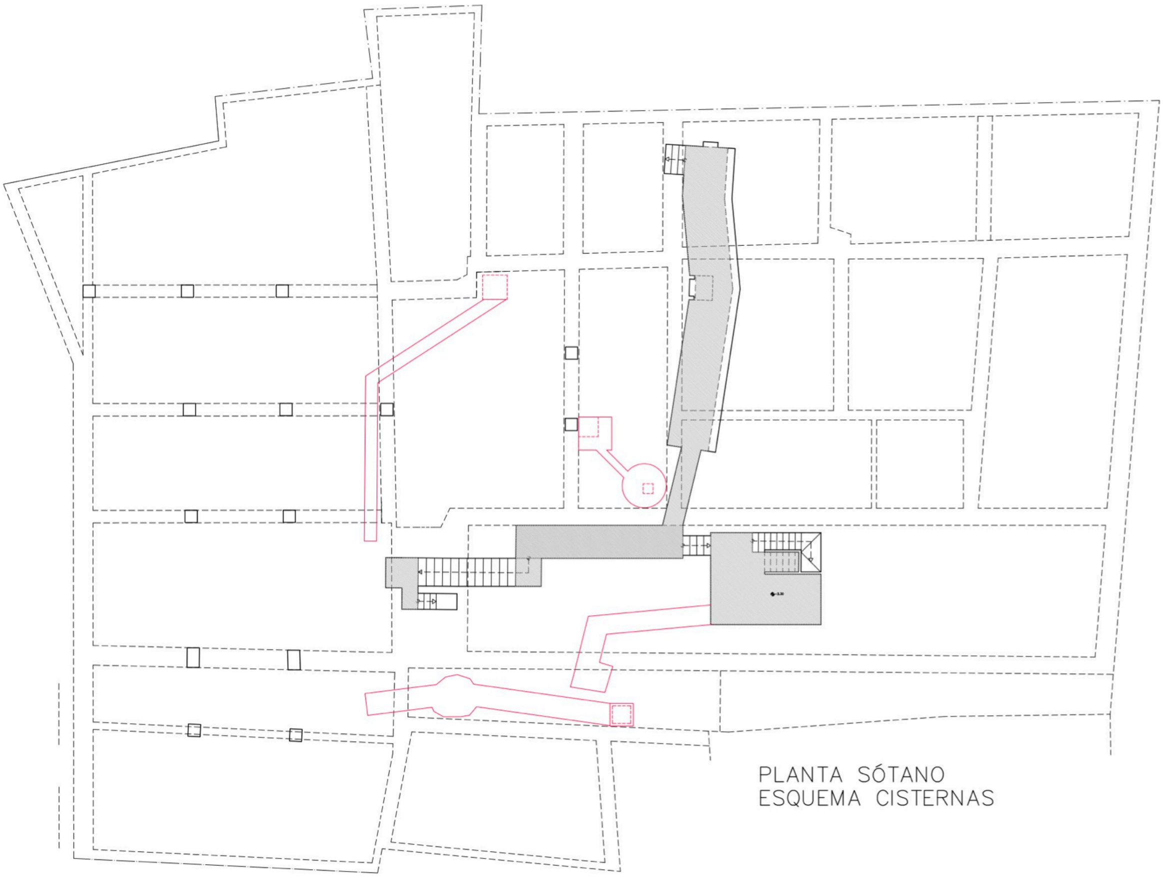
71 Rib Lath Placement on the Beams at Room 2A30
© Bastidas Architecture

Various furniture was carried out to a storage warehouse in Can Ramis. Decorative wooden elements are also transported to the Carpinteria Lliteres workshop for safekeeping and restoration.

During January 2013, the inspection and construction were ongoing simultaneously. In the second week of January, safety shoring was carried out in areas with severe corrosion in iron joists. It is propped up to the ground floor, or in the case of having the store below; it is propped up to the first floor.

As a consequence of the emptying, demolition of partitions closing cisterns, and emptying of rubble from the interior, the existence of extensions of said cisterns in the subsoil was verified; the water passage can be seen in the image **(72)** with the scheme of cistern discovered on basement map. **(D19)** Internal rehabilitation was paused, and able to start the erection of external scaffolding on February 2013; also, the existing tower at the eastern wing of the building was started to get demolished.

72 Extensions of the Cistern at the Basement
© Bastidas Architecture



D19 Cistern Pathways Scheme on Basement Floor Plan, Pathways Market in Red (Unscaled) © Bastidas Architecture

Similar works described above were done to each room necessary as simultaneously the construction phase started around mid-December, with the excavations for the elevator pits.

4.2 Basic & Executive Projects

In Spain, like many other countries, it is mandatory to obtain confirmation from the town hall through the association of architects. When construction is finished, the competent authority that granted the urban planning license for its execution should verify that, what it approved and authorized in its day, is coincident with what was executed.

In most cases, urban planning permits are granted based on the Basic Projects documentation, and the works are executed based on the Execution Project documentation. The City Council does not usually have the Execution Project, and the construction company does not usually have the Basic License Project.

Thus, the importance of the Execution Project being the faithful development of the Basic License Project is critical.

“There are many occasions in which it is necessary to process a “Modification of the Urban Planning License,” or even rectify the executed work because what has been authorized does not coincide with what has been executed. With the repercussions in price and term that all this causes.” (Source: proteyco.es)

To avoid this sort of modification that could end up wasting money or work, Bastidas Architecture follows a process where they get two town hall licenses, one for the Basic Project and one for the Executive Project.

The process begins with submitting the Basic Project to the Association of Architects, in this case specifically to Collegi Oficial d'Arquitectes de les Illes Balears (COAIB). Once the visa from COAIB is obtained, the project is submitted to the Town Hall, Ayuntamiento de Palma. The project is sent to the *consell—Council* of Mallorca. If a confirmation is not obtained, the required corrections should be done on the project, and the cycle repeats until the council approves the project. Once the confirmation is obtained, the Town Hall starts studying the project; similarly, a period of corrections might be asked until the Town Hall License for the Basic Project is obtained.

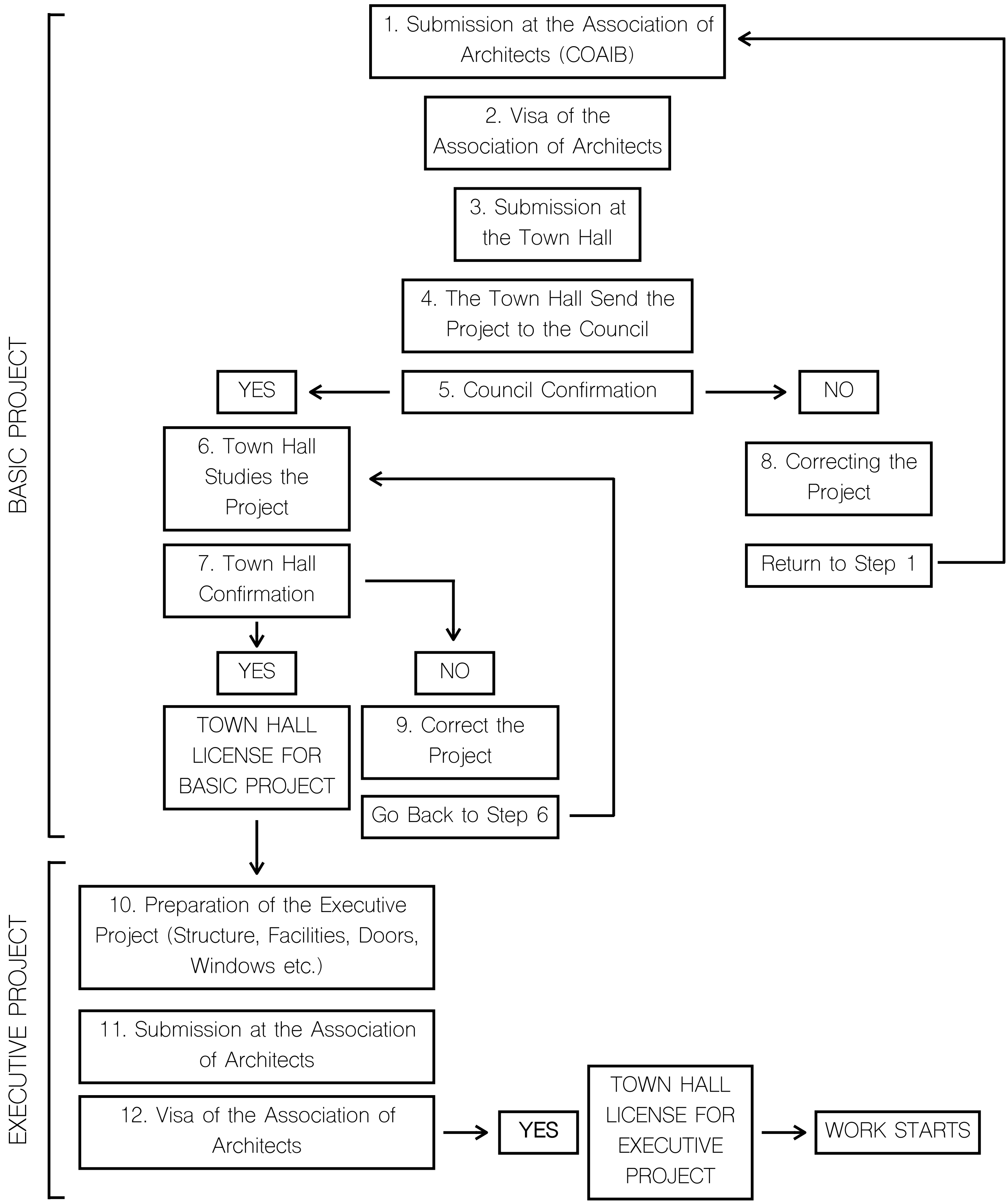
For the Executive Project, the process is shorter, where the plans are prepared, signifying the adjustment of the structure, facilities, doors, and windows are done and submitted to the Association of Architects. After obtaining the visa, the submission to the Town Hall is made, and the works start once the Town Hall License is obtained. **(S6)**

4.2.1 Basic & Executive Plans

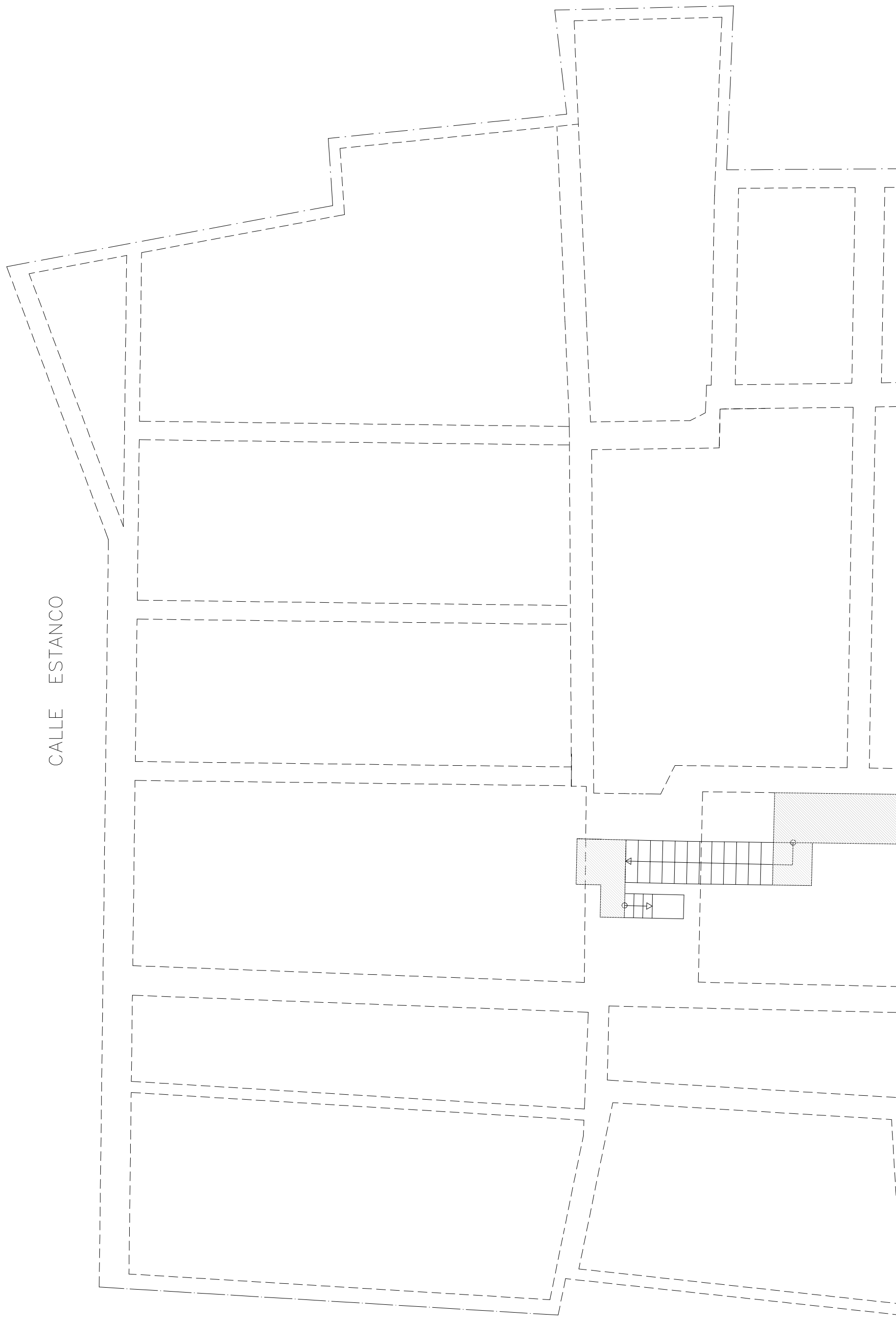
While designing the project, the owners Bergman and Kall, had plenty of meetings with Sergi Bastidas to decide what to add to the building and how to organize the space. In the words of Bergman, during our conversation, they worked closely together. They all were at the site during the construction; this was not hard for the owners Bergman and Kall since they never closed the shop fully, closing some parts depending on the rehabilitation from time to time.

There were no specific concepts initially, but Sergi Bastidas mentioned during our conversations that the idea was to create a common site. This place is inspired by a Souq,' where the similarity comes from how the Moroccan Souq's are large sites that are perceived as public gathering area rather than bland stores by the local community. Sergi Bastidas perfectly described the concept of the project:

'Customers come in, they find a store, obviously. But nobody tells you anything. What do you want? You are free. So you go have a coffee, eat something, buy some clothes, or go upstairs buy whatever you want. It's like a small city structure. There is a very free circulation, you walk through it and come out the other side without nobody telling you anything practically. If you stop, it's because something caught your attention. That's the same principle that defines a Souq. It's very free, as if there are several people selling different things. That's the concept, and I think it was achieved and works very well. '[1]



S6 Basic and Executive Project Approval Scheme to Start Construction in Palma de Mallorca
Source: Bastidas Architecture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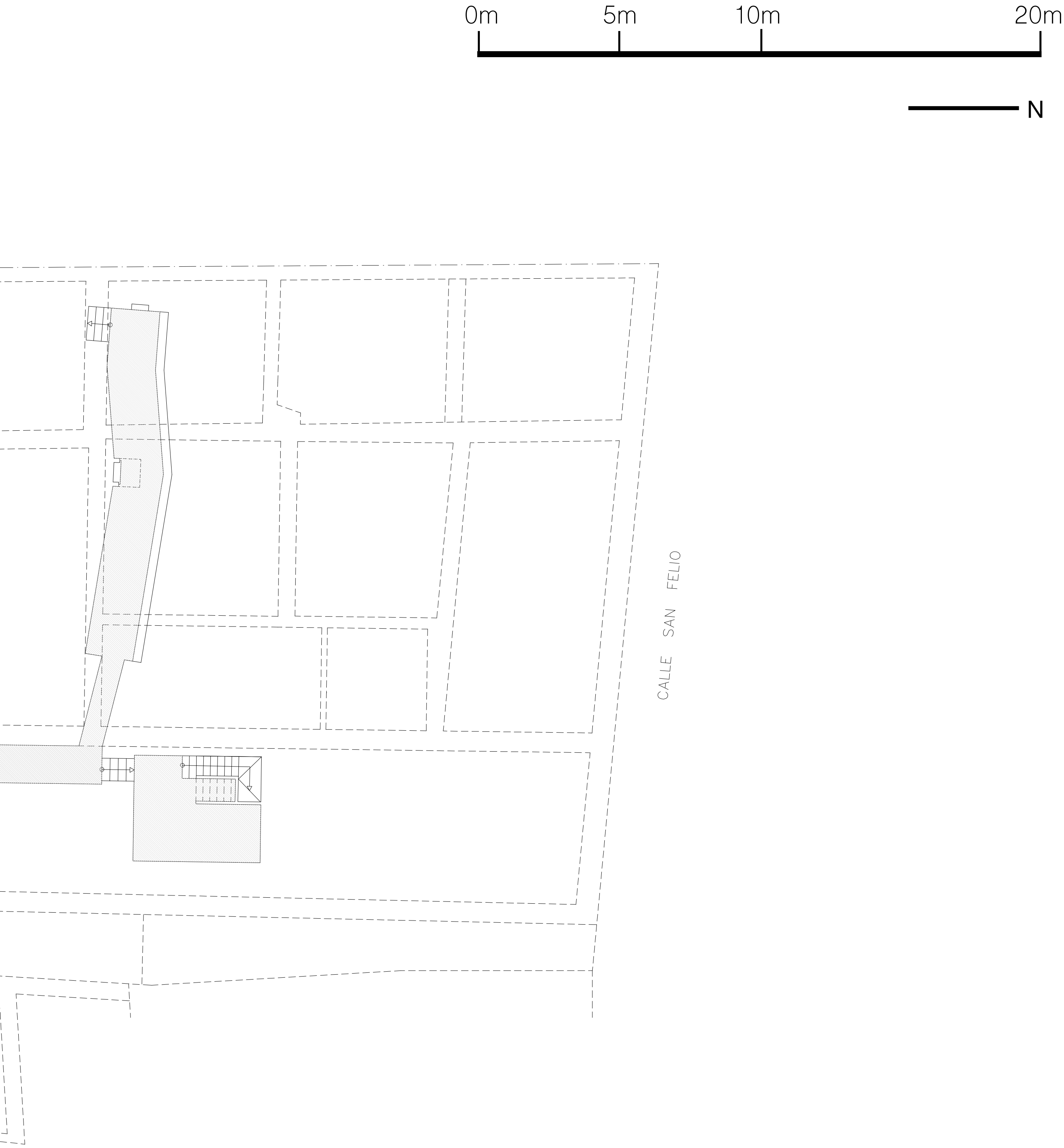
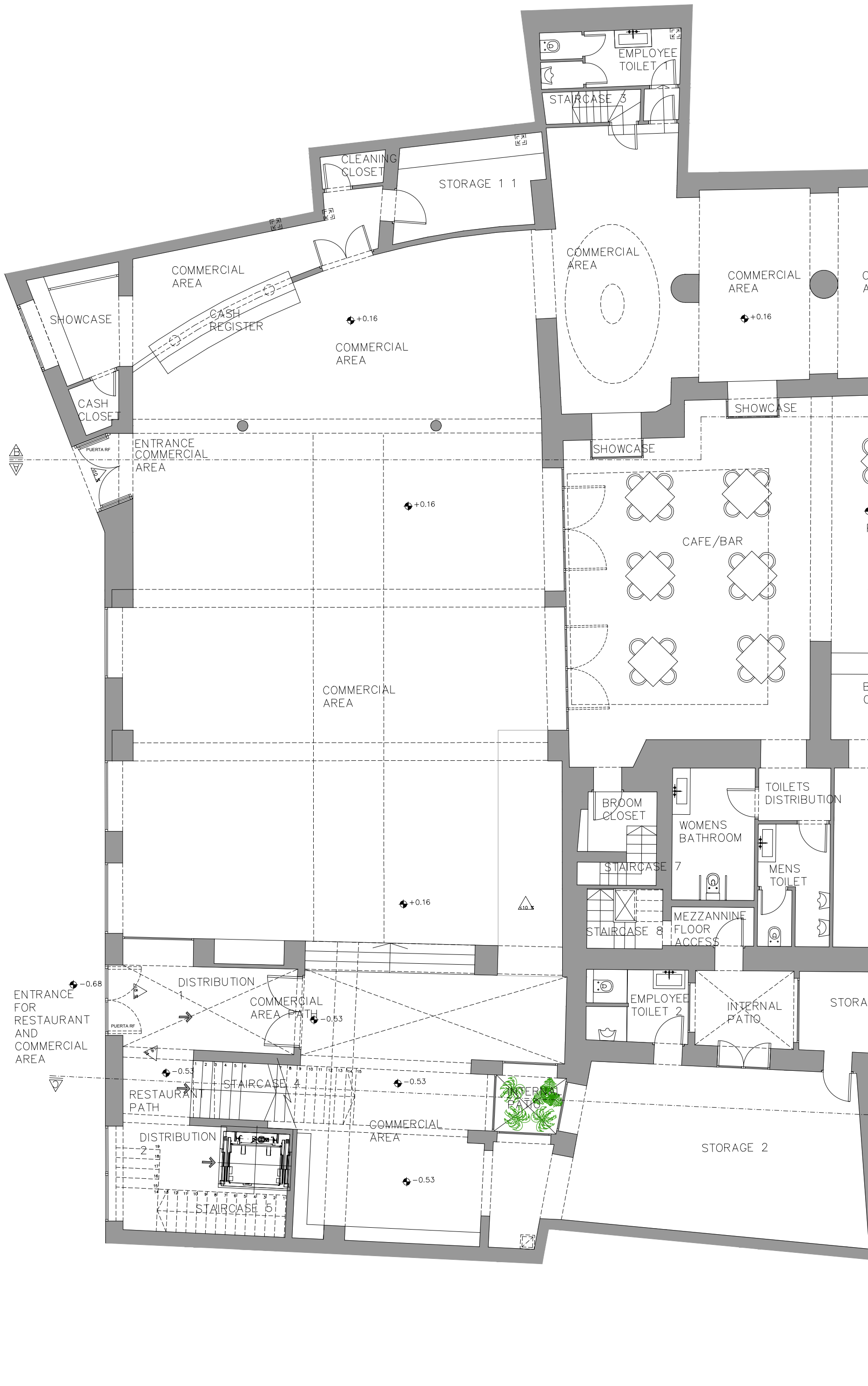
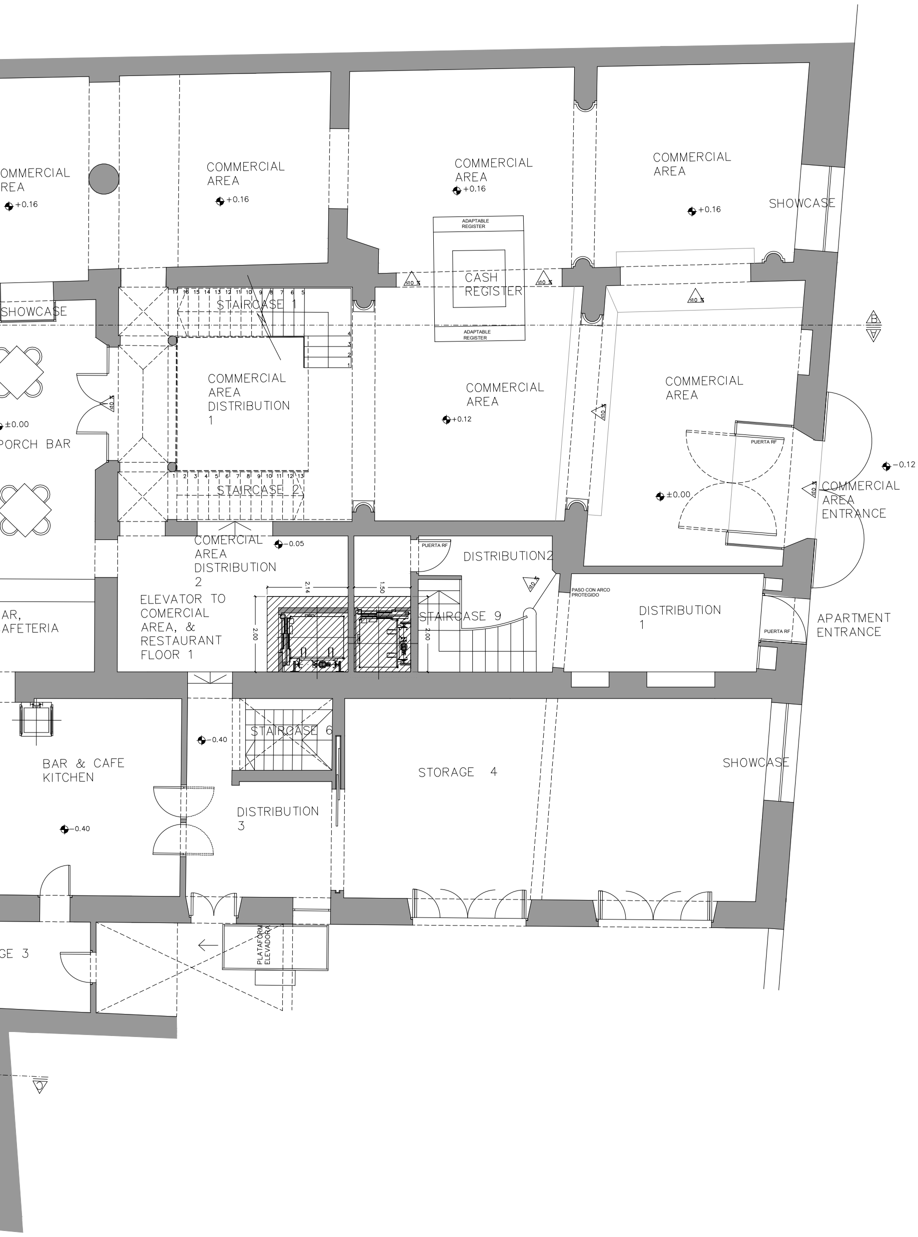


D20 Rialto Living Basic Phase Basement Floor Plan
Scale: 1:200

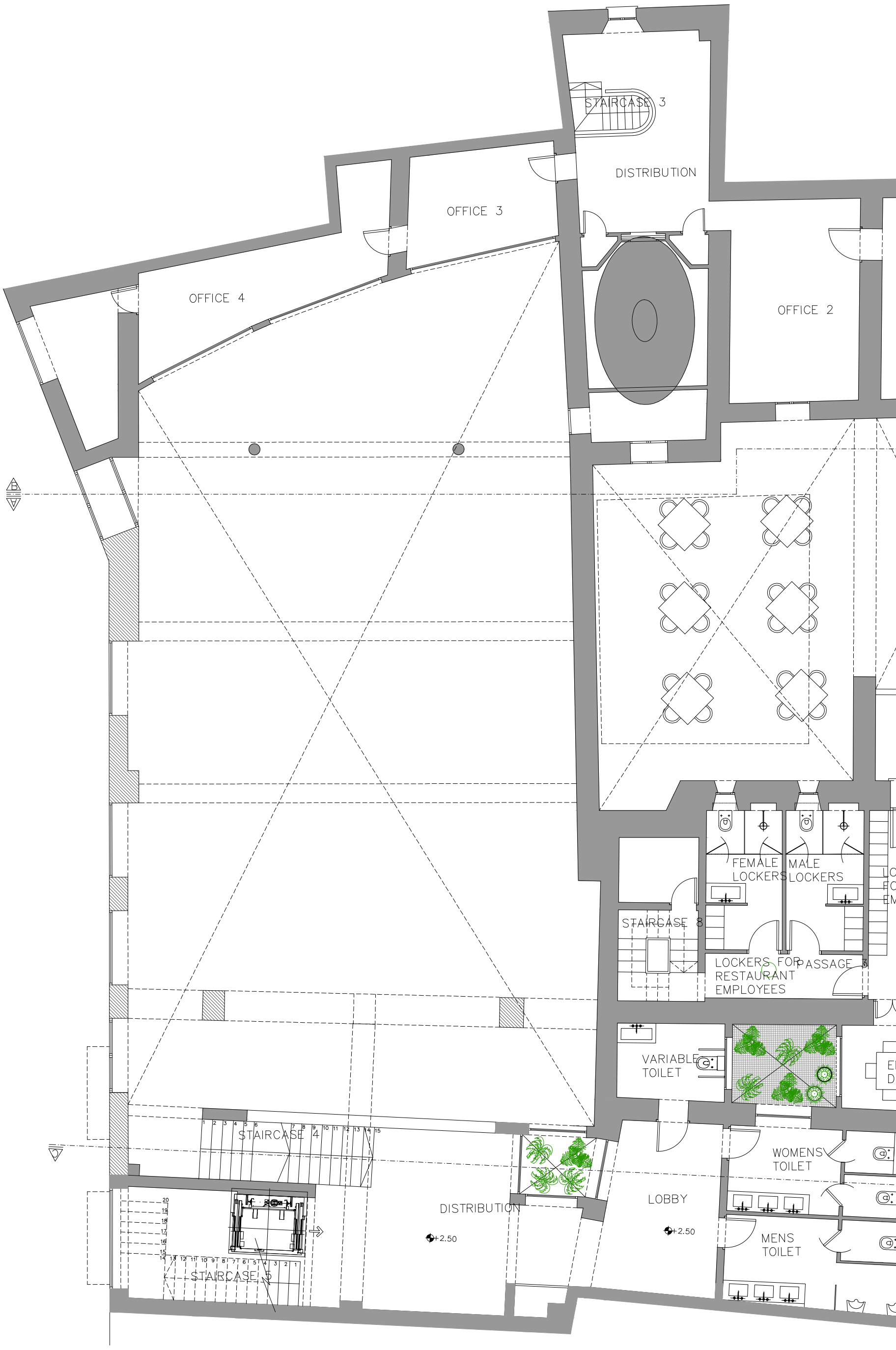

EMPLOYEE TOILET 1
STAIRCASE 3
CLEANING CLOSET
STORAGE 1 1
COMMERCIAL AREA
SHOWCASE
CASH REGISTER
+0.16
COMMERCIAL AREA
CASH CLOSET
COMMERCIAL AREA
COMMERCIAL AREA
+0.16
SHOWCASE
SHOWCASE
ENTRANCE COMMERCIAL AREA
PUERTA RF
+0.16
CAFE/BAR
COMMERCIAL AREA
BROOM CLOSET
WOMENS BATHROOM
TOILETS DISTRIBUTION
MENS TOILET
STAIRCASE 7
STAIRCASE 8
MEZZANNINE FLOOR ACCESS
+0.16
-0.68
ENTRANCE FOR RESTAURANT AND COMMERCIAL AREA
DISTRIBUTION 1
COMMERCIAL AREA PATH
-0.53
EMPLOYEE TOILET 2
INTERNAL PATIO
-0.53
RESTAURANT PATH
STAIRCASE 4
-0.53
INTERNAL PATIO
COMMERCIAL AREA
STORAGE 2
DISTRIBUTION 2
-0.53
STAIRCASE 5

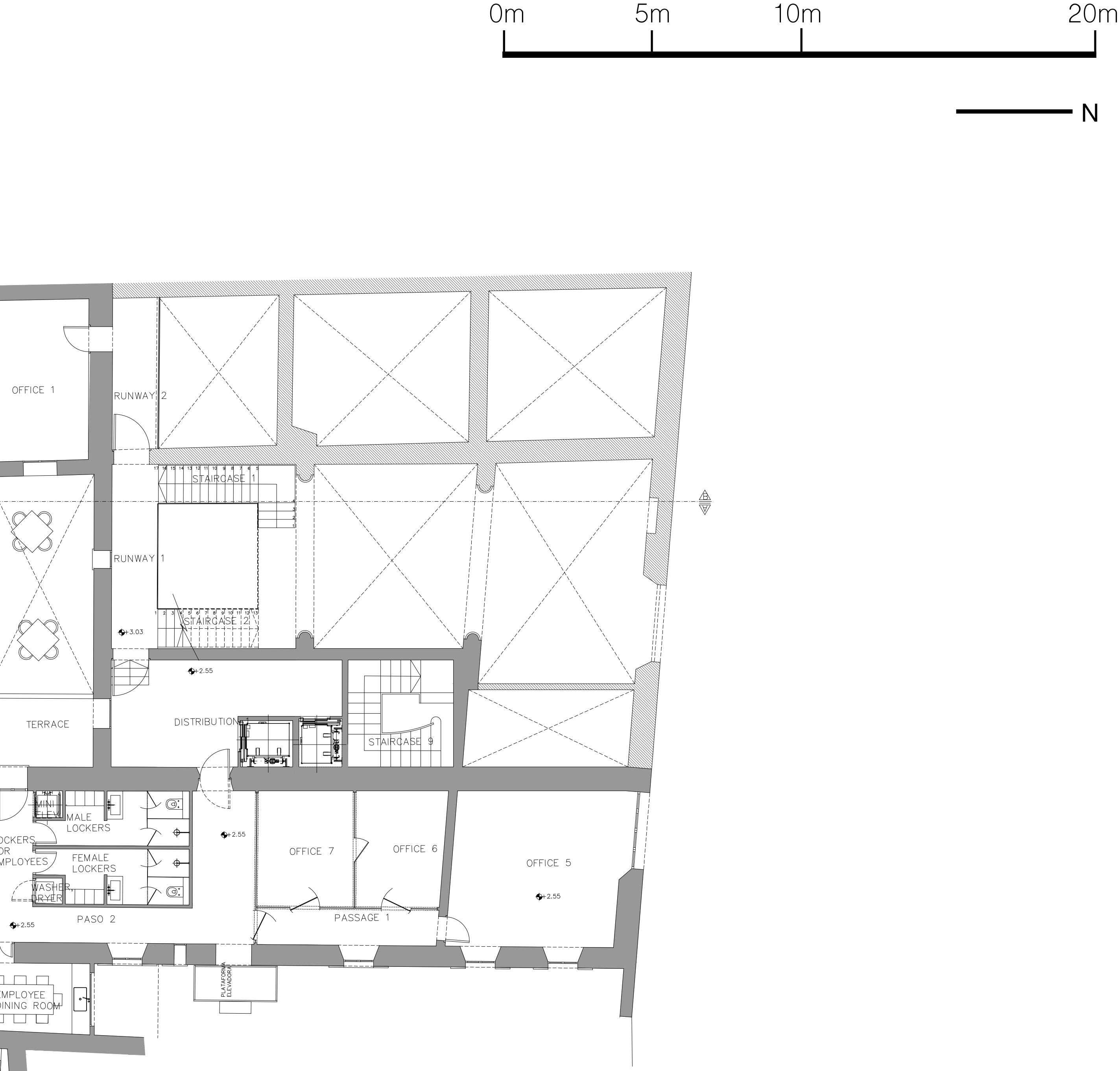
0m 5m 10m 20m

N

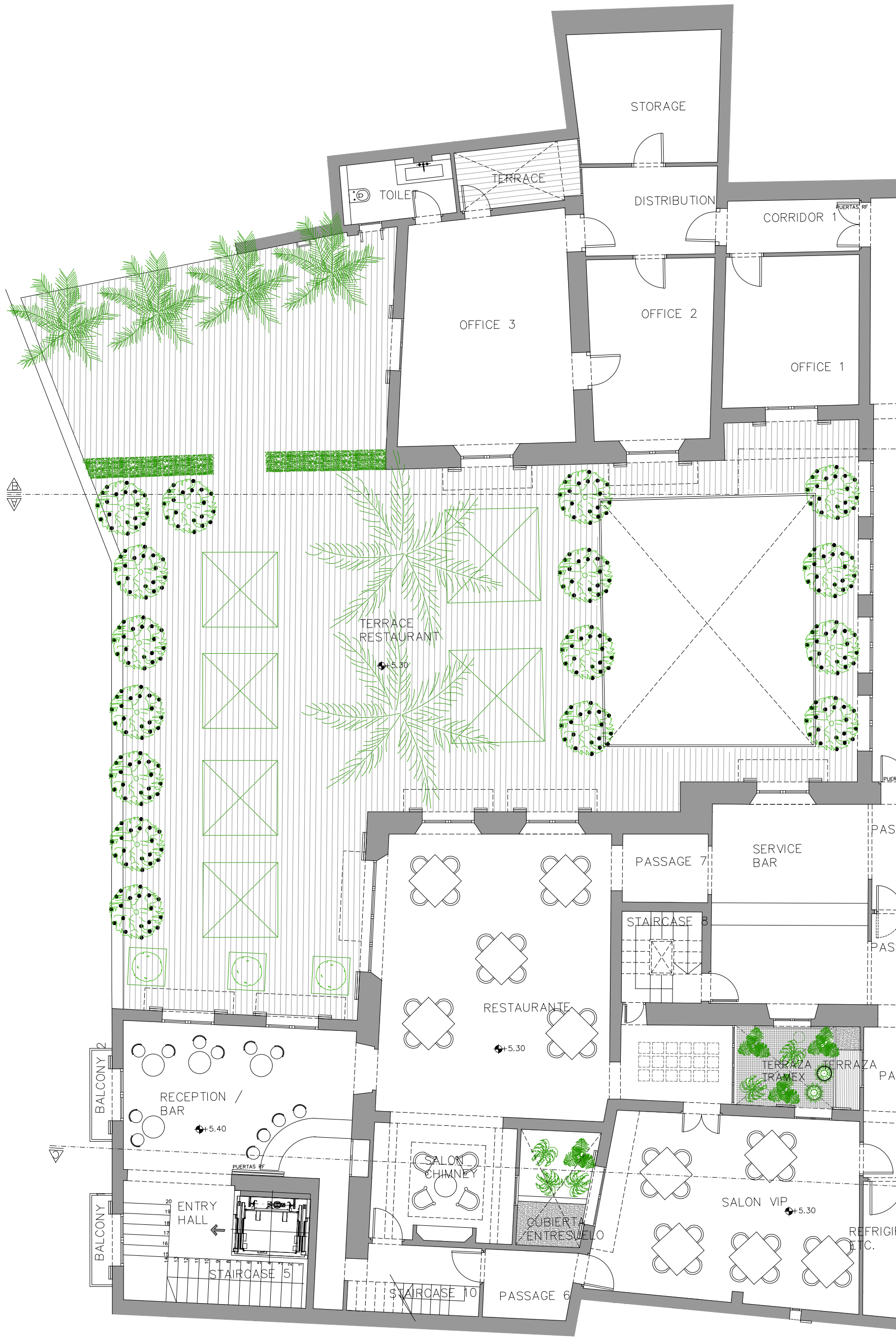


D21 Rialto Living Basic Phase Ground Floor Plan
Scale: 1:200

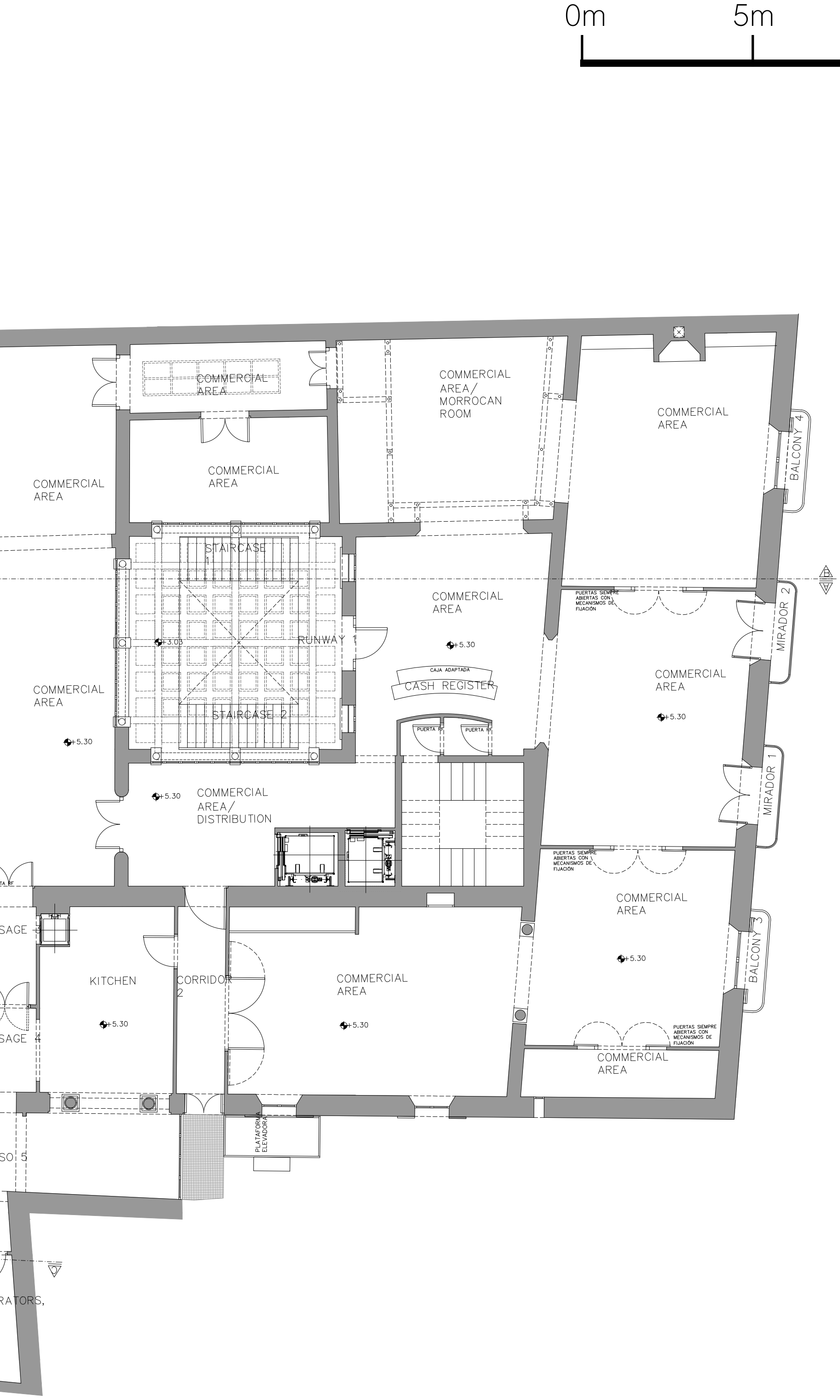

STAIRCASE 3
DISTRIBUTION
OFFICE 3
OFFICE 4
OFFICE 2
FEMALE LOCKERS
MALE LOCKERS
STAIRCASE 8
LOCKERS FOR RESTAURANT EMPLOYEES
PASSAGE 3
VARIABLE TOILET
STAIRCASE 4
DISTRIBUTION
LOBBY
WOMENS TOILET
MENS TOILET
STAIRCASE 5
+2.50
+2.50



D22 Rialto Living Basic Phase Mezzanine Floor Plan
Scale: 1:200



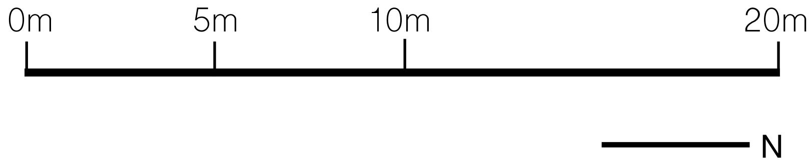
STORAGE
TOILET
TERRACE
DISTRIBUTION
CORRIDOR 1
OFFICE 3
OFFICE 2
OFFICE 1
TERRACE RESTAURANT
+5.30
PASSAGE 7
SERVICE BAR
STAIRCASE 8
RESTAURANTE
+5.30
TERRAZA TRAMEX
TERRAZA
RECEPTION / BAR
+5.40
BALCONY 2
BALCONY
SALON CHIMNEY
CUBIERTA ENTRESUELO
SALON VIP
+5.30
ENTRY HALL
STAIRCASE 5
STAIRCASE 10
PASSAGE 6

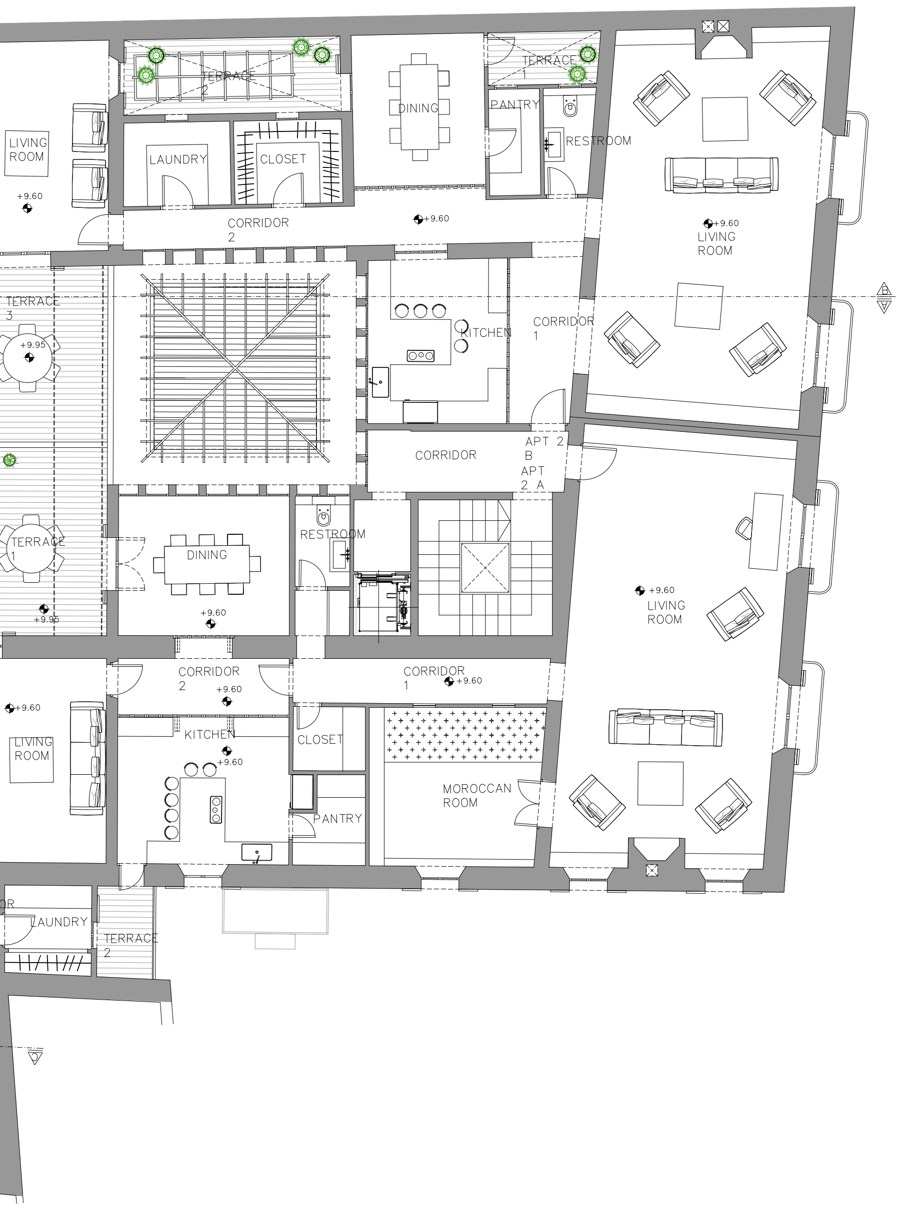


D23 Rialto Living Basic Phase First Floor Plan

Scale: 1:200

BATHROOM 2
TERRAZA TRAMEX
CORRIDOR 3
+9.60
+9.41
BEDROOM 2
BEDROOM 1
BATHROOM 1
CORRIDOR 2
+9.60
BEDROOM 2
+11.00
BATHROOM 1
BEDROOM 1
+9.60
CORRIDOR 4
+9.60
BATHROOM 2
CLOSET
+11.00
CORRIDOR 5
TERRACE
TERRACE
CORRIDOR 3
+9.60
OFFICE 1
+9.30
+9.30
OFFICE TERRACE
+11.00
BEDROOM 3
TERRACE TRAMEX
BEDROOM 4
+9.60
OFFICE 2
+9.30
BATHROOM 3
+11.00
BETHROOM 4

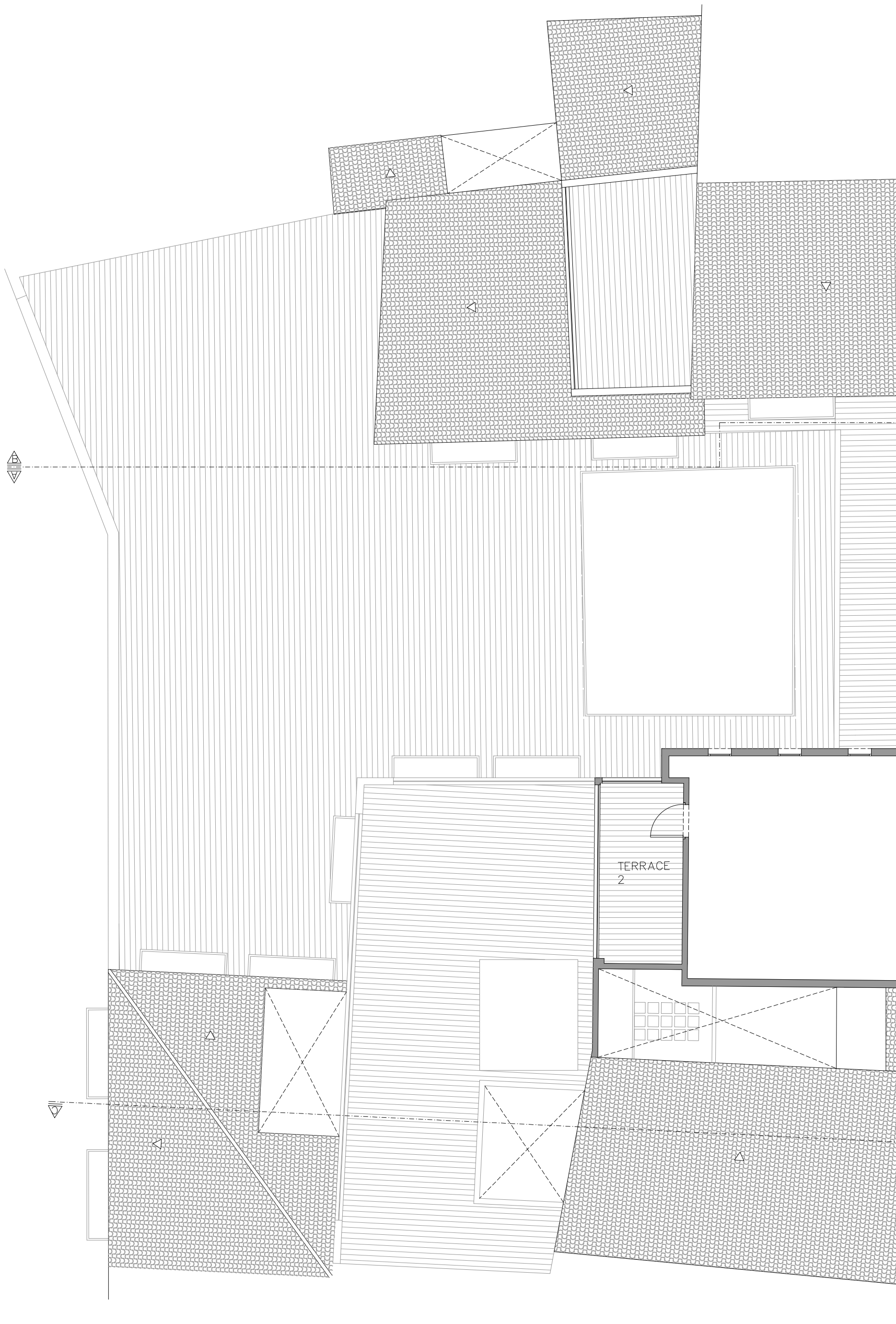


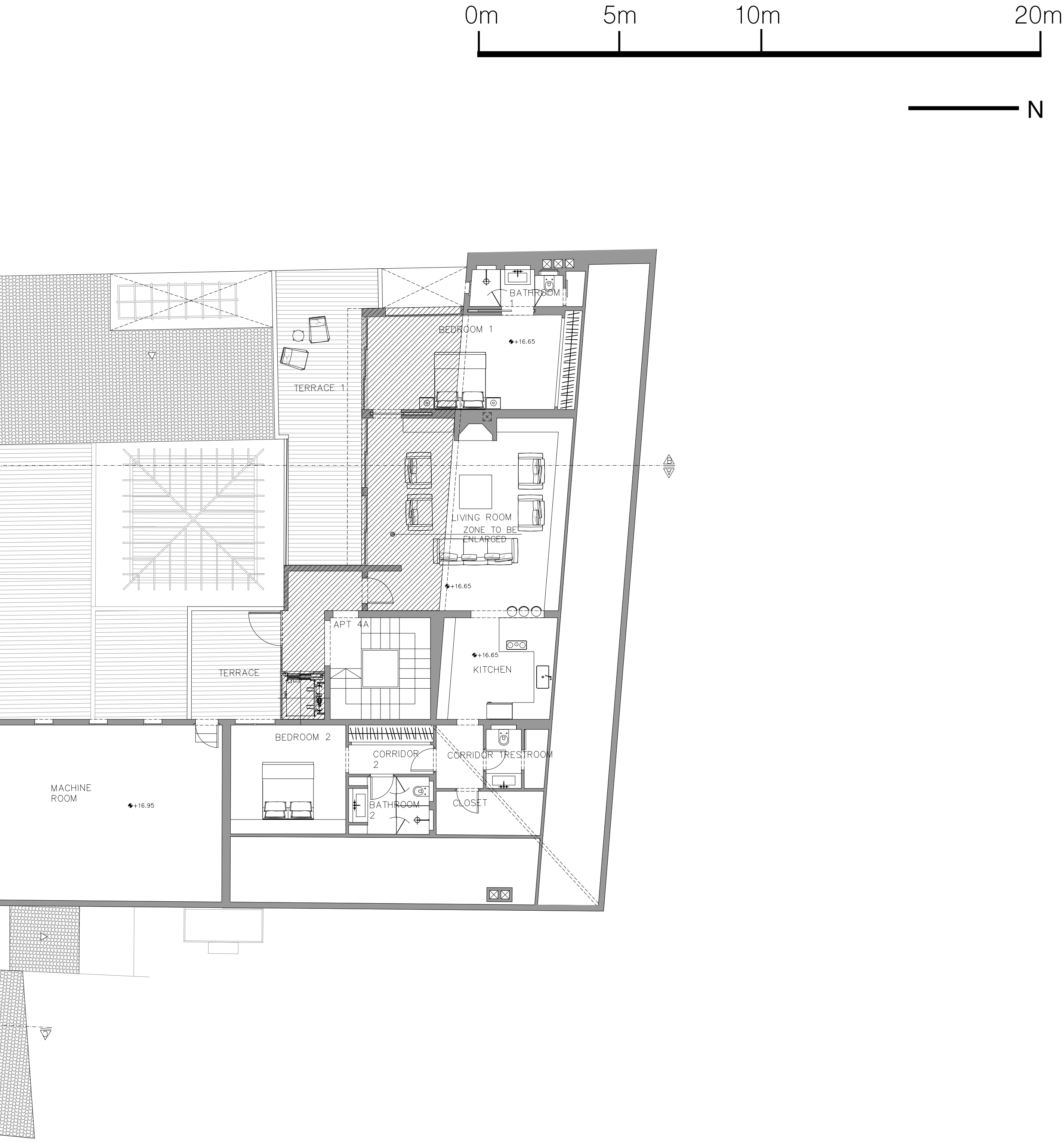


D24 Rialto Living Basic Phase Second Floor Plan
Scale: 1:200

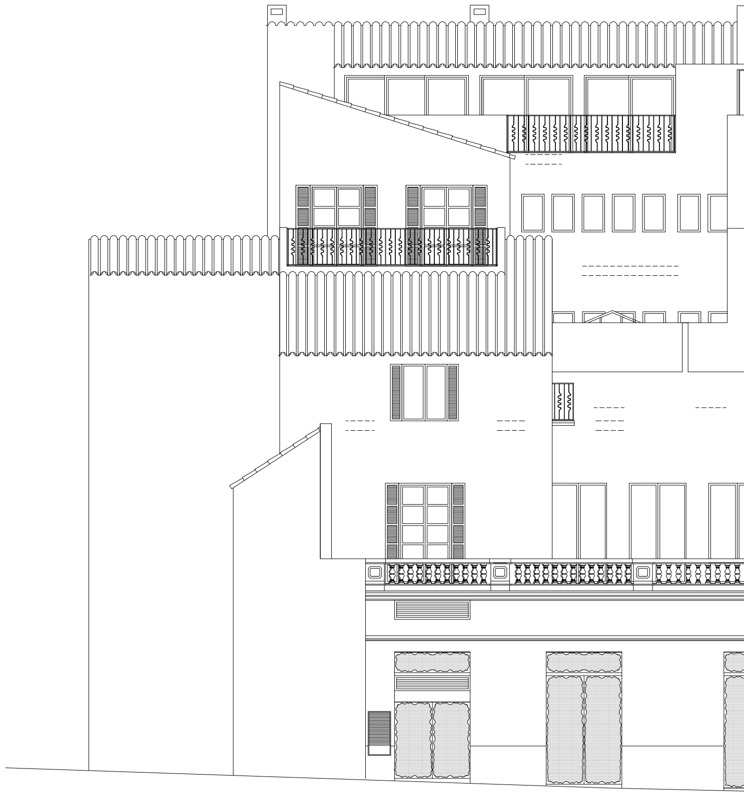
TERRACE 1
BEDROOM 2
+13.70
TERRACE
3
+14.30
BEDROOM 2
+13.70
CLOSET
LIVING
ROOM
BATHROOM
POOL
TERRACE 2
TERRACE
TERRACE
CORRIDO
3
VIP TERRACE
FLOOR 1 DECK
+14.30
TERRACE
MEZZ
DECK
BEDROOM 3
BATHROOM

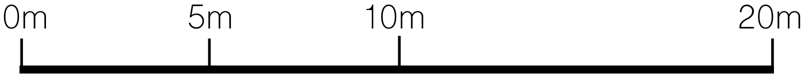
D25 Rialto Living Basic Phase Third Floor Plan
Scale: 1:200


TERRACE
2



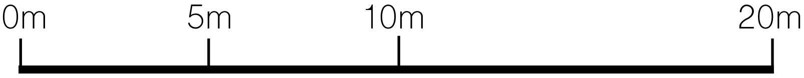
D26 Rialto Living Basic Phase Fourth Floor Plan
Scale: 1:200



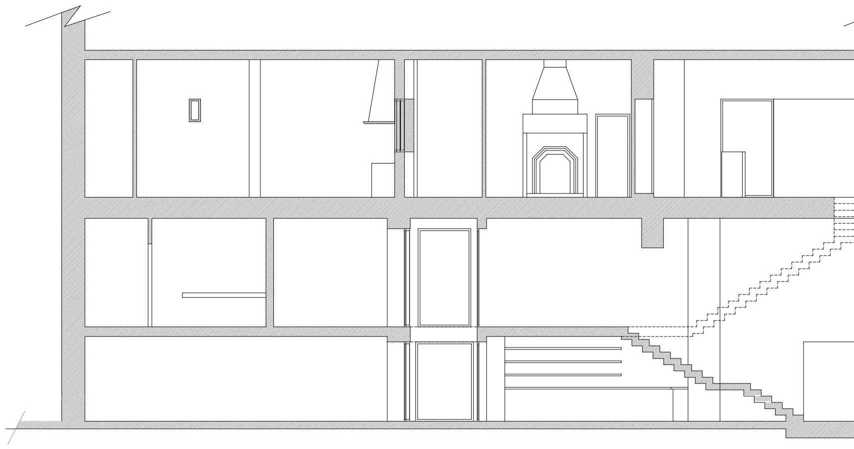


D27 Rialto Living Basic Phase South Elevation
Scale: 1:200

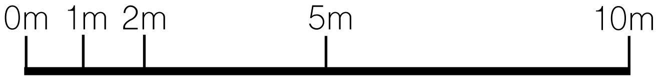
21.01
20.07
17.49
1.50
3.10
+16.65
0.25
2.70
+13.70
0.25
3.85
+9.60
0.25
4.05
+5.30
0.30
5.00
3.00
+0.00
+0.12
10.17
+11.20
+10.80
+3.03
-3.30

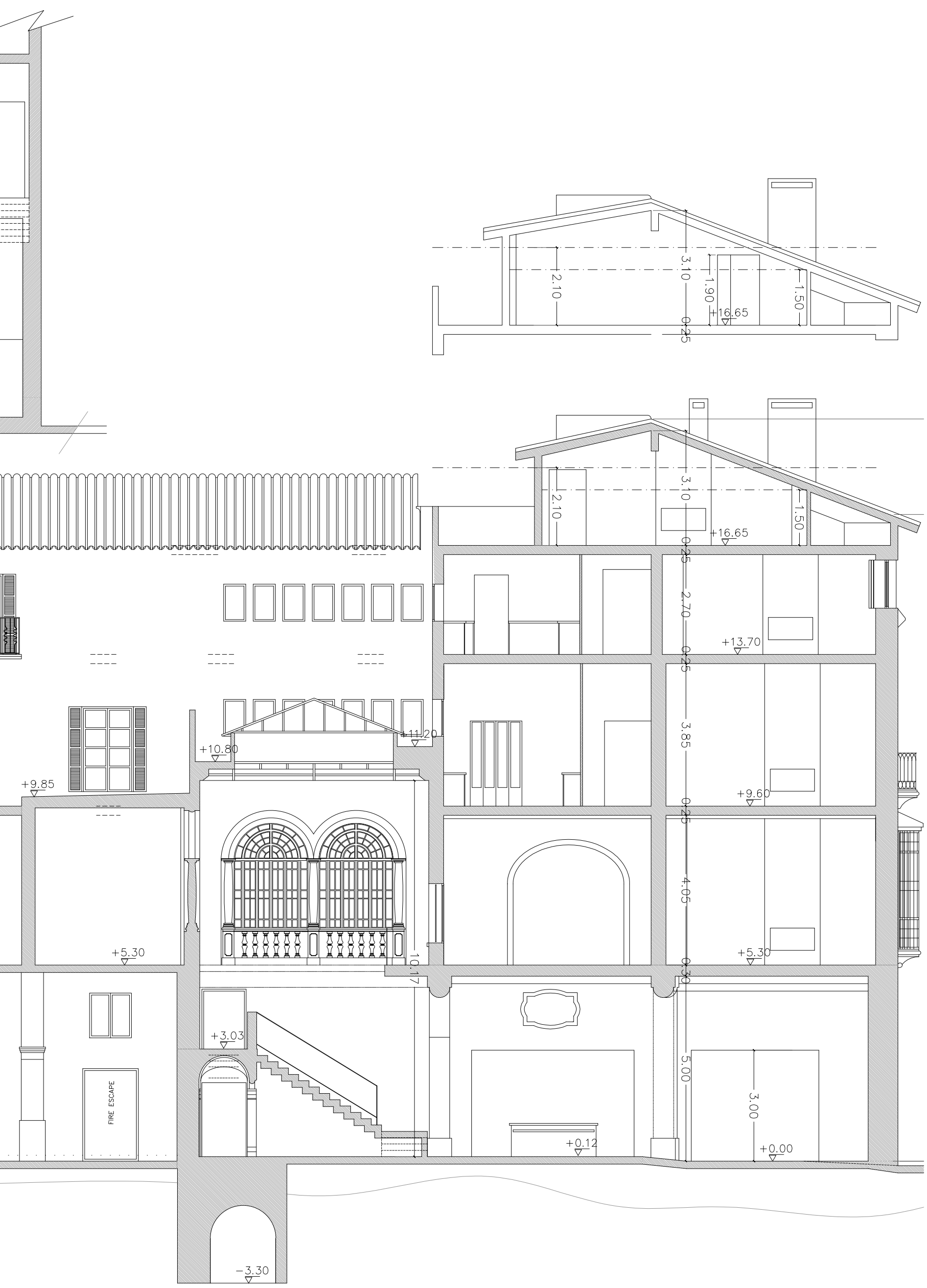


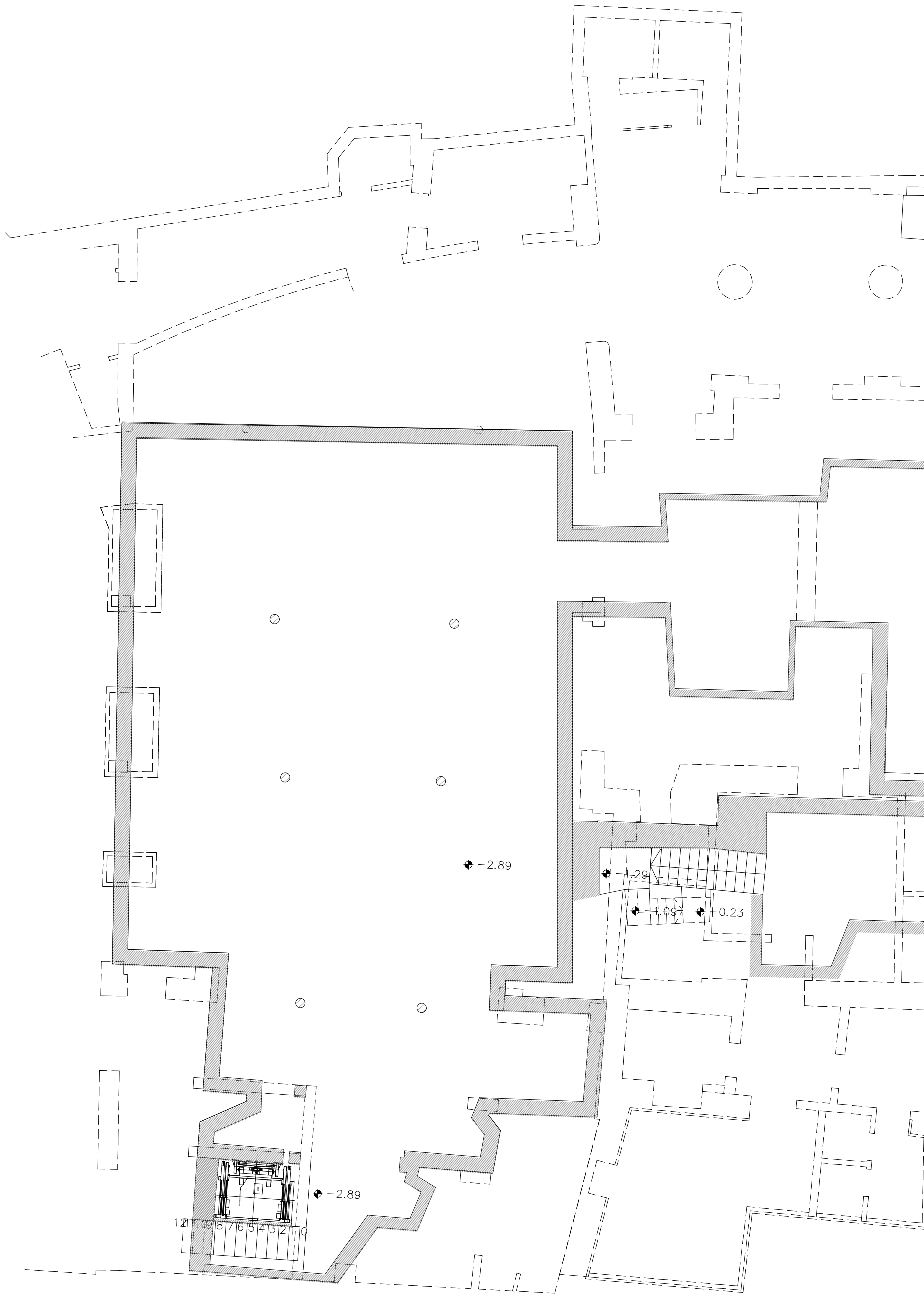
D28 Rialto Living Basic Phase Section A-A'
Scale: 1:200



D29 & D30 Rialto Living Basic Phase Sections
B-B' (Right) & C-C' (Above)
Scale: 1:200

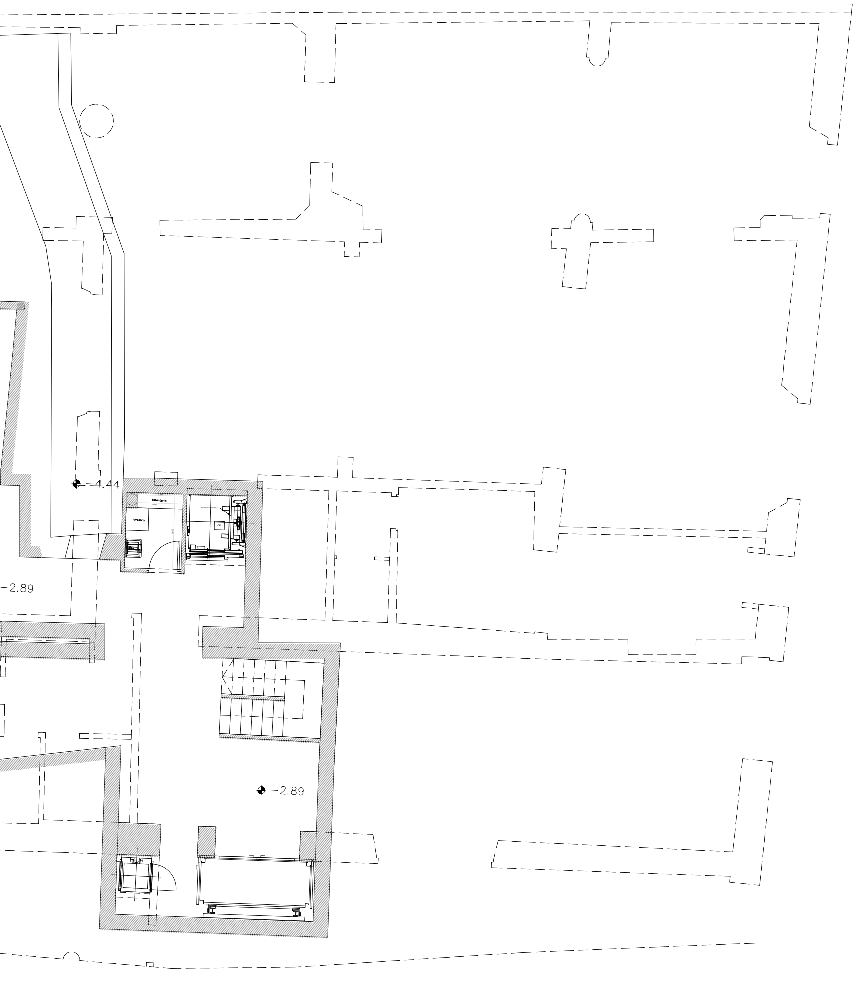

0m
1m
2m
5m
10m


3.10
2.10
1.90
1.50
0.25
+16.65
2.70
+13.70
3.85
+9.60
4.05
+5.30
0.30
5.00
3.00
+0.00
+0.12
+3.03
-3.30
+9.85
+10.80
+11.20
10.17
FIRE ESCAPE

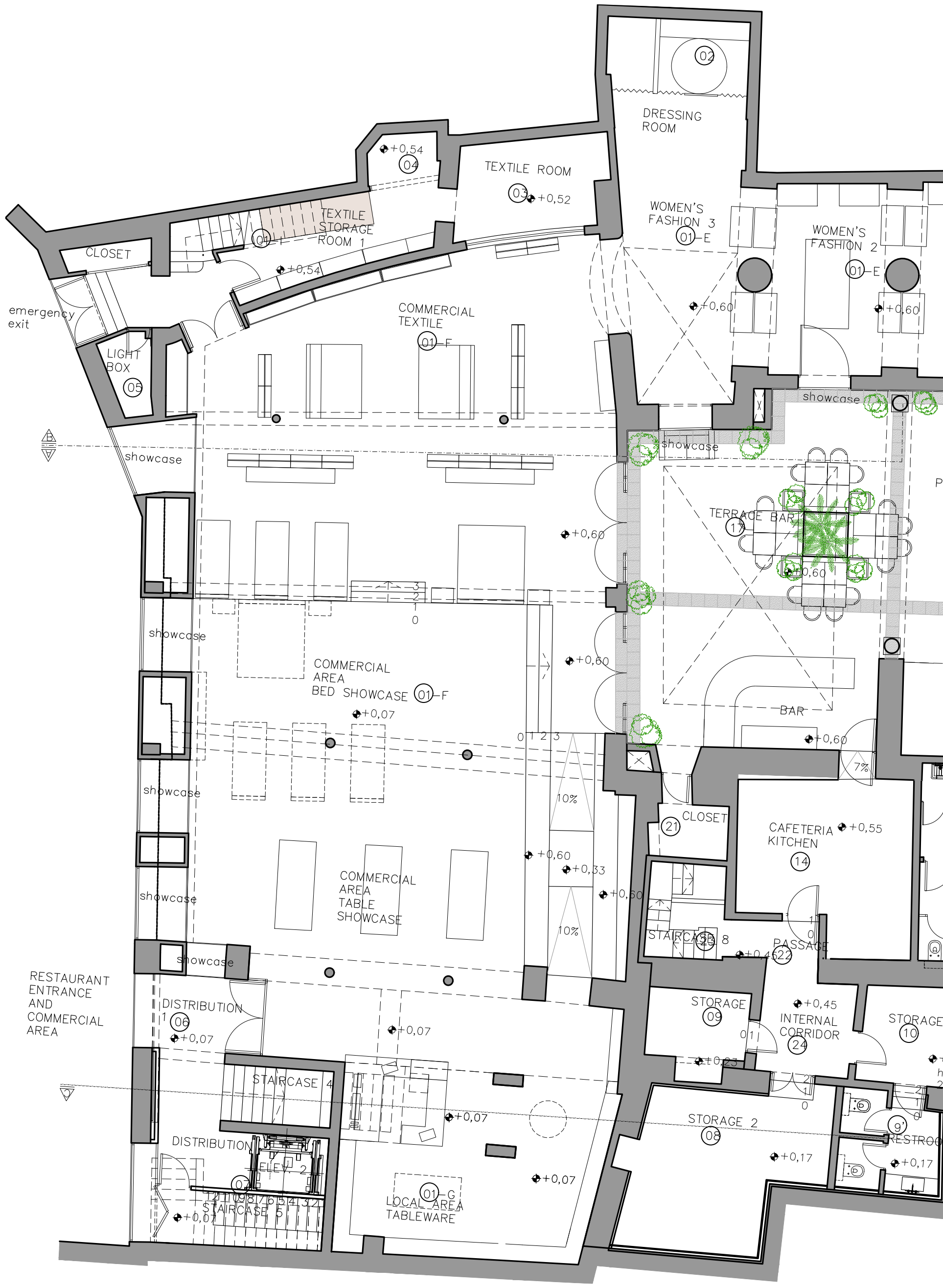

−2.89
−1.29
−1.09
−0.23
−2.89
12 11 10 9 8 7 6 5 4 3 2 1 0

0m 5m 10m 20m

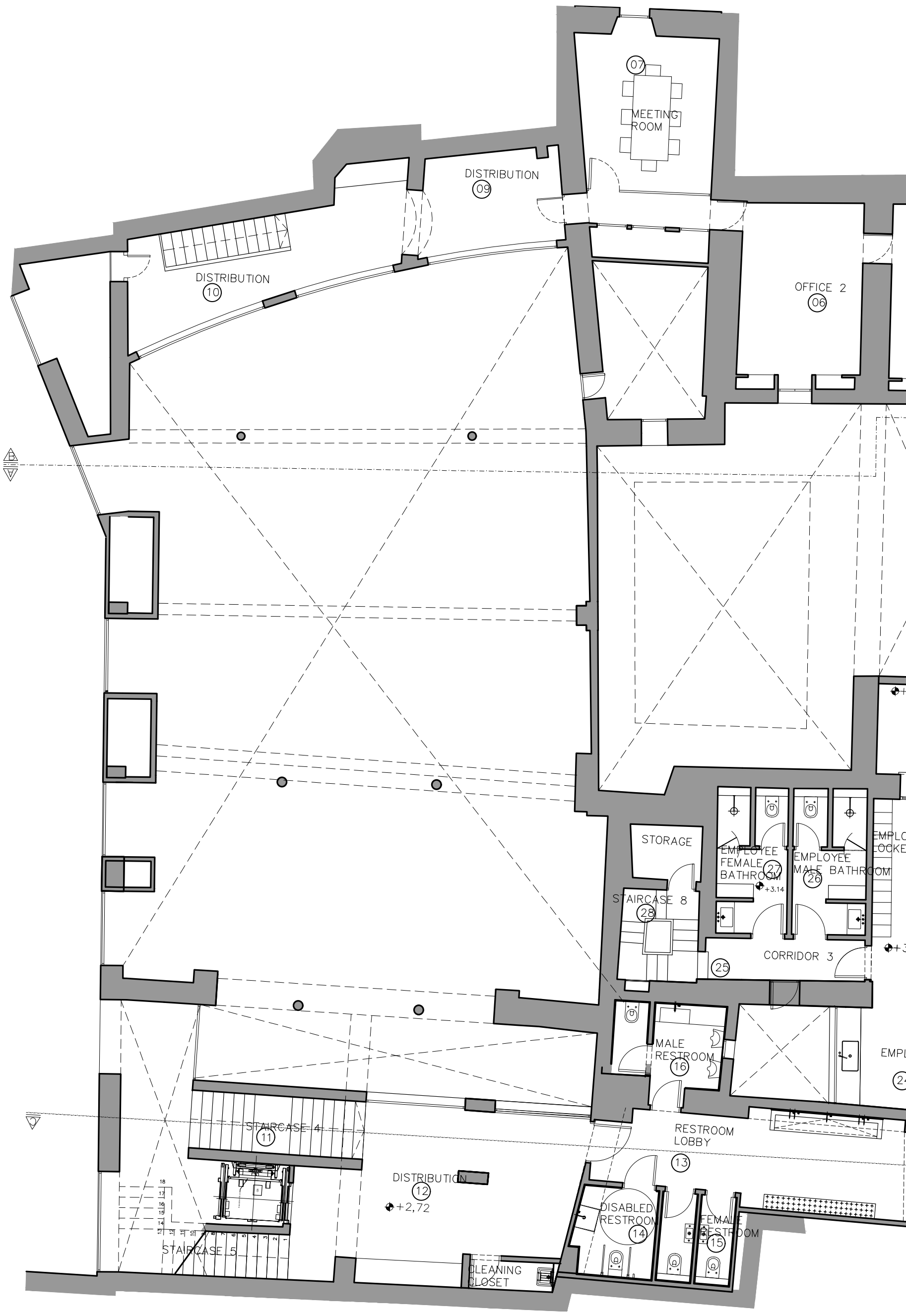
N



D31 Rialto Living Executive Phase Basement Floor Plan
Scale: 1:200

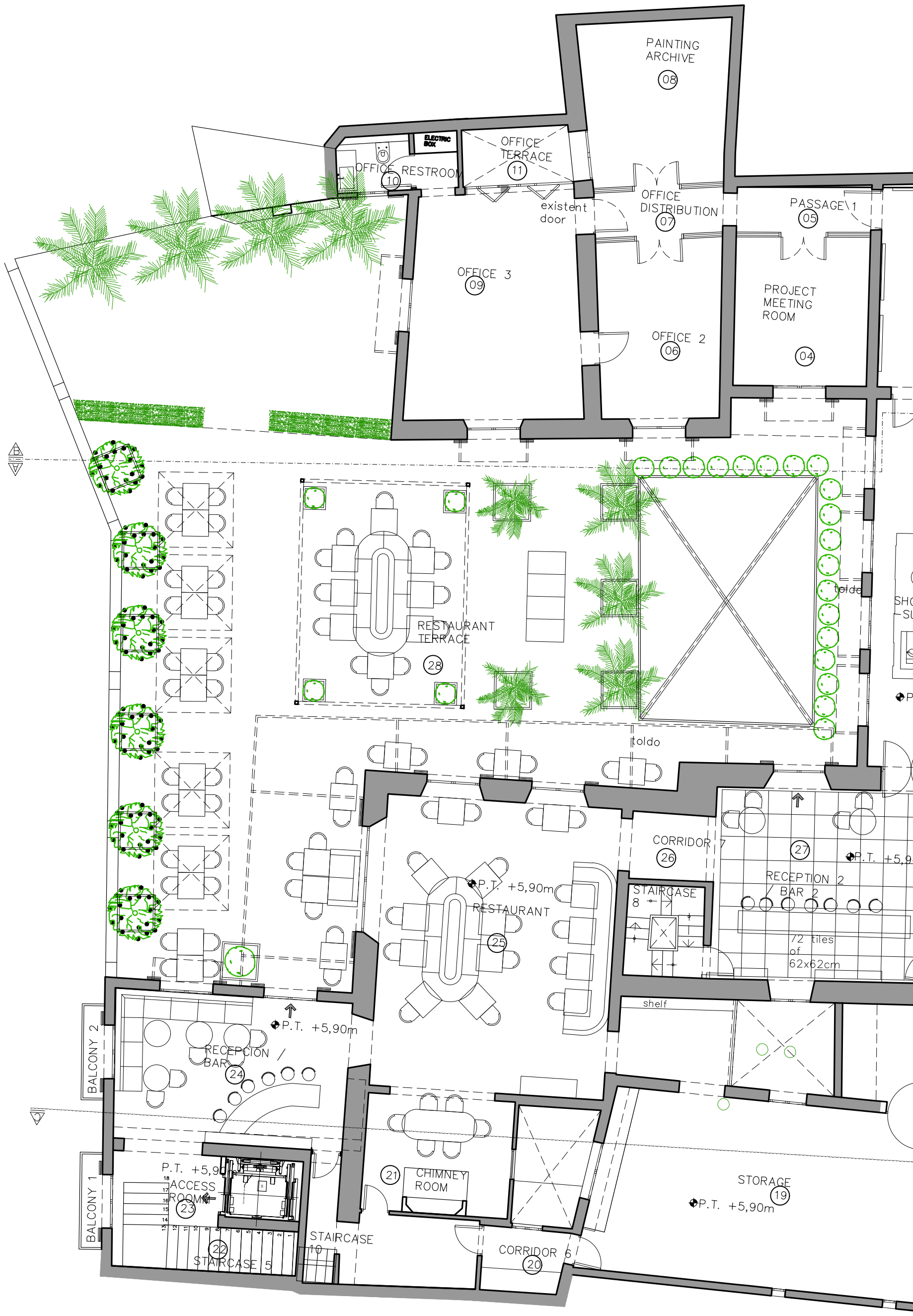

DRESSING ROOM
TEXTILE ROOM
TEXTILE STORAGE ROOM 1
CLOSET
emergency exit
LIGHT BOX
WOMEN'S FASHION 3
WOMEN'S FASHION 2
COMMERCIAL TEXTILE
showcase
TERRACE BAR
COMMERCIAL AREA BED SHOWCASE
BAR
CLOSET
CAFETERIA KITCHEN
COMMERCIAL AREA TABLE SHOWCASE
STAIRCASE 8
PASSAGE
RESTAURANT ENTRANCE AND COMMERCIAL AREA
DISTRIBUTION
STORAGE
INTERNAL CORRIDOR
STAIRCASE 4
STORAGE 2
DISTRIBUTION
ELEV. 2
STAIRCASE 5
LOCAL AREA TABLEWARE

D32 Rialto Living Executive Phase Ground Floor Plan
Scale: 1:200

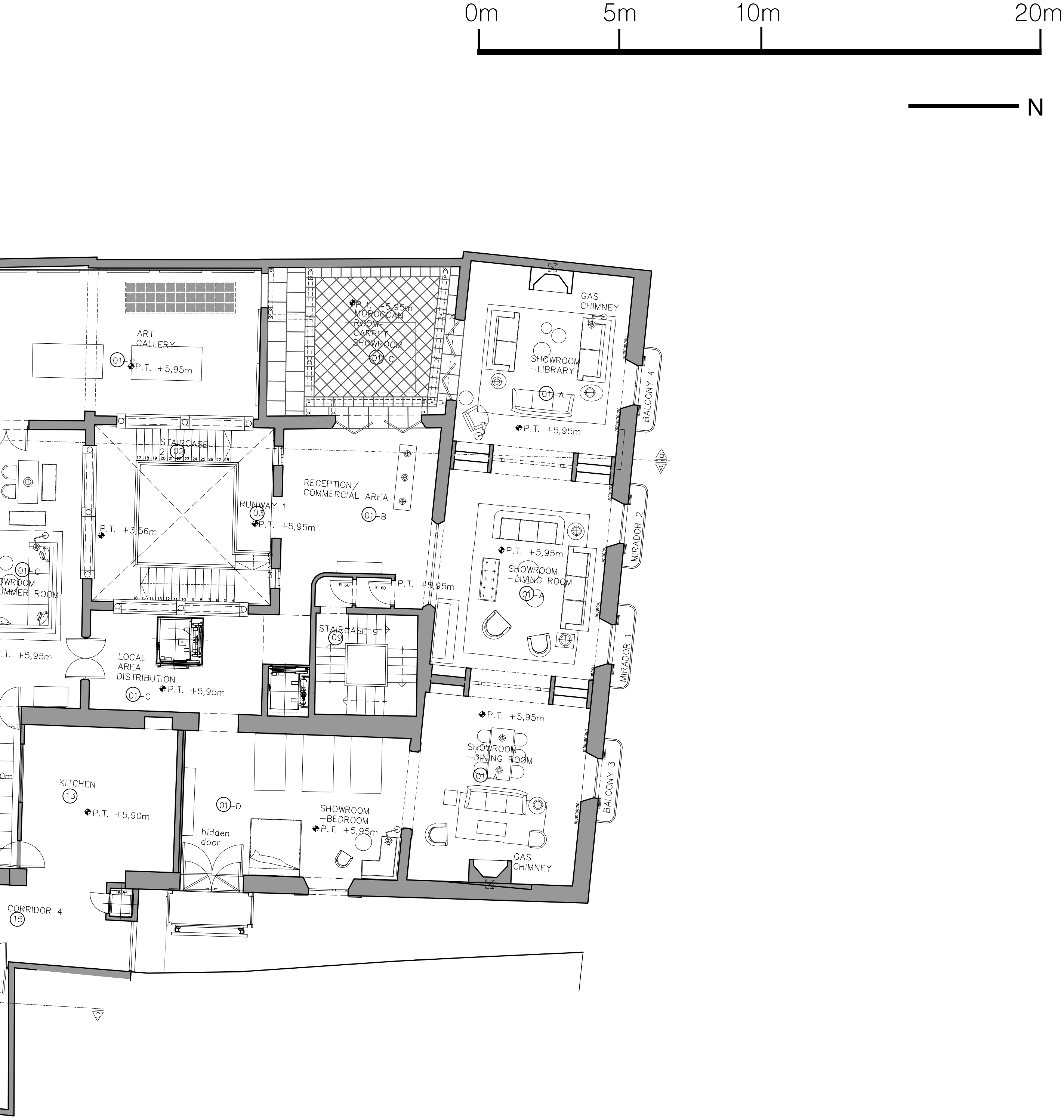


MEETING ROOM
07
DISTRIBUTION
09
DISTRIBUTION
10
OFFICE 2
06
STORAGE
STAIRCASE 8
28
EMPLOYEE FEMALE BATHROOM
27
+3,14
EMPLOYEE MALE BATHROOM
26
CORRIDOR 3
25
MALE RESTROOM
16
STAIRCASE 4
11
DISTRIBUTION
12
+2,72
RESTROOM LOBBY
13
DISABLED RESTROOM
14
FEMALE RESTROOM
15
STAIRCASE 5
CLEANING CLOSET

D33 Rialto Living Executive Phase Mezzanine Floor Plan
Scale: 1:200

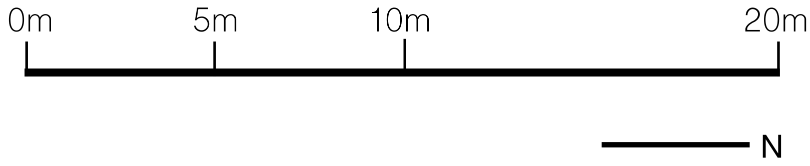


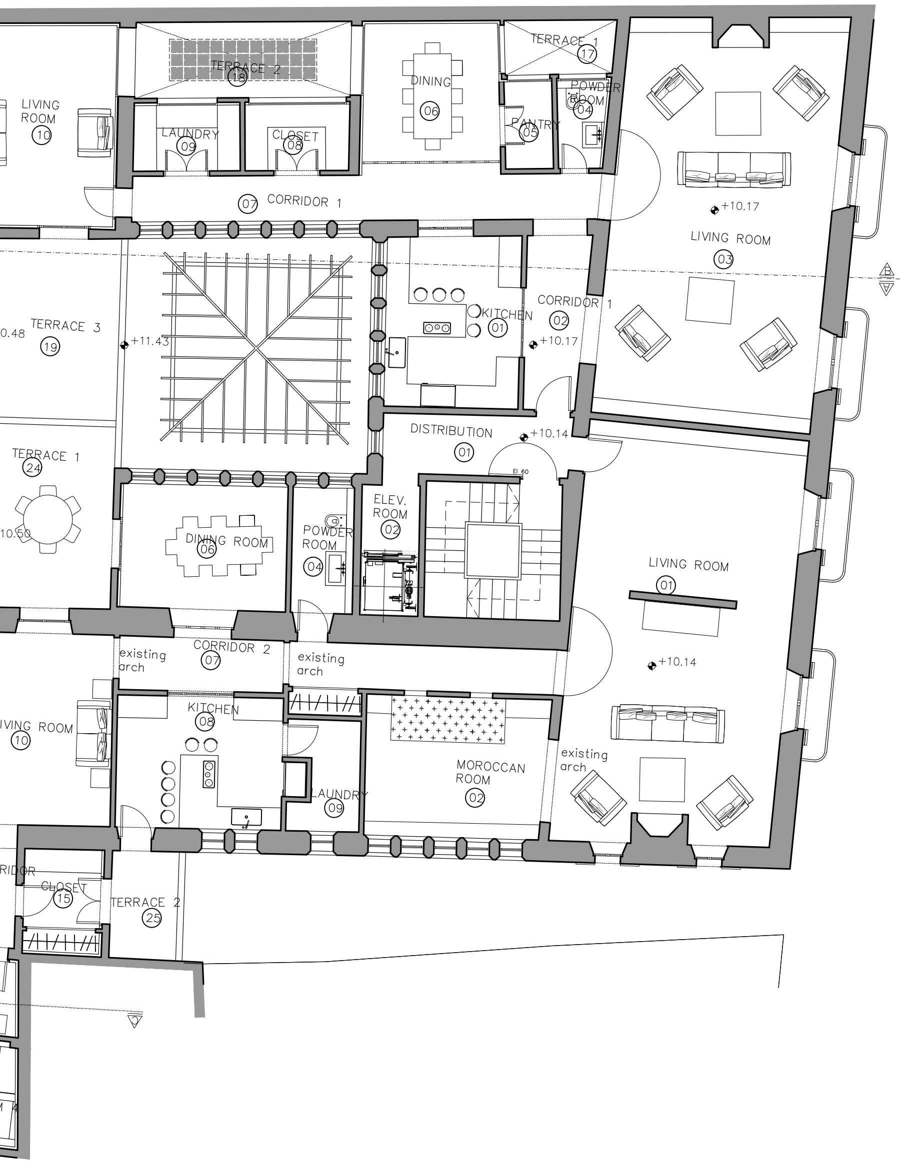
PAINTING ARCHIVE 08
OFFICE RESTROOM 10
OFFICE TERRACE 11
existent door
OFFICE DISTRIBUTION 07
PASSAGE 1 05
OFFICE 3 09
OFFICE 2 06
PROJECT MEETING ROOM 04
RESTAURANT TERRACE 28
toldo
CORRIDOR 7 26
RECEPTION 2 BAR 2 27
72 tiles of 62x62cm
STAIRCASE 8
P.T. +5,90m
RESTAURANT 25
shelf
RECEPCION / BAR 24
BALCONY 2
BALCONY 1
ACCESS ROOM 23
STAIRCASE 5 22
STAIRCASE 10
CHIMNEY ROOM 21
CORRIDOR 6 20
STORAGE 19



D34 Rialto Living Executive Phase First Floor Plan
Scale: 1:200

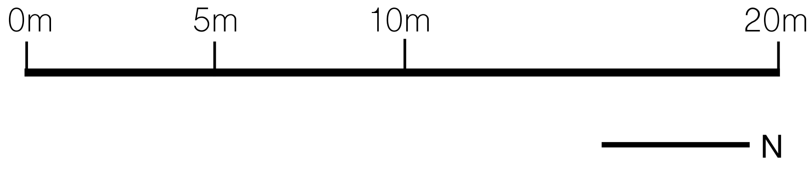

BATHROOM 2
15
+10.17
CORRIDOR 3
14
+9.98
BEDROOM 2
16
BATHROOM 1
12
BEDROOM 1
13
CORRIDOR 2
11
+11.53
BEDROOM 2
21
BATHROOM 1
12
BEDROOM 1
11
+10.14
CORRIDOR 4
13
+11.53
BATHROOM 2
20
CLOSET
19
1.70 h
CORRIDOR 5
18
TERRACE 3
26
+9.50
OFFICE 1
29
BEDROOM 3
22
+11.53
BEDROOM 4
16
+10.14
OFFICE 2
30
+9.50
STORAGE
BATHROOM 3
23
BATHROOM
17

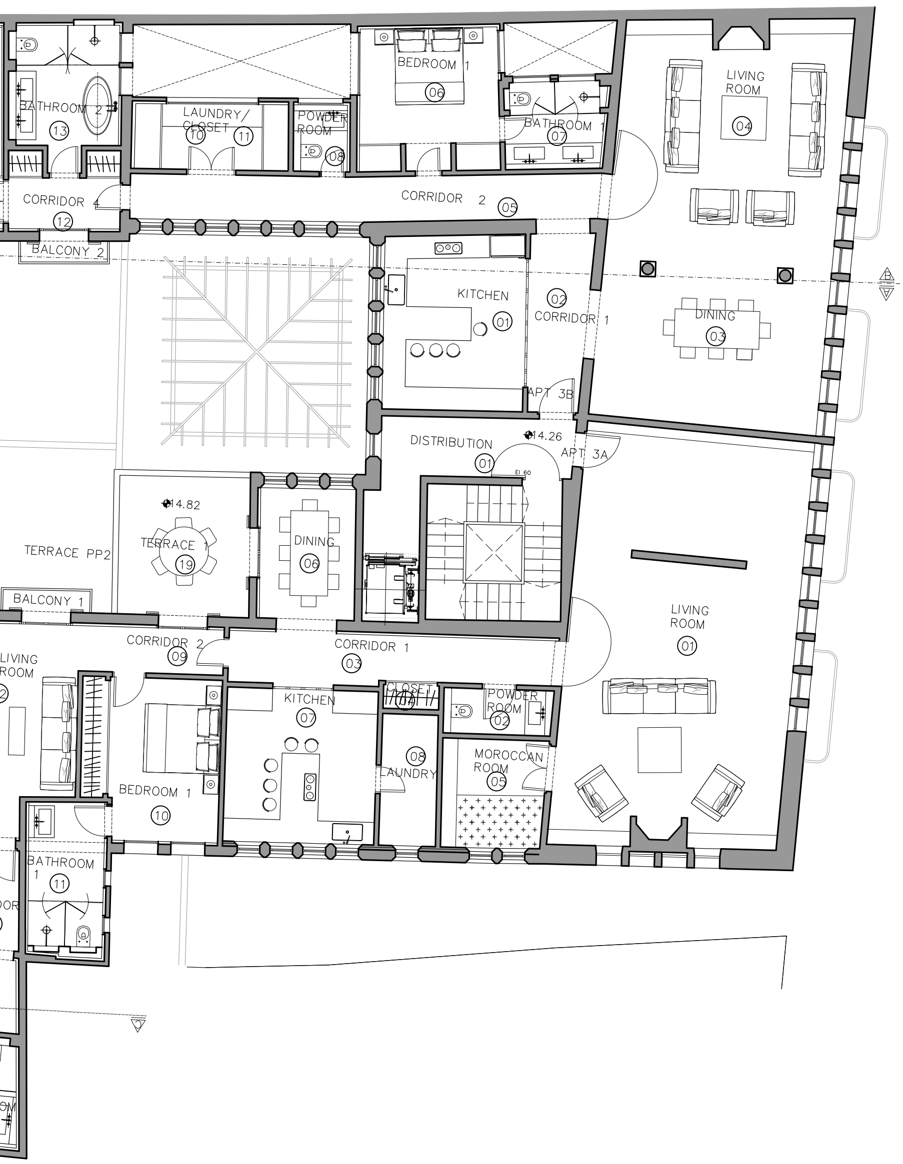




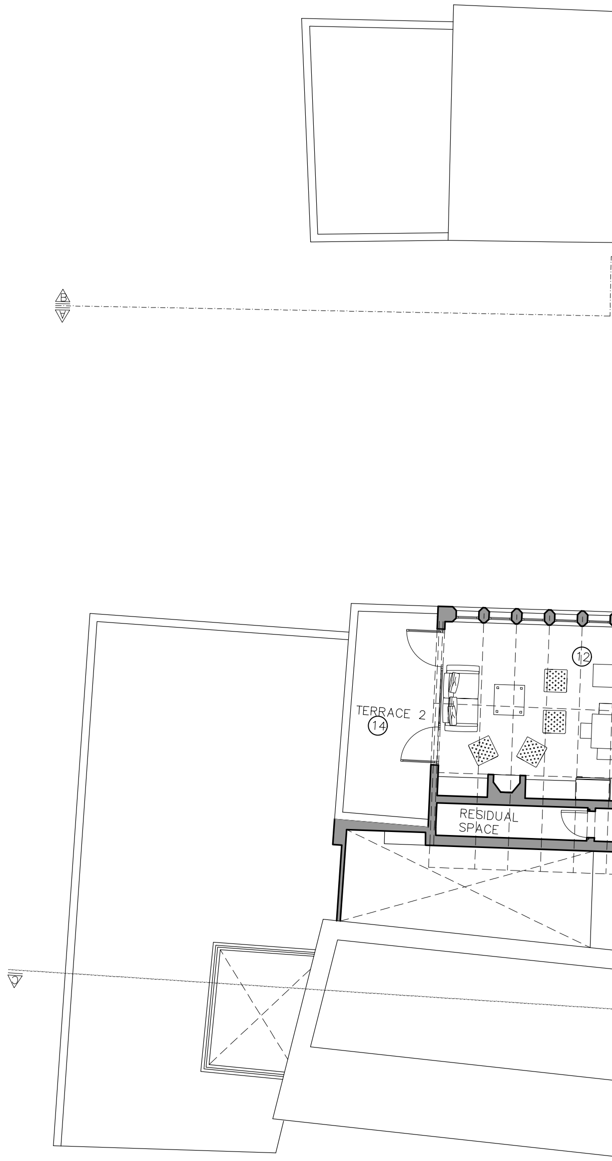
D35 Rialto Living Executive Phase Second Floor Plan
Scale: 1:200

TERRACE 1
15
14.11
BEDROOM 2
14
BALCONY 1
BALCONY 2
CLOSET
14
BEDROOM 2
15
TERRACE 3
21
BATHROOM
2 13
POOL
CORRID
3 16
BEDROOM 3
18
TERRACE
21
14.76
BATHRO
3 17

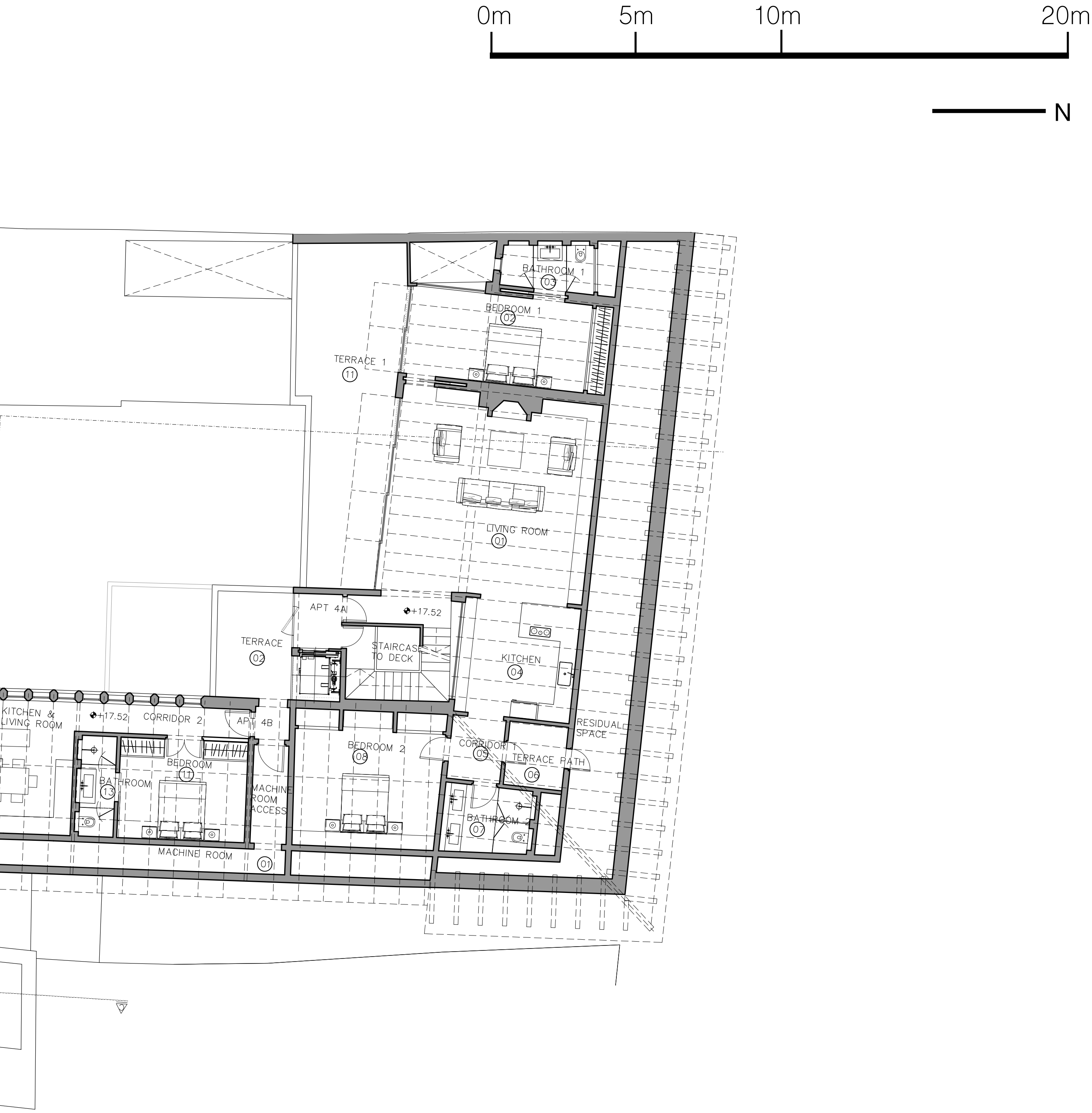




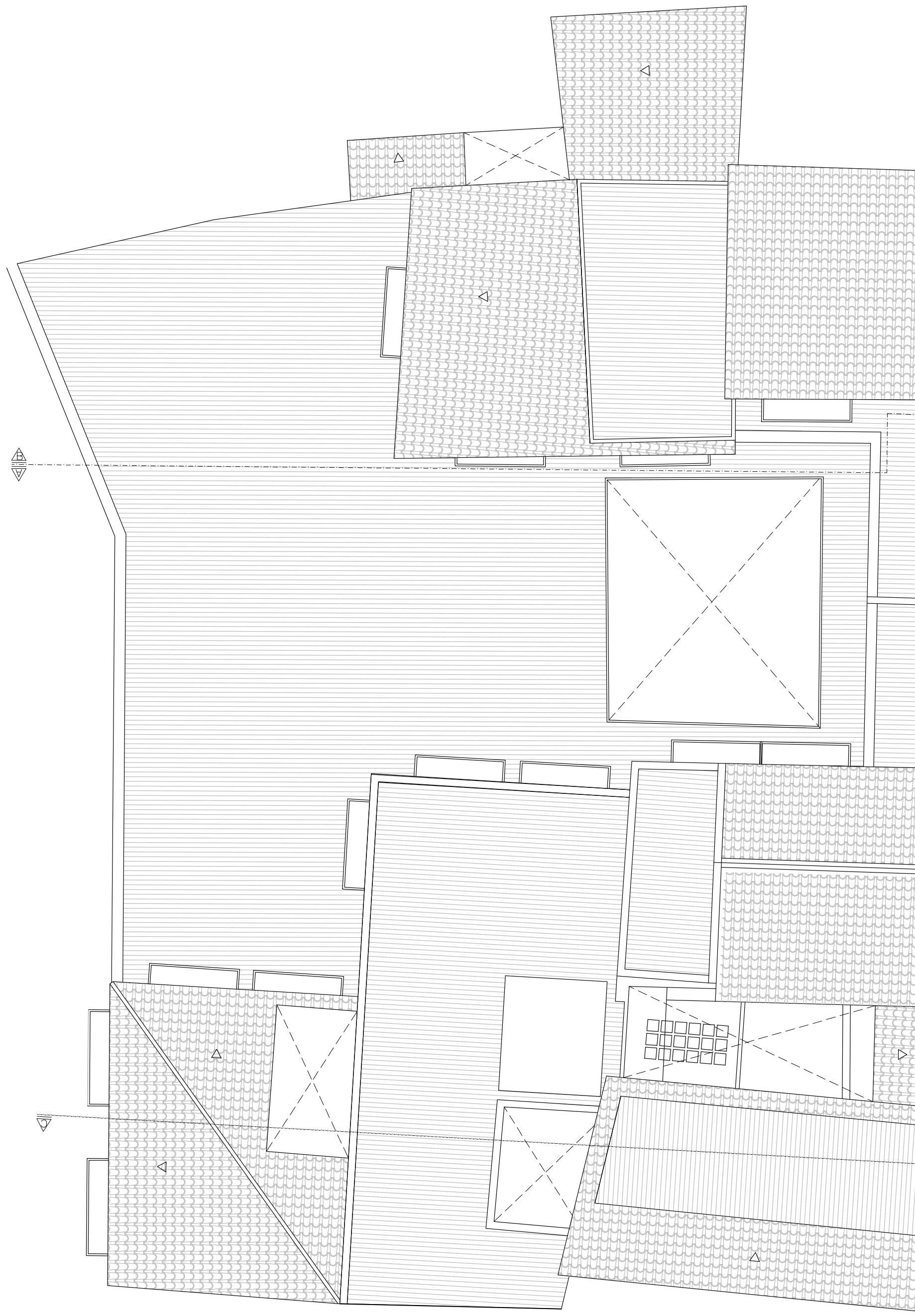
D36 Rialto Living Executive Phase Third Floor Plan
Scale: 1:200

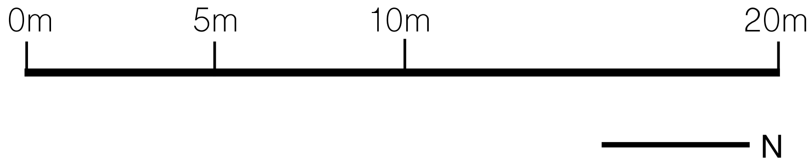


B
A
TERRACE 2
14
12
RESIDUAL
SPACE
C

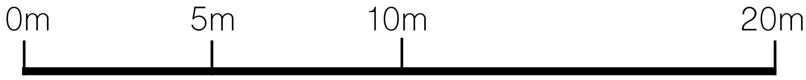


D37 Rialto Living Executive Phase Fourth Floor Plan
Scale: 1:200


B

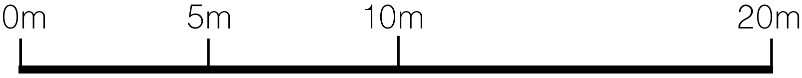


D38 Rialto Living Executive Phase Roof Plan
Scale: 1:200



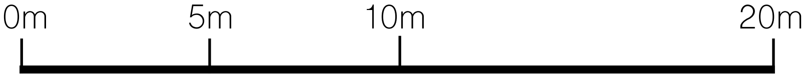
D39 Rialto Living Executive Phase South Elevation
Scale: 1:200

22.25
20.07
17.49
2.20
2.20
3.60
2.53
+17.52
2.80
2.80
+14.26
3.63
3.63
+10.17
+11.43
3.76
+5.95
+5.81
4.90
+3.53
+0.60
+0.75
-4.43

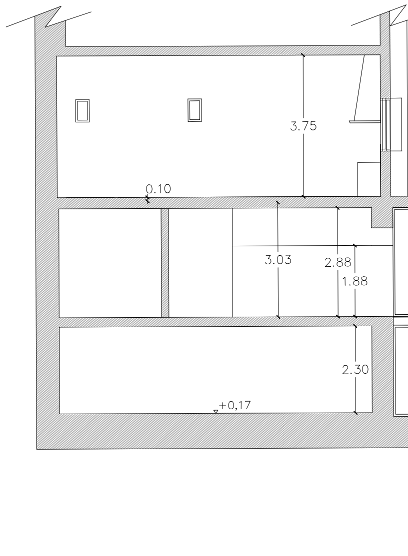


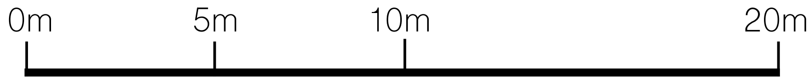
D40 Rialto Living Executive Phase Section A-A'
Scale: 1:200

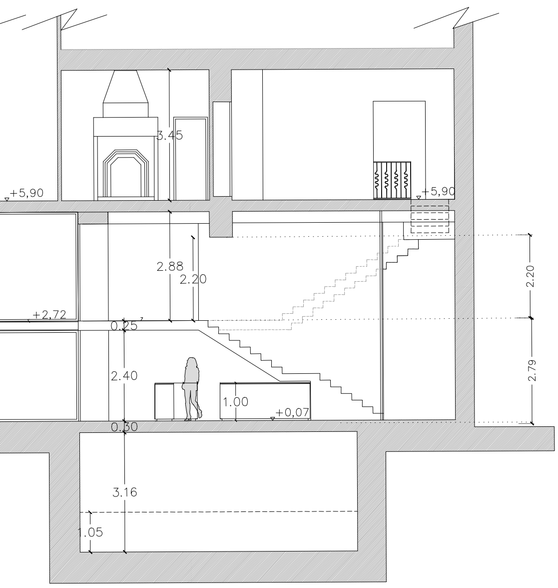

+10.17
+10.45
FIRE ESCAPE
FIRE ESCAPE



D41 Rialto Living Executive Phase Section B-B'
Scale: 1:200


3.75
0.10
3.03
2.88
1.88
2.30
+0,17



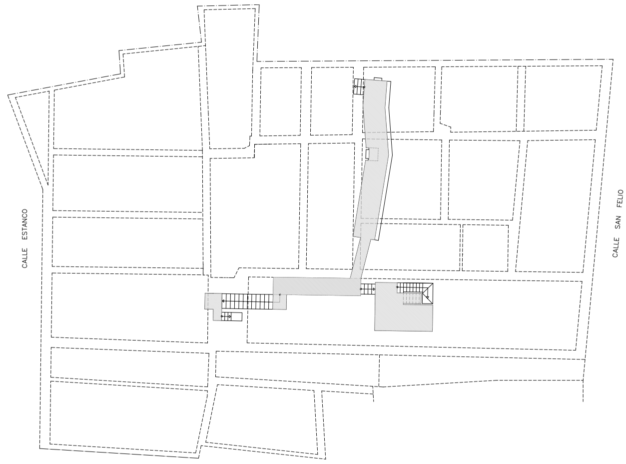


D42 Rialto Living Executive Phase Section C-C'
Scale: 1:200

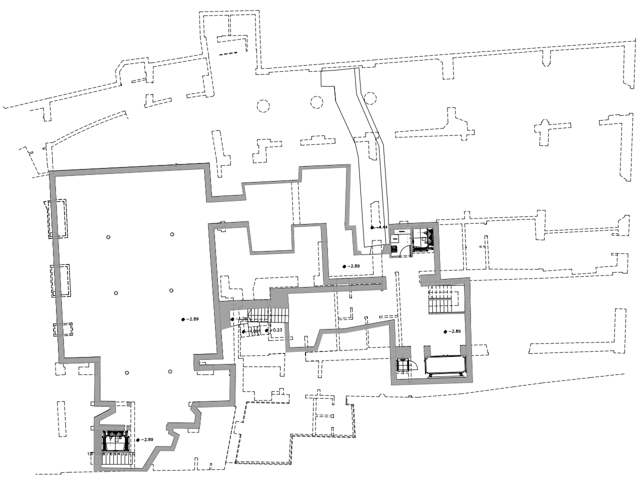
4.2.2 Changes Made

After comparison of the Existing State, Basic Phase, and Executive Phase drawings it can be observed that there are a variety of changes made with different scales.

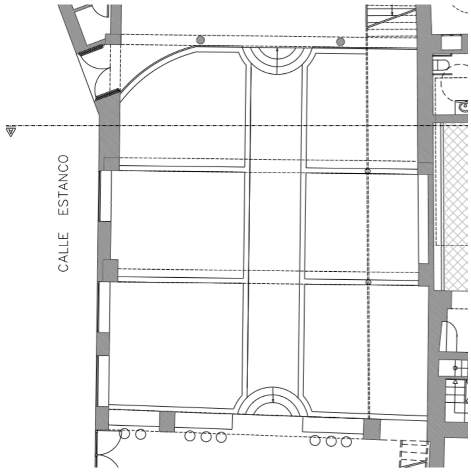
Initially, eastern wing of the ground floor was planned to be used for the storage but considering the size of the building, it was concluded that the storage area wouldn't be enough, thus a storage room was constructed to the basement floor, paying attention to the report made by the archeologist to avoid intersecting the bunker and the cistern. **(D7 &D31)**



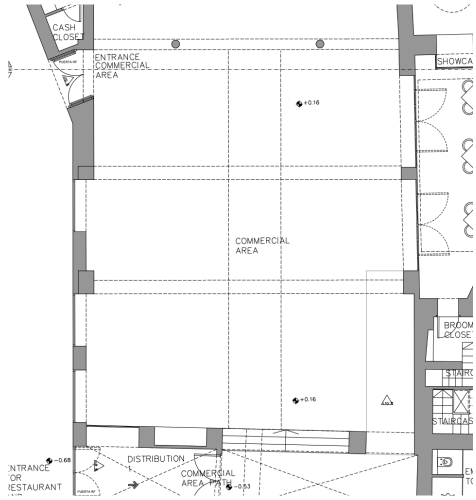
73 Basement Floor Existing State, D7
© Bastidas Architecture



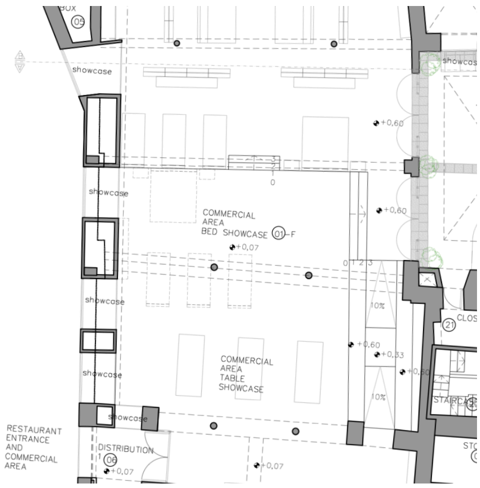
74 Basement Floor Final State, D31
© Bastidas Architecture



75 Ground Floor Existing State, D8
© Bastidas Architecture



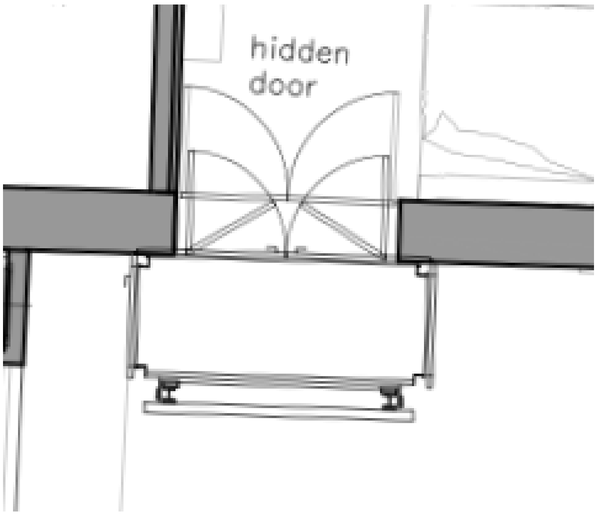
76 Ground Floor Basic Phase, D21
© Bastidas Architecture



77 Ground Floor Final State, D32
© Bastidas Architecture

Furthermore, the slope created previously for the movie theater was elevated and straightened during the Basic Phase, and some of the area was risen to match the height of the Rialto Cafe during the

Executive Phase, and slope was created to connect the lower and higher part for the disabled accessibility. **(D8, D21, D32)**

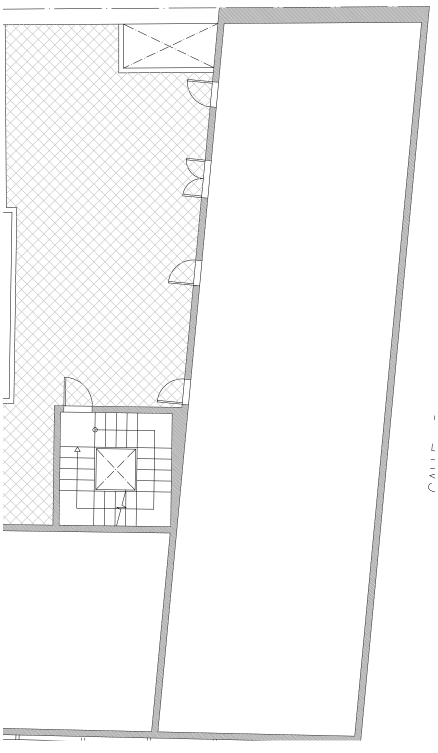


78 Service Elevator with Hidden Door, D34
© Bastidas Architecture

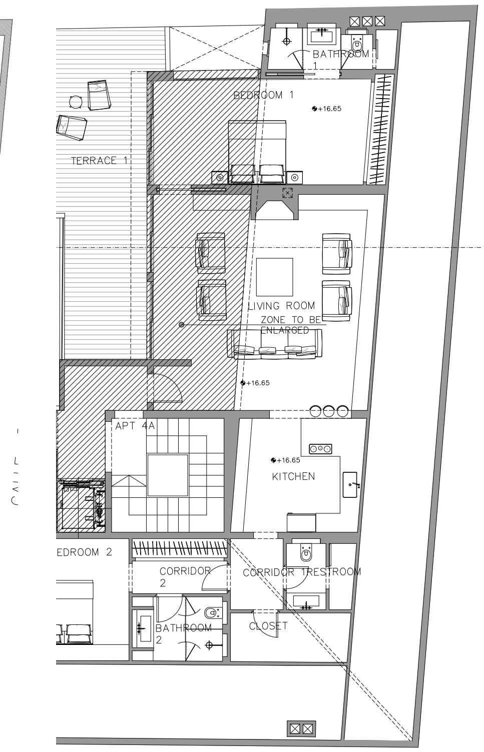
Total of 5 elevators were installed; two of them functioning only for ground and first floors and available for customers; one for the residents of the apartments functioning between the ground floor and fourth floor; one mini elevator designated to transfer food for the planned restaurant located at the first floor; and one service elevator to transfer furniture from the basement to the first floor.

Another large construction that took place was the enlargement of the fourth floor. At the existing state the floor was unused and as the architect Sergi Bastidas said it was either used as a storage for old furniture or as a server quarter, the permit was obtained from COAIB starting at the Basic Phase and finally was executed at the Executive State. It's also possible to see from images 77, 78, and 79 that the internal walls were demolished and rebuilt to create two more apartments to the fourth floor.

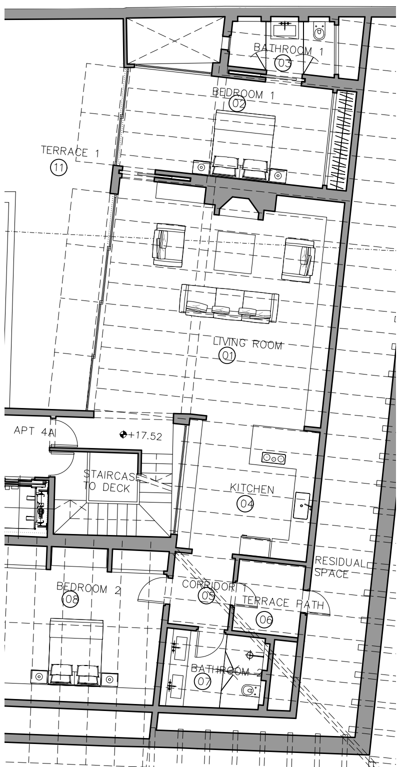
The functions of the rooms of the lifestyle store at the first two floors were left generalized throughout the Basic Phase construction, it's possible to observe that what specific function was assigned to furniture exhibition rooms at the executive phase drawings.



79 Fourth Floor Existing State, D13
© Bastidas Architecture



80 Fourth Floor Basic Phase, D26
© Bastidas Architecture



81 Fourth Floor Final State, D37
© Bastidas Architecture

4.2.3 Building Program

Rialto Living is an architectural masterpiece by Sergi Bastidas that stands out for its unique design and functionality. The building is strategically located in a bustling area and offers a comprehensive range of services and amenities to its occupants and visitors.

The later extension of the basement floor is used for storing the home decoration, and curated pieces for the showrooms, which are transferred through the service elevator to the commercial floors.

Upon entering the building, one is greeted with a warm and inviting atmosphere, thanks to the cafe located on the ground floor. The cafe serves a variety of delicious coffee, pastries, and lunch, making it an ideal spot for individuals to catch up with friends or to take a break from shopping. Adjacent to the cafe, there is a fashion store that offers a wide range of trendy and fashionable clothing, shoes, and accessories. The textile shop, also located on the ground floor, offers a variety of fabrics and home textiles, making it an ideal spot for those who are passionate about sewing or designing their own interiors. Furthermore, the furniture and home accessories store on the ground floor is a must-visit for those looking to furnish or decorate their home. The store offers a comprehensive range of furniture, home decor, and accessories that are suitable for any style and budget.

The mezzanine floor of the building is dedicated to offices and a hair dresser. The offices are for discussing the interior design projects, have meetings and for the organization of the store, incoming goods, and paperwork. The hair dresser, located on the mezzanine floor, is a full-service salon that offers a variety of hair and beauty services, including haircuts, color, and styling.

The first floor of the building is dedicated to showcasing the furniture and home decor that are available for purchase in the store located on the ground floor. The showrooms are expertly designed to provide individuals with an idea of how the furniture will look in a real-life setting. As the owner, Barbara Bergman, stated, their aim for the concept store was to ‘let the customers experience a good quality life style, and inspire their creativity for their own house.’

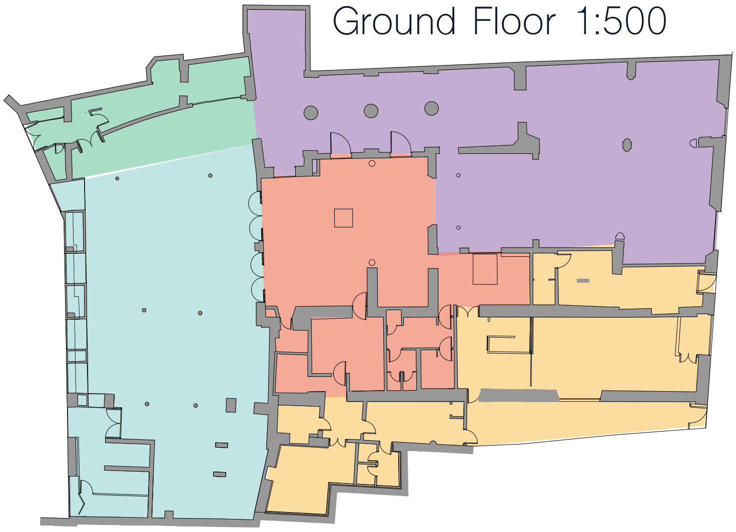
The art gallery, also located on the first floor, is an excellent spot to admire the work of local artists and to find inspiration for one's own home decor. Additionally, the interior design studio on the first floor is an ideal spot for individuals to consult with professional designers on their home decor and renovation projects. The terrace, which was originally intended to be a restaurant, is now used for weekly yoga classes, providing a peaceful and serene environment for residents and visitors alike to relax and unwind. The designated kitchen, VIP room, and bar for the restaurant are also used as showrooms and an outlet store for the sale offers.

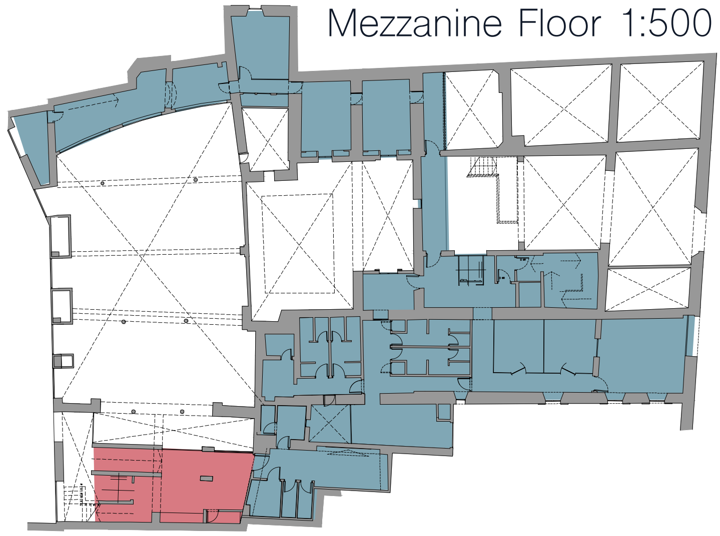
The second, third, and fourth floors are dedicated to residential units. The units are expertly designed and offer all the necessary amenities and comforts of home. The building offers a variety of unit sizes and styles to suit different needs and budgets.

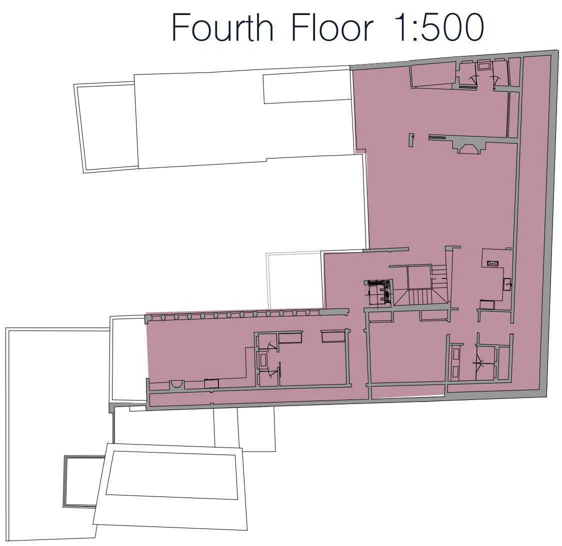
The building is designed to cater to the needs of the community with a mix of commercial, recreational, and residential spaces all under one roof, making it an ideal location for individuals who wish to live, work, and play in one convenient location, specifically retracting all of the economic framework Palma de Mallorca is known for.

S7(Right) Building Program Scheme

Textile
Cafe
Storage
Terrace
Showroom
Art Gallery
Furniture
Fashion
Office
Hair Dresser
Residential
Interior Design Studio







4.3 Construction Phases

82 Removal of the Wooden Beams on Fourth Floor
© Bastidas Architecture

The construction of the new parts of the building took place simultaneously with the second half of the first phase, at the beginning of 2013.

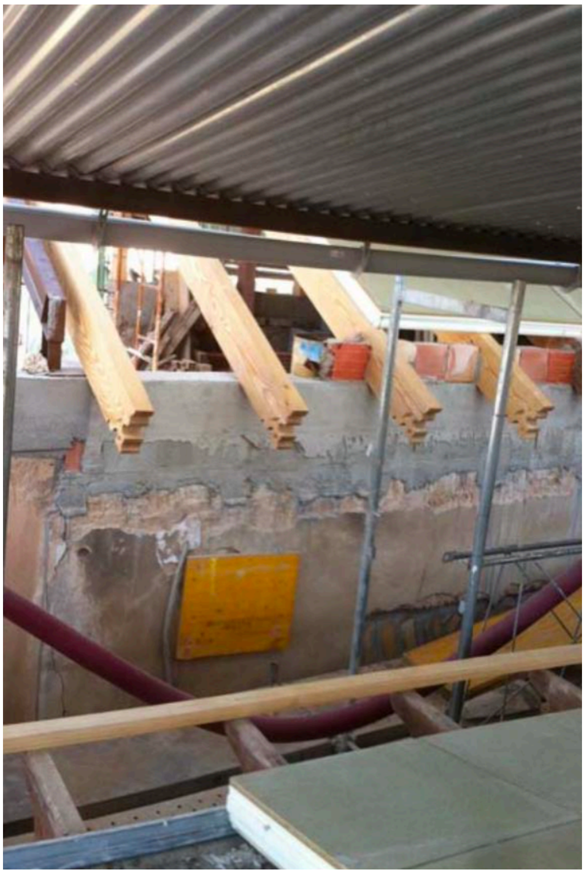
It should be noted that during the reconstructions of the floor slabs, only joists are to be replaced due to their state do not guarantee structural and functional safety. In that case, they were replaced by the profiles indicated in the plan. The preserved joists are cleaned and properly treated, protecting them with anti-rust and enamel. Mesh and a layer of concrete is to be placed on them according to the specifications.

Walls that were in stable condition were plastered again with an addition of CP mortar, Meshatex fiberglass mesh, and Kerakoll.

Considerably biggest extension to the building, the fourth floor was extended to be able to fit two apartments. The additional walls were built with brick and mortar. Wooden beams were removed from the roof **(82)**, loaded, transported and ordered in the Can Ramis warehouse. Placement of new beams, wooden eaves, and a sandwich panel was put on the secondary apartment **(83)**. Vapor barrier cloth, 5Kg/m2 asphalt cloth, (with a layer of fiber mortar for protection), and traditional tile roof was placed **(88)**. For the support additional HEB metal beams were used. The structural drawing can be seen at the next page. **(D43)**

The cantilevered Mallorcan roof was also restored and reinforced. **(82)** Zinc sheet was placed and tile eaves were formed. Closing is carried out with a brick wall, and eaves formed by means of recovered wooden joists and pending slopes of a conejero partition, as a tile covered base in the area where air conditioning machinery will be installed.

83 Installation of the Wood Joists on the Fourth Floor
© Bastidas Architecture



84 Cantilevered Roof Joists Installed After Restoration
© Bastidas Architecture

Laminated wood joists were placed on a metal structure in the bigger apartment. and terrace of fourth floor, including adjustment of beams by carpenter in connection with metal girder under hip. Work began with the placement of sandwich panel.

85 Formation of New Concrete Loading Bays in Area 3A26
© Bastidas Architecture

In area 3A26, demolition of the slab is carried out, formation of new concrete loading bays **(85)**, placement of joists, reinforcements, and final concreting of the compression layer similar to the other zones to be reinforced after demolition of the existing floors is carried out.

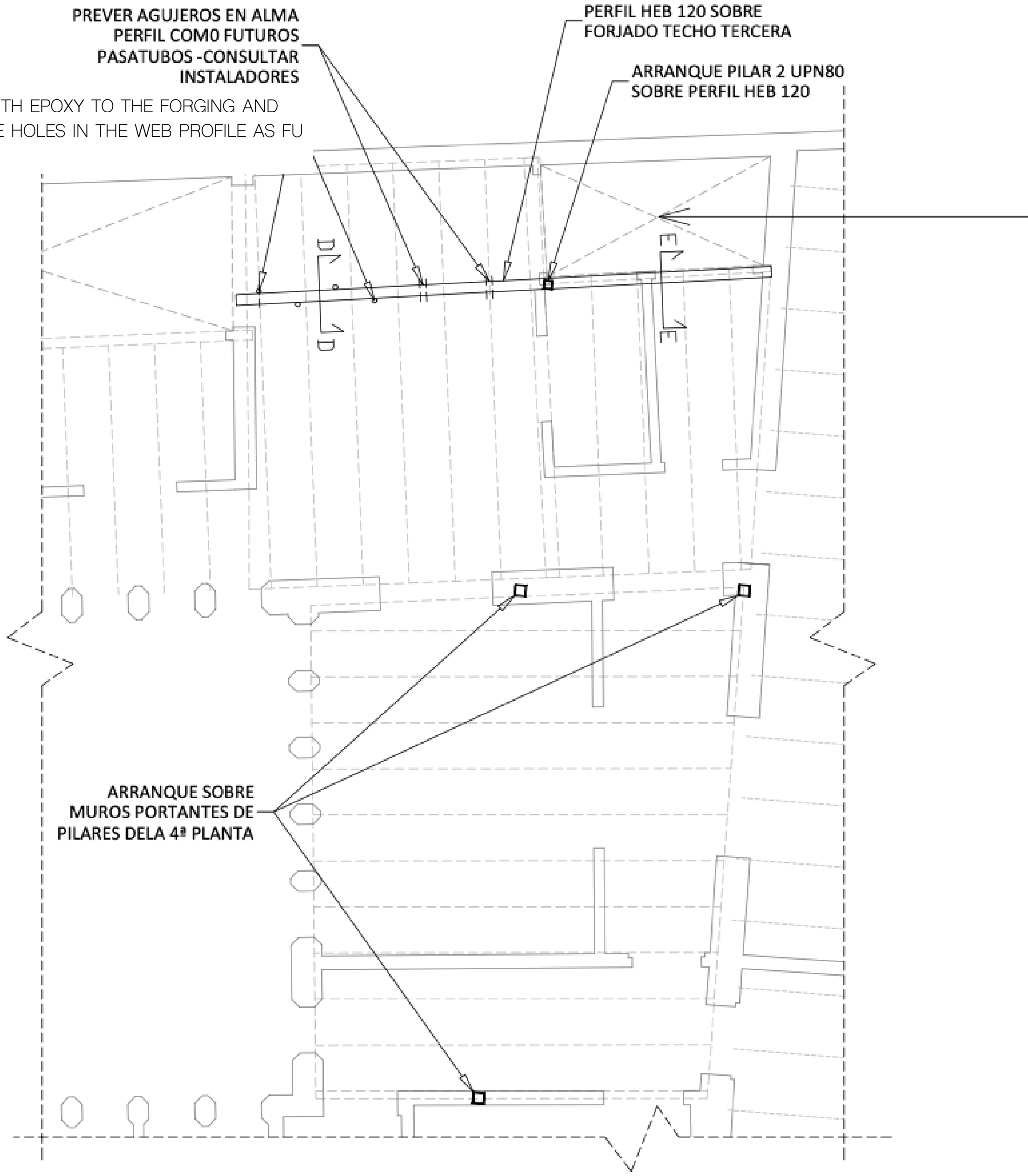
Demolition of interior linings for their subsequent replacement with breathable

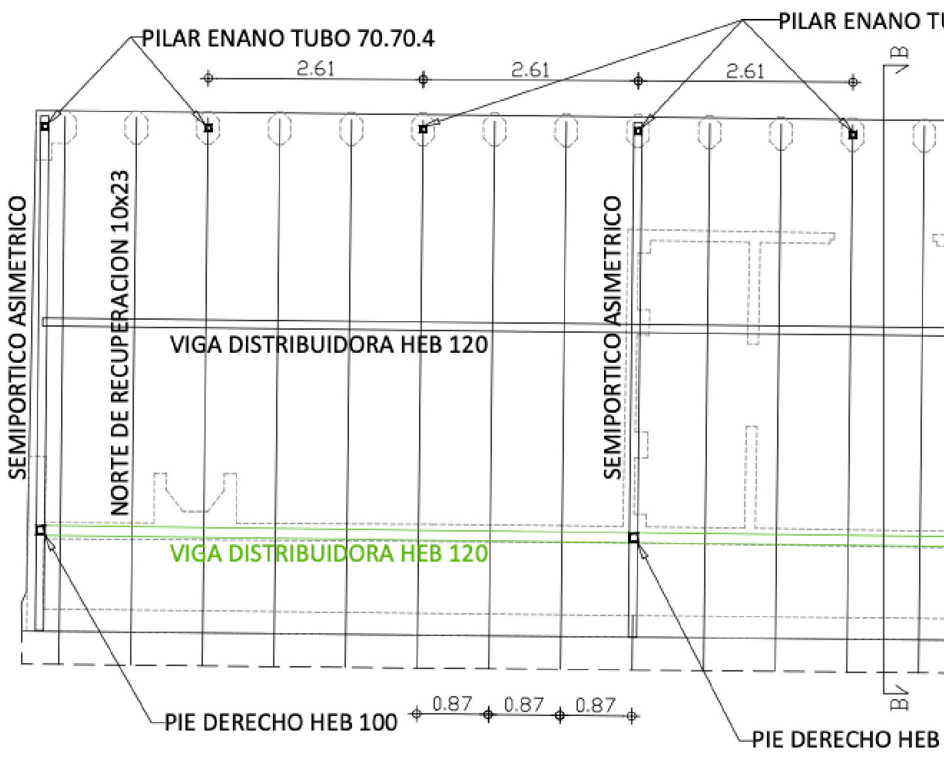
86 Existing Walls Before the KeraKoll Biocalce Base Application
© Bastidas Architecture

87 Existing Walls After the KeraKoll Biocalce Base Application
© Bastidas Architecture

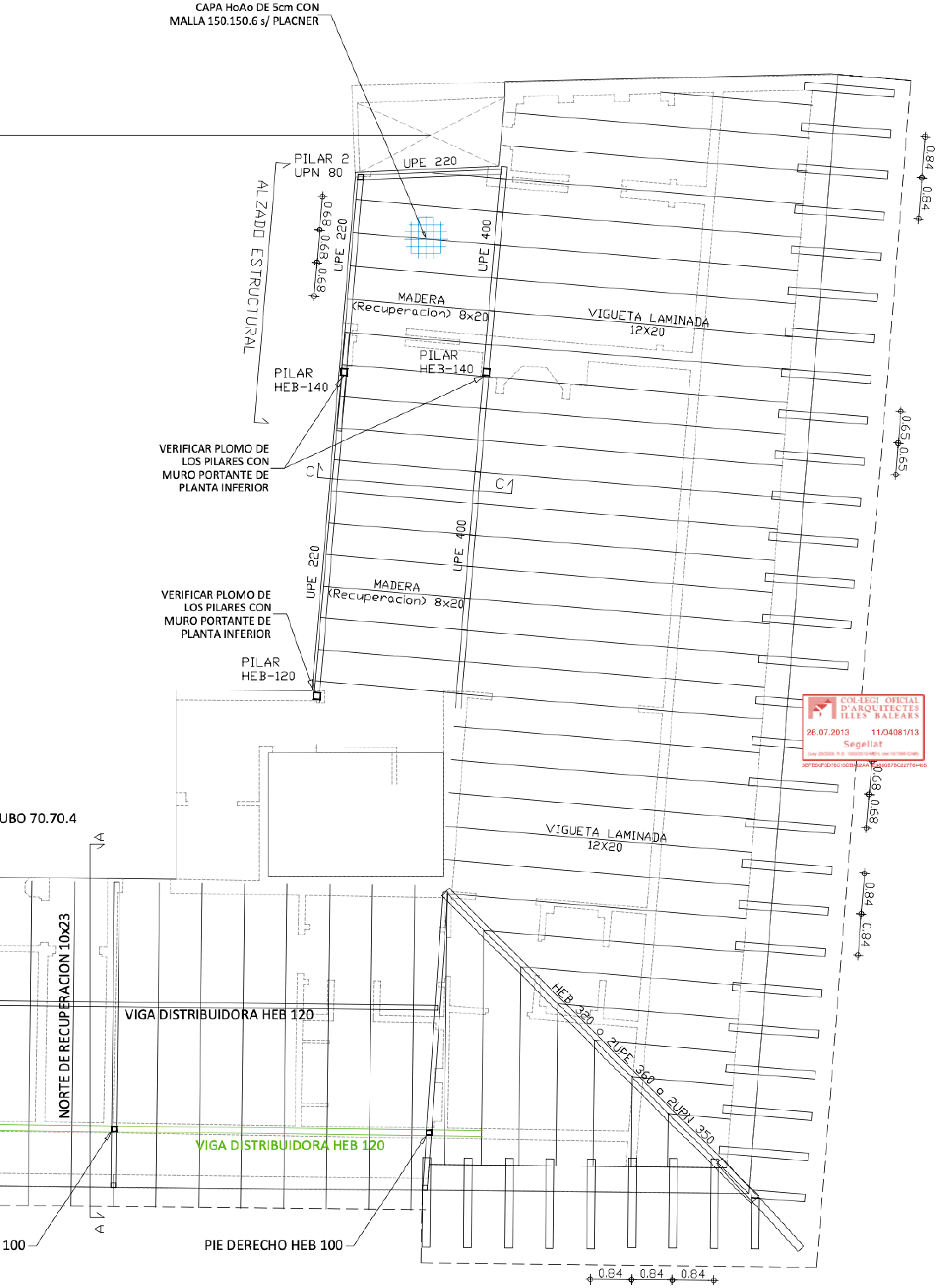
mortar was done with laying KeraKoll Biocalce Base. The choice of this material is due to the fact that the marès stone is highly reactive to the traditional cement mortar, the biological lime inside the KeraKoll mortar doesn't cause chemical

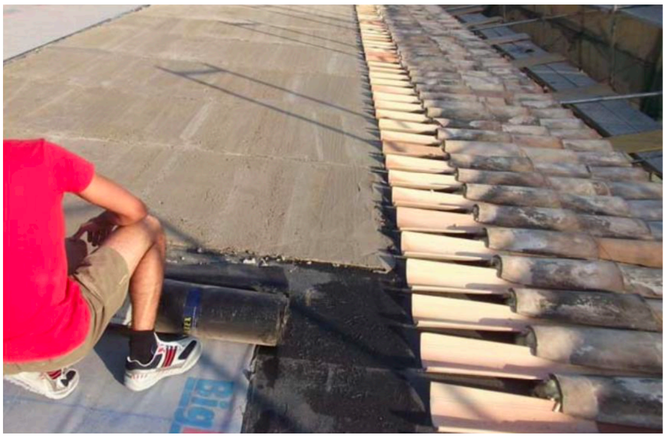
PARTIAL STRUCTURE OF THIRD FLOOR





D43 Fourth Floor Roof Structural Plan Scale: 1:100
Source: Bastidas Architecture


CAPA HoAo DE 5cm CON
MALLA 150.150.6 s/ PLACNER
PILAR 2
UPN 80
UPE 220
ALZADO ESTRUCTURAL
UPE 400
MADERA
(Recuperacion) 8x20
VIGUETA LAMINADA
12X20
PILAR
HEB-140
PILAR
HEB-140
VERIFICAR PLOMO DE
LOS PILARES CON
MURO PORTANTE DE
PLANTA INFERIOR
UPE 220
UPE 400
MADERA
(Recuperacion) 8x20
VERIFICAR PLOMO DE
LOS PILARES CON
MURO PORTANTE DE
PLANTA INFERIOR
PILAR
HEB-120
UBO 70.70.4
VIGUETA LAMINADA
12X20
NORTE DE RECUPERACION 10x23
VIGA DISTRIBUIDORA HEB 120
VIGA DISTRIBUIDORA HEB 120
HEB 320 o 2UPE 360 o 2UPN 350
100
PIE DERECHO HEB 100
0.84
0.84
0.84
0.84
0.84
0.65
0.65
0.68
0.68
0.84
0.84
0.68
0.68
0.68



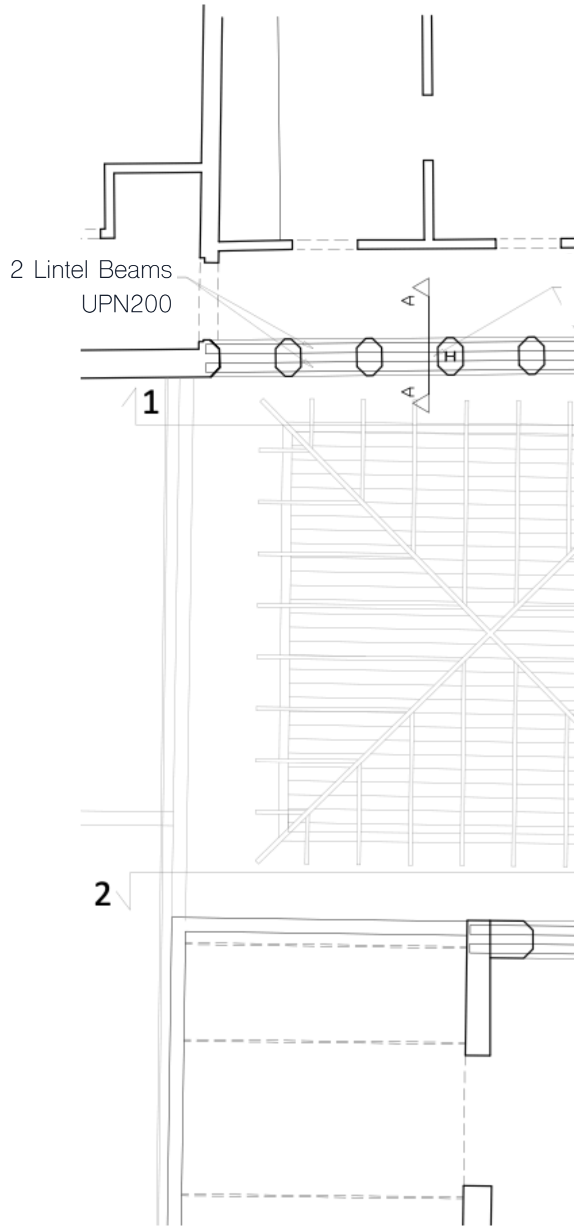
88 Application of Vapor Barrier on Roofs
© Bastidas Architecture

deterioration of the Marès stone.

The KeraKoll Biocalce Base mortar application was also done to the ceilings without the coffered woodwork. Work continued on interior and exterior walls, according to the instructions for use. Rock wool foam was projected on the ceilings, by protecting the carpentry and decorative elements with removable plastics. Various tests are carried out to select the grouting color between pieces of various tests to select the grouting color between marés pieces, and areas are repaired where the marés is damaged, if the finish is visible. Rendering work continued on different floors of the building, using the agreed materials, from the KeraKoll brand, following the application guidelines described. **(86),(87)** The plastering in zone B patios, due to the great irregularity in the verticality of the wall of the neighboring building, was carried out in staggered planes.

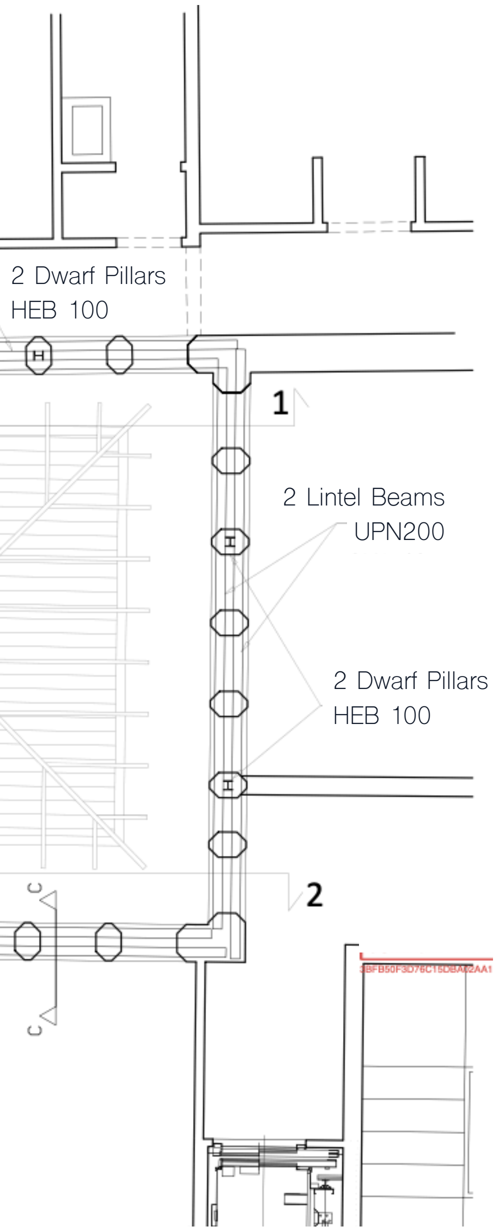
For the floors that will be finished with tiling, a vapor barrier and asphalt cloth was placed. Furthermore, rock wool mortar was put on the walls that required extra acoustic insulation.

After the completion of the brick partition walls, rehabilitating the floor slabs, applying BioCalce to the required walls and renewing the roof



D44 Third Floor Array Windows F
(Unscaled)

89 Santanyi Stone Cladding on Array Windows
© Bastidas Architecture



Plan

There was also maintenance and construction works on the enlargement of the basement, central coffered skylight, central staircase designed by Sergi Bastidas, Moroccan Room used for carpet showcasing, and reused crystal doors and windows; which will be discussed in detail in the next subchapter due to their architectural importance for the thesis.

As mentioned by the owners of Rialto Living, the already purchased part of the ground floor remained untouched until rest of the building was complete. Thus, after rehabilitation of the newly purchased areas were done, a second phase was executed, specifically for the areas where the Cine Rialto was, the basement area below it, the designated restaurant terrace right above, and the remaining small scaled work to be done.
The iron beams and columns remaining from the cinema was conserved and

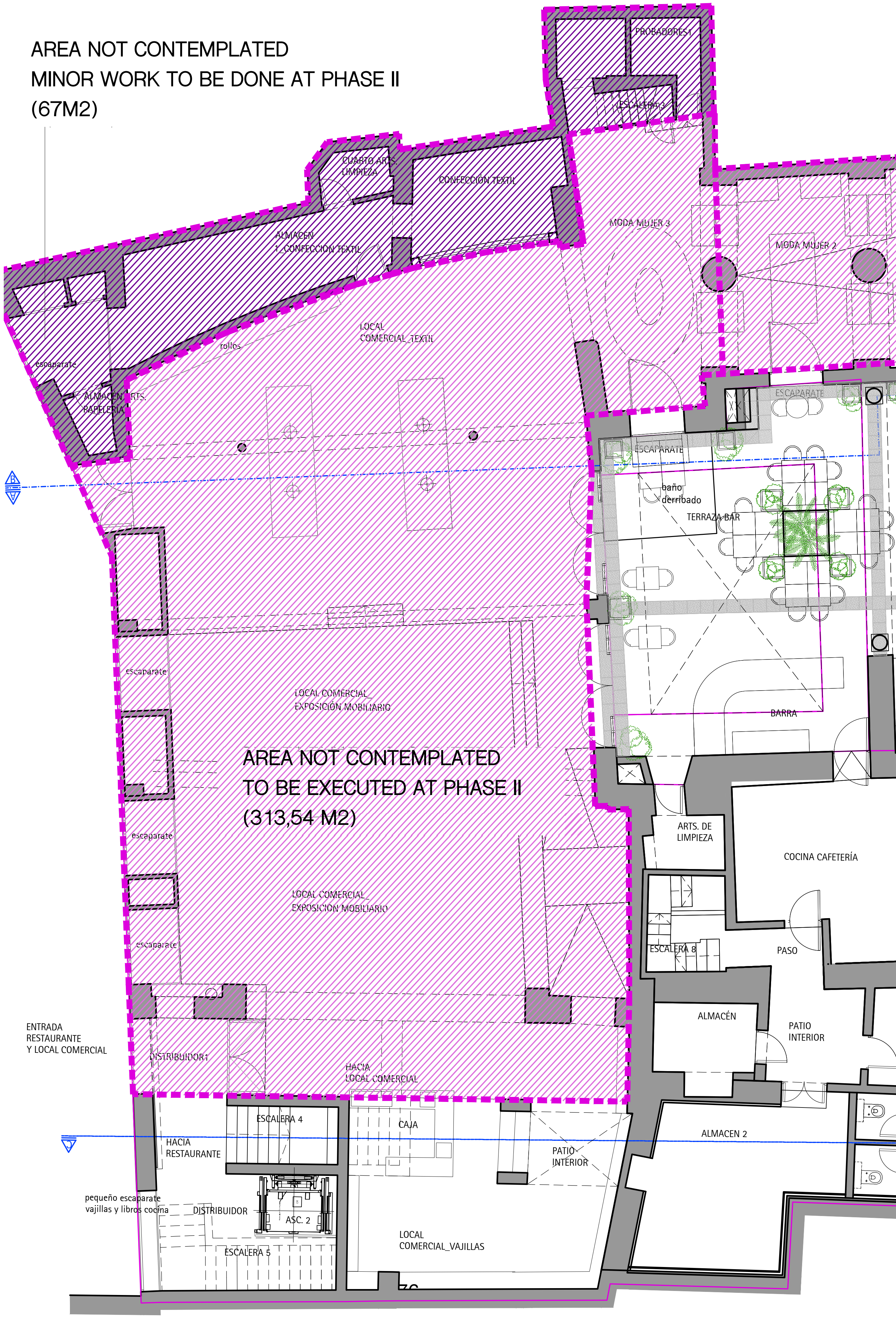
90 Initiation of Phase II on April 2015
© Bastidas Architecture

the lighting fixtures were chosen to be spotlights as an ode to the history of the building.

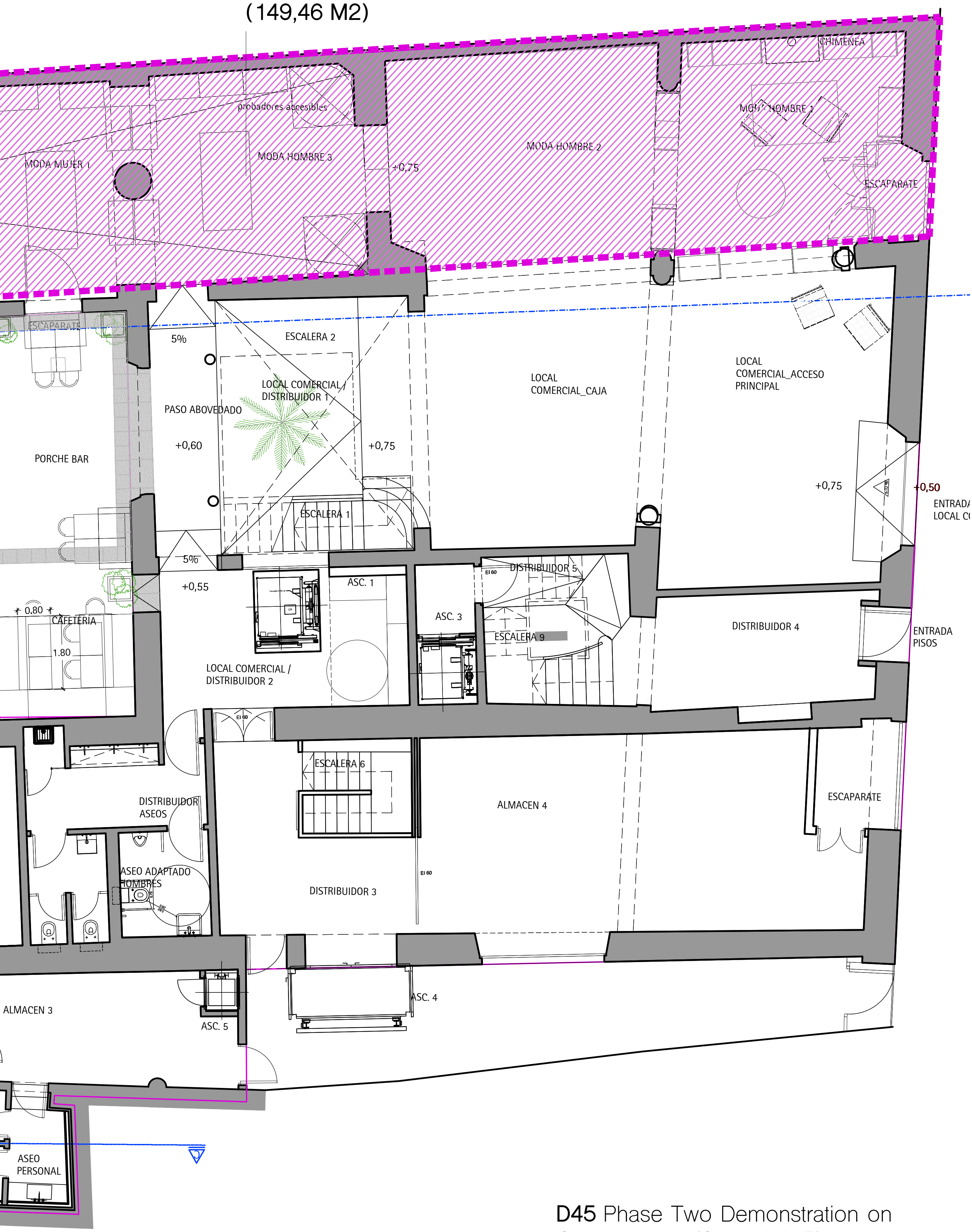
First, all the facilities were disconnected, the emergency exit corridor for the commercial premises

joists, plastering was done to finalize the surfaces of the building.

Row of array windows were created on residential floors similar to the existent one on the north façade, for the structural stability two metal lintel beams and two metal HEB 100 dwarf pillars were installed; as the traditional Mallorcan array windows are made out solely out of stone, the dwarf pillars were also covered with Santanyi stone cladding.


AREA NOT CONTEMPLATED
MINOR WORK TO BE DONE AT PHASE II
(67M2)
PROBADORES1
ESCALERA 3
CUARTO ARTS. LIMPIEZA
CONFECCION TEXTIL
ALMACEN 1_CONFECCION TEXTIL
MODA MUJER 3
MODA MUJER 2
LOCAL COMERCIAL_TEXTIL
rollos
escaparate
ALMACÉN ARTS. PAPELERIA
ESCAPARATE
baño derribado
TERRAZA BAR
escaparate
LOCAL COMERCIAL_ EXPOSICIÓN MOBILIARIO
BARRA
AREA NOT CONTEMPLATED
TO BE EXECUTED AT PHASE II
(313,54 M2)
escaparate
ARTS. DE LIMPIEZA
COCINA CAFETERÍA
LOCAL COMERCIAL_ EXPOSICIÓN MOBILIARIO
escaparate
ESCALERA 8
PASO
ENTRADA RESTAURANTE Y LOCAL COMERCIAL
ALMACÉN
PATIO INTERIOR
DISTRIBUIDOR1
HACIA LOCAL COMERCIAL
ESCALERA 4
CAJA
ALMACEN 2
HACIA RESTAURANTE
PATIO INTERIOR
pequeño escaparate vajillas y libros cocina
DISTRIBUIDOR
ASC. 2
ESCALERA 5
LOCAL COMERCIAL_VAJILLAS

AREA NOT CONTEMPLATED
EXECUTED DURING PHASE I
(149,46 M2)

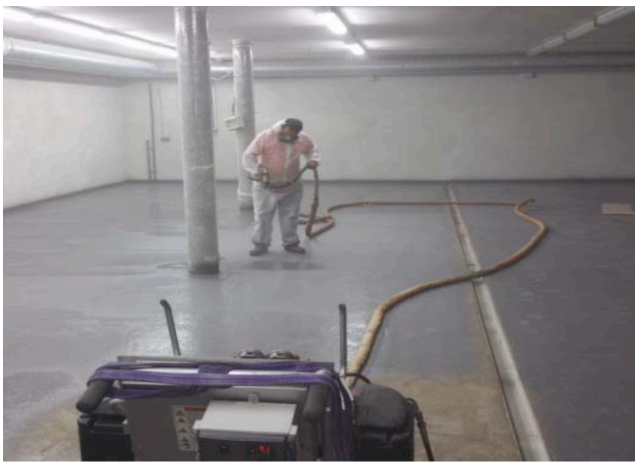


D45 Phase Two Demonstration on Ground Floor (Scale:1:125)

was erected, a geotechnical study was carried out, followed by demolition of existing stone and wood floors, removal of glass railings and demolition of the mezzanine and its corresponding metal structure.
A visual barrier was erected for the premises with *Pladur*. For exteriors; waterproofing, flooring and filling on

91 Model Representation of the Staircase for the Restaurant
© Bastidas Architecture

the terrace were removed, as well as flooring in the main restaurant hall. Beginning of demolition was carried out for wrought iron stairs area and restaurant elevator, the plaster work was done on the walls of the ground



92 Spraying Polyurea to the Basement Extension
© Bastidas Architecture

93 Internal Court Façade After Painting
© Bastidas Architecture

and first floor. New staircase and a glass covered elevator was built for the access to the restaurant.

For the basement floor extension below the Cine Rialto area, polyurea projection work was carried out, and the excavation work to carry out *bataches*, clean concrete in the batches to later assemble with iron and concrete, was made under the supervision of the archaeologist.

External painting works were carried out on the ground and second floor, and glass was installed at the variety areas of the building. Furthermore, the custom parquet that was delivered was also installed at the designated flooring.

Final step for the phase two was to renew the tiles at the ground floor cinema area, electrical and plumbing installations throughout the terrace and restaurant on the ground, first, and second floor, and installation of the wooden counters on the ground floor.

4.4 Building Components

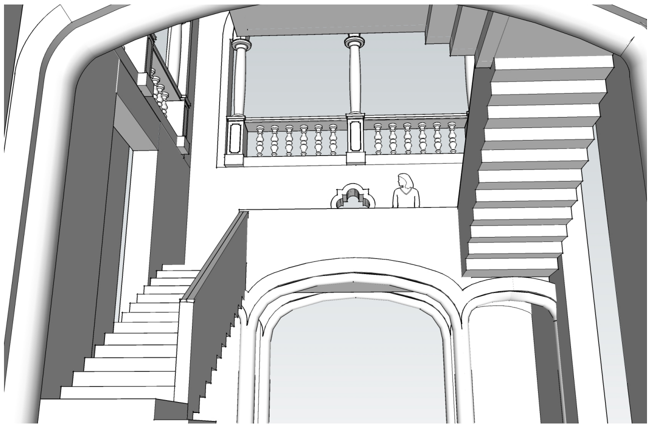
The following subchapter will provide an in-depth examination of some of the important architectural elements of Rialto Living. These elements include the staircase, the Moroccan room, the coffered skylight and ceilings, restored doors and windows, and the basement. These elements have been carefully selected as they not only contribute to the overall aesthetic of the building, but also serve functional and structural purposes. The examination will focus on the historical, aesthetic and functional significance of these elements in relation to the overall design of the building and how they contribute to the user experience.

4.4.1 Grand Staircase

The grand staircase at the building is a true architectural marvel, personally designed by the self-thought architect, Sergi Bastidas. The staircase boasts an elongated passage landing at the mid-level, which was originally a corridor between the two wings of the building at the mezzanine level. The staircase is constructed entirely out of stone and reinforced concrete, a material that not only adds to the aesthetic appeal of the building, but also provides a sense of durability and solidity.

One of the standout features of the staircase is its unique riser design. The riser slopes inwards towards the lower tread, creating a visually striking and dynamic effect. Additionally, the height of the riser is 17.58cm, and the tread is 28cm, providing a comfortable and safe ascent or descent.

The upper landing, or Runway 1, and ladder are set back from the wall, creating a sense of spaciousness and openness.

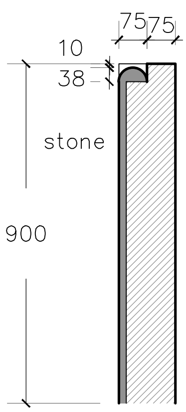


94 View of the Staircase from the Architectural Model

Additionally, the upper landing has a 12% slope, which not only creates a seamless connection between levels but also adheres to building regulations.

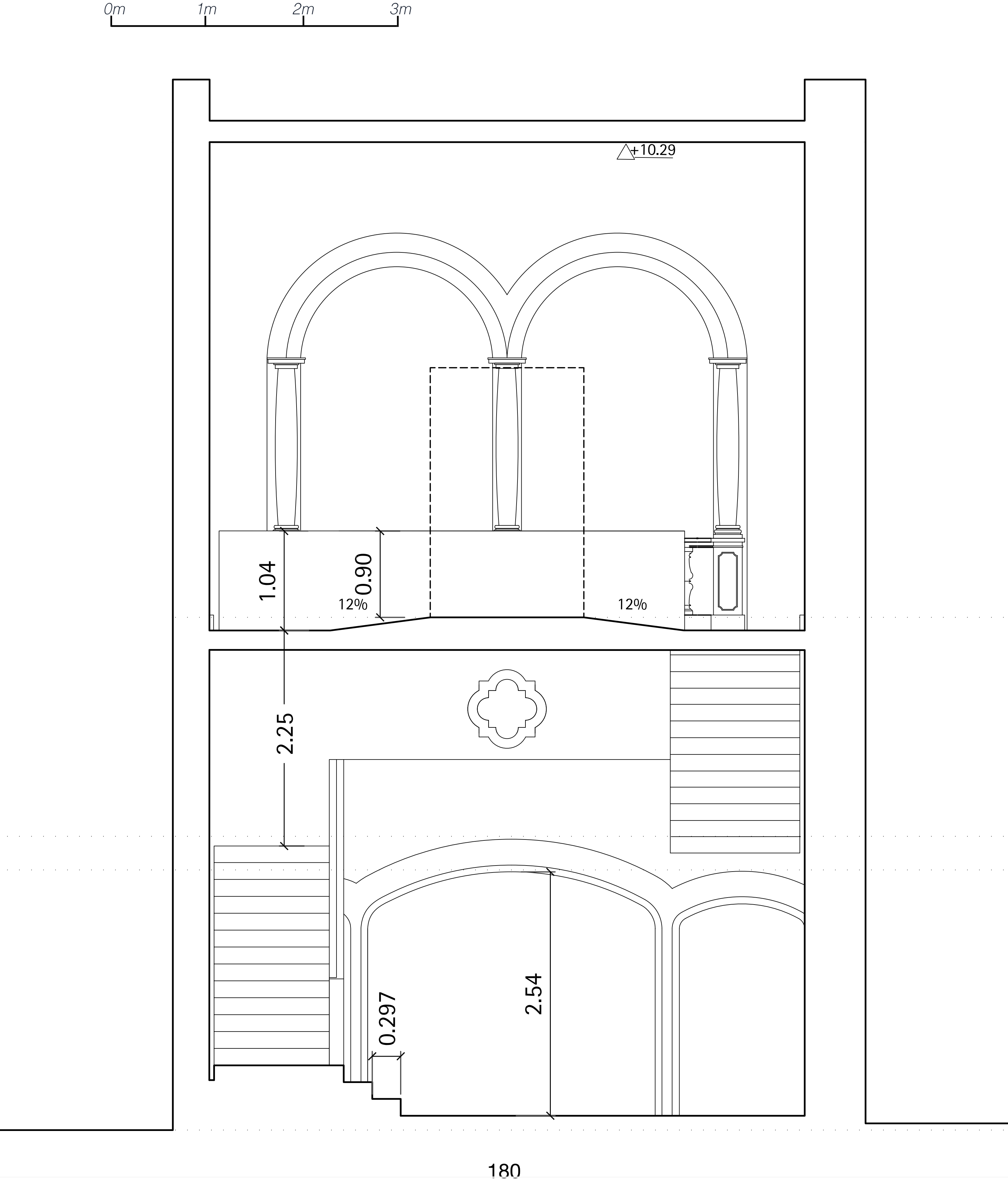
The railing of the staircase is another highlight of the design, crafted from reinforced concrete and cladded with stone, the main material of the building. **(D46)**

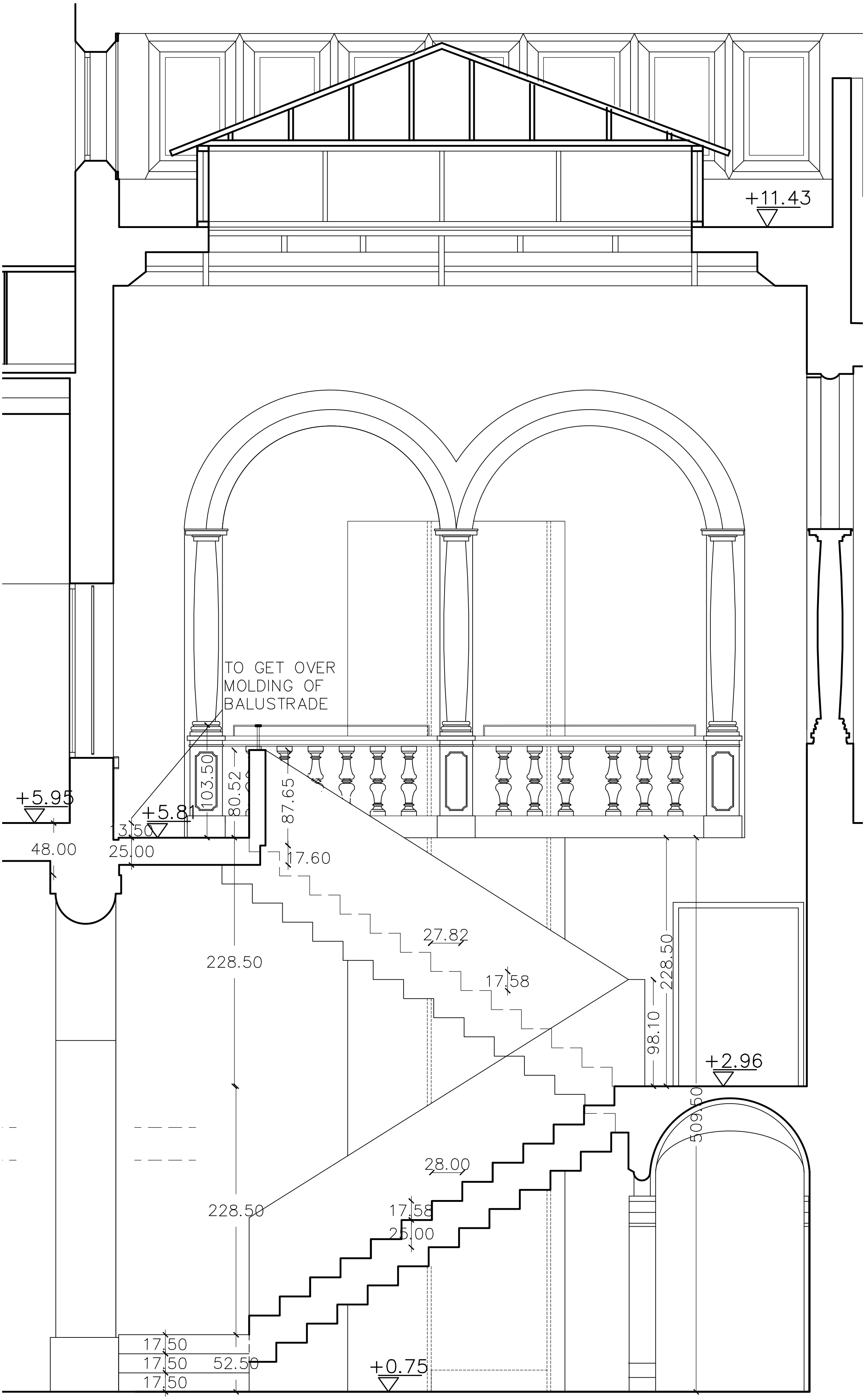
The technique used was that a small screed is made on the landing of the local communication stairs on the ground floor and first floor, and the parapet was placed using a 10cm block wall filled with concrete and reinforced. The internal side of the railing is plastered for a natural and serene look, and the top of the railing is rounded with a void on the inner side for grip. The already existing landing on the mezzanine level rests on a groin vault made out of marés stone and supported



D46 Section of the Railing (Scale: 1:20)

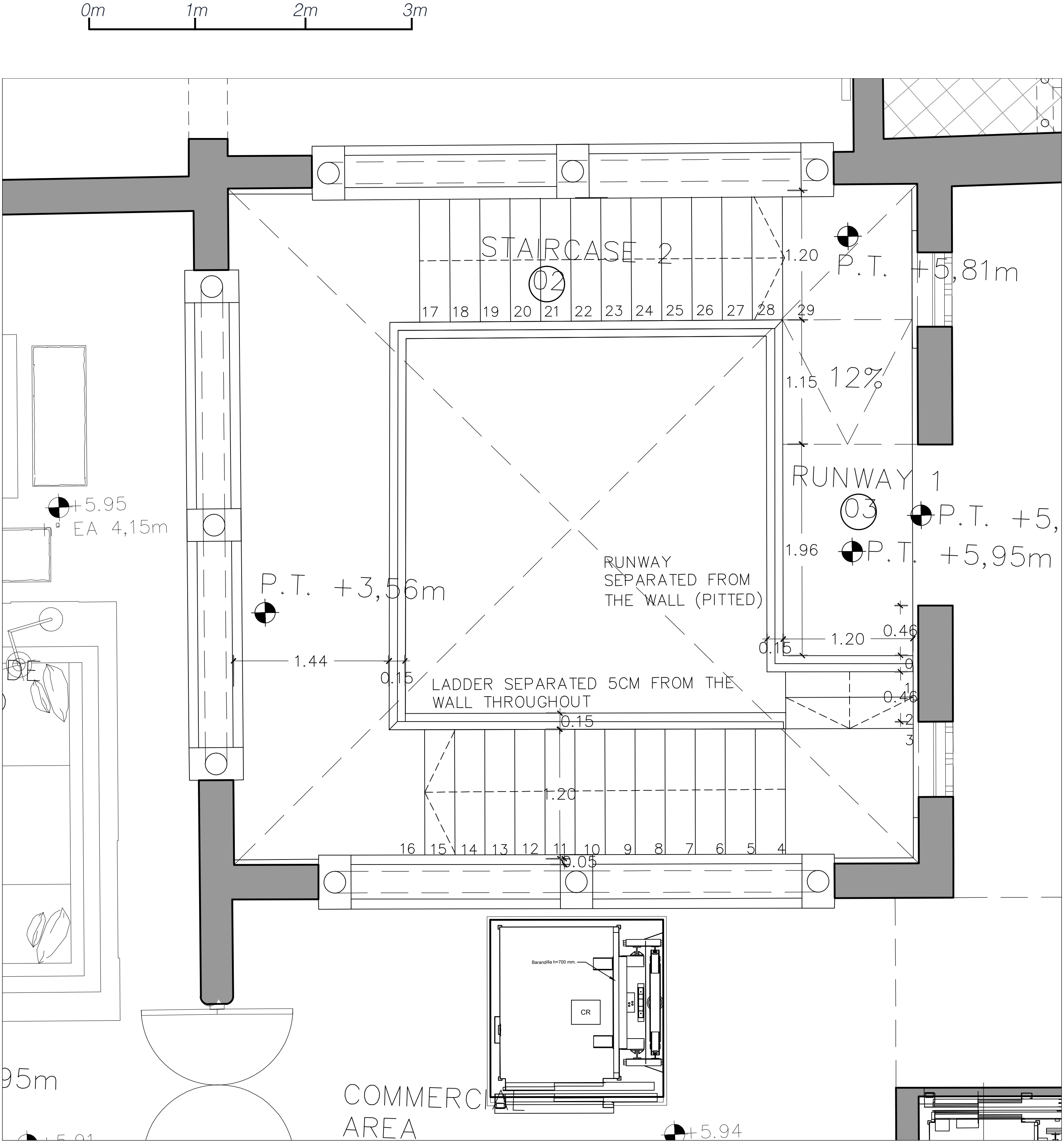
D47(Left) Central Staircase Section A-A' (Scale:1:50)
D48(Right) Central Staircase Section B-B' (Scale:1:50)





+11.43
TO GET OVER
MOLDING OF
BALUSTRADE
103.50
80.52
87.65
+5.95
+5.81
13.50
48.00
25.00
17.60
27.82
228.50
17.58
228.50
98.10
+2.96
509.50
28.00
228.50
17.58
25.00
17.50
17.50
52.50
17.50
+0.75

D49 Central Staircase Plan (Scale:1:50)




95 Central Staircase of Rialto Living
© Bastidas Architecture


96 Central Staircase of Rialto Living View From First Floor
© Bastidas Architecture


97 Central Staircase Groin Vault of Rialto Living
© Bastidas Architecture

by marble columns, which the vaulted passage leads to the Cafe Rialto.

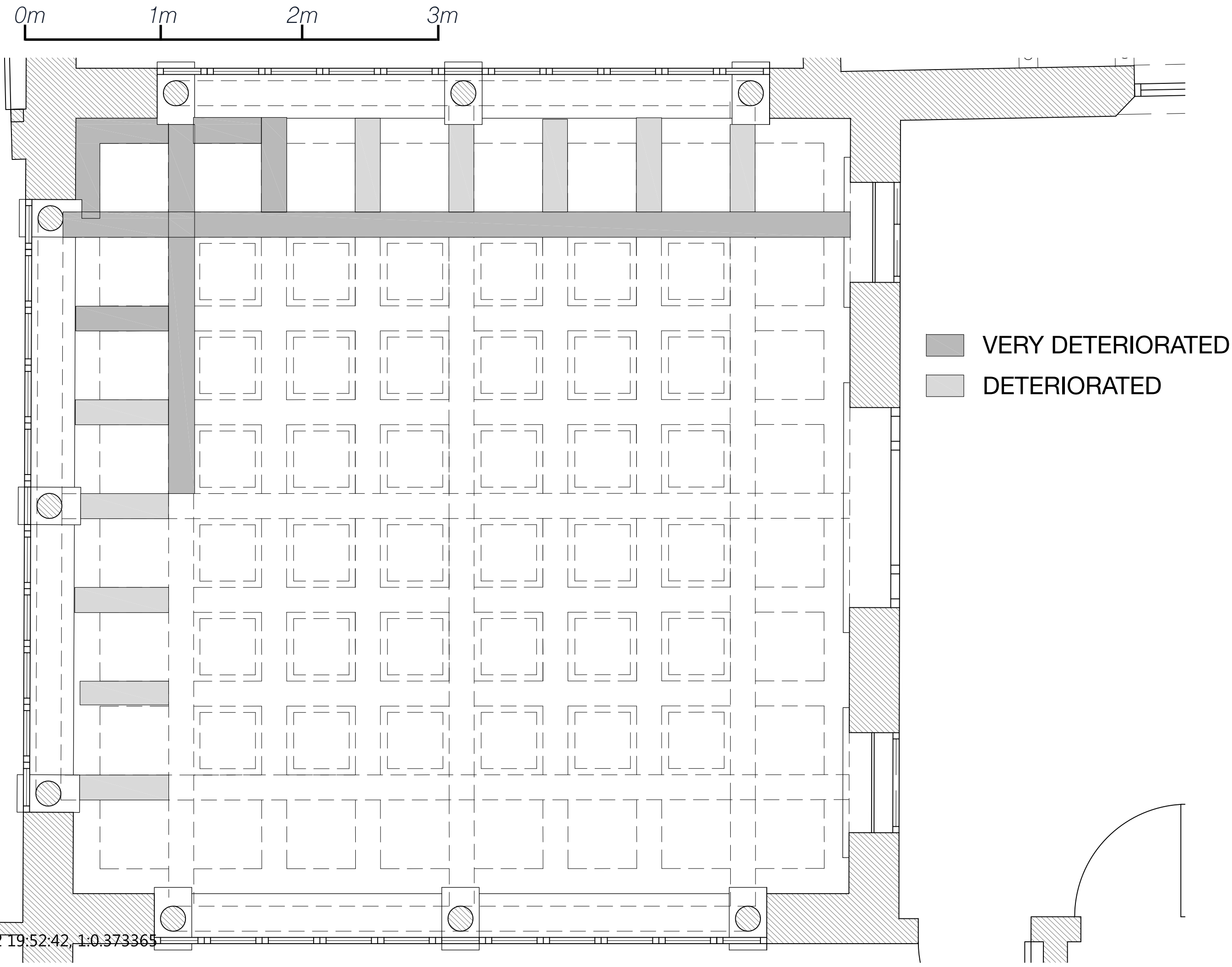
.Overall, the grand staircase at the building is a testament to the skill and creativity of Sergi Bastidas. The combination of functionality, aesthetics, and historical elements make it an architectural masterpiece that seamlessly enhances the user experience while respecting the building's original design.

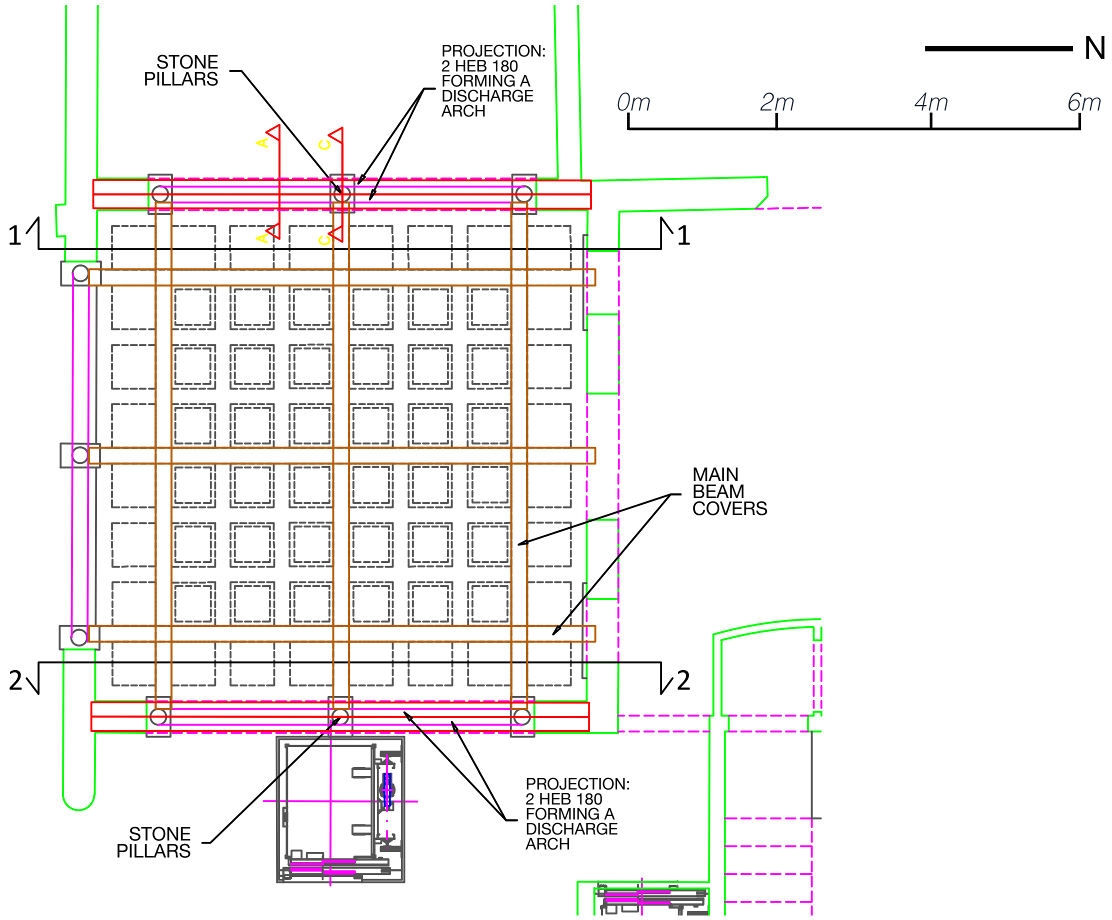
4.4.2 Coffered Skylight

A coffered skylight is a type of skylight that features a series of recessed panels, or "coffers," in the ceiling below it. These coffers can be used to add visual interest to the skylight, as well as to control the amount of light that enters the room. They are often used in architectural designs to create a feeling of depth and dimension in a space, and can be made from a variety of materials including wood, metal, or plaster. Rialto living has six coffered

98 Deterioration on Coffered Ceiling
© Bastidas Architecture

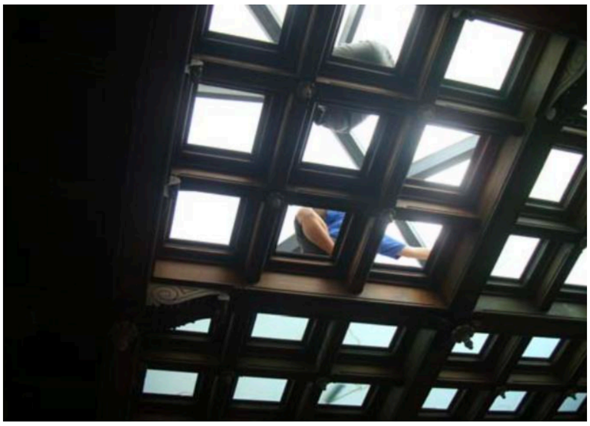
D50 Deteriorating Joists Diagram of the Coffered Skylight (Scale:1:50)





D51 Structural Plan of the Coffered Skylight (Scale:1:100)

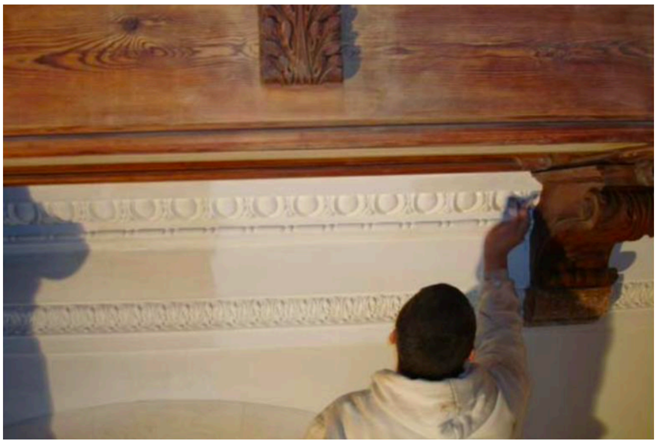
ceilings at the first two floors, and a coffered skylight above the central staircase, arguably central attraction of the building.
The restoration process of the coffered skylight began with an initial investigation of the existing wooden coffered ceiling. The focus was on an area reinforced with metal girders, which showed pronounced deterioration **(98)** due to moisture infiltration. To address this issue, cracks were filled with silicone as a provisional measure until proper restoration could be carried out.
The main coffered ceiling area required provisional propping, which was done on a scaffolding platform. The metal corner girders were removed and embedded finishes for wooden girders were maintained on walls, including their upper protection by means of PVC fabric.**(99)**



99 PVC Fabric Being Applied to Skylight
© Bastidas Architecture

A new concrete girder was constructed, using formwork, reinforcement, and concreting, and then stripped. The main structure of the metallic reinforcement on the coffered ceiling was anchored to this girder, in a separation wall between the perimeter coffered ceiling terrace and terraces of houses A and B on the second floor. Reinforced glass was then installed.

The wooden coffered ceiling was prepared for subsequent waterproofing using polyurea spray. A perimeter metal profile



100 Painting the Molding Below Skylight
© Bastidas Architecture

was placed to receive the skylight. Paint samples were also carried out in the molding and wooden coffered area. **(100)**

Finally, four HEB beams were installed on the stone pillars for reinforcement. The restoration process of the coffered skylight was comprehensive, addressing structural, waterproofing and aesthetic

101 Final Situation of the Coffered Skylight
© Bastidas Architecture

issues, to ensure a long-lasting and visually appealing final outcome.
The final structure of the coffered skylight combined with the second and third floors can be found at the subchapter 4.7.3 Detailed Sections.

4.4.3 Moroccan Room

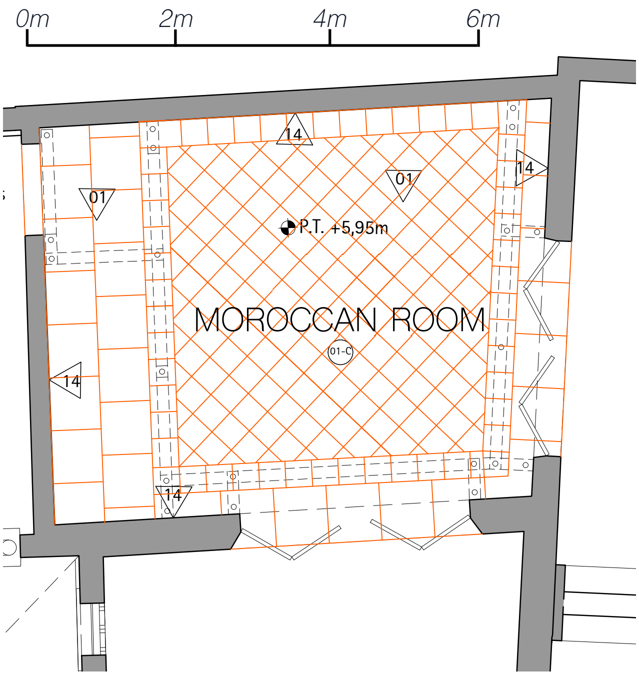
The Moroccan Room is a unique and enchanting space in the building, featuring

102 Reinstallation of the False Ceilings
© Bastidas Architecture

a distinct architectural style with its horseshoe or Moorish arches. According to architect Sergi Bastidas, it is believed that this room was originally used as a smoking area, as it was already present when the building was purchased. The walls and floor are adorned with a layer of intricate hydraulic tile finish, adding to the room's exotic charm.

103 Mouldings at the Moroccan Room
© Bastidas Architecture

During the renovation, it was deemed necessary to reinforce the propping in the Moroccan lounge area as a precautionary measure. The arches structure was also fixed, and the metal joists were painted to give the room a polished look.
Reinforcements were added and a final compression layer was concreted to ensure the structural integrity of the space.



D52 Moroccan Room Tiling Plan
(Scale:1:100)

The owner of the building, Barbara, is committed to preserving the historical and architectural significance of the space. Every existing tile and ornament was kept and reused if in good condition. Any moldings that could not be saved were painted to match the original design.

Currently, the room is used as a showroom for the carpets and rugs.

4.4.4 Doors & Windows

The restoration and reusing of the doors and carpentry at the building named Rialto Living was a crucial aspect of the building's renovation project. Beginning in 2012, the doors and windows were removed from the building and brought to a warehouse in Can Ramis for evaluation. The goal was to determine if they were in good enough condition to be reused in the building.

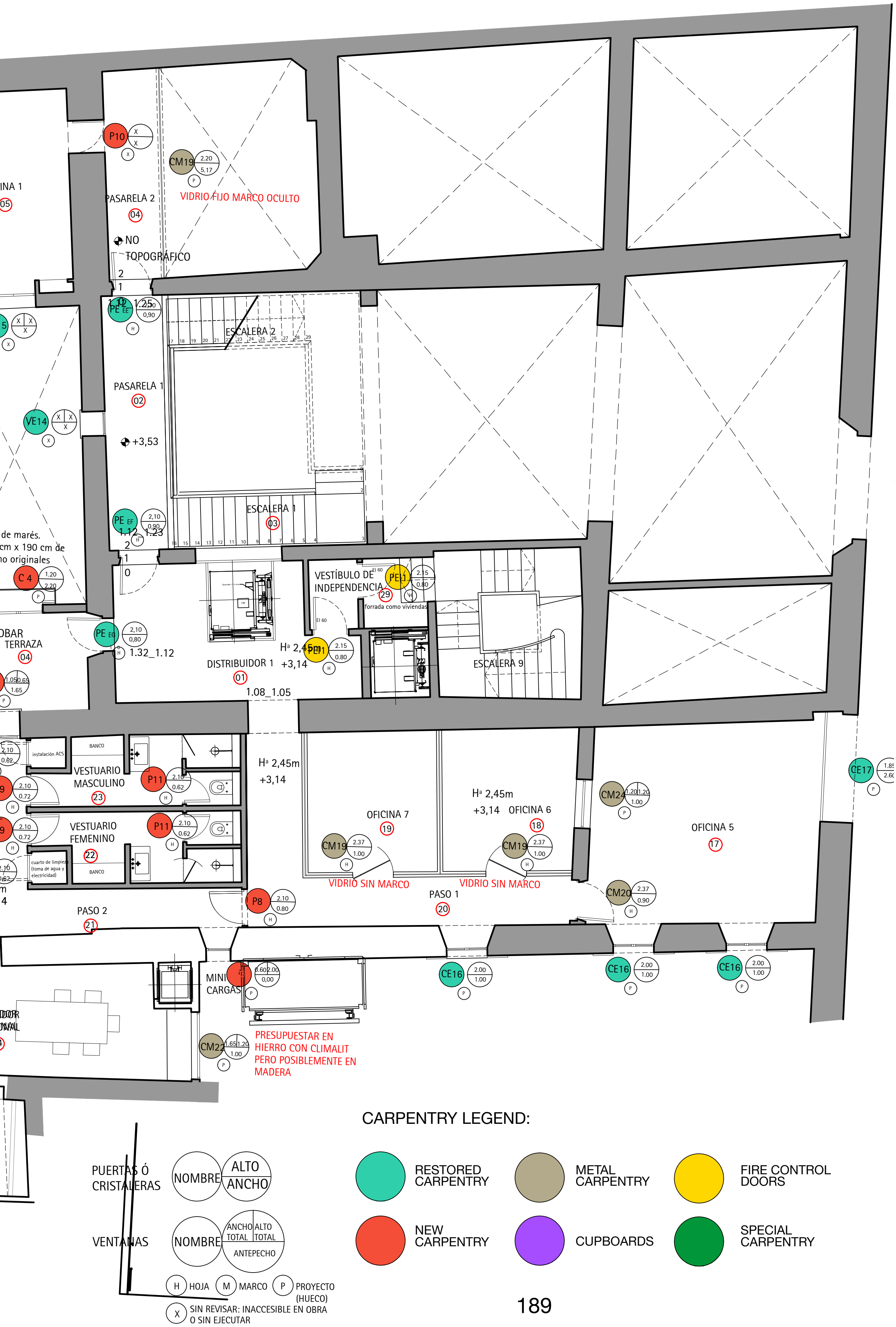
The doors and windows underwent a thorough cleaning process, including being washed and varnished. Each type of door, mirador, and window was carefully documented and coded for their intended use when the phase I of the project was completed.

The carpentry was divided into 6 general categories: 1) Doors to be restored, 2) Metallic Doors, 3) Special Use Doors, 4) Fire Control Doors, 5) Cupboards, and 6) New Carpentry. Each piece was evaluated and assigned to the appropriate category based on its condition and intended use. The restoration and reusing of the doors and carpentry not only saved the building's historical integrity, but it also helped to reduce the overall cost of the renovation project. This was a smart and sustainable approach to the renovation, as it minimized the need for new materials and helped to preserve the building's original architectural elements.
Overall, the restoration and reusing of the doors and carpentry at Rialto Living was a well-planned and executed aspect of the renovation project. The careful documentation and coding of each piece ensured that the carpentry was used in the most appropriate manner, and the restoration process helped to preserve the building's historical integrity while also reducing costs.

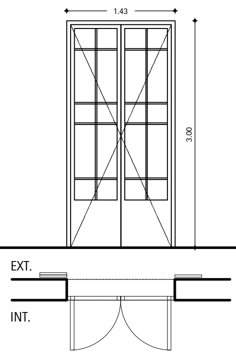
104 Doors & Shutters at Can Ramis Warehouse
© Bastidas Architecture

SALA DE REUNIONES
07
DISTRIBUIDOR
09
replantear escalones en obra (huella 28,00 tabica mínimo 17,50cm)
DISTRIBUIDOR
10
OFICINA 2
06
recercado de marés. rejas sustituir por nuevas a imitación de balcones originales
posiblemente eliminada
ALMACÉN
ESCALERA 8
28
VESTUARIO FEMENINO
27
VESTUARIO MASCULINO
26
PASO 3
25
VESTUARIOS PERSONAL RESTAURANTE
ASEO CABALLEROS
16
VIDRIO FIJO MARCO OCULTO
ESCALERA 4
11
DISTRIBUIDOR
12
+2,72
Hª 2,88
VESTÍBULO ASEOS
13
Hª b.v. 2,20
espejo
ESCALERA 5
VESTÍBULO ASEOS
1.05 1.10 (AMPLIAR HUECO SI SE USA)
ASEO DAMAS
ASEO ADAPTADO
14
ASEO DAMAS
15

D53 Mezzanine Floor Carpentry Classification Plan (Scale: 1:125)
*The plan is original, in Spanish, and given as an example, the full classification can be found in the Annex.



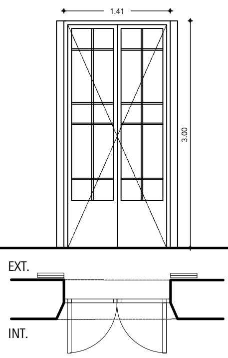
(en 1.30)
FASE 1_CIMG8570



CE6 3.00 / 1.43 (P)

PUERTA EXISTENTE A RECUPERAR,
MADERA EN SU COLOR.
LAS MEDIDAS SON DE HUECO.
CE 6

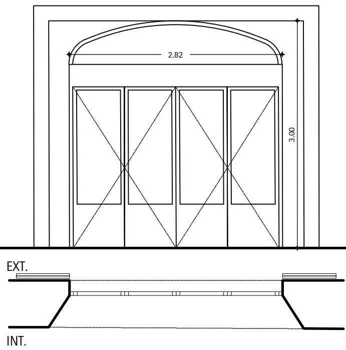
TOTAL
2 UNIDADES
PLANTA PISO 1
BALCONES EN BAR1



CE7 3.00 / 1.41 (P)

PUERTA EXISTENTE A RECUPERAR,
MADERA EN SU COLOR.
LAS MEDIDAS SON DE HUECO.
CE 7

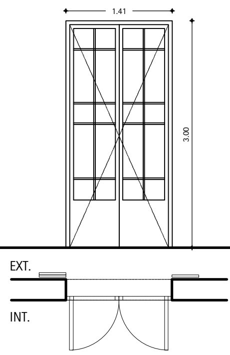
TOTAL
2 UNIDADES
PLANTA PISO 1
OFICINAS 2 Y 3



CE8 3.00 / 2.82 (P)

PUERTA EXISTENTE A RECUPERAR,
MADERA EN SU COLOR.
LAS MEDIDAS SON DE HUECO.
COLOCAR VIDRIO LAMINADO EN
CARA EXTERIOR DELANTE DE
VIDRIERAS
CE 8

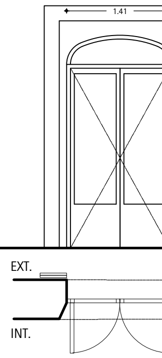
TOTAL
1 UNIDAD
PLANTA PISO 1
RESTAURANTE



CE9 3.00 / 1.40 (P)

PUERTA EXISTENTE A RECUPERAR,
MADERA EN SU COLOR.
LAS MEDIDAS SON DE HUECO.
-NOTA-
SIN PERSIANAS EN SHOW ROOM
SE DESPLAZA UNA DE OFICINA1
CE 9

TOTAL
5 UNIDADES
PLANTA PISO 1
OFICINA 3, SHOW ROOM VERANO

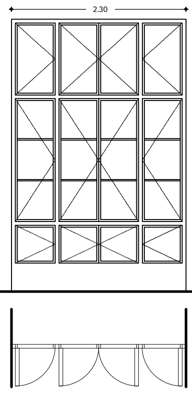


CE10 3.00 / 1.41 (P)

PUERTA EXISTENTE A RECUP
MADERA EN SU COLOR.
LAS MEDIDAS SON DE HUEC
COLOCAR VIDRIO LAMINADO
CARA EXTERIOR DELANTE DE
VIDRIERAS

TOTAL
2 UNIDADES
PLANTA PISO 1
RESTAURANTE

(en 1.20 trasladada)
PUERTAS MAYO 2013
IMG-20130520-WA001

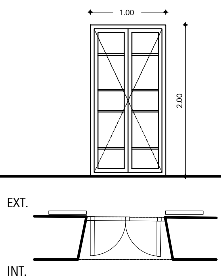


CE15 3.60 / 2.30 (P)

PUERTA EXISTENTE A RECUPERAR,
MADERA EN SU COLOR.
LAS MEDIDAS SON DE HUECO.
confirmar si
pintada
CE 15

TOTAL
1 UNIDAD
PLANTA PISO 1
DISTRIBUIDOR RESTAURANTE

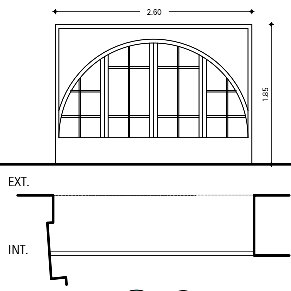
COMPROBAR
ALTURA HOJA



CE16 2.00 / 1.00 (P)

VENTANA EXISTENTE A RECUPERAR,
MADERA EN SU COLOR.
MEDIDAS DE HUECO
CON PERSIANAS EXISTENTES
CE 16

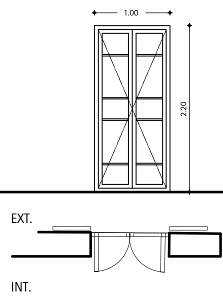
TOTAL
3 UNIDADES
PLANTA ENTRESUELO
OFICINAS_CARRERÓ



CE17 1.85 / 2.60 (P)

VENTANA EXISTENTE A RECUPERAR,
MADERA EN SU COLOR.
MEDIDAS DE HUECO
CE 17

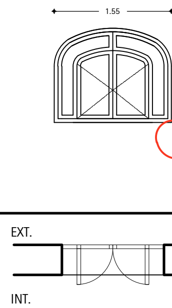
TOTAL
1 UNIDAD
PLANTA ENTRESUELO
OFICINA 5



CE18 2.20 / 1.00 (P)

PUERTA EXISTENTE A RECUPERAR,
MADERA EN SU COLOR.
LAS MEDIDAS SON DE HUECO.
CE 18

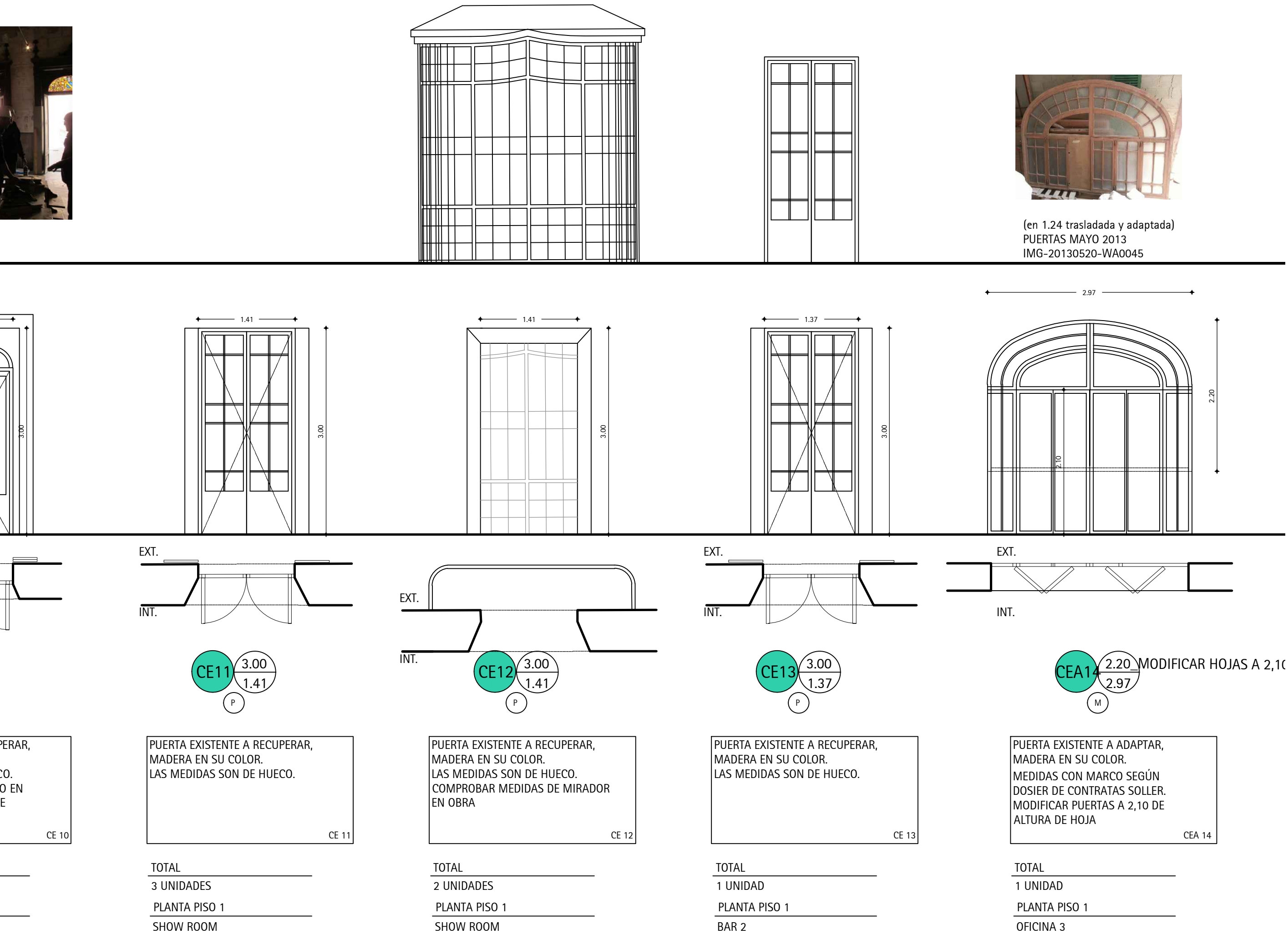
TOTAL
4 UNIDADES
PLANTA PISO 2
SALA VIP



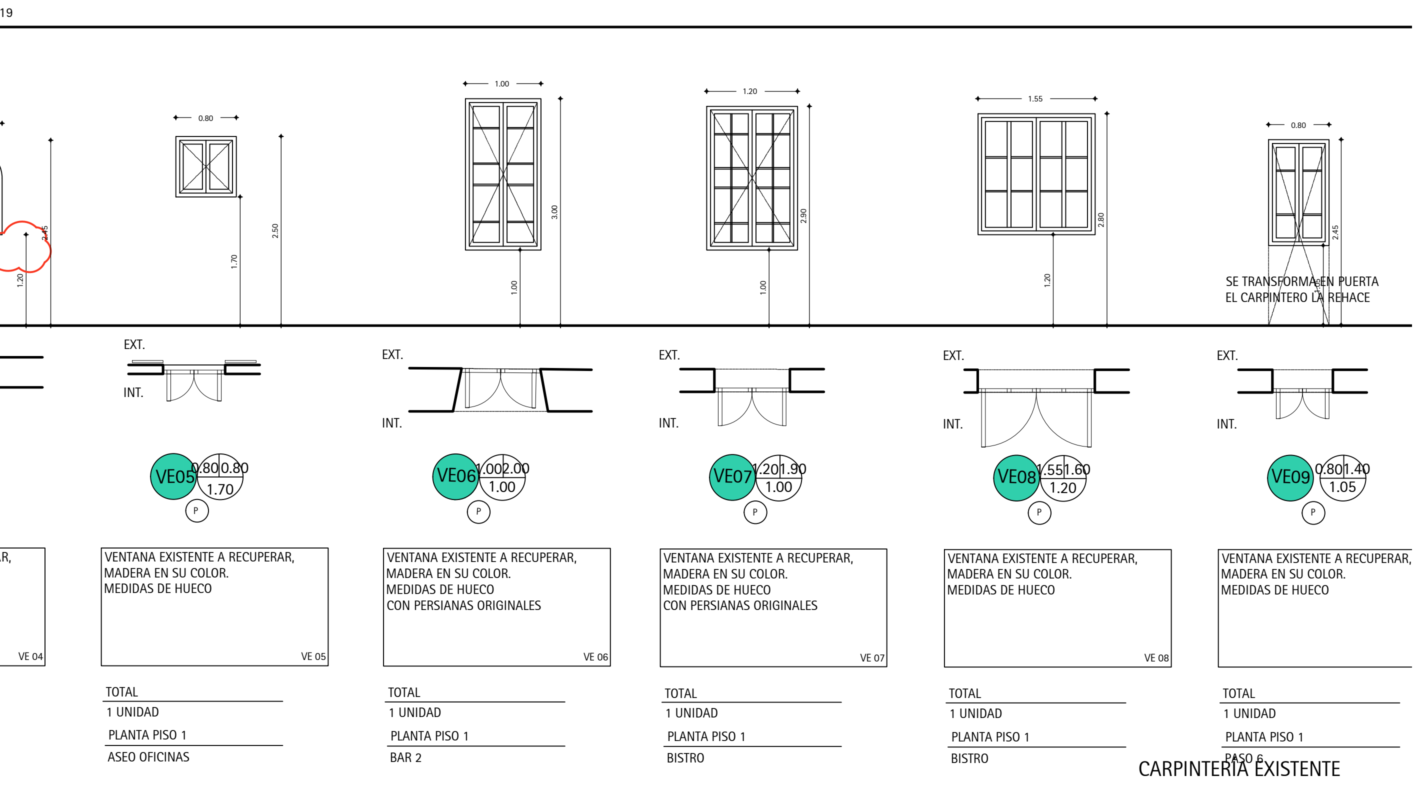
VE04 1.551.34 / 1.20 (M)

VENTANA EXISTENTE A RECUPERA
MADERA EN SU COLOR.
MEDIDAS CON MARCO SEGÚN
DOSIER DE CONTRATAS SOLLER.
CRISTALERA 1.20 TRASLADADA
DIM. CON MARCO SEGÚN DOSIER

TOTAL
1 UNIDAD
PLANTA PISO 1
ARCHIVO Y MUESTRARIOS



S8 Carpentry Classification Chart Page 3
*The scheme is in Spanish and given as an example, the full classification can be found in the Annex.



At the previous pages two parts from the classification of the carpentry is given to exemplify the calculation process of carpentry. It is possible to detect the state of the carpentry by checking it from the floor plan with color codes for the type. Then each color type, initials of the carpentry style and dimension is to be found at the classification chart, where its elevation, plan, location, amount of the same carpentry and picture (if possible) can be found.

4.4.5 Basement Floor

The extension of the basement floor for storage at Rialto Living building was a complex and multifaceted project. The work was divided into two phases, with Phase One focusing on the realization of the basement and the new ground floor, and Phase Two focusing on the excavation of Basement 2 by "Micropilotes" technique and the attempt to communicate it with the existing structure.

In Phase One, the commercial premises in operation were left as is, while the new ground floor was finished. A few weeks before finishing the basement, plasterboard walls were placed in the sector of Commercial Premises 01- D and 01- E to isolate the commercial premises from the dust and noise generated when opening the holes. The holes were then opened from the new plant, towards the existing premises.

Once the holes were made, the Pladur walls were removed and the new Bar-Cafeteria, as well as the new toilets, were able to function. The access to the store was temporarily closed through Calle Sant Feliu while decoration work was being completed. The entrance to the store was then redirected through Calle Estanc.

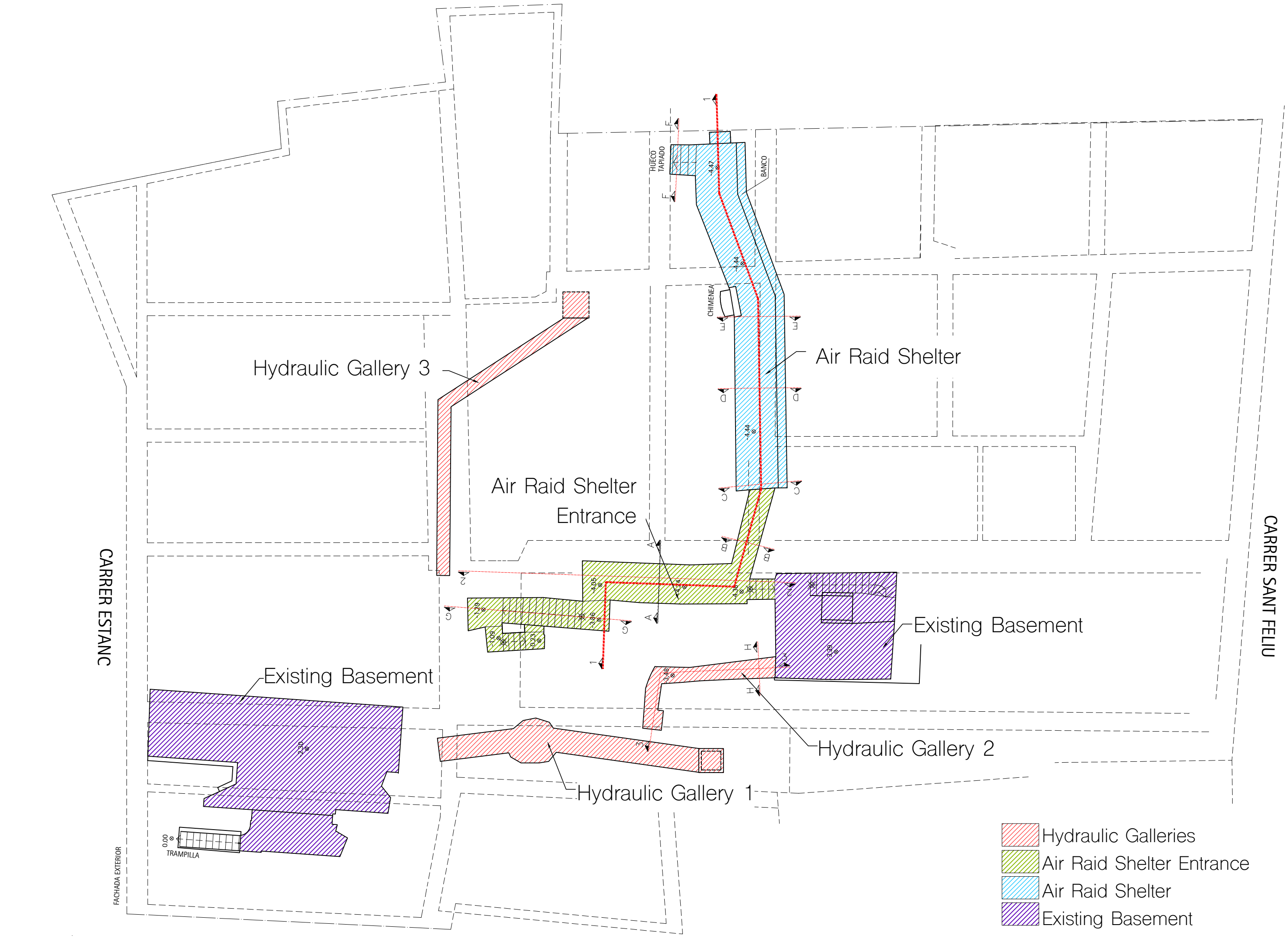
In Phase Two, the excavation of Basement 2 began and an attempt was made to communicate it with the existing structure. The work from Phase One was completed, including decoration and the installation of the bar, restaurant kitchen, and toilets. A couple of weeks before the completion of Phase Two, plasterboard walls were placed in Commercial Premises 01- F to isolate the business premises from the dust and noise generated when opening the holes. The holes were then opened from the new plant, towards the existing premises. The entrance through Sant Feliu was then enabled and the entrance through Estanc was closed in order to work.

One issue happened during the excavations was that, due to the modification in the load-bearing area of the alley wall, due to batching, one cistern path was completely filled with compacted sand during elevator shaft excavation **(105)**, this issue was solved by cleaning of the area and reinforcing the walls with concrete.

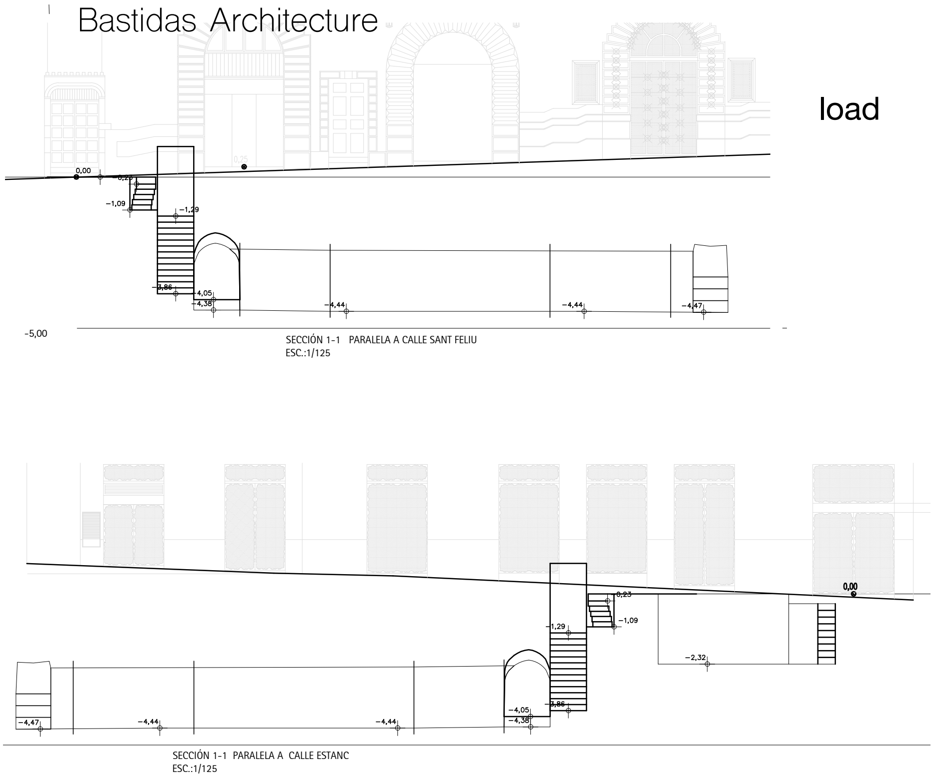
105 Debris of Compacted Sand at the Cistern Path
© Bastidas Architecture

MICROPILOTES TECHNIQUE

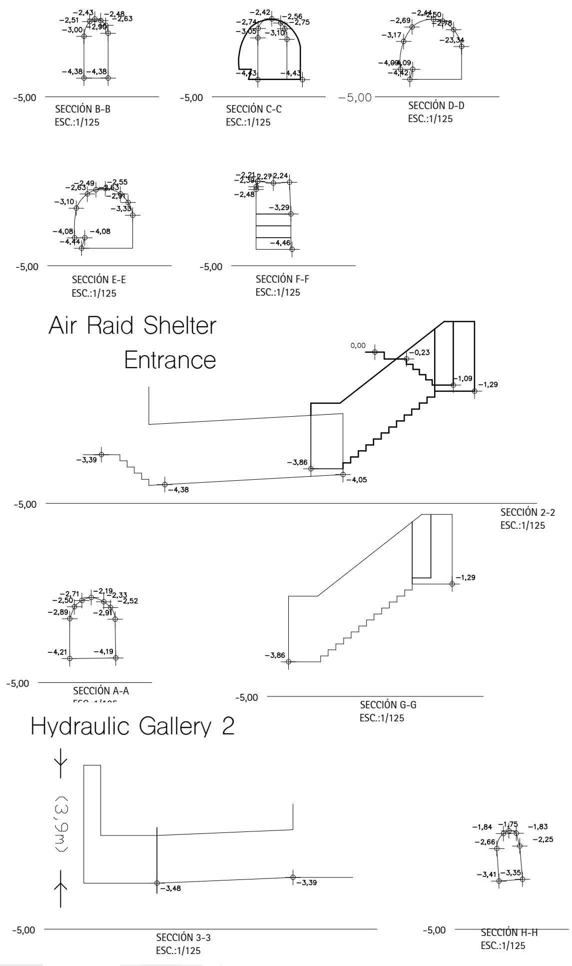
The construction of a basement using the micropiles technique involves the implementation of small-diameter, high-strength, and deep foundation elements called micropiles. Micropiles are slender, drilled and grouted piles that are typically used to provide foundation support in areas with challenging soil conditions or



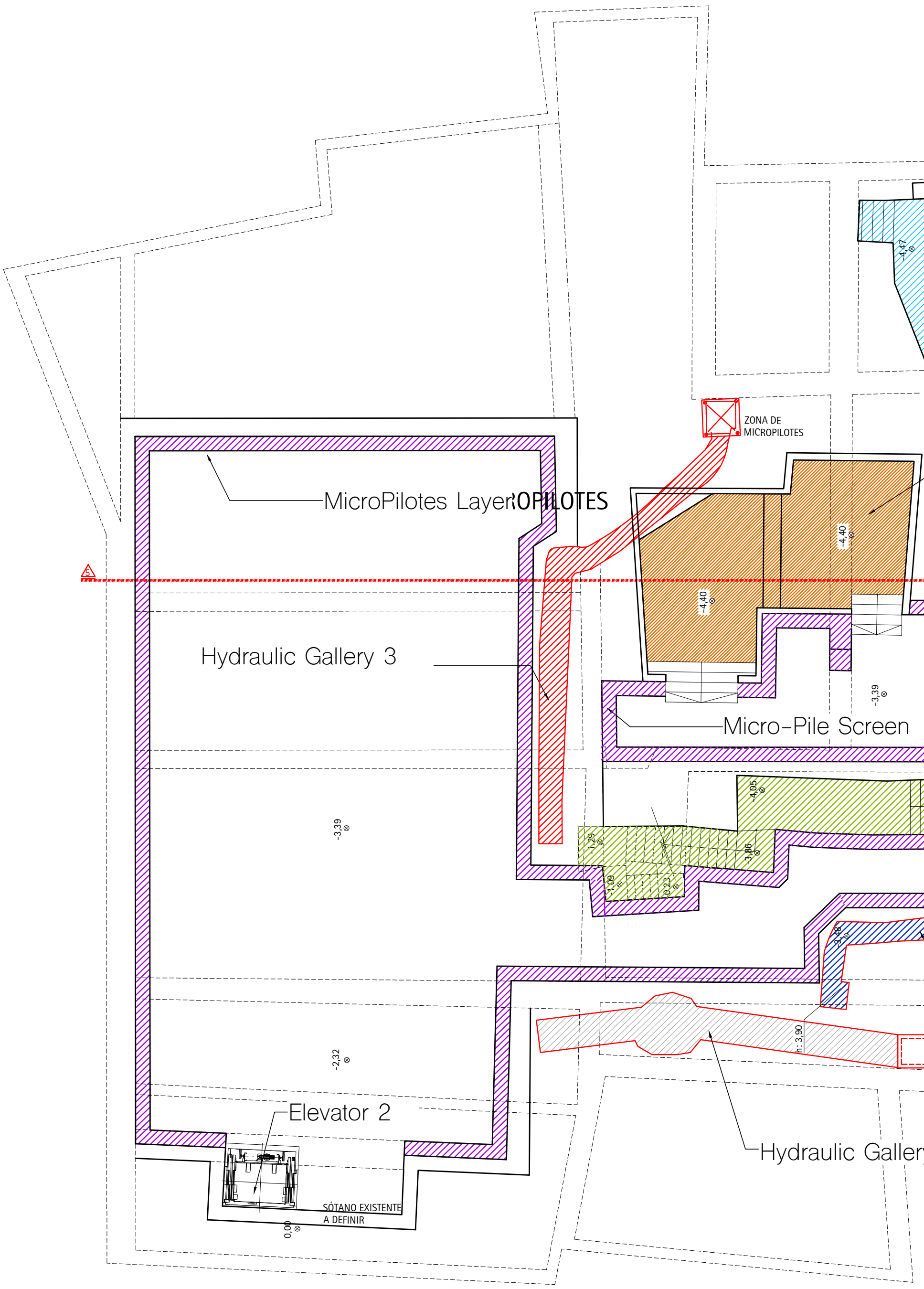
D54 Existing Basement Elements Plan and Sections of Hydraulic Gallery and Bunker (Scale: 1:250) Source: Bastidas Architecture



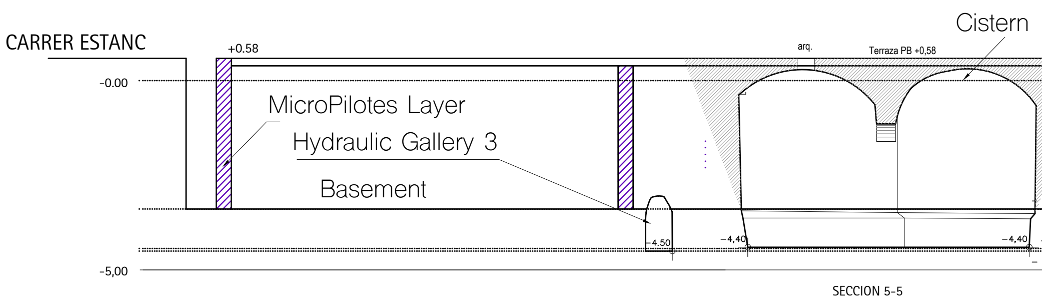
load

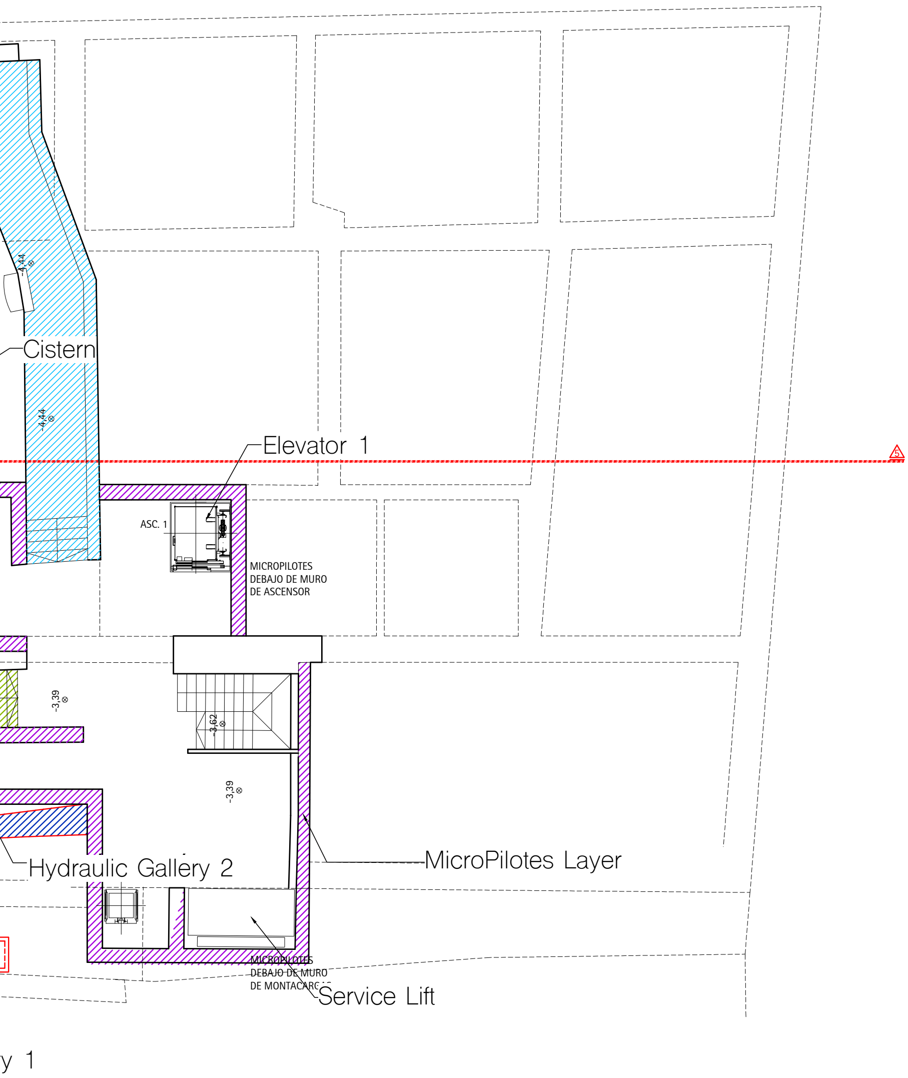


limited access. This technique offers numerous advantages, such as increased



D55 & D56 Basement Final Confirmation Plan and Section
(Scale: 1:200) Source: Bastidas Architecture




Cistern
Elevator 1
ASC. 1
MICROPILOTES
DEBAJO DE MURO
DE ASCENSOR
-3,39
-3,62
-3,39
Hydraulic Gallery 2
MicroPilotes Layer
Service Lift


CARRER SANT FELIU
Air Raid Refuge
3.39
3.78
Basement
1.96

carrying capacity, improved stability, and reduced settlement, making it a popular choice in basement construction.

The installation of micropiles begins with drilling boreholes into the ground using specialized drilling equipment. The diameter of the boreholes typically ranges from 100 to 300 millimeters, depending on the design specifications. The drilling process is carefully monitored to ensure precise placement and alignment of the micropiles. The boreholes are then cleaned to remove any debris or drilling mud.

After the boreholes are drilled and cleaned, grout is injected into the holes under pressure. The grout serves several purposes, including improving load transfer between the micropile and the surrounding soil, reducing the risk of corrosion, and enhancing the overall stability of the foundation. The grout material is usually a cement-based mixture that can flow easily through the micropile and fill the annular space between the pile and the borehole wall.

To further enhance the structural capacity of the micropiles, reinforcing steel bars, known as reinforcement, are installed during the grouting process. These steel bars, often referred to as rebar, are inserted into the grout-filled boreholes to provide additional tensile strength and improve the micropiles' resistance to bending or shearing forces. The arrangement and spacing of the reinforcement are determined by the design requirements.

Once the micropiles are installed, the load from the basement structure is transferred to the piles through the reinforced grout. The micropiles resist the applied loads by transferring them to deeper, more competent soil layers or rock formations. The load transfer mechanism may involve a combination of skin friction along the pile shaft and end-bearing resistance at the pile tip, depending on the specific soil conditions and design considerations.

4.5 Material Analysis

The subchapter is dedicated to providing a comprehensive overview of the materials used in the building's structure and their calculation for Embodied Energy and Embodied Carbon. The calculation process is a crucial aspect of sustainable architecture and provides valuable insights into the environmental impact of a building.

The structure of the building is considered to be made of marés stone and insulation layer, which are commonly used building materials. However, the structural details, such as reinforcement action, metal beams, concrete pouring, etc., can alter the calculation process, and therefore, if specified, these materials will be taken into consideration during the calculation process.

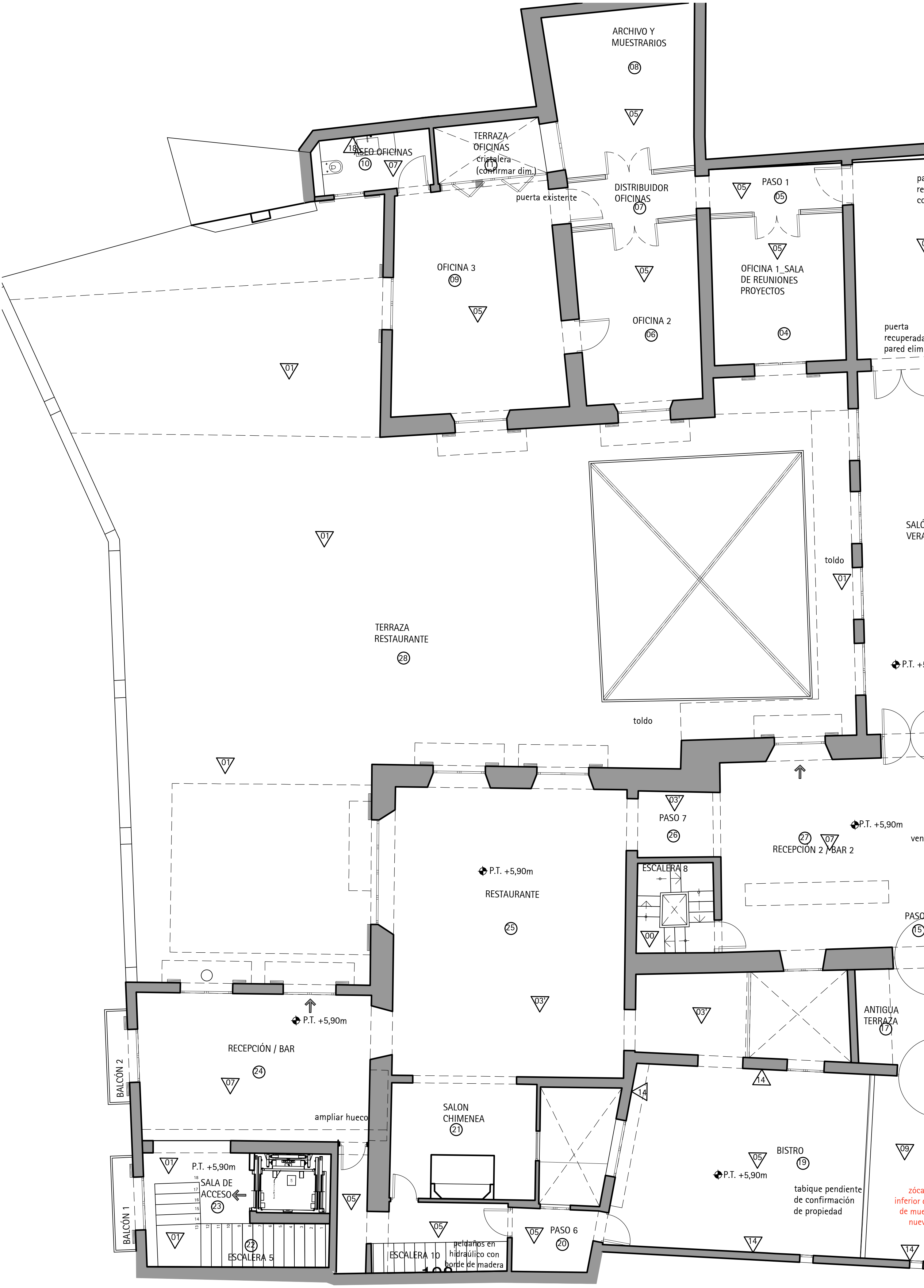
Before calculating the finishes used on the surfaces, the areas and volumes of the structure are calculated. This information is then used to determine the amount of materials needed for each surface and, therefore, the embodied energy and embodied carbon of each surface can be calculated.

The building features thirty finishes, each with its own unique properties, and each of these finishes are listed in Table 2. On the building plan, these finishes can be identified by the assigned number, which is indicated in a triangle pointing towards the surface.

The plans used as reference for the finishes and false ceiling calculations are crucial in ensuring the accuracy of the calculations and are therefore kept in the Annex for easy reference.

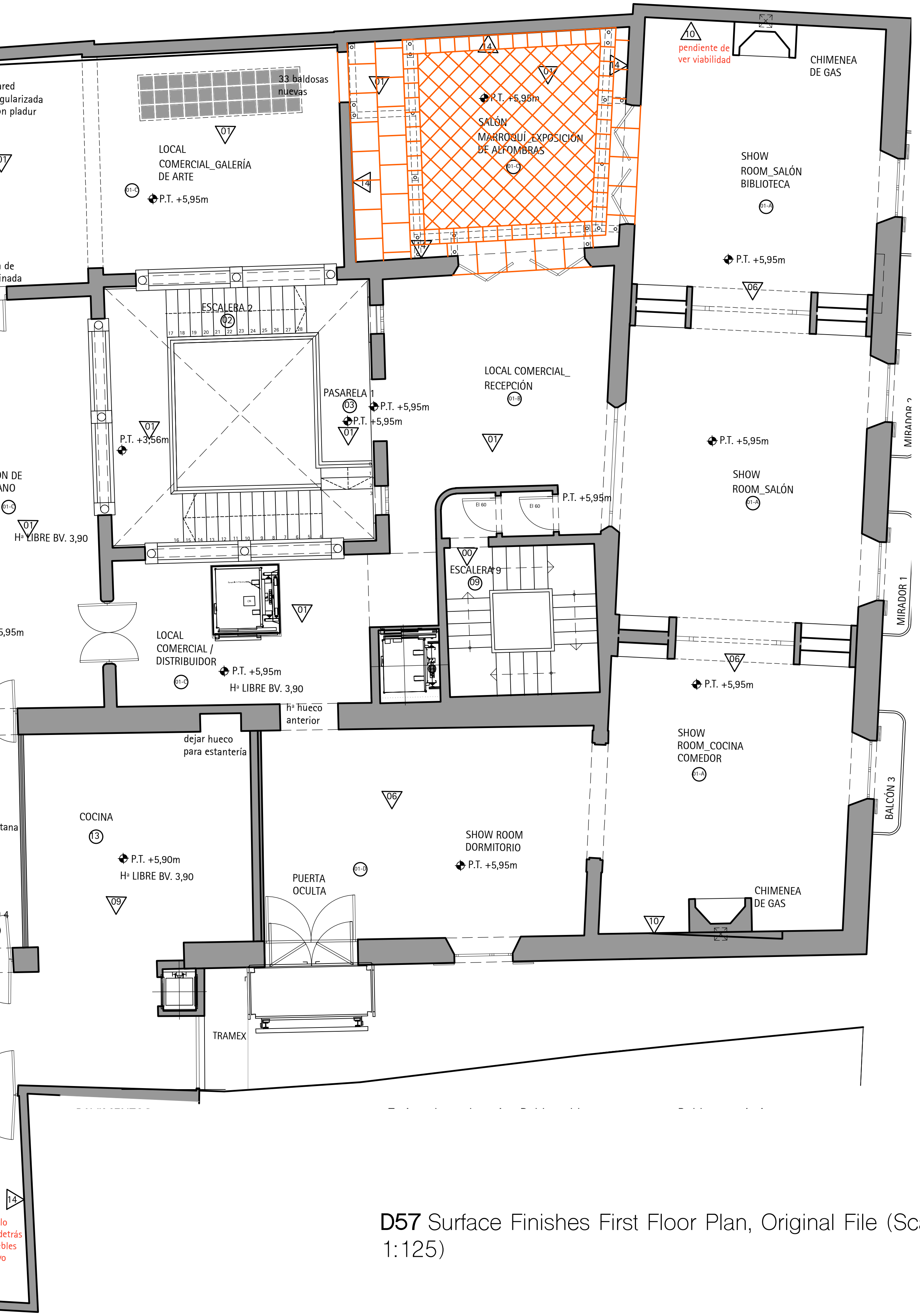
PAVEMENTS	
00	Existing Flooring With Floor Paint
01	Aged Bush- Hammered Lorca-Type Natural Stone with Water-Repellent and Stain-Resistant Treatment. 70x70
02	Existing Stone Paving From Binissalem, Cleaned and Treated
03-03’	New Binisalem Stone Flooring - Polished Rectangular Section with Square Cutout in the Center of Carrara
04	Existing Wood Deck, Cleaned and Treated
05	Oak Wooden Flooring
06	Herringbone Parquet
07	Recovered Hydraulic Tiles
08	Painted Cement
09-09’	Ceramic Flooring - Zellige Type Ceramic Flooring
VERTICAL WALLS	
10	Marés Stark
11	Dirty-White Stucco
12	Wooden Plinth
13	Smooth Paint
14	Recovered Original Tiling
15	Ceramic Tile
16	Zellige Type Tiled Skirting
17	Iron Railing
18	Subway Tile
CEILINGS	
21	False Plasterboard Ceiling
22	Existing Ceramic Vault Slab
23	Recovered Molding
24	Exposed Beam Ceiling
25	Skylight
26	Original Recovered Glass Flooring
27	Val Saint Lambert Type Glass Flooring
28	Existing Roof

T2 Material Classifications of Surfaces



ARCHIVO Y MUESTRARIOS
08
05
ASEO OFICINAS
18
10
07
TERRAZA OFICINAS
cristalera (confirmar dim.)
11
puerta existente
DISTRIBUIDOR OFICINAS
07
PASO 1
05
OFICINA 3
09
OFICINA 2
06
OFICINA 1_SALA DE REUNIONES PROYECTOS
04
puerta recuperada
01
toldo
TERRAZA RESTAURANTE
28
P.T. +5,90m
PASO 7
26
03'
RECEPCION 2 / BAR 2
27
ESCALERA 8
00
RESTAURANTE
25
ANTIGUA TERRAZA
17
RECEPCIÓN / BAR
24
BALCÓN 2
BALCÓN 1
ampliar hueco
SALON CHIMENEA
21
14
BISTRO
19
tabique pendiente de confirmación de propiedad
09
SALA DE ACCESO
23
ESCALERA 5
22
ESCALERA 10
peldaños en hidraúlico con borde de madera
PASO 6
20

*The plan is original, in Spanish, and given as an example, the full classification can be found in the Annex.

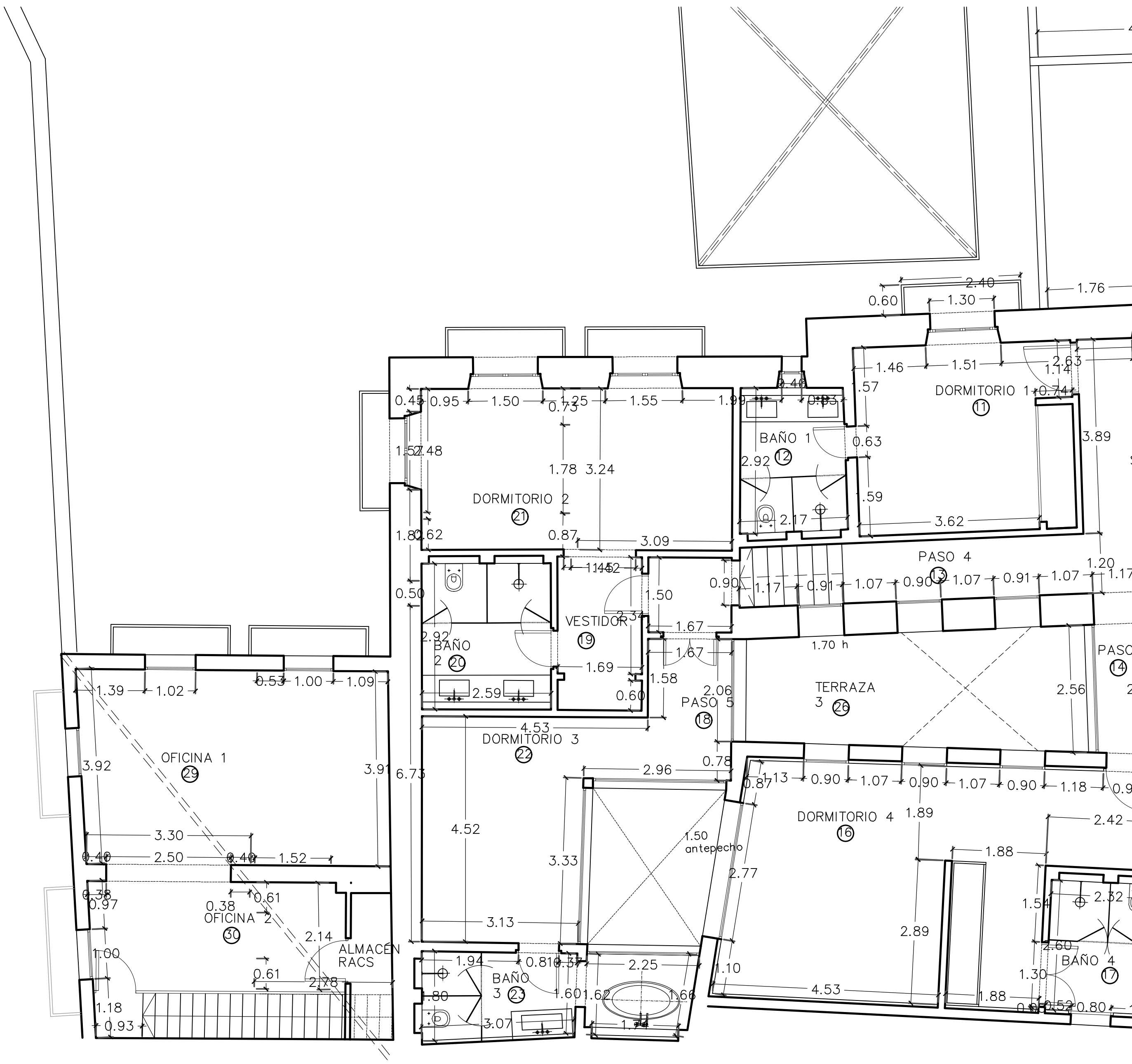


D57 Surface Finishes First Floor Plan, Original File (Scale: 1:125)

4.6 Area Analysis

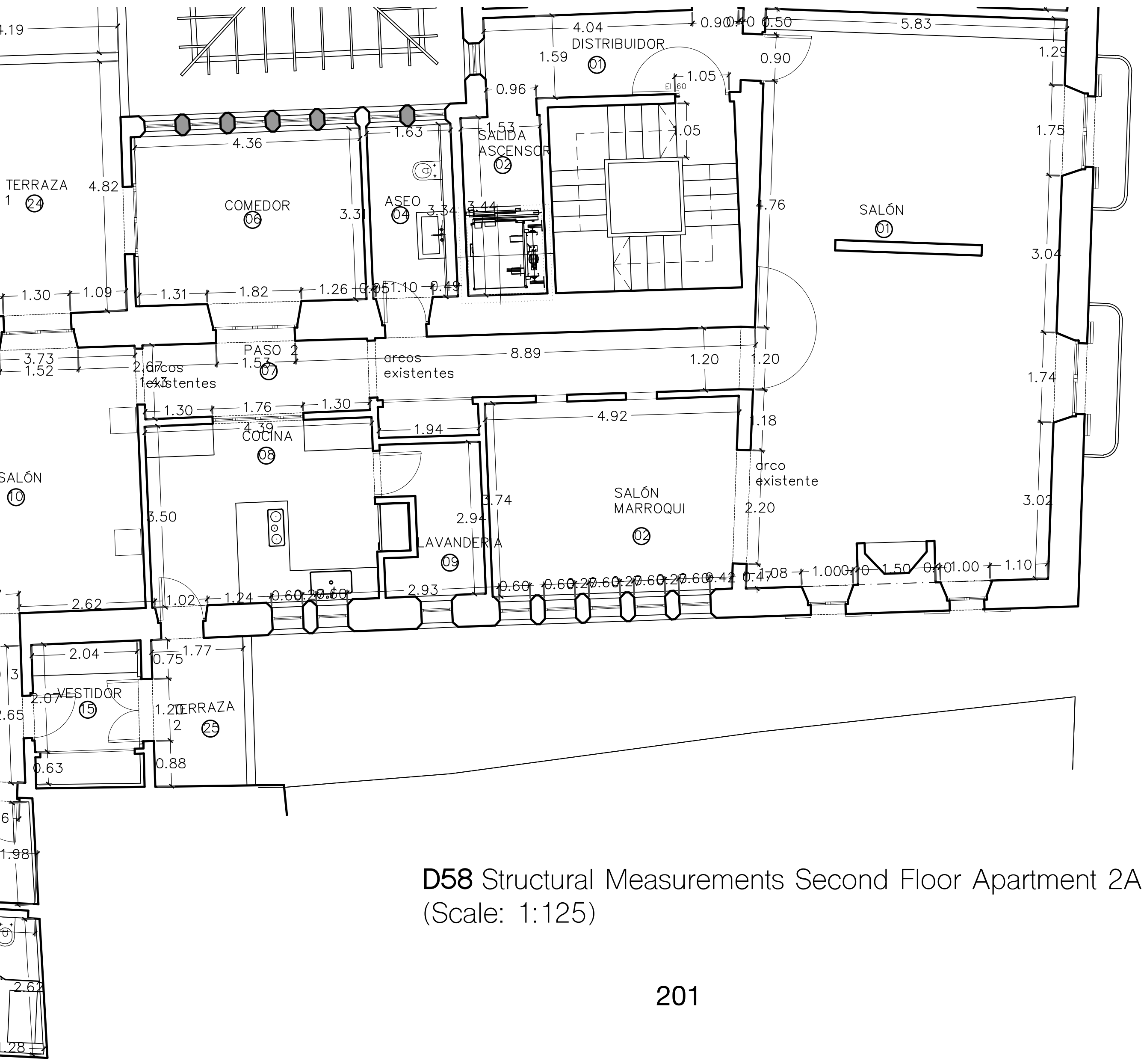
In this study, the structural plans of a building are utilized to determine the areas and volumes of its surfaces. This approach was taken as access to every room within the building was restricted, and some parts were deemed unaccessible. The measurement plan of a residential unit 2A serves as an example, and measurement plans for all floors can be found in the annex. Additionally, the insulation layer within the marès walls was not known, so the calculations were made based on the standard marès wall thicknesses.

The measurements obtained through the utilization of the structural plans are significant for the calculation of embodied energy and embodied carbon, which play a key role in the building's environmental performance. The embodied energy and embodied carbon calculations take into account the energy and carbon emissions associated with the extraction, production, transportation, and assembly of the building's materials and components. The areas and volumes of the surfaces, as determined from the structural plans, provide the necessary information to calculate the amounts and types of



materials used, and their corresponding energy and carbon emissions.

In conclusion, the structural plans of the building were utilized to determine the areas and volumes of its surfaces, which are key inputs for the calculation of embodied energy and embodied carbon. The results of these calculations provide crucial information about the building's environmental performance, which will inform future decision-making processes and renovations aimed at reducing its environmental impact. The methodology used in this study is robust and reliable, and will provide valuable insights into the embodied energy and embodied carbon of the building.



D58 Structural Measurements Second Floor Apartment 2A Plan (Scale: 1:125)

4.7 Detailed Sections

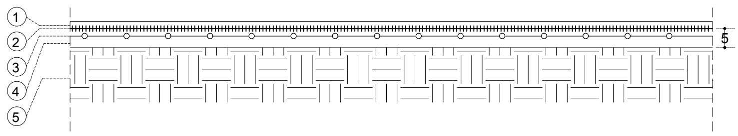
The material calculations and surface analysis are done by combining the structural plans, surface finish plans, and the construction journals. The first step is to separate building components by floors, interior walls, exterior walls, central staircase & coffered skylight, staircases, doors & windows, and balconies, then analyse their detailed sections to determine the reinforced slabs, materials of the existent joists and new joists. In cases of insufficient information for the surface components of a module, information from the construction journals were used to approximate the most accurate result.

In this chapter, the typologies of the layers used in surfaces can be found categorised by the components.

Floors

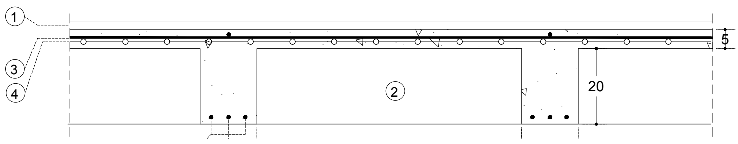
Ground Floor

1. Floor Finish (Varies by the Room)
2. Polyurea Waterproofing
3. Rebar Steel Mesh 150.150.6
4. Concrete Slab (7 cm)
5. Soil



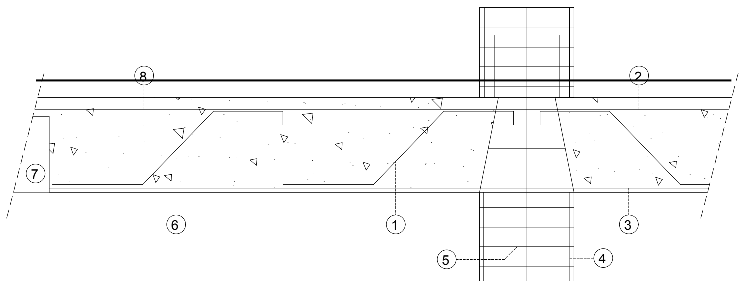
D59 Ground Floor Without Basement Below 1:20

1. Floor Finish (Lorca Natural Stone)
2. Concrete Caisson Floor Slab (Max:25cm Min:5cm)
3. Negative Reinforcement Bars
4. Rebar Steel Mesh 150.150.6
5. Nerve Reinforcement Bars
6. Base Reinforcement Bars



D60 Ground Floor With Basement Below 1:20

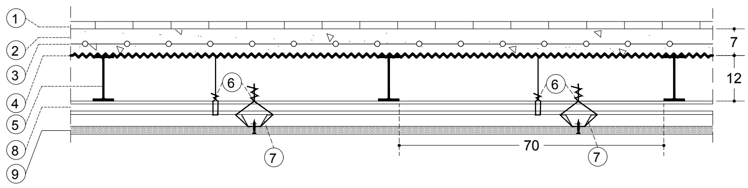
1. Punching Reinforcement Bars (1st Position)
2. Rebar Steel Mesh 150.150.6
3. Base Reinforcement Bars
4. Pillar Reinforcement
5. Pillar Supports
6. Punching Reinforcement Bars (2nd & 3rd Positions)
7. Caisson



D61 Ground Floor Cine Rialto Columns With Basement Below 1:20

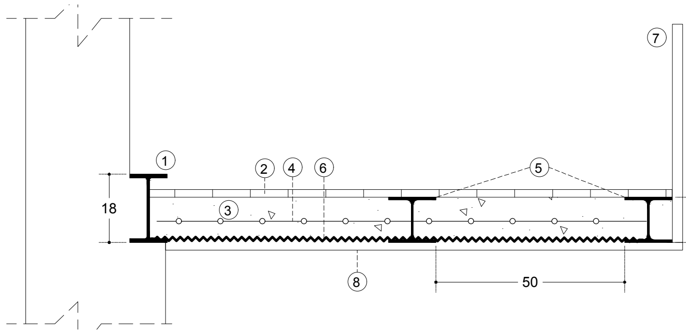
Mezzanine Floor

1. Floor Finish (Lorca Natural Stone)
2. Concrete Slab (7 cm)
3. Rebar Steel Mesh 150.150.6
4. Placner Plate Ribbed Lath
5. IPE 120 Beams (Existent)
6. Galvanised Wire
7. False Ceiling Frame Main "T"
8. False Ceiling Frame Cross "T"
9. Plasterboard False Ceiling (1.25 cm)



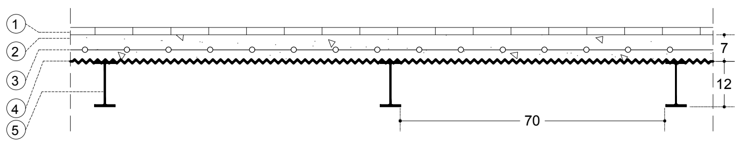
D62 Mezzanine Floor Cine Rialto Area 1:20

1. Existing Steel Profile IPE 180
2. Floor Finish (Lorca Natural Stone)
3. Concrete Slab (16 cm)
4. Rebar Steel Mesh 150.150.6
5. HEB 160 Beams (New)
6. Placner Plate Ribbed Lath
7. Tampered Glass Protection (3 cm)
8. Plasterboard False Ceiling (2cm)



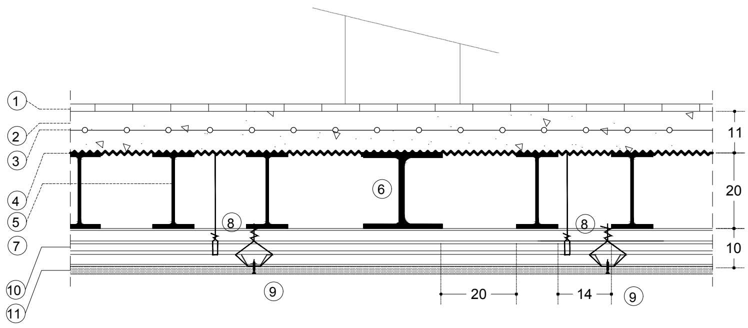
D63 Mezzanine Floor Passage 2 To Offices 1:20

1. Floor Finish (Lorca Natural Stone)
2. Concrete Slab (7 cm)
3. Rebar Steel Mesh 150.150.6
4. Placner Plate Ribbed Lath
5. IPE 120 Beams (New)



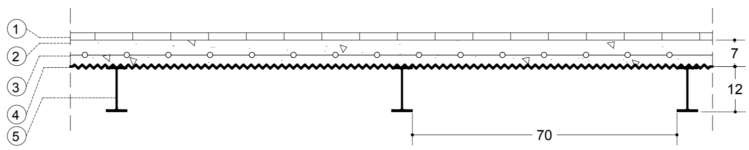
D64 Mezzanine Floor Rooms E14 & E01 1:20

1. Floor Finish (Oak Wooden Parquet)
2. Concrete Slab (11 cm)
3. Rebar Steel Mesh 150.150.6
4. Placner Plate Ribbed Lath
5. IPE 200 Beams (New)
6. HEB 200 Beam (New)
7. UPN 100 Beam (New)
7. Galvanised Wire
8. False Ceiling Frame Main "T"
9. False Ceiling Frame Cross "T"
10. Plasterboard False Ceiling (1.25 cm)



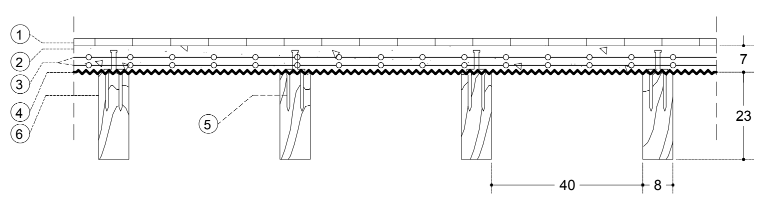
D65 Mezzanine Floor Rooms E02-E09 & E13 1:20

1. Floor Finish (Lorca Natural Stone)
2. Concrete Slab (7 cm)
3. Rebar Steel Mesh 150.150.6
4. Placner Plate Ribbed Lath
5. IPE 120 Beams (Existent)



D66 Mezzanine Floor Rooms E10 & E12 1:20

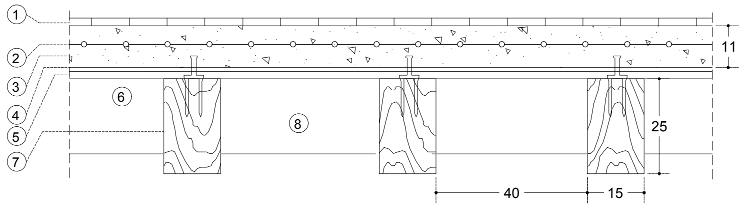
1. Floor Finish (Lorca Natural Stone)
2. Concrete Slab (7 cm)
3. Rebar Steel Mesh 150.150.6
4. Placner Plate Ribbed Lath
5. Reinforcement Claws
6. Recovered Timber Beams (23x8 cm)



D67 Mezzanine Floor Room E11 1:20

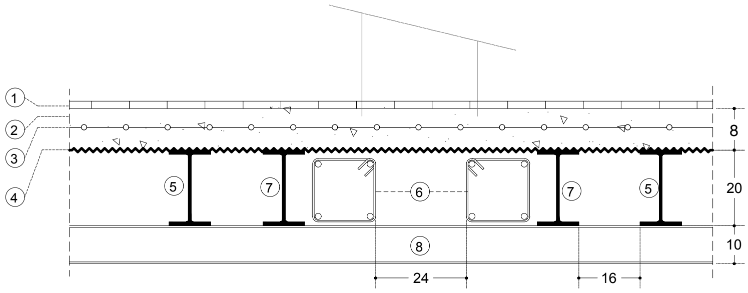
First Floor

1. Floor Finish (Herringbone Parquet)
2. Concrete Slab (11 cm)
3. Rebar Steel Mesh 150.150.6
4. Waterproof Membrane
5. Wood Planking (Existent)
6. Reinforcement Claws
7. Recovered Timber Beams (25x15 cm)
8. Coffered Ceiling (Existent)

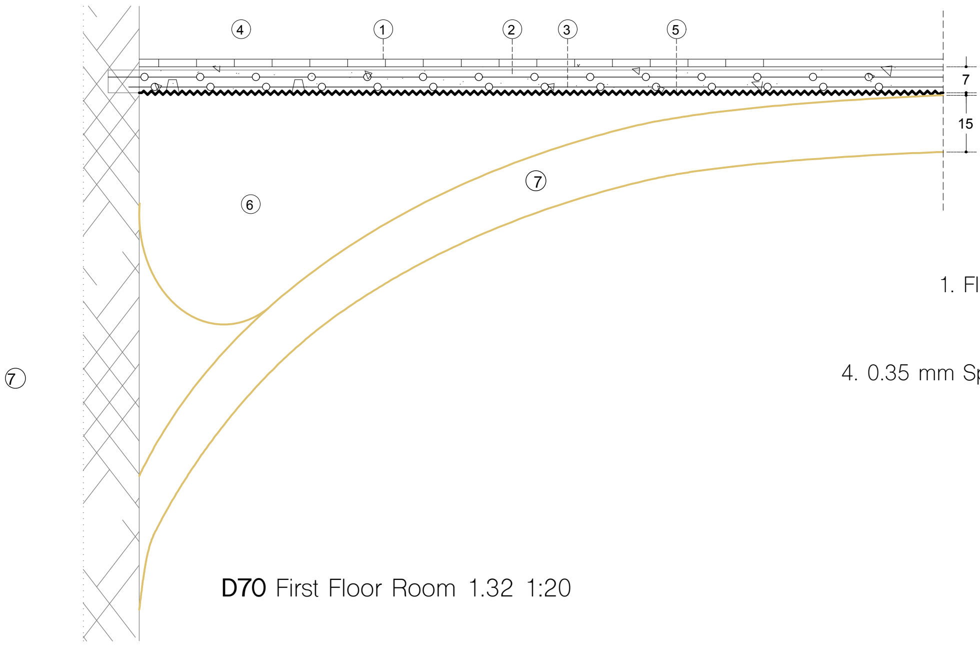


D68 First Floor Rooms 1.15 & 1.16 1:20

1. Floor Finish (Varies by the Room)
2. Concrete Slab (8 cm)
3. Rebar Steel Mesh 150.150.6
4. Placner Plate Rib Lath
5. IPE 200 Beams (New)
6. Concrete Tie Beam 4ø12 & eø6 c/20cm
7. IPE 200 Beams (Parallel to the Mounted Wall
8. UPN 100 Beam
9. Plasterboard False Ceiling (1,25 cm)



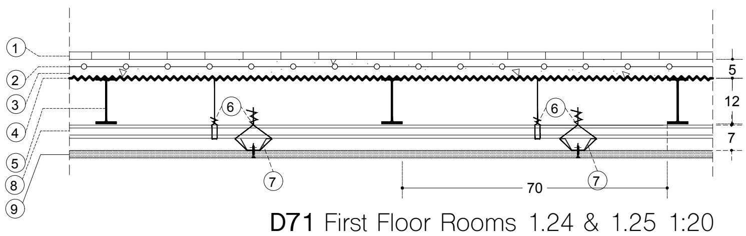
D69 First Floor Rooms 1.17-1.29 1:20



1. Floor Finish (Oak Wooden Flooring)
2. Concrete Slab (7 cm)
3. Rebar Steel Mesh 150.150.6
4. 0.35 mm Spacer for the Upper Mesh Support
5. Placner Plate Ribbed Lath
6. Marés Partition Fill
7. Marés Vault (15 cm)

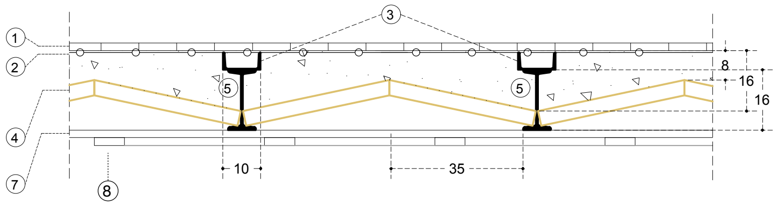
D70 First Floor Room 1.32 1:20

1. Floor Finish (Painted Ceramic)
2. Concrete Slab (5 cm)
3. Rebar Steel Mesh 150.150.6
4. Placner Plate Ribbed Lath
5. IPE 120 Beams (New)
6. Galvanised Wire
7. False Ceiling Frame Main "T"
8. False Ceiling Frame Cross "T"
9. Plasterboard False Ceiling (1.25 cm)



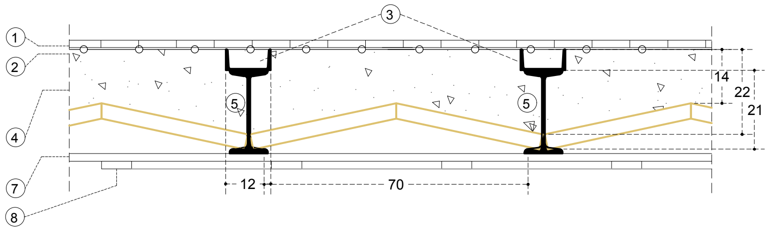
D71 First Floor Rooms 1.24 & 1.25 1:20

1. Floor Finish (Lorca Natural Stone)
2. Rebar Steel Mesh 150.150.6
3. Concrete Slab (Max:16 cm Min: 8cm)
4. UPN 100 Reinforcement Beams (New)
5. Ceramic Vault (Existent)
6. IPN 160 Beams (Existent)
7. Decorative Coffered Ceiling Planking (Existing)
8. Decorative Coffered Ceiling Beams (Existing)



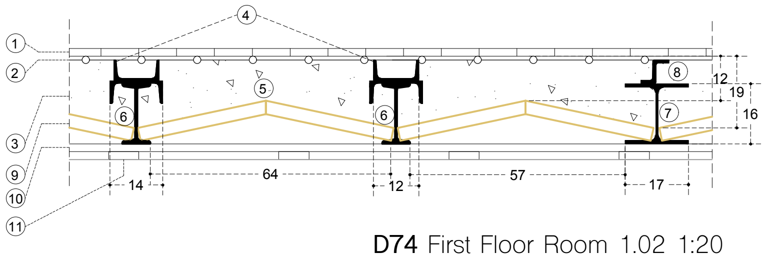
D72 First Floor Room 1.01 1:20

1. Floor Finish (Lorca Natural Stone)
2. Rebar Steel Mesh 150.150.6
3. Concrete Slab (Max:22 cm Min:14 cm)
4. UPN 120 Reinforcement Beams (New)
5. Ceramic Vault (Existent)
6. IPN 220 Beams (Existent)
7. Decorative Coffered Ceiling Planking (Existing)
8. Decorative Coffered Ceiling Beams (Existing)



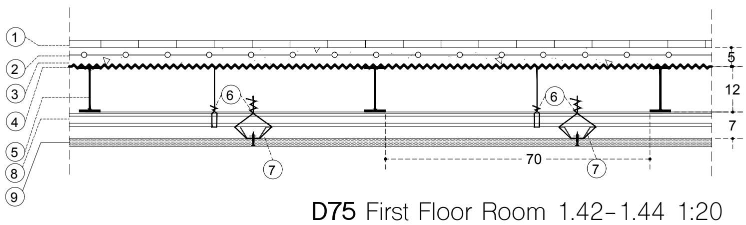
D73 First Floor Room 1.03 & 1.04 1:20

1. Floor Finish (Lorca Natural Stone)
2. Rebar Steel Mesh 150.150.6
3. Concrete Slab (Max:19 cm Min:12 cm)
4. UPN 140 Reinforcement Beams (New)
5. UPN 120 Reinforcement Beams (New)
6. IPN 220 Beams (Existent)
7. HEB 160 Reinforcement Beam (New)
8. Cold Formed Z Section Connector
9. Ceramic Vault (Existent)
10. Decorative Coffered Ceiling Planking (Existing)
11. Decorative Coffered Ceiling Beams (Existing)



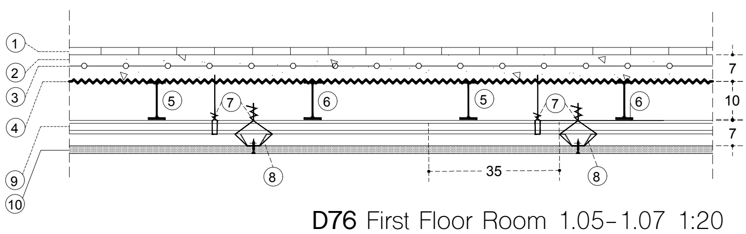
D74 First Floor Room 1.02 1:20

1. Floor Finish (Painted Ceramic)
2. Concrete Slab (5 cm)
3. Rebar Steel Mesh 150.150.6
4. Placner Plate Ribbed Lath
5. IPE 120 Beams (Existent)
6. Galvanised Wire
7. False Ceiling Frame Main "T"
8. False Ceiling Frame Cross "T"
9. Plasterboard False Ceiling (1.25 cm)



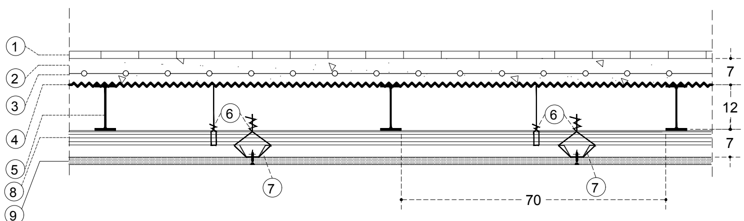
D75 First Floor Room 1.42-1.44 1:20

1. Floor Finish (Painted Ceramic)
2. Concrete Slab (7 cm)
3. Rebar Steel Mesh 150.150.6
4. Placner Plate Ribbed Lath
5. IPN 100 Beams (Existent)
6. IPN 100 Beams (New)
6. Galvanised Wire
7. False Ceiling Frame Main "T"
8. False Ceiling Frame Cross "T"
9. Plasterboard False Ceiling (1.25 cm)



D76 First Floor Room 1.05-1.07 1:20

1. Floor Finish (Painted Ceramic)
2. Concrete Slab (7 cm)
3. Rebar Steel Mesh 150.150.6
4. Placner Plate Ribbed Lath
5. IPE 120 Beams (Existent)
6. Galvanised Wire
7. False Ceiling Frame Main "T"
8. False Ceiling Frame Cross "T"
9. Plasterboard False Ceiling (1.25 cm)



D77 First Floor Room 1.08-1.11 1:20

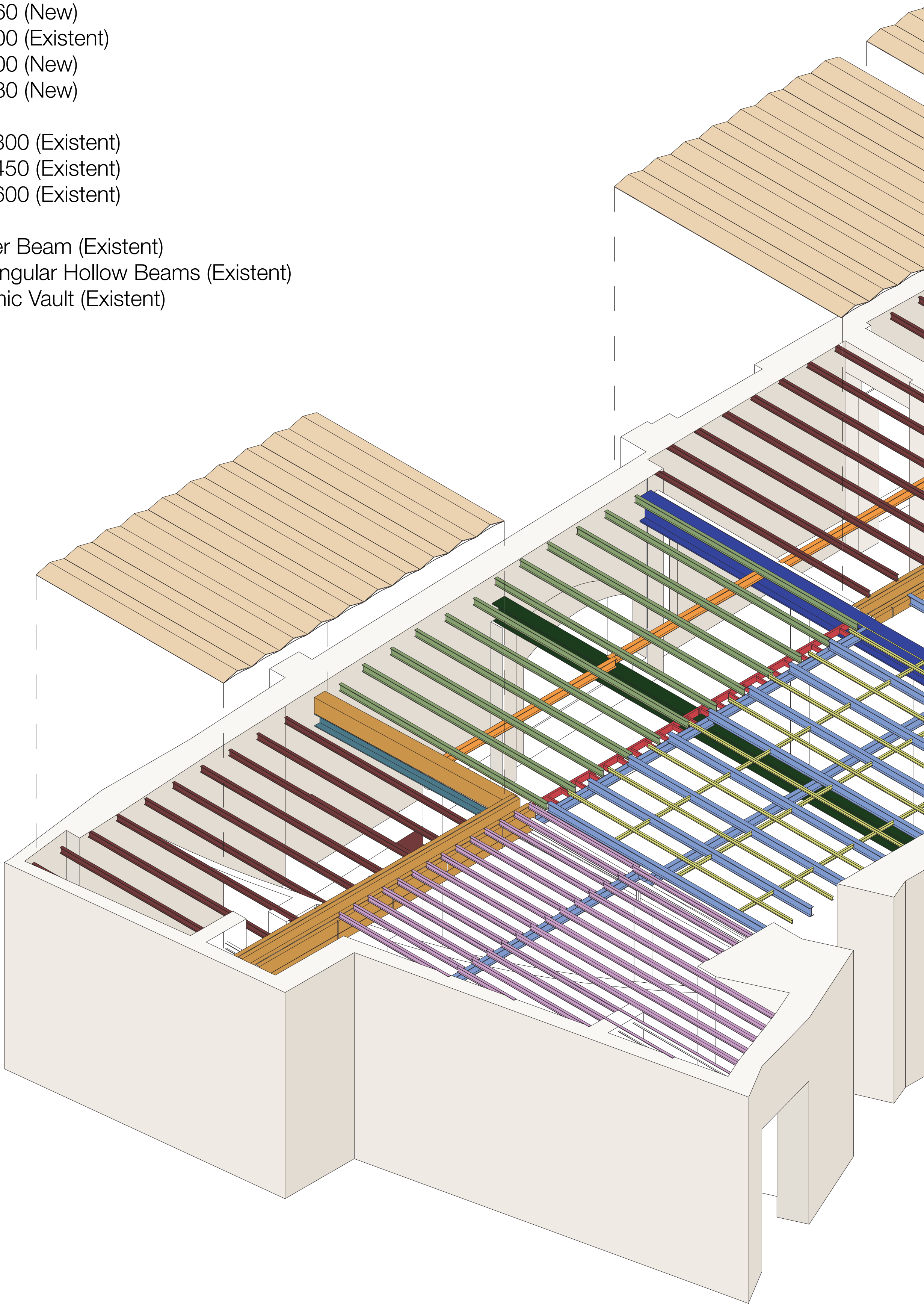
Beam & Joist Typology:

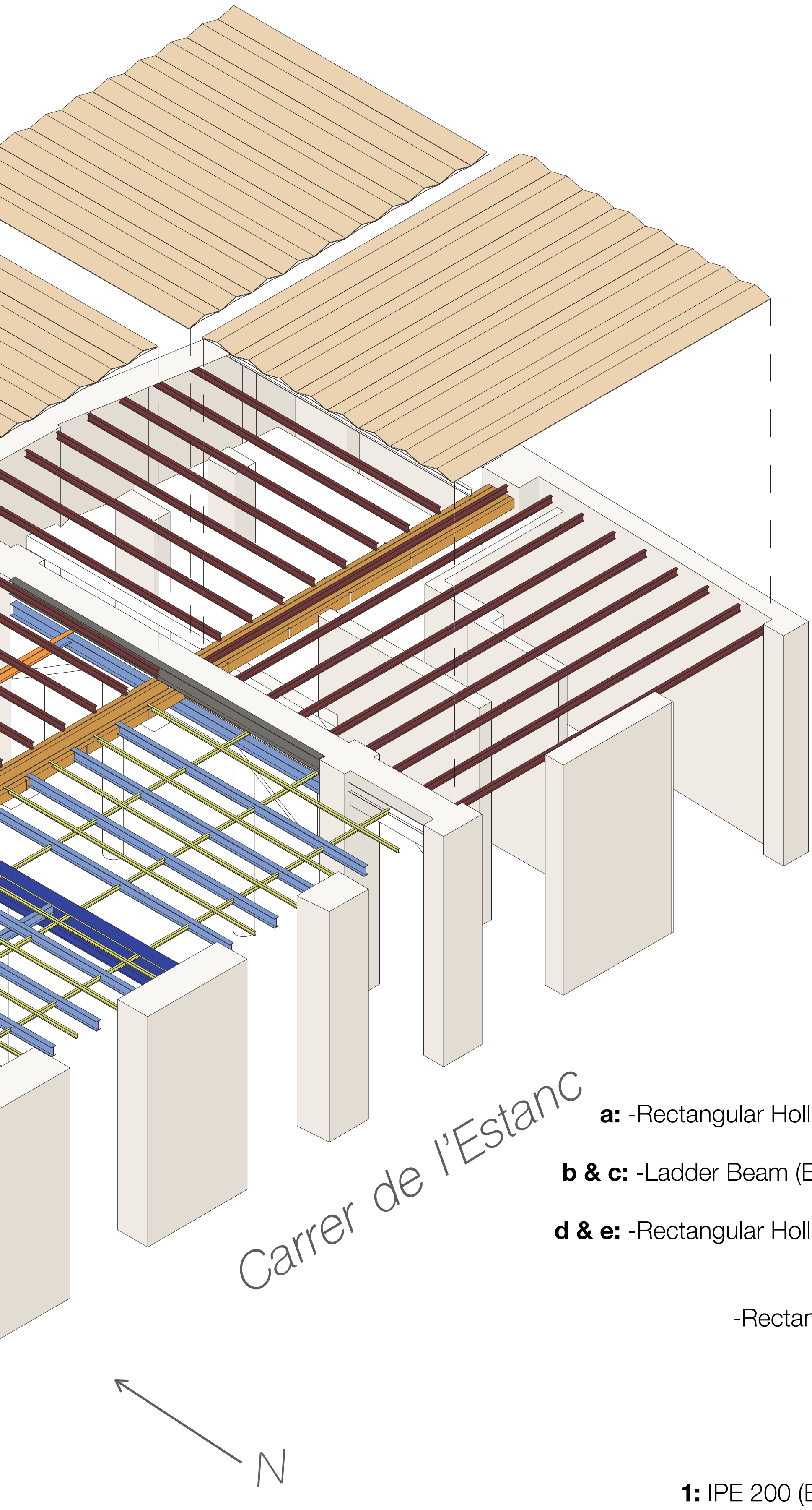
- IPE 80(Existent)
- IPE 120 (Existent)
- IPN 140 (Existent)
- IPE 160 (New)
- IPE 200 (Existent)
- IPE 200 (New)
- IPE 280 (New)

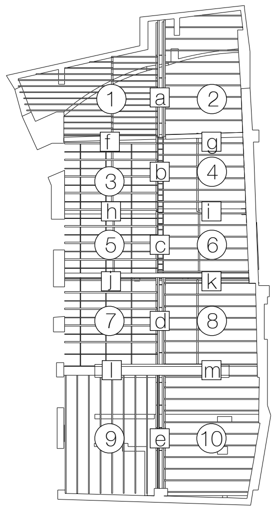
- HEB 300 (Existent)
- HEB 450 (Existent)
- HEB 600 (Existent)

- Ladder Beam (Existent)
- Rectangular Hollow Beams (Existent)
- Ceramic Vault (Existent)

*On the areas without ceramic vault the floor is completed with Placner Plate Ribbed Lath, concrete filling, rebar steel mesh 150.150.6, polyurea waterproofing, and Lorca Natural Stone finish.



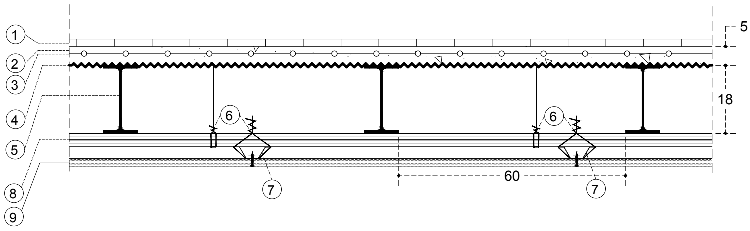




a: -Rectangular Hollow Beams (Existent) (10x30 cm) (x8)
-Marés Gravel Filling (Existent)
b & c: -Ladder Beam (Existent) (5x15 cm)(x4) (4x10cm)(x21)
-IPE 200 Beams (Existent) (x2)
d & e: -Rectangular Hollow Beams (Existent) (20x10 cm) (x4)
-Marés Gravel Filling (Existent)
f & g: -HEB 300 (Existent) (x1)
-Rectangular Hollow Beam (Existent) (x1) (g)
-IPE 200 Beam (Existent) (x1) (f)
h & i: -HEB 450 (Existent) (x1)
j & k: -HEB 600 (Existent) (x1)
l & m: -IPE 200 (Existent) (x2)
-IPE 280 (New) (x2)
1: IPE 200 (Existent)(x1) + IPE 120 (Existent)(x27)
2-8-9-10: IPN 140 (Existent) (x38) + IPE 200 (New) (x1) (ONLY #8)
3-5-7: IPE 200 (x12) + IPE 80 L (x12) + IPE 80 S (x39) (Existent)
4-6: IPE 200 (New) (x2) + IPE 160 (New) (x11)

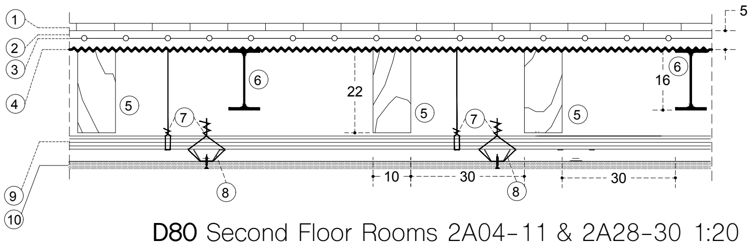
Second Floor

1. Floor Finish (Varies by the Room)
2. Concrete Slab (5 cm)
3. Rebar Steel Mesh 150.150.6
4. Placner Plate Ribbed Lath
5. IPE 180 Beams (Existent)
6. Galvanised Wire
7. False Ceiling Frame Main “T”
8. False Ceiling Frame Cross “T”
9. Plasterboard False Ceiling (1.25 cm)



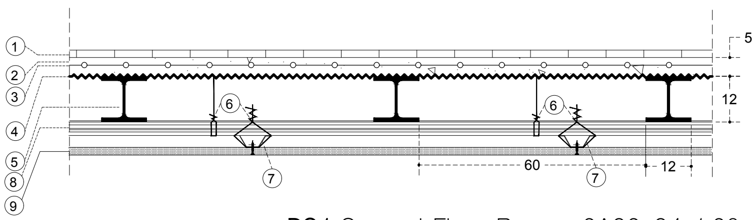
D79 Second Floor Rooms 2B01-07 & 2A14-16 1:20

1. Floor Finish (Varies by the Room)
2. Concrete Slab (5 cm)
3. Rebar Steel Mesh 150.150.6
4. Placner Plate Ribbed Lath
5. Timber Beams (Existent) (10x22cm)
6. IPE 160 Beams (New)
7. Galvanised Wire
8. False Ceiling Frame Main “T”
9. False Ceiling Frame Cross “T”
10. Plasterboard False Ceiling (1.25 cm)



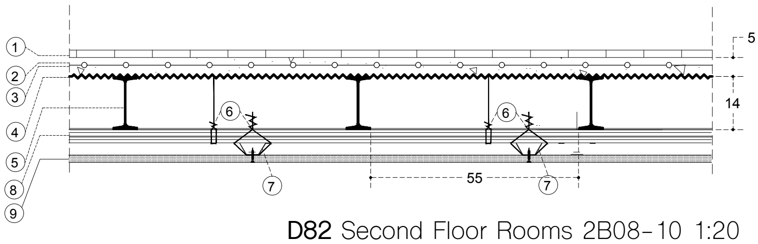
D80 Second Floor Rooms 2A04-11 & 2A28-30 1:20

1. Floor Finish (Hydraulic Tiles)
2. Concrete Slab (5 cm)
3. Rebar Steel Mesh 150.150.6
4. Placner Plate Ribbed Lath
5. HEB 120 Beams (New)
6. Galvanised Wire
7. False Ceiling Frame Main “T”
8. False Ceiling Frame Cross “T”
9. Plasterboard False Ceiling (1.25 cm)



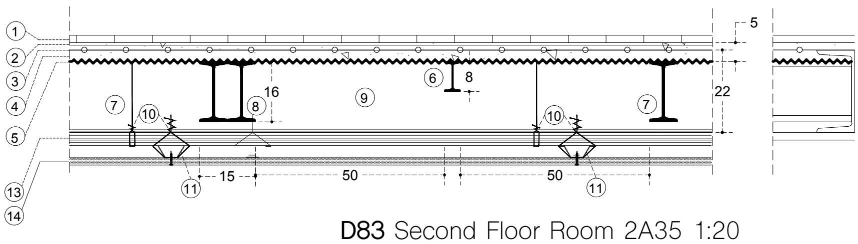
D81 Second Floor Rooms 2A32-34 1:20

1. Floor Finish (Oak Wooden Flooring)
2. Concrete Slab (5 cm)
3. Rebar Steel Mesh 150.150.6
4. Placner Plate Ribbed Lath
5. IPN 140 Beams (New)
6. Galvanised Wire
7. False Ceiling Frame Main “T”
8. False Ceiling Frame Cross “T”
9. Plasterboard False Ceiling (1.25 cm)



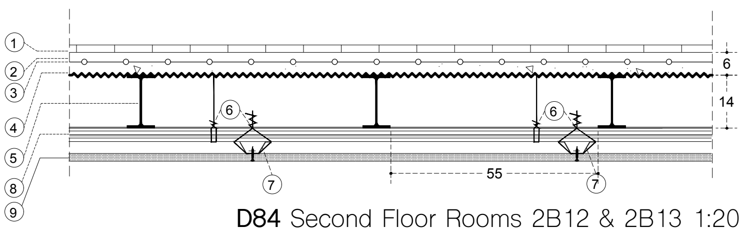
D82 Second Floor Rooms 2B08-10 1:20

1. Floor Finish (Lorca Natural Stone)
2. Polyurea Waterproofing Layer
3. Concrete Slab (5 cm)
4. Rebar Steel Mesh 150.150.6
5. Placner Plate Ribbed Lath
6. IPN 80 Beams (New)
7. IPN 160 Beams (Existent)
8. IPN 160 Reinforcement Beams (New)
9. UPN 220 Beam (Existent)
10. Galvanised Wire
11. False Ceiling Frame Main “T”
12. False Ceiling Frame Cross “T”
13. Plasterboard False Ceiling (1.25 cm)



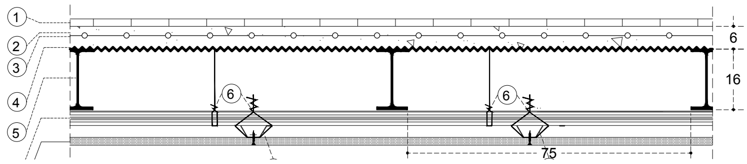
D83 Second Floor Room 2A35 1:20

1. Floor Finish (Varies by the Rooms)
2. Concrete Slab (6 cm)
3. Rebar Steel Mesh 150.150.6
4. Placner Plate Ribbed Lath
5. IPE 140 Beams (Existent)
6. Galvanised Wire
7. False Ceiling Frame Main “T”
8. False Ceiling Frame Cross “T”
9. Plasterboard False Ceiling (1.25 cm)



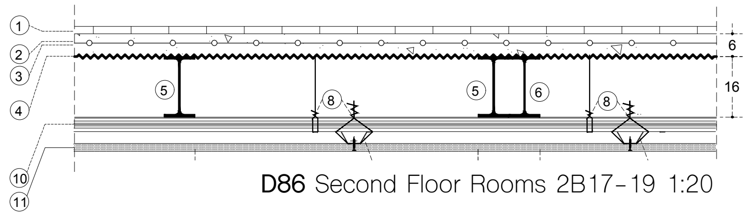
D84 Second Floor Rooms 2B12 & 2B13 1:20

1. Floor Finish (Varies by the Room)
2. Concrete Slab (6 cm)
3. Rebar Steel Mesh 150.150.6
4. Placner Plate Ribbed Lath
5. IPE 160 Beams (Existent)
6. Galvanised Wire
7. False Ceiling Frame Main “T”
8. False Ceiling Frame Cross “T”
9. Plasterboard False Ceiling (1.25 cm)



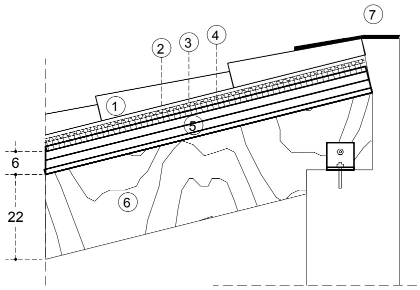
D85 Second Floor Rooms 2B14-16 1:20

1. Floor Finish (Varies by the Room)
2. Concrete Slab (6 cm)
3. Rebar Steel Mesh 150.150.6
4. Placner Plate Ribbed Lath
5. IPE 160 Beams (Existent)
6. IPE 160 Reinforcement Beams (New)
7. Galvanised Wire
8. False Ceiling Frame Main “T”
9. False Ceiling Frame Cross “T”
10. Plasterboard False Ceiling (1.25 cm)



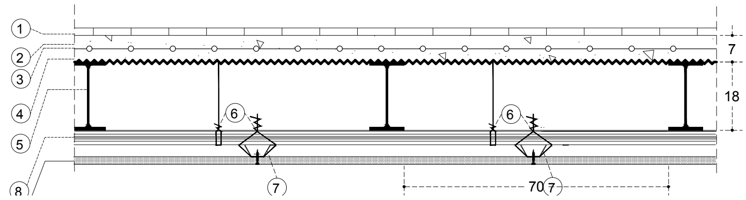
D86 Second Floor Rooms 2B17-19 1:20

1. Ceramic Roof Tiles (Double Layer)
2. Mortar (1cm) (For Asphalt Cloth Protection)
3. Asphalt Cloth
4. Vapor Barrier
5. Thermochip® Insulated Panel
6. Timber Beams (Existent) (10 x 22 cm)
7. Zinc Plate (0.5 cm)



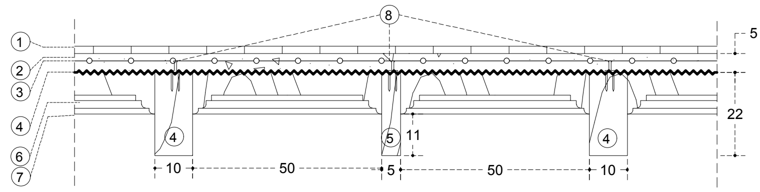
D87 Second Floor Roof Above Room1.13 1:20

1. Floor Finish (Oak Wooden Flooring)
2. Concrete Slab (7 cm)
3. Rebar Steel Mesh 150.150.6
4. Placner Plate Ribbed Lath
5. IPE 180 Beams (Existent)
6. Galvanised Wire
7. False Ceiling Frame Main “T”
8. False Ceiling Frame Cross “T”
9. Plasterboard False Ceiling (1.25 cm)



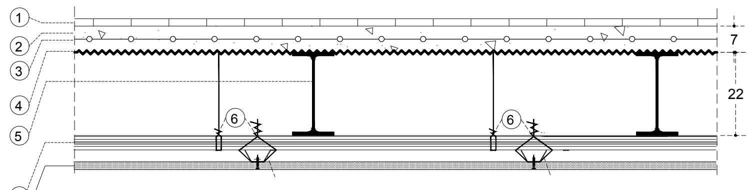
D88 Second Floor Rooms 2A25-27 1:20

1. Floor Finish (Varies by the Room)
2. Concrete Slab (5 cm)
3. Rebar Steel Mesh 150.150.6
4. Placner Plate Ribbed Lath
4. Timber Beams (10x22 cm) (Existent)
5. Coffered Ceiling (5x22) (Existent)
6. Wooden Planking
7. Decorative Coffered Ceiling Joists
8. Reinforcement Claws



D89 Second Floor Rooms 2A17-24 1:20

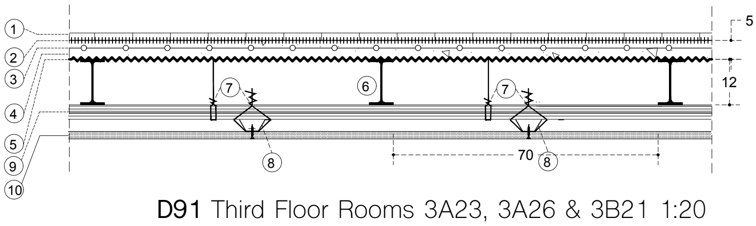
1. Floor Finish (Herringbone Parquet)
2. Concrete Slab (7 cm)
3. Rebar Steel Mesh 150.150.6
4. Placner Plate Ribbed Lath
5. IPE 220 Beams (New)
6. Galvanised Wire
7. False Ceiling Frame Main “T”
8. False Ceiling Frame Cross “T”
9. Plasterboard False Ceiling (1.25 cm)



D90 Second Floor Rooms 2A01-03 & 2B02 1:20

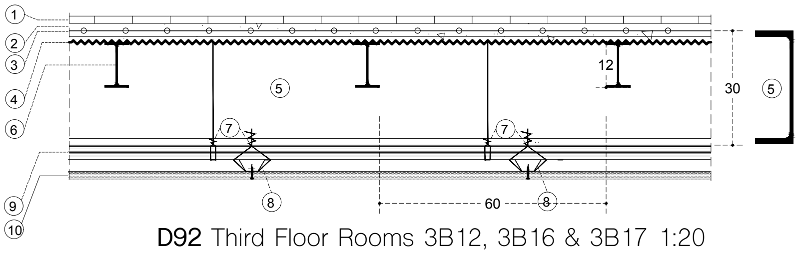
Third Floor

1. Floor Finish (Lorca Natural Stone)
2. Polyurea Waterproofing
3. Concrete Slab (5 cm)
4. Rebar Steel Mesh 150.150.6
5. Placner Plate Ribbed Lath
6. IPE 120 Beams (Existent)
7. Galvanised Wire
8. False Ceiling Frame Main “T”
9. False Ceiling Frame Cross “T”
10. Plasterboard False Ceiling (1.25 cm)



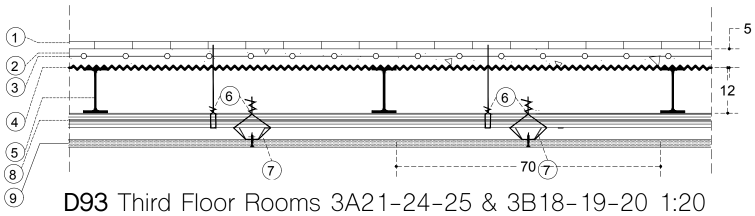
D91 Third Floor Rooms 3A23, 3A26 & 3B21 1:20

1. Floor Finish (Oak Wooden Flooring)
2. Concrete Slab (5 cm)
3. Rebar Steel Mesh 150.150.6
4. Placner Plate Ribbed Lath
5. UPE 300 Beam (New)
6. IPE 120 Beams (New)
7. Galvanised Wire
8. False Ceiling Frame Main “T”
9. False Ceiling Frame Cross “T”
10. Plasterboard False Ceiling (1.25 cm)



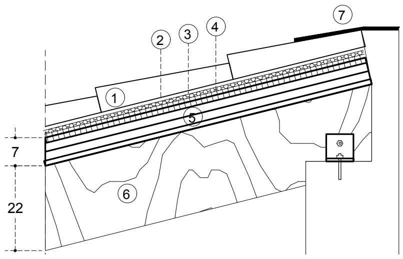
D92 Third Floor Rooms 3B12, 3B16 & 3B17 1:20

1. Floor Finish (Varies by the Room)
2. Concrete Slab (5 cm)
3. Rebar Steel Mesh 150.150.6
4. Placner Plate Ribbed Lath
5. IPE 120 Beams (Existent)
6. Galvanised Wire
7. False Ceiling Frame Main “T”
8. False Ceiling Frame Cross “T”
9. Plasterboard False Ceiling (1.25 cm)



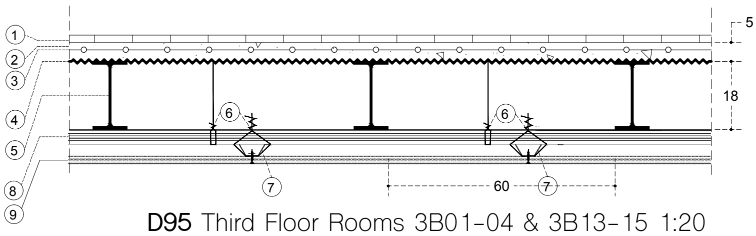
D93 Third Floor Rooms 3A21-24-25 & 3B18-19-20 1:20

1. Ceramic Roof Tiles (Double Layer)
2. Mortar (1cm) (For Asphalt Cloth Protection)
3. Asphalt Cloth
4. Vapor Barrier
5. Thermochip® Insulated Panel
6. Timber Beams (Existent) (10 x 22 cm)
7. Zinc Plate (0.5 cm)



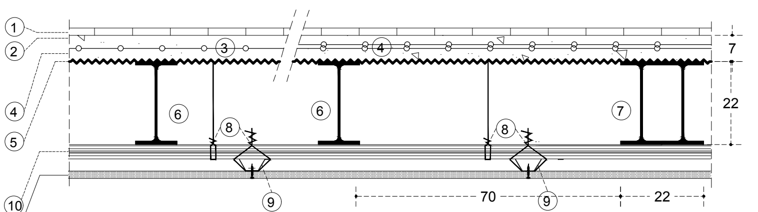
D94 Third Floor Roofs (All) 1:20

1. Floor Finish (Varies by the Room)
2. Concrete Slab (5 cm)
3. Rebar Steel Mesh 150.150.6
4. Placner Plate Ribbed Lath
5. IPE 180 Beams (New)
6. Galvanised Wire
7. False Ceiling Frame Main “T”
8. False Ceiling Frame Cross “T”
9. Plasterboard False Ceiling (1.25 cm)



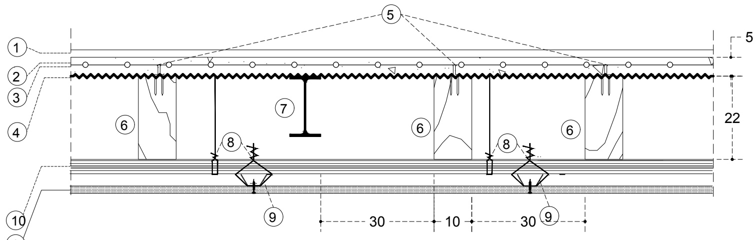
D95 Third Floor Rooms 3B01-04 & 3B13-15 1:20

1. Floor Finish (Herringbone Parquet)
2. Concrete Slab (7 cm)
3. Rebar Steel Mesh 150.150.6
4. Double Layer Rebar Steel Mesh 150.150.6
5. Placner Plate Ribbed Lath
6. IPE 220 Beams (New)
7. IPE 220 Double Beams (New)
8. Galvanised Wire
9. False Ceiling Frame Main “T”
10. False Ceiling Frame Cross “T”
11. Plasterboard False Ceiling (1.25 cm)



D96 Third Floor Rooms 3A01-04-05 & 3B05-11 1:20

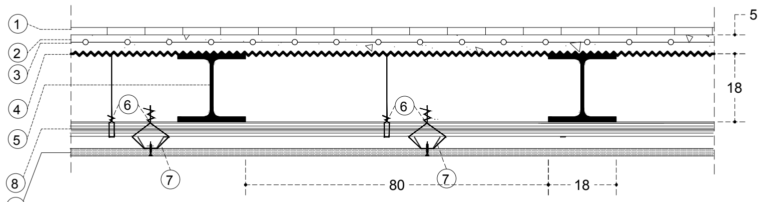
1. Floor Finish (Varies by the Room)
2. Concrete Slab (5 cm)
3. Rebar Steel Mesh 150.150.6
4. Placner Plate Ribbed Lath
5. Reinforcement Claws
6. Timber Beams (22x10cm) (Pine)
7. IPE 160 Reinforcement Beams (New)
8. Galvanised Wire
9. False Ceiling Frame Main “T”
10. False Ceiling Frame Cross “T”
11. Plasterboard False Ceiling (1.25 cm)



D97 Third Floor Rooms 3A02-18 1:20

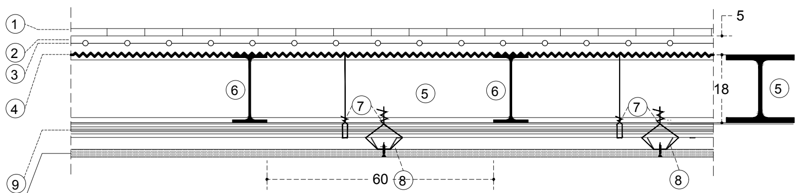
Fourth Floor

1. Floor Finish (Oak Wooden Flooring)
2. Concrete Slab (5 cm)
3. Rebar Steel Mesh 150.150.6
4. Placner Plate Ribbed Lath
5. HEB 180 Beams (New)
6. Galvanised Wire
7. False Ceiling Frame Main “T”
8. False Ceiling Frame Cross “T”
9. Plasterboard False Ceiling (1.25 cm)



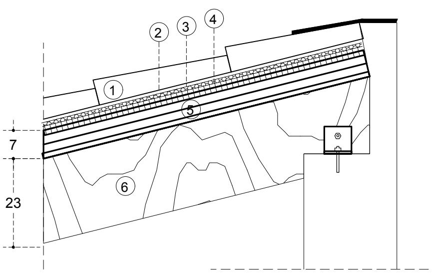
D98 Fourth Floor Areas 4.01 & 4.02 1:20

1. Floor Finish (Oak Wooden Flooring)
2. Concrete Slab (5 cm)
3. Rebar Steel Mesh 150.150.6
4. Placner Plate Ribbed Lath
5. HEB 180 Beams (New)
6. IPE 180 Beams (New)
7. Galvanised Wire
8. False Ceiling Frame Main “T”
9. False Ceiling Frame Cross “T”
10. Plasterboard False Ceiling (1.25 cm)



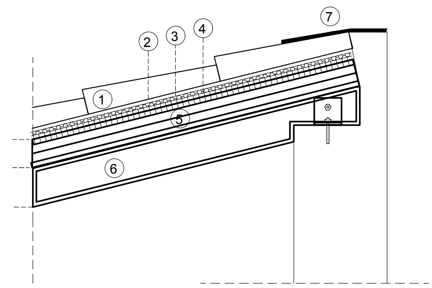
D99 Fourth Floor Extension Terrace Area 4.01 1:20

1. Ceramic Roof Tiles (Double Layer)
2. Mortar (1cm) (For Asphalt Cloth Protection)
3. Asphalt Cloth
4. Vapor Barrier
5. Thermochip® Insulated Panel
6. Timber Beams (Existent) (8 x 23 cm)
7. Zinc Plate (0.5 cm)



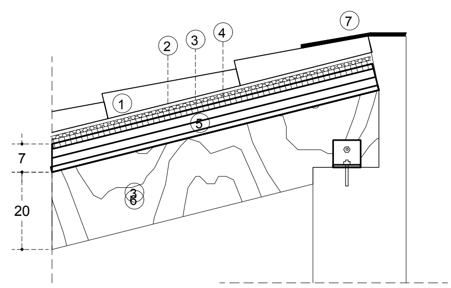
D100 Fourth Floor Extension Roof R1 1:20

1. Ceramic Roof Tiles (Double Layer)
2. Mortar (1cm) (For Asphalt Cloth Protection)
3. Asphalt Cloth
4. Vapor Barrier
5. Thermochip® Insulated Panel
6. IPE100 Beams (New)
7. Zinc Plate (0.5 cm)



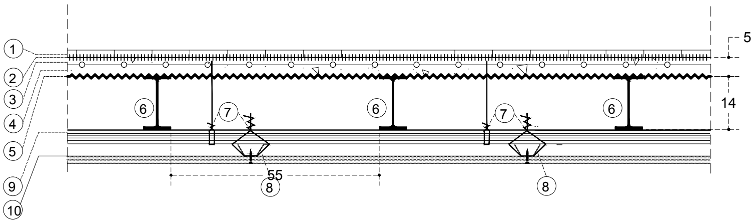
D101 Fourth Floor Extension Roof R2 1:20

1. Ceramic Roof Tiles (Double Layer)
2. Mortar (1cm) (For Asphalt Cloth Protection)
3. Asphalt Cloth
4. Vapor Barrier
5. Thermochip® Insulated Panel
6. Timber Beams (Existent) (10 x 20 cm)
7. Zinc Plate (0.5 cm)



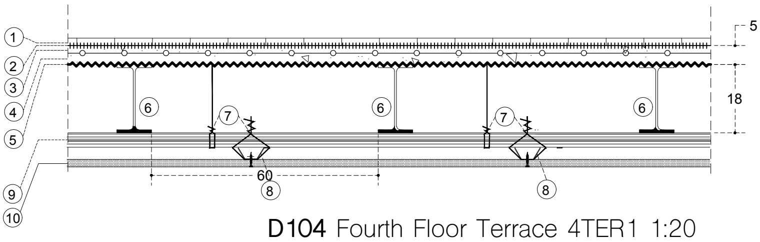
D102 Fourth Floor Extension Roof R3 1:20

1. Floor Finish (Lorca Natural Stone)
2. Polyurea Waterproofing
3. Concrete Slab (5cm)
4. Rebar Steel Mesh 150.150.6
5. Placner Plate Ribbed Lath
6. IPE 140 Beams (New)
7. Galvanised Wire
8. False Ceiling Frame Main “T”
9. False Ceiling Frame Cross “T”
10. Plasterboard False Ceiling (1.25 cm)



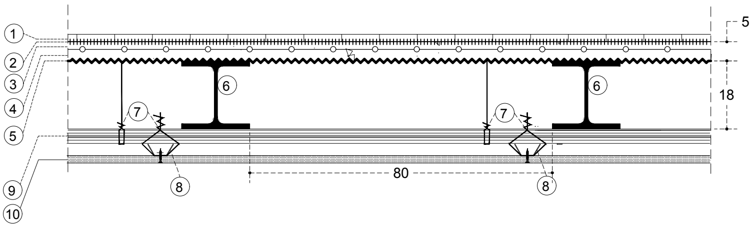
D103 Fourth Floor Terrace 4TER 1:20

1. Floor Finish (Lorca Natural Stone)
2. Polyurea Waterproofing
3. Concrete Slab (5cm)
4. Rebar Steel Mesh 150.150.6
5. Placner Plate Ribbed Lath
6. IPE 180 Beams (New)
7. Galvanised Wire
8. False Ceiling Frame Main “T”
9. False Ceiling Frame Cross “T”
10. Plasterboard False Ceiling (1.25 cm)



D104 Fourth Floor Terrace 4TER1 1:20

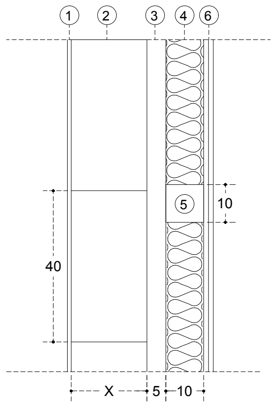
1. Floor Finish (Lorca Natural Stone)
2. Polyurea Waterproofing
3. Concrete Slab (5cm)
4. Rebar Steel Mesh 150.150.6
5. Placner Plate Ribbed Lath
6. HEB 180 Beams (New)
7. Galvanised Wire
8. False Ceiling Frame Main “T”
9. False Ceiling Frame Cross “T”
10. Plasterboard False Ceiling (1.25 cm)



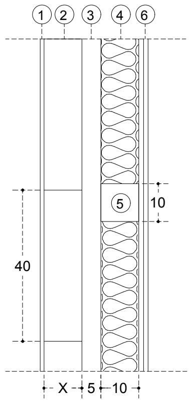
D105 Fourth Floor Terrace 4TER2 1:20

Wall Typologies

1. Kerakoll Biocalce® Intonaco Plaster (Varies by the Surface)
2. Marés Stone Wall (Existent) (Thickness Varies)
3. Air Gap
4. Insulation (Mineral Wool)
5. Fixing to Support
6. Pladur® Layer (Double Layer of 1.25 cm)



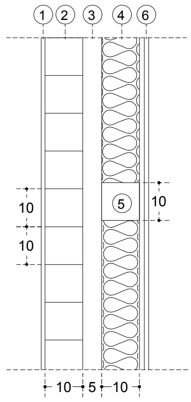
D106 Wall Type A: External Walls with Marés 1:20



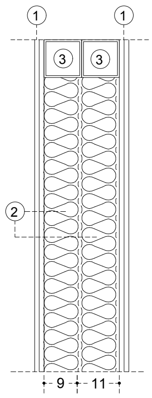
1. Kerakoll Biocalce® Intonaco Plaster (Varies by the Surface)
2. Marés Stone Wall (Existent) (Thickness Varies)
3. Air Gap
4. Insulation (Mineral Wool)
5. Fixing to Support
6. Pladur® Layer (Double Layer of 1.25 cm)

D107 Wall Type B: Internal Walls with Marés 1:20

1. Kerakoll Biocalce® Intonaco Plaster (Varies by the Surface)
2. Brick Wall (New)
3. Air Gap
4. Insulation (Mineral Wool)
5. Fixing to Support
6. Pladur® Layer (Double Layer of 1.25 cm)



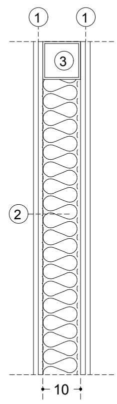
D108 Wall Type C: New Construction Brick Walls (4th Floor) 1:20



1.Pladur® Layer (Double Layer of 1.25 cm)
2. Insulation (Mineral Wool)
3. Fixing to Support

D109 Wall Type D: Internal Pladur Walls Between Apartment Units 1:20

1.Pladur® Layer (Double Layer of 1.25 cm)
2. Insulation (Mineral Wool)
3. Fixing to Support



D110 Wall Type D: Internal Pladur Walls Between Rooms 1:20

Beam & Joist Typology:

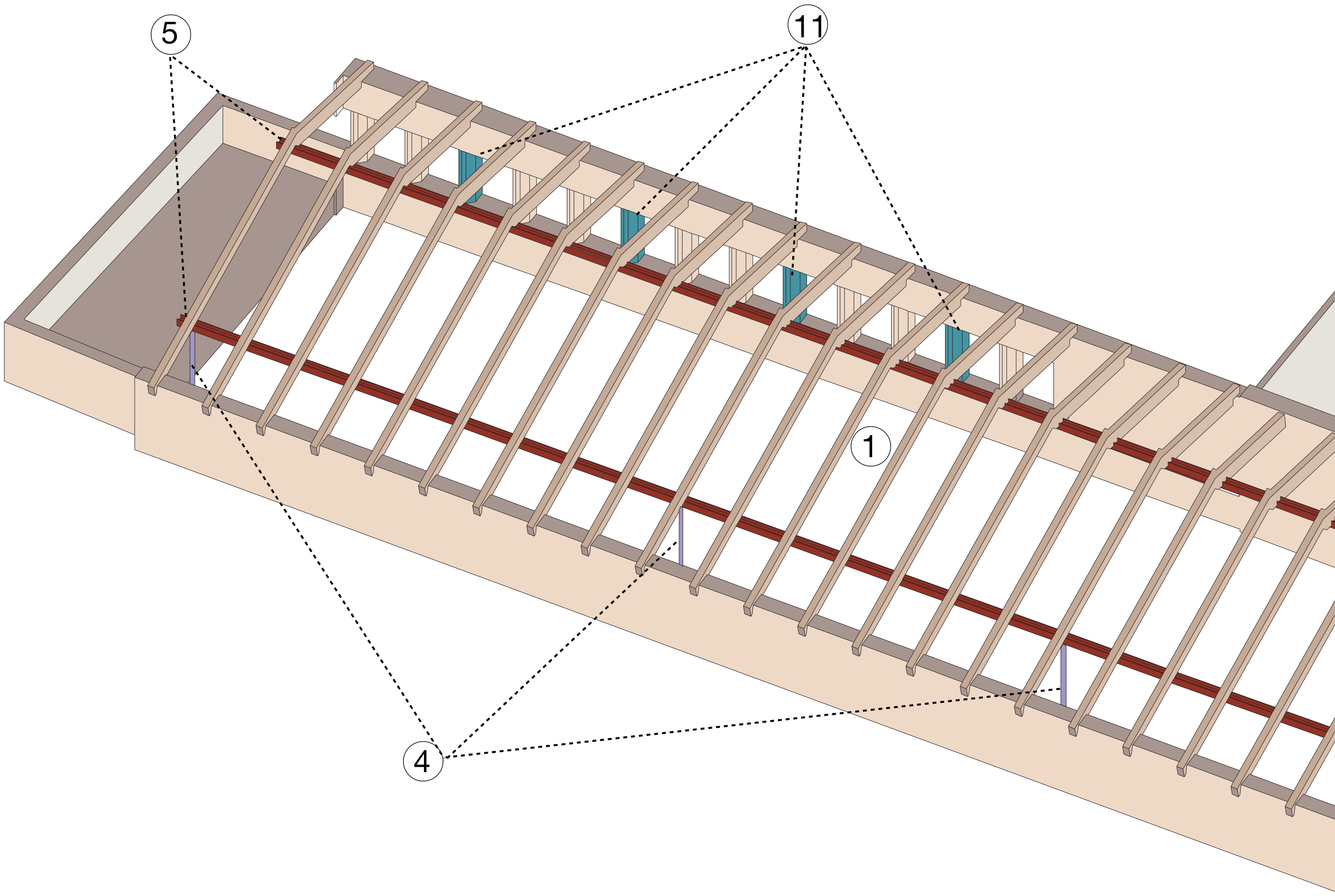
1. Timber Joists (Recovered) (10x23cm)
2. Timber Joists (New) (12x20cm)
3. Timber Joists (Recovered) (8x20cm)

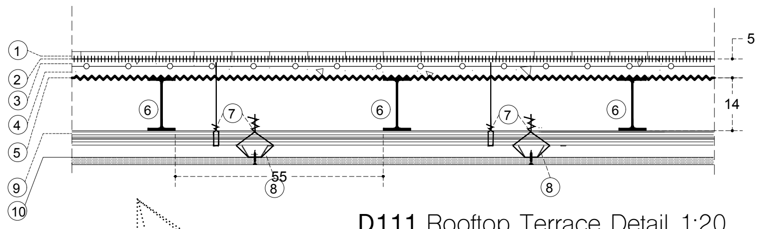
4. HEB100 Support Columns (New)
5. HEB120 Beams (New)
6. HEB140 Columns (New)
7. HEB 320 Beam (New)

8. UPN 80 Column (New) (x2)
9. UPE 220 Beam (New)
10.UPE400 Beam (New)

11. Tube Pillar Inside the Mares Window (70.70.4)
12. Timber Decorative Roof Extensions (Recovered)

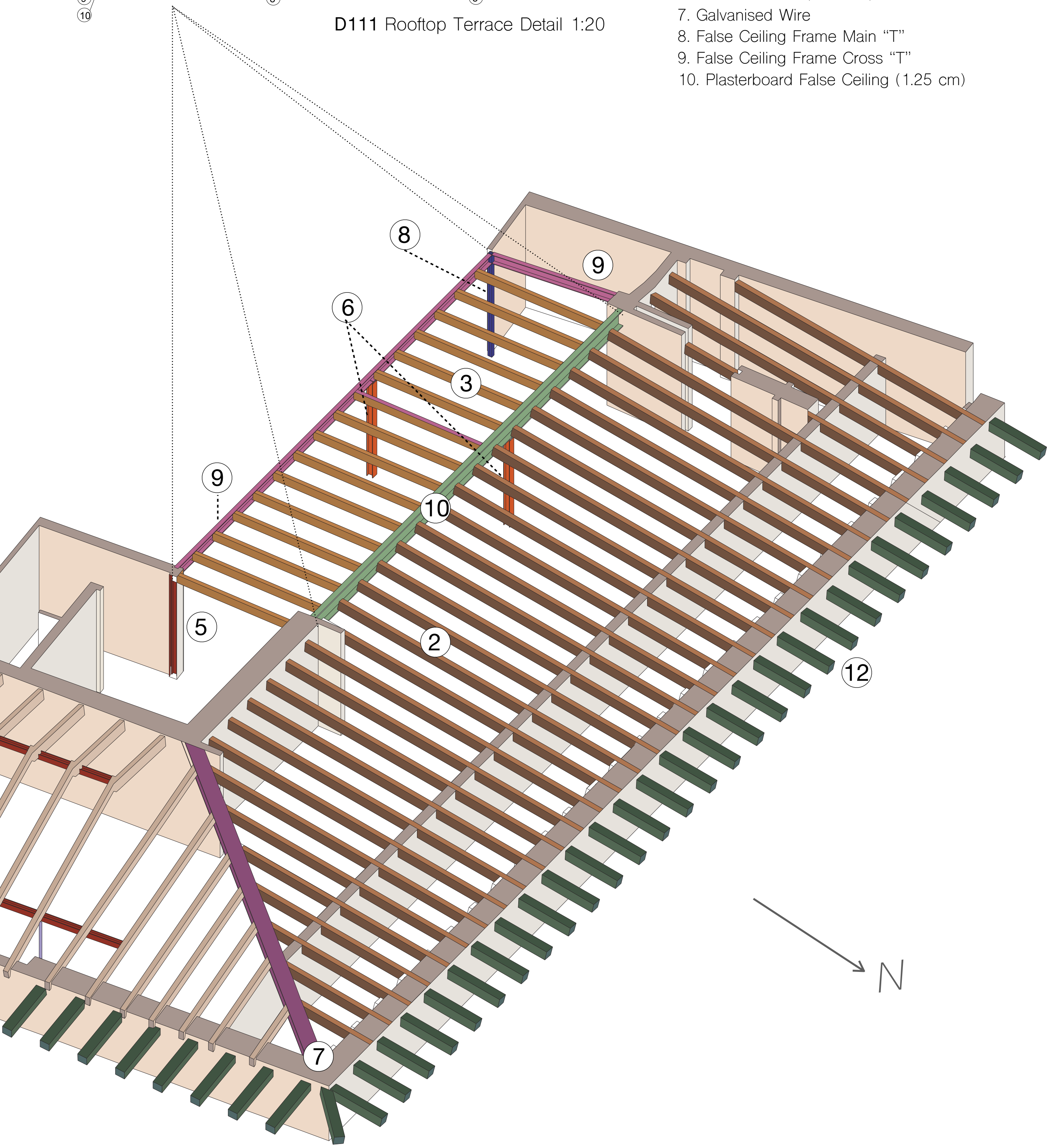
*The roof is completed with Thermochip® Insulated Panel, Vapour Barrier, Asphalt Cloth, 1cm Mortar and Ceramic Roof Tiles, except for the area indicated at drawing D111.





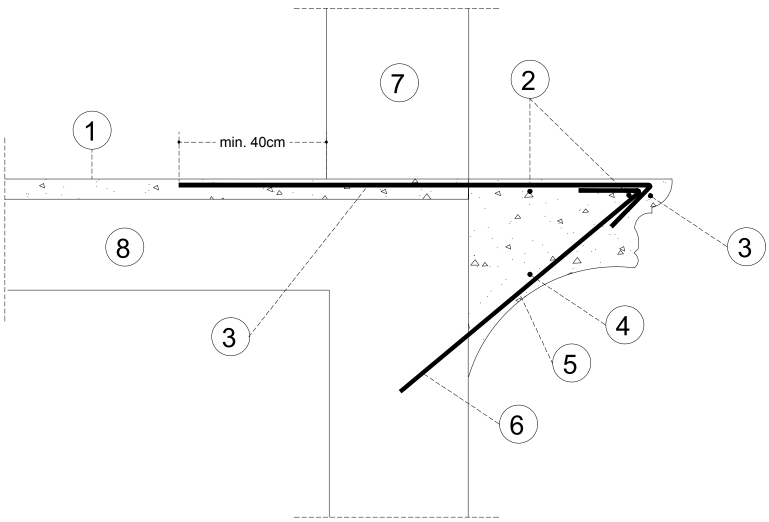
D111 Rooftop Terrace Detail 1:20

1. Floor Finish (Lorca Natural Stone)
2. Polyurea Waterproofing
3. Concrete Slab (5cm)
4. Rebar Steel Mesh 150.150.6
5. Placner Plate Ribbed Lath
6. Timber Beams (8x20cm)
7. Galvanised Wire
8. False Ceiling Frame Main “T”
9. False Ceiling Frame Cross “T”
10. Plasterboard False Ceiling (1.25 cm)

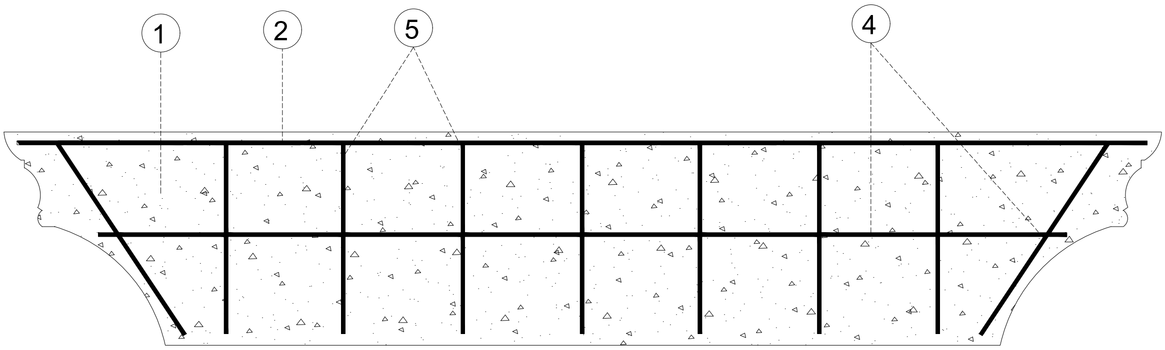


D112 Roof Structural Analysis

Balconies



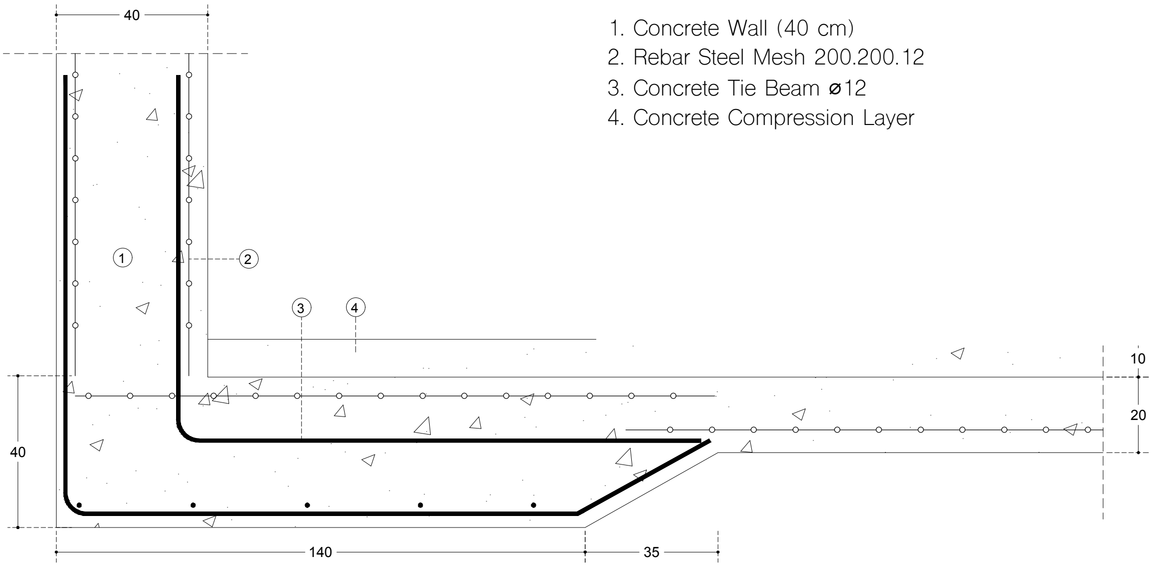
D113 Balconies Side Section 1:20



D114 Balconies Frontal Section 1:20

1. Concrete Compression Layer (Varies by the Room)
2. Concrete Tie Beam ø10
3. Concrete Tie Beam ø10C/30
4. Concrete Tie Beam ø8
5. Concrete Tie Beam ø8c/30
6. ø12 mm Drill Hole Filled With Epoxy Resin
7. Existing Wall
8. Existing Floor Slab

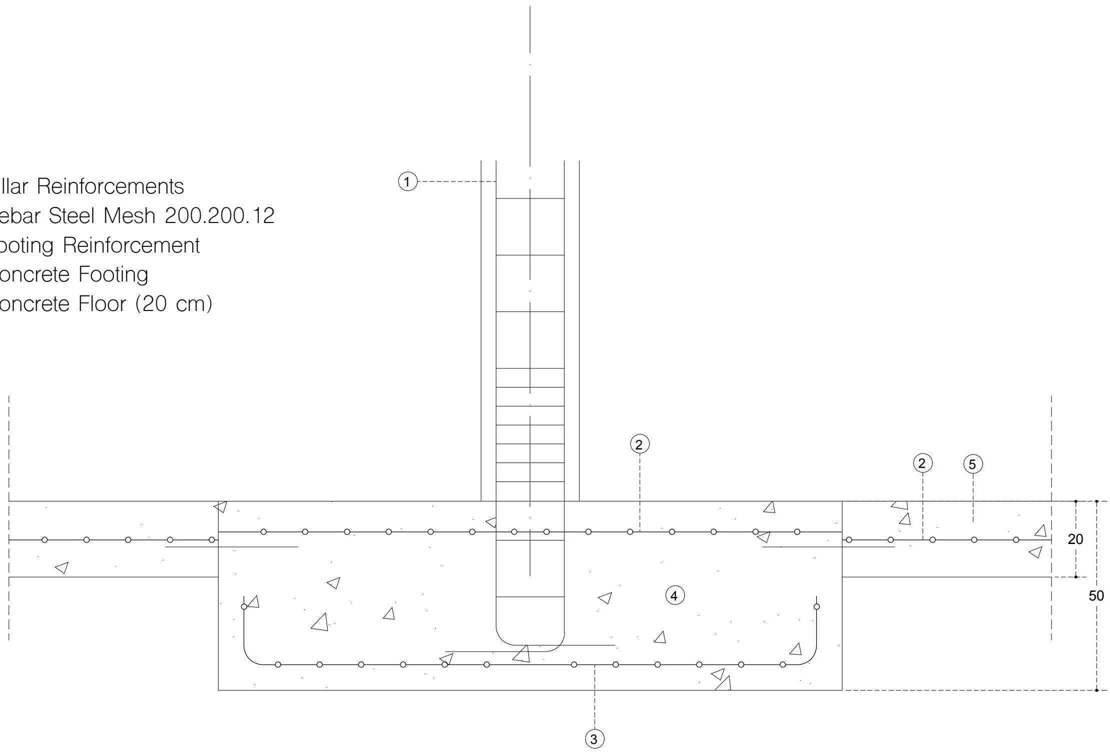
Basement



1. Concrete Wall (40 cm)
2. Rebar Steel Mesh 200.200.12
3. Concrete Tie Beam ø12
4. Concrete Compression Layer

D115 Basement Floor Corner Section 1:20

1. Pillar Reinforcements
2. Rebar Steel Mesh 200.200.12
3. Footing Reinforcement
4. Concrete Footing
5. Concrete Floor (20 cm)

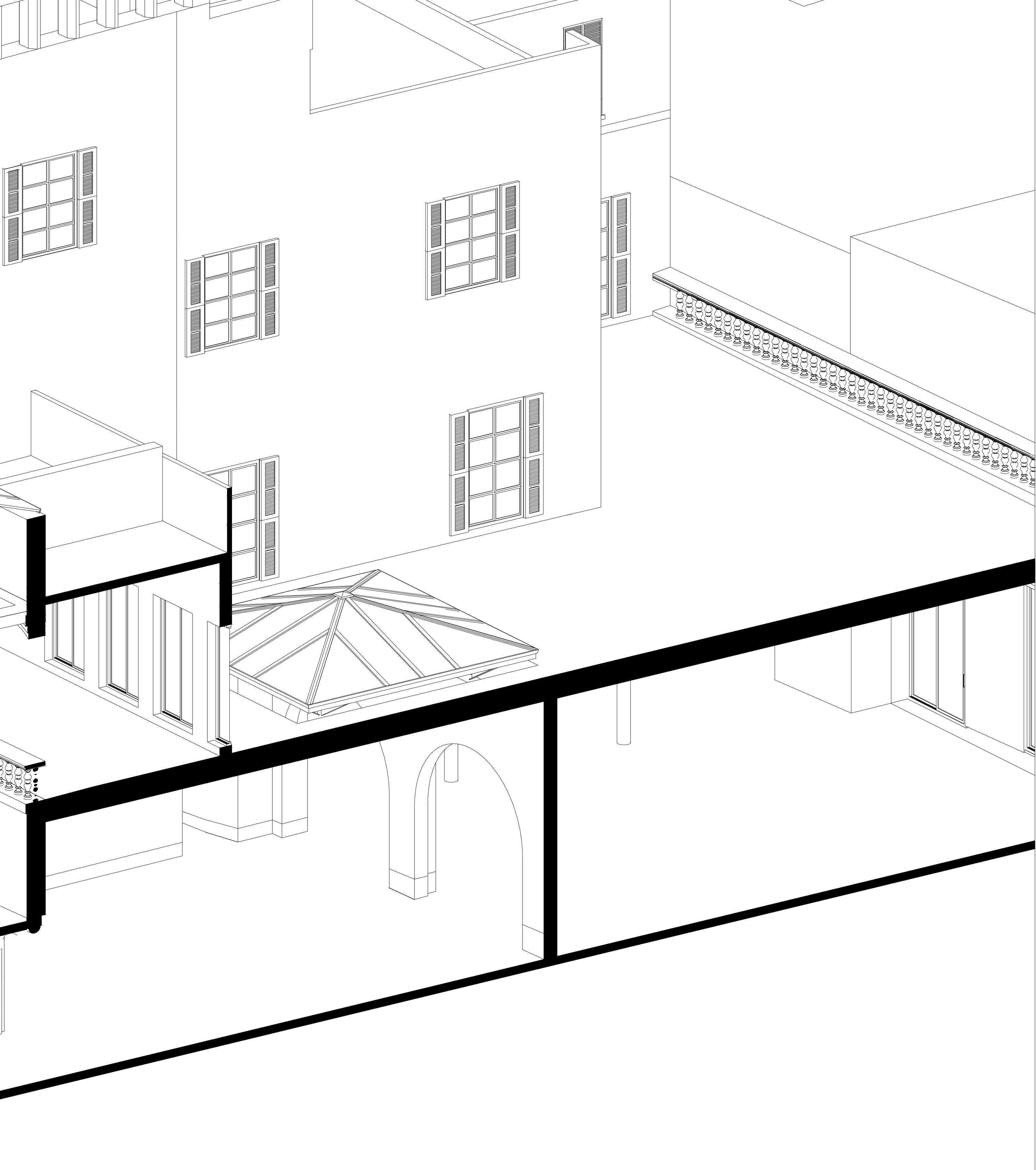


D116 Basement Floor Iron Column Footing Section 1:20

4.8 Final Project

4.8.1 Final Building Model

D117 Building Model (Unscaled)



D118 Building Axonometric Section Model (Unscaled)

4.9 Post-Construction Maintenance

4.9.1 Cinema Rialto Ceiling Leakage

The ongoing water leakage issue in the rehabilitated building, specifically from the terrace area to the ground floor, could be caused by a number of factors. One potential cause could be that the waterproof membrane that was reapplied during the rehabilitation may not have been properly installed or may have been damaged during the construction process. Additionally, the new tiles may not have been properly sealed or may have been installed over a poorly prepared surface, resulting in a failure of the waterproofing system.

Another possible cause could be that the water leakage is originating from a structural issue, such as a crack or failure in the roof or terrace structure. This could be due to poor design or construction, or could be the result of natural wear and tear over time. In this case, it would be necessary to evaluate the structural integrity of the roof and terrace in order to determine the source of the leak.

To solve this problem, a comprehensive assessment of the building's waterproofing system and structural integrity should be conducted. This assessment should include a thorough inspection of the roof and terrace, as well as an analysis of the waterproof membrane and tile installation. Any areas of damage or failure should be identified and repaired, and any design or construction issues should be addressed. It is also essential to conduct regular maintenance and inspections to ensure that the building's waterproofing system remains in good condition. This may include resealing or replacing tiles, as well as monitoring the condition of the waterproof membrane and making any necessary repairs.

In conclusion, the water leakage issue in the rehabilitated building could be caused by a variety of factors including improper installation or damage to the waterproof membrane and tiles, or structural issues such as crack or failure in the roof or terrace structure. To solve this problem, a comprehensive assessment of the building's waterproofing system and structural integrity should be conducted and regular maintenance and inspections should be done.

4.9.2 Exterior Paint

The exterior walls of Rialto Living are made of marés stone, which is a type of limestone that is commonly used in architectural elements such as facades and cladding. This type of stone is known for its durability and resistance to weathering, but it can also be prone to discolouration and staining over time. To maintain the aesthetic appearance of the building, the owners of Rialto Living have implemented a regular repainting schedule that takes place every 3-5 years.

The primary cause of the need for frequent repainting is the exposure of the building's exterior to the elements. The marés stone is susceptible to discolouration and staining due to the effects of UV rays, rain, and other environmental factors. Additionally, the building's location in a coastal area may also contribute to the need for frequent repainting, as salt and sea air can be particularly damaging to the stone.

To address this issue, there are several alternative solutions that can be implemented to increase the repainting time and reduce the need for frequent maintenance. One solution would be to apply a protective coating to the exterior of the building. This coating can help to seal the stone and protect it from the effects of weathering. Another solution would be to install a shading system, such as a pergola or awning, to reduce the amount of direct sunlight that the building is exposed to.

In addition, regular cleaning and maintenance can also help to prolong the life of the paint and reduce the need for frequent repainting. This includes cleaning the exterior walls regularly, using a mild detergent and a low-pressure water spray, to remove dirt and grime that can accumulate over time. Additionally, regular inspections can be conducted to identify any areas of the building that may require additional attention, such as areas that are particularly exposed to the elements or areas that may be showing signs of wear and tear.

Overall, the repainting process of the exterior walls of Rialto Living is an important part of maintaining the aesthetic appearance and structural integrity of the building. By implementing alternative solutions and regular maintenance, the building owners can increase the repainting time and reduce the need for frequent maintenance.

4.9.3 Skylight

The glass skylight installed above the Cafe Rialto by architect Sergi Bastidas is a unique architectural feature that provides natural light to the Cafe area while maintaining the integrity of the building's design. The pyramid-shaped skylight is constructed with aluminium mullions and transoms, which allows for maximum light penetration into the Cafe.

However, to address the issue of overheating, a layer of film was applied to the transparent surfaces. This film acts as a shading device, blocking excessive sunlight and preventing the Cafe area from getting too warm. According to the owner of the building, Barbara Bergman, this film discolours after a period of time and becomes a shade of sepia. As a result, the film has to be removed every winter and replaced with a new one each summer. The film is likely a solar control film, which is commonly used in architecture to regulate the amount of sunlight that enters a building. Although this film provides a quick solution to overheating, the constant renewal of the film is not sustainable and may result in long-term damage to the skylight.

An alternative solution to this problem could be to install a shading system that operates automatically. For example, a louvered roof system that adjusts based on the sun's angle could be implemented. Another option is to install a dynamic glazing system, where the level of transparency can be adjusted depending on the amount of sunlight entering the building. This type of system would not only reduce the need for a shading film, but also increase the energy efficiency of the building.

106 Installation of the Skylight Glass Panels © Bastidas Architecture

Ultimately, the constant renewal of the shading film is not a sustainable solution. Alternative solutions, such as an automatic shading system or dynamic glazing, should be considered to increase the longevity and energy efficiency of the building.

part III

05 Embodied Energy & Embodied Carbon Calculation

107 Corridor of Rialto Living Apartments
© Bastidas Architecture

5.1 Premise

Life Cycle Assessment (LCA) is a valuable tool for understanding the environmental impact of a building throughout its entire life cycle, from the extraction of raw materials to the construction and operation of the building, as well as its eventual demolition and disposal. By conducting an LCA, we can identify the key environmental hotspots associated with a building and develop strategies to minimise these impacts. Additionally, LCA can help to inform decision-making throughout the design, construction, and operation of the building, ultimately leading to more sustainable and efficient buildings.

CRADLE-TO-GATE PROCESS

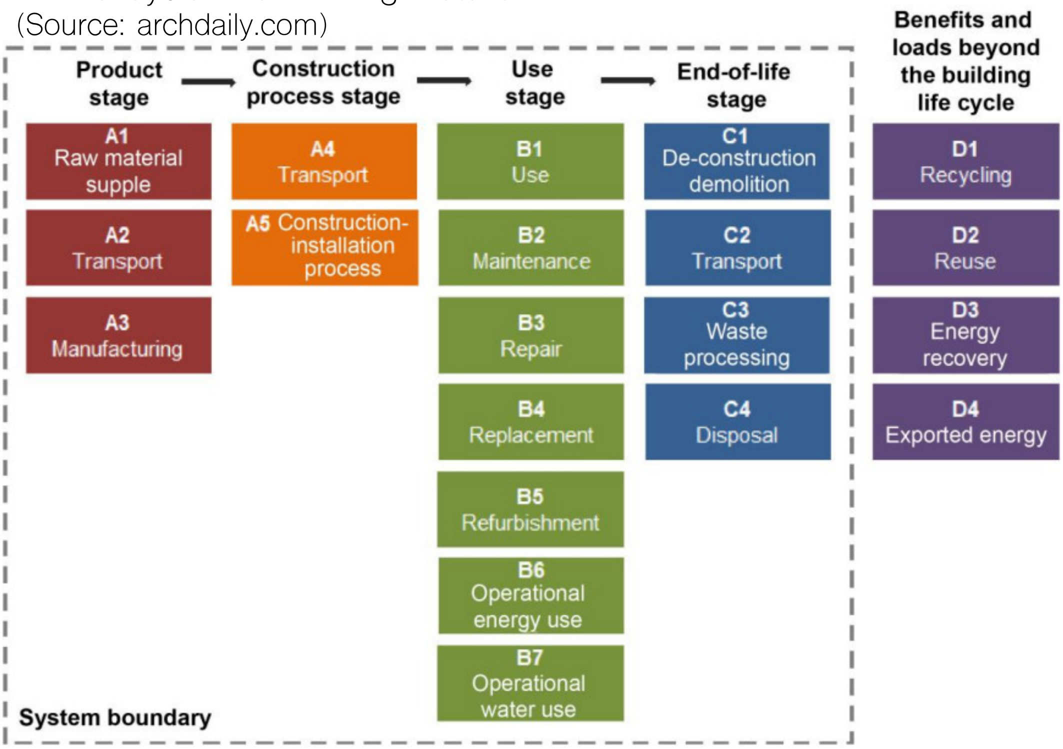
The cradle-to-gate process of a building refers to the entire life cycle of a building from the extraction of raw materials (the "cradle") to the point when the building is ready for use (the "gate"). This includes all stages of the building's life cycle, including the production of materials and components, transportation, manufacturing, construction, and end-of-life disposal.

EMBODIED ENERGY AND EMBODIED CARBON

Embodied energy and embodied carbon calculations are a key component of Life Cycle Assessment (LCA) of a building. Embodied energy refers to the total amount of energy required to extract, process, transport, and install all of the materials used in a building. Embodied carbon, on the other hand, is the total amount of greenhouse gases emitted during the production and transportation of the materials used in a building.

The analysis comprises three distinct phases known as A1-A3, which encompass the product stages of raw material extraction, its transportation, and manufacturing. To ensure reliable data for the majority of materials, the Öekobaudat database is primarily utilized. However, for specific or hard-to-find materials such as marés sandstone, Kerakoll BioCalce Plaster, Pladur Partition Wall, and

S9 Life Cycle of a Building Material
(Source: archdaily.com)



Thermochip Roof Panel, the Environmental Product Declaration (EPD) database is employed.

EPD, or Environmental Product Declaration, serves as a standardized and verified document that provides transparent and relevant environmental information about a product or system.

ÖEKOBAUDAT

The ÖkoBAUDAT is a German database that provides detailed information on the environmental performance of building products and components. It is used as a reference tool to assess the environmental performance of the products in the context of Life Cycle Assessment (LCA) of buildings. The database includes information on the materials and production processes used in the products, as well as the associated environmental impacts such as energy consumption and greenhouse gas emissions. The data in the ÖkoBAUDAT is collected from product manufacturers and verified by independent experts, making it a reliable source of information for LCA studies. By using this database as a reference for the Life Cycle Assessment, it can be used to identify the key environmental hotspots of the building and develops strategies to minimize these impacts. Additionally, it can help to inform decision-making throughout the design, construction, and operation of the building, ultimately leading to more sustainable and efficient buildings.

5.2 Primary Energy Intensity & Global Warming Potential

Primary Energy Intensity and Global Warming Potential are important during the construction process as they impact the overall energy efficiency and environmental impact of a building.
In terms of materials, low-GWP and energy-efficient materials are prioritised in the construction process to reduce the carbon footprint and embodied energy of a building. For example, using insulation made from recycled materials or materials with low embodied energy reduces the GWP and embodied energy of the building, contributing to its overall sustainability.

During construction, the use of energy-efficient technologies, such as high-efficiency HVAC systems and renewable energy sources, also help reduce the building's primary energy intensity, contributing to its energy efficiency and sustainability.

In addition, the use of life-cycle assessment and other sustainability tools helps to evaluate the embodied energy and carbon of different materials, informing decision-making and ensuring that materials with low environmental impact are used.

The calculation process begins by determining the dimensions of each material unit, which are then multiplied by their corresponding density to obtain the weight. This weight is crucial for accurately assessing the environmental impact. Subsequently, the existing parts of the building are distinguished from the newly added ones. This segregation enables the determination of the Primary Energy Input (PEI) and Global Warming Potential (GWP) values specifically attributed to the newly introduced materials.

5.3 Inventory Analysis of the Building Materials

T3 Inventory List of Rialto Living

	ELEMENT	MATERIAL CLASS	[kg/m]	density [kg/m2]	[kg/m3]	WEIGHT ALL [kg]	WEIGHT NEW [kg]
Basement Floor	Concrete Filling (30cm)	concrete			2.400,00	74.865,60	74.865,60
	Concrete Filling (50cm)	concrete			2.400,00	152.952,00	152.952,00
	Rebar Steel Mesh 150.150.6	metal			7.850,00	15.797,34	15.797,34
	Rebar Steel Mesh 150.150.6 (Double Layer)	metal			7.850,00	683,89	683,89
	Polyurethane Flooring	Plastic		0,15		50,71	50,71
	Concrete Filling (30cm) (Phase 1)	concrete			2.400,00	80.078,40	80.078,40
Ground Floor	Lorca Natural Stone 70x70 cm Tiles	stone		52,56		58.236,48	58.236,48
	Polyurea Waterproofing	Plastic		0,15		129,73	129,73
	Concrete Filling (7cm)	concrete			2.400,00	147.262,08	147.262,08
	Rebar Steel Mesh 150.150.6	metal			7.850,00	52.186,80	52.186,80
	Concrete Caisson Min (5cm)	concrete			2.400,00	11.230,80	11.230,80
	Concrete Caisson Min (25cm)	concrete			2.400,00	82.710,00	82.710,00
	Nerve and Base Reinforcement Bars	metal			7.850,00	47.100,00	47.100,00
Mezzanine Floor	Rebar Steel Mesh 150.150.6	metal			7.850,00	15.039,03	15.039,03
	Placner Plate Rib Lath	metal			7.850,00	1.253,25	1.253,25
	Concrete Slab (7 cm)	concrete			2.400,00	42.957,60	42.957,60
	Concrete Slab (5 cm)	concrete			2.400,00	2.000,40	2.000,40
	Concrete Slab (11 cm)	concrete			2.400,00	6.956,40	6.956,40
	Mares Stone Vault (Patio Terrace)	Stone			1.794,00	15.858,96	0,00
	Metal Joists IPE 120 (Cine Rialto)	metal			7.850,00	1.172,98	0,00
	Metal Joists IPE 120 Cut (E14 &E01)	metal			7.850,00	105,69	105,69
	Metal Joists IPE 120 (E14 &E01)	metal			7.850,00	246,62	246,62
	Metal Joists HEB 120 (Pasarella 2)	metal			7.850,00	277,66	277,66
	Existing Steel Profile (Pasarella 2)	metal			7.850,00	163,28	0,00
	Beams IPE 120 (E10)	metal			7.850,00	155,43	155,43
	Beams IPE 120 (E12)	metal			7.850,00	103,62	103,62
	Beams IPE 200 (E02-E13)	metal			7.850,00	3.448,01	3.448,01
	Beams HEB 200 (E02-E13)	metal			7.850,00	688,93	688,93
	Beam UPN 100 (E02-E13)	metal			7.850,00	59,56	59,56
	Vertical Pillars HEB 100 (E11)	metal			7.850,00	151,02	151,02
	Wooden Joists (8x45 cm) (E11)	timber			492,92	1.304,27	0,00
	Plasterboard False Ceiling (1.25 cm)	not categorised		8,50		829,60	0,00
	Metal False Ceiling System	metal		10,38		1.013,09	0,00
	Lorca Natural Stone 70x70 cm Tiles	stone		52,56		7.305,84	7.305,84
	KeraKoll BioCalce Plaster (Patio Terrace)	not categorised			1.640,00	105,78	105,78
	Oak Parquet	timber			716,80	604,62	604,62
	Ceramic Tiles	HP clay		22,15		1.035,07	0,00
First Floor	Rebar Steel Mesh 150.150.6	metal			7.850,00	45.706,78	45.706,78
	Lorca Natural Stone 70x70 cm Tiles	stone		52,56		28.136,42	28.136,42
	Painted Ceramic Tiles	HP clay		22,15		2.891,02	0,00
	Binissalem Stone	stone			2.730,00	215,12	215,12
	Hydraulic Tiles (Recovered)	HP clay		22,15		677,35	0,00
	Herringbone Parquet	timber			716,80	713,29	713,29
	Oak Parquet	timber			716,80	311,88	311,88
	Polyurea Waterproofing (Cine Rialto)	Plastic		0,15		27,40	27,40

Waterproof Membrane	plastic		0,15		14,73	14,73
Concrete Filling (18cm Avg.) (Cine Rialto)	concrete			2.400,00	74.433,60	74.433,60
Concrete Slab (7 cm)(Cine Rialto)	concrete			2.400,00	34.641,60	34.641,60
Concrete Slab (7 cm)	concrete			2.400,00	20.568,24	20.568,24
Concrete Filling (18cm Avg.)	concrete			2.400,00	13.284,00	13.284,00
Concrete Filling (15cm Avg.)	concrete			2.400,00	12.384,00	12.384,00
Concrete Filling (12cm Avg.)	concrete			2.400,00	9.835,20	9.835,20
Concrete Slab (11 cm)	concrete			2.400,00	26.270,64	26.270,64
Concrete Slab (8 cm)	concrete			2.400,00	26.271,36	26.271,36
Concrete Slab (5 cm)	concrete			2.400,00	9.724,80	9.724,80
Ceramic Vault (4cm) (Cine Rialto)	HP clay		22,15		3.816,45	0,00
Ceramic Vault (4cm)	HP clay		22,15		2.199,50	0,00
Placner Plate Rib Lath (Cine Rialto)	metal			7.850,00	1.485,61	1.485,61
Placner Plate Rib Lath	metal			7.850,00	1.164,90	1.164,90
Mares Arch	stone			1.794,00	11.111,68	0,00
Mares “Tabiques” Filler	Stone			1.794,00	19.820,83	0,00
IPE80 (Existent)(Cine Rialto)	metal	6,00			700,44	0,00
IPE120 (Existent) (Cine Rialto)	metal	10,40			1.066,62	0,00
IPN 140 (Existent) (Cine Rialto)	metal	12,90			3.278,54	0,00
IPE 160 (New) (Cine Rialto)	metal	15,80			1.150,87	1.150,87
IPE200 (Existent) (Cine Rialto)	metal	22,40			2.444,96	0,00
IPE200 (New) (Cine Rialto)	metal	22,40			337,57	337,57
IPE280 (New) (Cine Rialto)	metal	36,10			274,00	274,00
HEB300 (Existent) (Cine Rialto)	metal	117,00			1.388,79	0,00
HEB450 (Existent) (Cine Rialto)	Metal	171,10			2.053,20	0,00
HEB600 (Existent) (Cine Rialto)	metal	211,90			2.585,18	0,00
Ladder Beam (2x RHH 150X100X5	metal	18,60			340,38	0,00
Rectangular Beams (RHH 200X100X12)	metal	50,80			4.246,88	0,00
Iron Beam Protection (25x2 cm)	metal			7.800,00	6.520,80	0,00
Iron Beam Protection (65x2 cm)	metal			7.800,00	16.954,08	0,00
Mares Gravel Filling	aggregates			1.794,00	19.820,83	0,00
IPE 120 Beams (Existent) (First Floor)	metal	10,40			884,52	0,00
IPE 120 Beams (New) (First Floor)	metal	10,40			312,00	312,00
IPE 200 (New) (First Floor)	metal	22,40			4.338,43	4.338,43
IPN 100 (New) (First Floor)	metal	8,30			227,75	227,75
IPN 100 (Existent) (First Floor)	metal	8,30			260,29	0,00
IPN 160 (Existent) (First Floor)	metal	17,90			472,56	0,00
IPN 220 (Existent) (First Floor)	metal	31,00			2.383,90	0,00
UPN 100 (New) (First Floor)	metal	10,60			431,00	431,00
UPN 120 (New) (First Floor)	metal	13,30			1.022,77	1.022,77
UPN 140 (New) (First Floor)	metal	16,00			650,24	650,24
HEB 160 (New) (First Floor)	metal	42,60			432,82	432,82
ZNP 80 (New) (First Floor)	metal	8,70			88,39	88,39
Timber Beams (Pine) (First Floor)	timber			492,92	3.109,09	0,00
Timber Planking (Pine)	timber			548,80	2.182,14	0,00

	Timber Coffered Ceiling Type 1 (5X10 cm)	timber			548,80	1.244,95	0,00
	Timber Coffered Ceiling Type 2 (15x20 cm)	timber			548,80	658,56	0,00
	Metal False Ceiling System	metal		10,38		3.080,68	3.080,68
	Plasterboard False Ceiling (1.25 cm)	not categorised		8,50		2.522,72	2.522,72
Second Floor	Rebar Steel Mesh 150.150.6	metal			7.850,00	33.892,69	33.892,69
	Placner Plate Rib Lath	metal			7.850,00	2.824,39	2.824,39
	Lorca Natural Stone 70x70 cm Tiles	stone		52,56		2.614,33	2.614,33
	Hydraulic Tiles (Recovered)	HP clay		22,15		1.214,26	0,00
	Oak Parquet	timber			716,80	2.531,31	2.531,31
	Herringbone Parquet	timber			716,80	729,63	729,63
	Binissalem Stone	stone			2.730,00	697,79	697,79
	Carrera Marble Flooring (2cm)	stone		52,00		532,48	532,48
	Polyurea Waterproofing	Plastic		0,15		6,16	6,16
	Ceramic Roof Tiles (Double Layer)	HP clay		27,30		266,99	266,99
	Cement Mortar	concrete			2.162,00	105,72	105,72
	Asphalt Cloth	not categorised		3,00		14,67	14,67
	Vapor Barrier	plastic		0,08		0,39	0,39
	THERMOCHIP (Plaster Fibreboard 12x50x19)	not categorised		27,75		135,70	135,70
	Zinc Plate	metal			7.200,00	43,20	43,20
	Concrete Slab (5 cm)	concrete			2.400,00	41.881,20	41.881,20
	Concrete Slab (6 cm)	concrete			2.400,00	12.647,52	12.647,52
	Concrete Slab (7 cm)	concrete			2.400,00	24.610,32	24.610,32
	Glass Brick (Recovered)	Glass			2.500,00	429,00	0,00
	Timber Planking (Pine)	timber			548,80	3.022,57	0,00
	IPE 140 (Existent) (Second Floor)	metal	12,90			365,07	0,00
	IPE 160 (Existent) (Second Floor)	metal	15,80			1.079,93	0,00
	IPE 160 (New) (Second Floor)	metal	15,80			1.559,46	1.559,46
	IPE 180 (Existent) (Second Floor)	metal	18,80			3.901,94	0,00
	IPE 180 (New) (Second Floor)	metal	18,80			56,78	56,78
	IPE 220 (New) (Second Floor)	metal	26,20			4.265,62	4.265,62
	IPN 80 (New) (Second Floor)	metal	6,00			226,26	226,26
	IPN 140 (New) (Second Floor)	metal	14,30			561,99	561,99
	IPN 160 (Existent) (Second Floor)	metal	17,90			750,01	0,00
	IPN 160 (New) (Second Floor)	metal	17,90			75,00	75,00
	UPN 220 (Existing) (Second Floor)	metal	29,40			779,98	0,00
	HEB 120 (New) (Second Floor)	metal	26,70			956,39	956,39
	HEB 180 (New) (Second Floor)	metal	51,20			280,58	280,58
	Timber Beams (Pine) (10x22)(Recovered)	timber			548,80	2.771,98	0,00
	Timber Beams (Pine) (5x22)(Recovered)	timber			548,80	334,14	0,00
	Timber Decorative Coffered Joists (Recovered)	timber			548,80	526,02	0,00
	Metal False Ceiling System	metal		10,38		5.451,06	5.451,06
	Plasterboard False Ceiling (1.25 cm)	not categorised		8,50		4.463,78	4.463,78
Third Floor	Rebar Steel Mesh 150.150.6	metal			7.850,00	29.996,11	29.996,11
	Rebar Steel Mesh 150.150.6 (Double Layer)	metal			7.850,00	797,87	797,87
	Placner Plate Rib Lath	metal			7.850,00	2.499,68	2.499,68

	Lorca Natural Stone 70x70 cm Tiles	stone		52,56		6.815,46	6.815,46
	Hydraulic Tiles (Recovered)	HP clay		22,15		752,44	0,00
	Oak Parquet	timber			716,80	1.365,00	1.365,00
	Herringbone Parquet	timber			716,80	953,06	953,06
	Carrera Marble Flooring (2cm)	stone		52,00		2.166,84	2.166,84
	Polyurea Waterproofing	Plastic		0,15		19,19	19,19
	Ceramic Roof Tiles (Double Layer)	HP clay		27,30		5.916,46	5.916,46
	Cement Mortar	concrete			2.162,00	2.342,74	2.342,74
	Asphalt Cloth	not categorised		3,00		325,08	325,08
	Vapor Barrier	plastic		0,08		8,67	8,67
	THERMOCHIP (Plaster Fibreboard 12x50x19)	not categorised		27,75		3.006,99	3.006,99
	Zinc Plate	metal			7.200,00	689,04	689,04
	Concrete Slab (5 cm)	concrete			2.400,00	48.609,60	48.609,60
	Concrete Slab (7 cm)	concrete			2.400,00	22.337,28	22.337,28
	IPE 120 Beams (Existent) (Third Floor)	metal	10,40			2.414,57	0,00
	IPE 120 Beams (New) (Third Floor)	metal	10,40			303,26	303,26
	IPE 160 (New) (Third Floor)	metal	15,80			1.418,21	1.418,21
	IPE 180 (New) (Third Floor)	metal	18,80			2.081,16	2.081,16
	IPE 220 (New) (Third Floor)	metal	26,20			4.482,82	4.482,82
	UPE 300 (New) (Third Floor)	metal	44,40			273,50	273,50
	HEB 180 (New) (Third Floor)	metal	51,80			283,35	283,35
	Timber Beams (Pine) (10x22)(Recovered)	timber			548,80	3.635,84	0,00
	Metal False Ceiling System	metal		10,38		6.610,61	6.610,61
	Plasterboard False Ceiling (1.25 cm)	not categorised		8,50		5.413,31	5.413,31
Fourth Floor	Rebar Steel Mesh 150.150.6	metal			7.850,00	18.133,97	18.133,97
	Placner Plate Rib Lath	metal			7.850,00	1.511,16	1.511,16
	Lorca Natural Stone 70x70 cm Tiles	stone		52,56		3.791,68	3.791,68
	Oak Parquet	timber			716,80	1.289,95	1.289,95
	Carrera Marble Flooring (2cm)	stone		52,00		973,96	973,96
	Polyurea Waterproofing	Plastic		0,15		10,68	10,68
	Ceramic Roof Tiles (Double Layer)	HP clay		27,30		6.898,16	6.898,16
	Cement Mortar	concrete			2.162,00	2.731,47	2.731,47
	Asphalt Cloth	not categorised		3,00		379,02	379,02
	Vapor Barrier	plastic		0,08		10,11	10,11
	THERMOCHIP (Plaster Fibreboard 12x50x19)	not categorised		27,75		3.505,94	3.505,94
	Zinc Plate	metal			7.200,00	658,80	658,80
	Concrete Slab (5 cm)	concrete			2.400,00	46.201,20	46.201,20
	IPE 100 Beams (New) (Fourth Floor)	metal	8,10			105,30	105,30
	IPE 140 Beams (New) (Fourth Floor)	metal	12,90			322,50	322,50
	IPE 180 Beams (New) (Fourth Floor)	metal	18,80			1.990,17	1.990,17
	HEB 180 Beams (New) (Fourth Floor)	metal	51,20			17.545,22	17.545,22
	Timber Beams (Pine) (10x20)(Recovered)	timber			548,80	1.426,44	0,00
	Timber Beams (Pine) (8x23)(Recovered)	timber			548,80	974,25	0,00
	Metal False Ceiling System	metal		10,38		3.996,40	3.996,40
	Plasterboard False Ceiling (1.25 cm)	not categorised		8,50		3.272,59	3.272,59

Roof Structure	Rebar Steel Mesh 150.150.6	metal			7.850,00	1.576,91	1.576,91
	Placner Plate Rib Lath	metal			7.850,00	131,41	131,41
	Lorca Natural Stone 70x70 cm Tiles	stone		52,56		1.759,71	1.759,71
	Polyurea Waterproofing	Plastic		0,15		4,96	4,96
	Concrete Slab (5 cm)	concrete			2.400,00	4.017,60	4.017,60
	Metal False Ceiling System	metal		10,38		347,52	347,52
	Plasterboard False Ceiling (1.25 cm)	not categorised		8,50		284,58	284,58
	Ceramic Roof Tiles (Double Layer)	HP clay		27,30		18.044,75	18.044,75
	Cement Mortar	concrete			2.162,00	7.145,19	7.145,19
	Asphalt Cloth	not categorised		3,00		991,47	991,47
	Vapor Barrier	plastic		0,08		26,44	26,44
	THERMOCHIP (Plaster Fibreboard 12x50x19mm)	not categorised		27,75		9.171,10	9.171,10
	Zinc Plate	metal			7.200,00	670,46	670,46
	Artisanal Overhanging Roof Decorations	timber			548,80	1.690,44	0,00
	Timber Roof Joists (Pine) (10x23)(Recovered)	timber			548,80	2.182,41	0,00
	Timber Beams (Pine) (8x10)(Recovered)	timber			548,80	522,46	0,00
	Timber Beams (Pine) (12x20)(New)	timber			548,80	1.948,90	1.948,90
	HEB 120 (New) (Roof)	metal	26,70			1.091,23	1.091,23
	HEB 320 (New) (Roof)	metal	126,60			1.020,40	1.020,40
	UPE 220 (New) (Roof)	metal	26,60			368,94	368,94
	UPE 400 (New) (Roof)	metal	72,10			776,52	776,52
Staircases	Reinforced Concrete (Central Staircase)	concrete			2.400,00	12.024,00	12.024,00
	RC Railing (Central Staircase)	concrete			2.400,00	4.056,00	4.056,00
	Mares Groin Vault (Central Staircase)	stone			1.794,00	5.776,68	0,00
	Mares Groin Vault Columns (Central Staircase)	stone			1.794,00	1.345,50	0,00
	Binissalem Stone Railing Interior (Central Staircase)	stone			2.730,00	4.613,70	4.613,70
	Lorca Natural Stone 70x70 cm Tiles	stone		52,56		1.953,13	1.953,13
	Kerakoll Plaster Biocalce	not categorised			1.640,00	12.041,70	12.041,70
	Concrete Cast-In Staircase (Existing)	concrete			2.400,00	21.264,00	0,00
	Concrete Cast-In Staircase (New)	concrete			2.400,00	22.608,00	22.608,00
	Concrete Cast-In Staircase (Existing)(Staircase 9)	concrete			2.400,00	41.448,00	0,00
	Rebar Steel Mesh 150.150.6 (Double Layer)	metal			7.850,00	4.421,75	4.421,75
	Paint	not categorised		0,90		16,31	16,31
	Binissalem Stone	stone			2.730,00	145,37	0,00
	Ceramic Vault (4cm) (Staircase 9)	HP clay		22,15		1.275,18	0,00
	Railing (Iron) (Staircase 9)	metal			7.800,00	90,79	0,00
	Railing Handle (Staircase 9)	Timber			7.800,00	226,98	0,00
	Timber Plinth (Staircase 9)(Recovered)	timber			548,80	335,87	0,00
	Hydraulic Tiles (Recovered) (Staircase 10)	HP clay		22,15		104,55	0,00
	Timber Plinth (Staircase 10)(Recovered)	timber			548,80	19,56	0,00
Balconies	Stone Balcony (Typical Balcony & Miradors) (Existing)	stone			1.794,00	6.996,60	0,00
	Concrete Filling (Typical Balcony) (New)	concrete			2.400,00	13.320,00	13.320,00
	Rebar Steel Mesh 150.150.6	metal			7.850,00	237,86	237,86
	Lorca Natural Stone 70x70 cm Tiles	stone		52,56		106,15	106,15
	Oak Parquet (Miradors)	timber			716,80	23,22	23,22

	Railing (Iron)				7.800,00	422,60	0,00
Skylights	Aluminium Square Frame	metal	1,02			70,18	70,18
	Aluminium Diagonal Frame	metal	1,02			29,38	29,38
	Aluminium Surrounding Frame	metal	1,02			40,47	40,47
	Aluminium Side Frame	metal	1,02			24,48	24,48
	Aluminium Vertical Frame (Total)	metal	1,02			80,29	80,29
	Clear Glass	Glass		20,50		635,27	635,27
	Frosted Glass	Glass		20,50		635,27	635,27
	Frosted Glass (Coffered Ceiling) (Recovered)	Glass		20,50		40,10	0,00
	Timber Frame (Coffered Ceiling) (Recovered)	timber			548,80	175,62	0,00
	Timber Coffer Panel (Coffered Ceiling) (Recovered)	timber			548,80	92,97	0,00
	Timber Beams (Coffered Ceiling) (Pine) (New)	timber			548,80	1.606,89	1.606,89
	Internal Timber Joists (Coffered Ceiling) (Recovered)	timber			548,80	720,03	0,00
	External Timber Joists (Coffered Ceiling) (New)	timber			548,80	132,81	132,81
	External Timber Joists (Coffered Ceiling) (Recovered)	timber			548,80	446,72	0,00
	HEB 180 (New) (Coffered Ceiling)	metal	51,80			1.501,16	1.501,16
	Stone Pillars (Coffered Ceiling)	stone			2.730,00	1.425,06	0,00
	Stone Arches (Coffered Ceiling)	stone			2.730,00	8.804,25	0,00
	Stone Ballusters (Coffered Ceiling)	stone			2.730,00	20.475,00	0,00
	Mares Wall (Coffered Ceiling)	stone			1.794,00	22.109,26	0,00
	Mares Wall With Door (Coffered Ceiling)	stone			1.794,00	14.352,00	0,00
Walls	Concrete Wall (Avg 40cm thickness)	concrete			2.400,00	491.276,88	491.276,88
	Ground Floor Mares Wall	stone			1.794,00	1.693.356,60	0,00
	Ground Floor Brick Wall	HP clay			575,00	10.373,00	10.373,00
	Ground Floor Brick Wall Insulation (Mineral Wool)	stone			24,00	144,24	144,24
	Ground Floor Pladur Plasterboard (12.5mm)	not categorised		8,50		1.088,00	1.088,00
	Mezzanine Floor Mares Wall	stone			1.794,00	111.945,60	0,00
	Mezzanine Floor Mares Wall Insulation (Mineral Wool)	not categorised			24,00	54,48	54,48
	Mezzanine Flor Pladur Plasterboard (12.5mm)	not categorised		8,50		385,90	385,90
	Mezzanine Floor Glass Office Walls	Glass		20,50		686,52	686,52
	First Floor Mares Wall	stone			1.794,00	851.455,72	0,00
	First Floor Balustrades (Binissalem Stone)	stone			2.730,00	8.572,20	0,00
	Second Floor Mares Walls	stone			1.794,00	834.425,28	0,00
	Second Floor Pladur Walls Single	not categorised		42,00		2.181,90	2.181,90
	Second Floor Pladur Walls Double	not categorised		61,60		3.528,45	3.528,45
	Second Floor Terrace Brick Perimeter Wall	HP clay			575,00	753,25	753,25
	Third Floor Mares Walls	stone			1.794,00	274.966,38	0,00
	Third Floor Pladur Walls Single	not categorised		42,00		8.826,72	8.826,72
	Third Floor Pladur Walls Double	not categorised		61,60		2.778,78	2.778,78
	Third Floor Terrace Brick Perimeter Wall	HP clay			575,00	2.742,75	2.742,75
	Fourth Floor Mares Walls	stone			1.794,00	50.572,86	0,00
	Fourth Floor Pladur Walls Single	not categorised		42,00		3.906,00	3.906,00
	Fourth Floor Pladur Walls Double	not categorised		61,60		6.601,67	6.601,67
	Fourth Floor Terrace Brick Perimeter Wall	HP clay			575,00	3.001,50	3.001,50
	Mares Stone Array Structural Windows	stone			1.794,00	97.970,34	0,00

	Mares Stone Array Structural Windows Glass	Glass		20,50		8,20	8,20
	Mares Stone Array Structural Windows (Existent)	stone			1.794,00	18.029,70	0,00
	Mares Stone Array Structural Windows HEB100	metal	20,40			183,60	183,60
	Mares Stone Array Structural Windows 70.70.4	metal	7,10			28,40	28,40
	Mares Stone Array Structural Windows UPN200 Sill &	metal	25,30			1.973,40	1.973,40
	Mares Stone Array Structural Windows UPN160	metal	18,80			131,60	131,60
	Rooftop Terrace Brick Perimeter Wall	HP clay			575,00	2.875,00	2.875,00
	Paint	not categorised		0,90		1.321,65	1.321,65
Carpentry	Ground Floor Metal Frame (Existent)	metal	17,81			3.360,57	0,00
	Ground Floor Metal Frame (New)	metal	17,81			3.537,42	3.537,42
	Ground Floor Timber Frame (New)	timber	2,11			65,94	65,94
	Ground Floor Metal Door (New)	metal		70,01		1.998,79	1.998,79
	Ground Floor Timber Door (New)	timber		53,95		2.369,48	2.369,48
	Ground Floor Glass (Existent)	glass		20,50		1.919,83	0,00
	Ground Floor Glass (New)	glass		20,50		1.049,81	1.049,81
	Mezzanine Floor Metal Frame (Existent)	metal	17,81			465,20	0,00
	Mezzanine Floor Metal Frame (New)	metal	17,81			1.441,90	1.441,90
	Mezzanine Floor Timber Frame (Existent)	timber	2,11			147,24	0,00
	Mezzanine Floor Metal Door (New)	metal		70,01		249,94	249,94
	Mezzanine Floor Timber Door (Existent)	timber		53,95		1.259,73	0,00
	Mezzanine Floor Timber Door (New)	timber		53,95		385,74	385,74
	Mezzanine Floor Glass (Existent)	glass		20,50		459,41	0,00
	Mezzanine Floor Glass (New)	glass		20,50		589,99	589,99
	First Floor Metal Frame (Existent)	metal	17,81			2.008,08	0,00
	First Floor Metal Frame (New)	metal	17,81			705,63	705,63
	First Floor Timber Frame (Existent)	timber	2,11			243,60	0,00
	First Floor Metal Door (New)	metal		70,01		521,57	521,57
	First Floor Timber Door (Existent)	timber		53,95		3.445,25	0,00
	First Floor Timber Door (New)	timber		53,95		237,92	237,92
	First Floor Glass (Existent)	glass		20,50		2.355,04	0,00
	First Floor Glass (New)	glass		20,50		102,30	102,30
	First Floor Mallorcan Shutters	timber			548,80	2.304,96	2.304,96
	Residential Floors Metal Frame (New)	metal	17,81			14.389,95	14.389,95
	Residential Floors Timber Frame (Existent)	timber	2,11			1.160,88	0,00
	Residential Floors Timber Frame (New)	timber	2,11			455,76	455,76
	Residential Floors Timber Door (Existent)	timber		53,95		1.334,72	0,00
	Residential Floors Timber Door (New)	timber		53,95		2.036,07	2.036,07
	Residential Floors Glass (Existent)	glass		20,50		1.882,11	0,00
	Residential Floors Glass (New)	glass		20,50		2.211,95	2.211,95
	Residential Floors Mallorcan Shutters	timber			548,80	4.774,56	4.774,56

5.4 Ökobaudat

T4 PEI and GWP Values of the Materials Used In Rialto Living According to Ökobaudat and EPD

	ELEMENT	WEIGHT NEW	Ref unit	PEI	PEI non-	PEI	GWP	PEI	GWP
		[kg]	[-]	[MJ/unit]	[MJ/unit]	[MJ/unit]	[kg CO2eq/	[MJ]	[kg CO2eq]
Basement Floor	Concrete Filling (30cm)	74865,60	1m3	180,00	912,00	1.092,00	178,00	34.063,85	5.552,53
	Concrete Filling (50cm)	152952,00	1m3	180,00	912,00	1.092,00	178,00	69.593,16	11.343,94
	Rebar Steel Mesh 150.150.6	15797,34	1000kg	3.780,00	6.278,00	10.058,00	544,30	158.889,65	8.598,49
	Rebar Steel Mesh 150.150.6 (Double Layer)	683,89	1000kg	3.780,00	6.278,00	10.058,00	544,30	6.878,59	372,24
	Polyurethane Flooring	50,71	1kg	8,84	141,30	150,14	6,82	7.614,15	345,87
	Concrete Filling (30cm) (Phase 1)	80078,40	1m3	180,00	912,00	1.092,00	178,00	36.435,67	5.939,15
Ground Floor	Lorca Natural Stone 70x70 cm Tiles	58236,48	1m2	127,10	405,90	533,00	31,75	590.564,00	35.179,00
	Polyurea Waterproofing	129,73	1m2	0,88	17,10	17,98	0,62	15.760,55	539,08
	Concrete Filling (7cm)	147262,08	1m3	180,00	912,00	1.092,00	178,00	67.004,25	10.921,94
	Rebar Steel Mesh 150.150.6	52186,80	1000kg	3.780,00	6.278,00	10.058,00	544,30	524.894,83	28.405,28
	Concrete Caisson Min (5cm)	11230,80	1m3	180,00	912,00	1.092,00	178,00	5.110,01	832,95
	Concrete Caisson Min (25cm)	82710,00	1m3	180,00	912,00	1.092,00	178,00	37.633,05	6.134,33
	Nerve and Base Reinforcement Bars	47100,00	1000kg	3.780,00	6.278,00	10.058,00	544,30	473.731,80	25.636,53
Mezzanine Floor	Rebar Steel Mesh 150.150.6	15039,03	1000kg	3.780,00	6.278,00	10.058,00	544,30	151.262,56	8.185,74
	Placner Plate Rib Lath	1253,25	1000kg	512,50	9.067,00	9.579,50	818,00	12.005,53	1.025,16
	Concrete Slab (7 cm)	42957,60	1m3	180,00	912,00	1.092,00	178,00	19.545,71	3.186,02
	Concrete Slab (5 cm)	2000,40	1m3	180,00	912,00	1.092,00	178,00	910,18	148,36
	Concrete Slab (11 cm)	6956,40	1m3	180,00	912,00	1.092,00	178,00	3.165,16	515,93
	Mares Stone Vault (Patio Terrace)	0,00	1m3	122,00	1.080,00	1.202,00	128,00	-	-
	Metal Joists IPE 120 (Cine Rialto)	0,00	1000kg	1.930,00	7.260,00	9.190,00	558,00	-	-
	Metal Joists IPE 120 Cut (E14 &E01)	105,69	1000kg	1.930,00	7.260,00	9.190,00	558,00	971,31	58,98
	Metal Joists IPE 120 (E14 &E01)	246,62	1000kg	1.930,00	7.260,00	9.190,00	558,00	2.266,40	137,61
	Metal Joists HEB 120 (Pasarella 2)	277,66	1000kg	1.930,00	7.260,00	9.190,00	558,00	2.551,67	154,93
	Existing Steel Profile (Pasarella 2)	0,00	1000kg	1.930,00	7.260,00	9.190,00	558,00	-	-
	Beams IPE 120 (E10)	155,43	1000kg	1.930,00	7.260,00	9.190,00	558,00	1.428,40	86,73
	Beams IPE 120 (E12)	103,62	1000kg	1.930,00	7.260,00	9.190,00	558,00	952,27	57,82
	Beams IPE 200 (E02-E13)	3448,01	1000kg	1.930,00	7.260,00	9.190,00	558,00	31.687,20	1.923,99
	Beams HEB 200 (E02-E13)	688,93	1000kg	1.930,00	7.260,00	9.190,00	558,00	6.331,28	384,42
	Beam UPN 100 (E02-E13)	59,56	1000kg	1.930,00	7.260,00	9.190,00	558,00	547,34	33,23
	Vertical Pillars HEB 100 (E11)	151,02	1000kg	1.930,00	7.260,00	9.190,00	558,00	1.387,89	84,27
	Wooden Joists (8x45 cm) (E11)	0,00	1m3	10.980,00	1.528,00	12.508,00	- 777,70	-	-
	Plasterboard False Ceiling (1.25 cm)	0,00	1m2	9,90	32,62	42,52	1,45	-	-
	Metal False Ceiling System	0,00	1m2	23,50	257,00	280,50	26,70	-	-
	Lorca Natural Stone 70x70 cm Tiles	7305,84	1m2	127,10	405,90	533,00	31,75	74.087,00	4.413,25
	KeraKoll BioCalce Plaster (Patio Terrace)	105,78	1kg	0,92	3,49	4,41	0,39	466,38	41,25
	Oak Parquet	604,62	1m3	13.100,00	1.706,00	14.806,00	- 1.041,00	12.488,86	- 878,08
	Ceramic Tiles	0,00	1m2	40,90	251,00	291,90	165,00	-	-
First Floor	Rebar Steel Mesh 150.150.6	45706,78	1000kg	3.780,00	6.278,00	10.058,00	544,30	459.718,81	24.878,20
	Lorca Natural Stone 70x70 cm Tiles	28136,42	1m2	127,10	405,90	533,00	31,75	285.325,56	16.996,41
	Painted Ceramic Tiles	0,00	1m2	40,90	251,00	291,90	165,00	-	-
	Binissalem Stone	215,12	1m2	40,90	251,00	291,90	165,00	1.150,09	650,10
	Hydraulic Tiles (Recovered)	0,00	1m2	40,90	251,00	291,90	165,00	-	-
	Herringbone Parquet	713,29	1m3	13.100,00	1.706,00	14.806,00	- 1.041,00	14.733,45	- 1.035,90
	Oak Parquet	311,88	1m3	13.100,00	1.706,00	14.806,00	- 1.041,00	6.442,09	- 452,94
	Polyurea Waterproofing (Cine Rialto)	27,40	1m2	0,88	17,10	17,98	0,62	3.329,00	113,87
	Waterproof Membrane	14,73	1m2	0,88	17,10	17,98	0,62	1.789,19	61,20

	Concrete Filling (18cm Avg.) (Cine Rialto)	74433,60	1m3	180,00	912,00	1.092,00	178,00	33.867,29	5.520,49
	Concrete Slab (7 cm)(Cine Rialto)	34641,60	1m3	180,00	912,00	1.092,00	178,00	15.761,93	2.569,25
	Concrete Slab (7 cm)	20568,24	1m3	180,00	912,00	1.092,00	178,00	9.358,55	1.525,48
	Concrete Filling (18cm Avg.)	13284,00	1m3	180,00	912,00	1.092,00	178,00	6.044,22	985,23
	Concrete Filling (15cm Avg.)	12384,00	1m3	180,00	912,00	1.092,00	178,00	5.634,72	918,48
	Concrete Filling (12cm Avg.)	9835,20	1m3	180,00	912,00	1.092,00	178,00	4.475,02	729,44
	Concrete Slab (11 cm)	26270,64	1m3	180,00	912,00	1.092,00	178,00	11.953,14	1.948,41
	Concrete Slab (8 cm)	26271,36	1m3	180,00	912,00	1.092,00	178,00	11.953,47	1.948,46
	Concrete Slab (5 cm)	9724,80	1m3	180,00	912,00	1.092,00	178,00	4.424,78	721,26
	Ceramic Vault (4cm) (Cine Rialto)	0,00	1m2	40,90	251,00	291,90	165,00	-	-
	Ceramic Vault (4cm)	0,00	1m2	40,90	251,00	291,90	165,00	-	-
	Placner Plate Rib Lath (Cine Rialto)	1485,61	1000kg	512,50	9.067,00	9.579,50	818,00	14.231,42	1.215,23
	Placner Plate Rib Lath	1164,90	1000kg	512,50	9.067,00	9.579,50	818,00	11.159,17	952,89
	Mares Arch	0,00	1m3	122,00	1.080,00	1.202,00	128,00	-	-
	Mares “Tabiques” Filler	0,00	1m3	122,00	1.080,00	1.202,00	128,00	-	-
	IPE80 (Existent)(Cine Rialto)	0,00	1000kg	1.930,00	7.260,00	9.190,00	558,00	-	-
	IPE120 (Existent) (Cine Rialto)	0,00	1000kg	1.930,00	7.260,00	9.190,00	558,00	-	-
	IPN 140 (Existent) (Cine Rialto)	0,00	1000kg	1.930,00	7.260,00	9.190,00	558,00	-	-
	IPE 160 (New) (Cine Rialto)	1150,87	1000kg	1.930,00	7.260,00	9.190,00	558,00	10.576,51	642,19
	IPE200 (Existent) (Cine Rialto)	0,00	1000kg	1.930,00	7.260,00	9.190,00	558,00	-	-
	IPE200 (New) (Cine Rialto)	337,57	1000kg	1.930,00	7.260,00	9.190,00	558,00	3.102,25	188,36
	IPE280 (New) (Cine Rialto)	274,00	1000kg	1.930,00	7.260,00	9.190,00	558,00	2.518,05	152,89
	HEB300 (Existent) (Cine Rialto)	0,00	1000kg	1.930,00	7.260,00	9.190,00	558,00	-	-
	HEB450 (Existent) (Cine Rialto)	0,00	1000kg	1.930,00	7.260,00	9.190,00	558,00	-	-
	HEB600 (Existent) (Cine Rialto)	0,00	1000kg	1.930,00	7.260,00	9.190,00	558,00	-	-
	Ladder Beam (2x RHH 150X100X5	0,00	1000kg	1.930,00	7.260,00	9.190,00	558,00	-	-
	Rectangular Beams (RHH 200X100X12)	0,00	1000kg	1.930,00	7.260,00	9.190,00	558,00	-	-
	Iron Beam Protection (25x2 cm)	0,00	1000kg	1.930,00	7.260,00	9.190,00	558,00	-	-
	Iron Beam Protection (65x2 cm)	0,00	1000kg	1.930,00	7.260,00	9.190,00	558,00	-	-
	Mares Gravel Filling	0,00	1m3	122,00	1.080,00	1.202,00	128,00	-	-
	IPE 120 Beams (Existent) (First Floor)	0,00	1000kg	1.930,00	7.260,00	9.190,00	558,00	-	-
	IPE 120 Beams (New) (First Floor)	312,00	1000kg	1.930,00	7.260,00	9.190,00	558,00	2.867,28	174,10
	IPE 200 (New) (First Floor)	4338,43	1000kg	1.930,00	7.260,00	9.190,00	558,00	39.870,19	2.420,85
	IPN 100 (New) (First Floor)	227,75	1000kg	1.930,00	7.260,00	9.190,00	558,00	2.093,04	127,09
	IPN 100 (Existent) (First Floor)	0,00	1000kg	1.930,00	7.260,00	9.190,00	558,00	-	-
	IPN 160 (Existent) (First Floor)	0,00	1000kg	1.930,00	7.260,00	9.190,00	558,00	-	-
	IPN 220 (Existent) (First Floor)	0,00	1000kg	1.930,00	7.260,00	9.190,00	558,00	-	-
	UPN 100 (New) (First Floor)	431,00	1000kg	1.930,00	7.260,00	9.190,00	558,00	3.960,85	240,50
	UPN 120 (New) (First Floor)	1022,77	1000kg	1.930,00	7.260,00	9.190,00	558,00	9.399,26	570,71
	UPN 140 (New) (First Floor)	650,24	1000kg	1.930,00	7.260,00	9.190,00	558,00	5.975,71	362,83
	HEB 160 (New) (First Floor)	432,82	1000kg	1.930,00	7.260,00	9.190,00	558,00	3.977,58	241,51
	ZNP 80 (New) (First Floor)	88,39	1000kg	1.930,00	7.260,00	9.190,00	558,00	812,32	49,32
	Timber Beams (Pine) (First Floor)	0,00	1m3	10.980,00	1.528,00	12.508,00	- 777,70	-	-
	Timber Planking (Pine)	0,00	1m3	10.980,00	1.528,00	12.508,00	- 777,70	-	-
	Timber Coffered Ceiling Type 1 (5X10 cm)	0,00	1m3	10.980,00	1.528,00	12.508,00	- 777,70	-	-
	Timber Coffered Ceiling Type 2 (15x20 cm)	0,00	1m3	10.980,00	1.528,00	12.508,00	- 777,70	-	-
	Metal False Ceiling System	3080,68	1m2	23,50	257,00	280,50	26,70	83.249,60	7.924,29
	Plasterboard False Ceiling (1.25 cm)	2522,72	1m2	9,90	32,62	42,52	1,45	12.619,51	431,24

Second Floor	Rebar Steel Mesh 150.150.6	33892,69	1000kg	3.780,00	6.278,00	10.058,00	544,30	340.892,67	18.447,79
	Placner Plate Rib Lath	2824,39	1000kg	512,50	9.067,00	9.579,50	818,00	27.056,25	2.310,35
	Lorca Natural Stone 70x70 cm Tiles	2614,33	1m2	127,10	405,90	533,00	31,75	26.511,42	1.579,25
	Hydraulic Tiles (Recovered)	0,00	1m2	40,90	251,00	291,90	165,00	-	-
	Oak Parquet	2531,31	1m3	13.100,00	1.706,00	14.806,00	- 1.041,00	52.285,91	- 3.676,19
	Herringbone Parquet	729,63	1m3	13.100,00	1.706,00	14.806,00	- 1.041,00	15.071,03	- 1.059,63
	Binissalem Stone	697,79	1m2	127,10	405,90	533,00	31,75	6.811,74	405,77
	Carrera Marble Flooring (2cm)	532,48	1m2	67,72	207,50	275,22	16,50	2.818,25	168,96
	Polyurea Waterproofing	6,16	1m2	0,88	17,10	17,98	0,62	748,33	25,60
	Ceramic Roof Tiles (Double Layer)	266,99	1m2	21,34	248,90	270,24	15,88	1.321,47	77,65
	Cement Mortar	105,72	1m3	260,00	1.159,00	1.419,00	345,10	69,39	16,88
	Asphalt Cloth	14,67	1kg	0,08	2,93	3,01	0,07	44,18	1,04
	Vapor Barrier	0,39	1m2	0,07	12,94	13,01	0,72	63,62	3,53
	THERMOCHIP (Plaster Fibreboard 12x50x19)	135,70	1m2	44,20	614,00	658,20	38,00	3.218,60	185,82
	Zinc Plate	43,20	1kg	6,37	48,39	54,76	3,22	2.365,55	139,19
	Concrete Slab (5 cm)	41881,20	1m3	180,00	912,00	1.092,00	178,00	19.055,95	3.106,19
	Concrete Slab (6 cm)	12647,52	1m3	180,00	912,00	1.092,00	178,00	5.754,62	938,02
	Concrete Slab (7 cm)	24610,32	1m3	180,00	912,00	1.092,00	178,00	11.197,70	1.825,27
	Glass Brick (Recovered)	0,00	1m3	2.545,00	42.740,00	45.285,00	3.927,00	-	-
	Timber Planking (Pine)	0,00	1m3	10.980,00	1.528,00	12.508,00	- 777,70	-	-
	IPE 140 (Existent) (Second Floor)	0,00	1000kg	1.930,00	7.260,00	9.190,00	558,00	-	-
	IPE 160 (Existent) (Second Floor)	0,00	1000kg	1.930,00	7.260,00	9.190,00	558,00	-	-
	IPE 160 (New) (Second Floor)	1559,46	1000kg	1.930,00	7.260,00	9.190,00	558,00	14.331,44	870,18
	IPE 180 (Existent) (Second Floor)	0,00	1000kg	1.930,00	7.260,00	9.190,00	558,00	-	-
	IPE 180 (New) (Second Floor)	56,78	1000kg	1.930,00	7.260,00	9.190,00	558,00	521,77	31,68
	IPE 220 (New) (Second Floor)	4265,62	1000kg	1.930,00	7.260,00	9.190,00	558,00	39.201,07	2.380,22
	IPN 80 (New) (Second Floor)	226,26	1000kg	1.930,00	7.260,00	9.190,00	558,00	2.079,33	126,25
	IPN 140 (New) (Second Floor)	561,99	1000kg	1.930,00	7.260,00	9.190,00	558,00	5.164,69	313,59
	IPN 160 (Existent) (Second Floor)	0,00	1000kg	1.930,00	7.260,00	9.190,00	558,00	-	-
	IPN 160 (New) (Second Floor)	75,00	1000kg	1.930,00	7.260,00	9.190,00	558,00	689,26	41,85
	UPN 220 (Existing) (Second Floor)	0,00	1000kg	1.930,00	7.260,00	9.190,00	558,00	-	-
	HEB 120 (New) (Second Floor)	956,39	1000kg	1.930,00	7.260,00	9.190,00	558,00	8.789,26	533,67
	HEB 180 (New) (Second Floor)	280,58	1000kg	1.930,00	7.260,00	9.190,00	558,00	2.578,49	156,56
	Timber Beams (Pine) (10x22)(Recovered)	0,00	1m3	10.980,00	1.528,00	12.508,00	- 777,70	-	-
	Timber Beams (Pine) (5x22)(Recovered)	0,00	1m3	10.980,00	1.528,00	12.508,00	- 777,70	-	-
	Timber Decorative Coffered Joists (Recovered)	0,00	1m3	10.980,00	1.528,00	12.508,00	- 777,70	-	-
	Metal False Ceiling System	5451,06	1m2	23,50	257,00	280,50	26,70	147.304,58	14.021,51
	Plasterboard False Ceiling (1.25 cm)	4463,78	1m2	9,90	32,62	42,52	1,45	22.329,38	763,04
Third Floor	Rebar Steel Mesh 150.150.6	29996,11	1000kg	3.780,00	6.278,00	10.058,00	544,30	301.700,83	16.326,88
	Rebar Steel Mesh 150.150.6 (Double Layer)	797,87	1000kg	3.780,00	6.278,00	10.058,00	544,30	8.025,02	434,28
	Placner Plate Rib Lath	2499,68	1000kg	512,50	9.067,00	9.579,50	818,00	23.945,64	2.044,73
	Lorca Natural Stone 70x70 cm Tiles	6815,46	1m2	127,10	405,90	533,00	31,75	69.114,11	4.117,02
	Hydraulic Tiles (Recovered)	0,00	1m2	40,90	251,00	291,90	165,00	-	-
	Oak Parquet	1365,00	1m3	13.100,00	1.706,00	14.806,00	- 1.041,00	28.195,07	- 1.982,38
	Herringbone Parquet	953,06	1m3	13.100,00	1.706,00	14.806,00	- 1.041,00	19.686,06	- 1.384,11
	Carrera Marble Flooring (2cm)	2166,84	1m2	67,72	207,50	275,22	16,50	11.468,42	687,56
	Polyurea Waterproofing	19,19	1m2	0,88	17,10	17,98	0,62	2.331,47	79,75
	Ceramic Roof Tiles (Double Layer)	5916,46	1m2	21,34	248,90	270,24	15,88	29.283,21	1.720,76

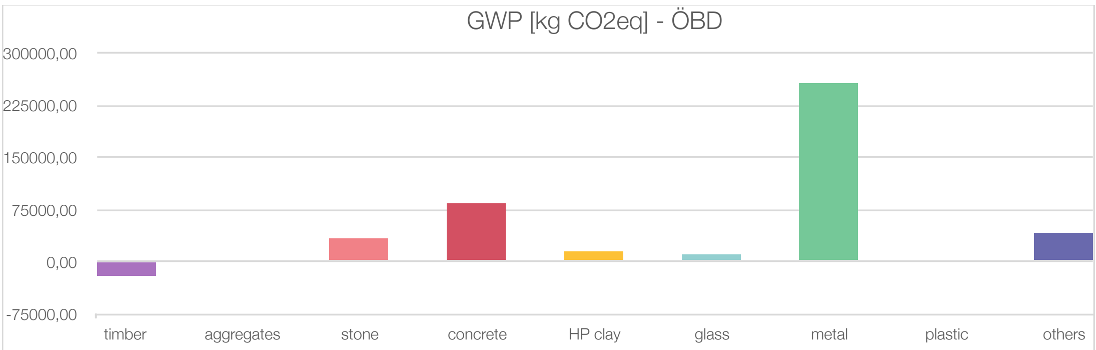
	Cement Mortar	2342,74	1m3	260,00	1.159,00	1.419,00	345,10	1.537,63	373,95
	Asphalt Cloth	325,08	1kg	0,08	2,93	3,01	0,07	979,06	23,13
	Vapor Barrier	8,67	1m2	0,07	12,94	13,01	0,72	1.409,68	78,21
	THERMOCHIP (Plaster Fibreboard 12x50x19)	3006,99	1m2	44,20	614,00	658,20	38,00	71.322,55	4.117,68
	Zinc Plate	689,04	1kg	6,37	48,39	54,76	3,22	37.730,45	2.220,09
	Concrete Slab (5 cm)	48609,60	1m3	180,00	912,00	1.092,00	178,00	22.117,37	3.605,21
	Concrete Slab (7 cm)	22337,28	1m3	180,00	912,00	1.092,00	178,00	10.163,46	1.656,68
	IPE 120 Beams (Existent) (Third Floor)	0,00	1000kg	1.930,00	7.260,00	9.190,00	558,00	-	-
	IPE 120 Beams (New) (Third Floor)	303,26	1000kg	1.930,00	7.260,00	9.190,00	558,00	2.787,00	169,22
	IPE 160 (New) (Third Floor)	1418,21	1000kg	1.930,00	7.260,00	9.190,00	558,00	13.033,33	791,36
	IPE 180 (New) (Third Floor)	2081,16	1000kg	1.930,00	7.260,00	9.190,00	558,00	19.125,86	1.161,29
	IPE 220 (New) (Third Floor)	4482,82	1000kg	1.930,00	7.260,00	9.190,00	558,00	41.197,12	2.501,41
	UPE 300 (New) (Third Floor)	273,50	1000kg	1.930,00	7.260,00	9.190,00	558,00	2.513,50	152,62
	HEB 180 (New) (Third Floor)	283,35	1000kg	1.930,00	7.260,00	9.190,00	558,00	2.603,95	158,11
	Timber Beams (Pine) (10x22)(Recovered)	0,00	1m3	10.980,00	1.528,00	12.508,00	- 777,70	-	-
	Metal False Ceiling System	6610,61	1m2	23,50	257,00	280,50	26,70	178.639,23	17.004,16
	Plasterboard False Ceiling (1.25 cm)	5413,31	1m2	9,90	32,62	42,52	1,45	27.079,29	925,36
Fourth Floor	Rebar Steel Mesh 150.150.6	18133,97	1000kg	3.780,00	6.278,00	10.058,00	544,30	182.391,48	9.870,32
	Placner Plate Rib Lath	1511,16	1000kg	512,50	9.067,00	9.579,50	818,00	14.476,20	1.236,13
	Lorca Natural Stone 70x70 cm Tiles	3791,68	1m2	127,10	405,90	533,00	31,75	38.450,62	2.290,45
	Oak Parquet	1289,95	1m3	13.100,00	1.706,00	14.806,00	- 1.041,00	26.644,88	- 1.873,38
	Carrera Marble Flooring (2cm)	973,96	1m2	67,72	207,50	275,22	16,50	5.154,87	309,05
	Polyurea Waterproofing	10,68	1m2	0,88	17,10	17,98	0,62	1.297,08	44,37
	Ceramic Roof Tiles (Double Layer)	6898,16	1m2	21,34	248,90	270,24	15,88	34.142,12	2.006,28
	Cement Mortar	2731,47	1m3	260,00	1.159,00	1.419,00	345,10	1.792,76	436,00
	Asphalt Cloth	379,02	1kg	0,08	2,93	3,01	0,07	1.141,51	26,97
	Vapor Barrier	10,11	1m2	0,07	12,94	13,01	0,72	1.643,59	91,19
	THERMOCHIP (Plaster Fibreboard 12x50x19)	3505,94	1m2	44,20	614,00	658,20	38,00	83.156,99	4.800,92
	Zinc Plate	658,80	1kg	6,37	48,39	54,76	3,22	36.074,57	2.122,65
	Concrete Slab (5 cm)	46201,20	1m3	180,00	912,00	1.092,00	178,00	21.021,55	3.426,59
	IPE 100 Beams (New) (Fourth Floor)	105,30	1000kg	1.930,00	7.260,00	9.190,00	558,00	967,71	58,76
	IPE 140 Beams (New) (Fourth Floor)	322,50	1000kg	1.930,00	7.260,00	9.190,00	558,00	2.963,78	179,96
	IPE 180 Beams (New) (Fourth Floor)	1990,17	1000kg	1.930,00	7.260,00	9.190,00	558,00	18.289,64	1.110,51
	HEB 180 Beams (New) (Fourth Floor)	17545,22	1000kg	1.930,00	7.260,00	9.190,00	558,00	161.240,54	9.790,23
	Timber Beams (Pine) (10x20)(Recovered)	0,00	1m3	10.980,00	1.528,00	12.508,00	- 777,70	-	-
	Timber Beams (Pine) (8x23)(Recovered)	0,00	1m3	10.980,00	1.528,00	12.508,00	- 777,70	-	-
	Metal False Ceiling System	3996,40	1m2	23,50	257,00	280,50	26,70	107.995,31	10.279,77
	Plasterboard False Ceiling (1.25 cm)	3272,59	1m2	9,90	32,62	42,52	1,45	16.370,63	559,42
Roof Structure	Rebar Steel Mesh 150.150.6	1576,91	1000kg	3.780,00	6.278,00	10.058,00	544,30	15.860,54	858,31
	Placner Plate Rib Lath	131,41	1000kg	512,50	9.067,00	9.579,50	818,00	1.258,83	107,49
	Lorca Natural Stone 70x70 cm Tiles	1759,71	1m2	127,10	405,90	533,00	31,75	17.844,84	1.062,99
	Polyurea Waterproofing	4,96	1m2	0,88	17,10	17,98	0,62	601,97	20,59
	Concrete Slab (5 cm)	4017,60	1m3	180,00	912,00	1.092,00	178,00	1.828,01	297,97
	Metal False Ceiling System	347,52	1m2	23,50	257,00	280,50	26,70	9.391,14	893,92
	Plasterboard False Ceiling (1.25 cm)	284,58	1m2	9,90	32,62	42,52	1,45	1.423,57	48,65
	Ceramic Roof Tiles (Double Layer)	18044,75	1m2	21,34	248,90	270,24	15,88	89.311,62	5.248,18
	Cement Mortar	7145,19	1m3	260,00	1.159,00	1.419,00	345,10	4.689,65	1.140,52
	Asphalt Cloth	991,47	1kg	0,08	2,93	3,01	0,07	2.986,06	70,54

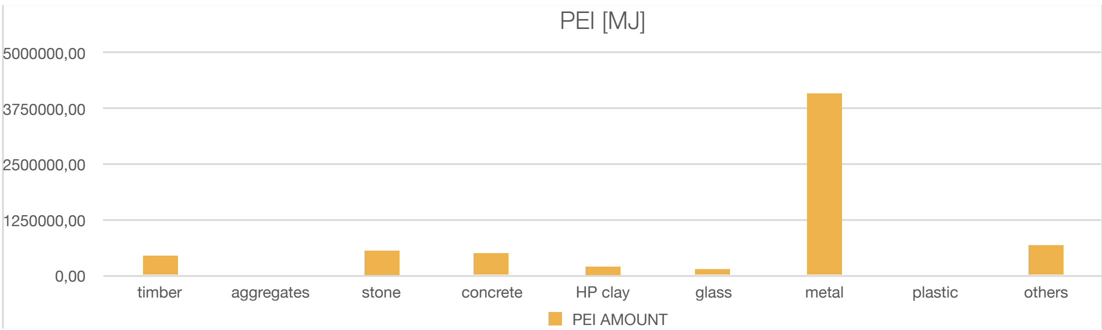
	Vapor Barrier	26,44	1m2	0,07	12,94	13,01	0,72	4.299,42	238,55
	THERMOCHIP (Plaster Fibreboard	9171,10	1m2	44,20	614,00	658,20	38,00	217.528,52	12.558,62
	Zinc Plate	670,46	1kg	6,37	48,39	54,76	3,22	36.713,27	2.160,24
	Artisanal Overhanging Roof Decorations	0,00	1m3	10.980,00	1.528,00	12.508,00	- 777,70	-	-
	Timber Roof Joists (Pine) (10x23)(Recovered)	0,00	1m3	10.980,00	1.528,00	12.508,00	- 777,70	-	-
	Timber Beams (Pine) (8x10)(Recovered)	0,00	1m3	10.980,00	1.528,00	12.508,00	- 777,70	-	-
	Timber Beams (Pine) (12x20)(New)	1948,90	1m3	10.980,00	1.528,00	12.508,00	- 777,70	44.418,41	- 2.761,77
	HEB 120 (New) (Roof)	1091,23	1000kg	1.930,00	7.260,00	9.190,00	558,00	10.028,39	608,91
	HEB 320 (New) (Roof)	1020,40	1000kg	1.930,00	7.260,00	9.190,00	558,00	9.377,44	569,38
	UPE 220 (New) (Roof)	368,94	1000kg	1.930,00	7.260,00	9.190,00	558,00	3.390,58	205,87
	UPE 400 (New) (Roof)	776,52	1000kg	1.930,00	7.260,00	9.190,00	558,00	7.136,19	433,30
Staircases	Reinforced Concrete (Central Staircase)	12024,00	1m3	180,00	912,00	1.092,00	178,00	5.470,92	891,78
	RC Railing (Central Staircase)	4056,00	1m3	180,00	912,00	1.092,00	178,00	1.845,48	300,82
	Mares Groin Vault (Central Staircase)	0,00	1m3	122,00	1.080,00	1.202,00	128,00	-	-
	Mares Groin Vault Columns (Central Staircase)	0,00	1m3	122,00	1.080,00	1.202,00	128,00	-	-
	Binissalem Stone Railing Interior (Central	4613,70	1m2	127,10	405,90	533,00	31,75	-	-
	Lorca Natural Stone 70x70 cm Tiles	1953,13	1m2	127,10	405,90	533,00	31,75	19.806,28	1.179,83
	Kerakoll Plaster Biocalce	12041,70	1kg	0,92	3,49	4,41	0,39	53.091,86	4.696,26
	Concrete Cast-In Staircase (Existing)	0,00	1m3	180,00	912,00	1.092,00	178,00	-	-
	Concrete Cast-In Staircase (New)	22608,00	1m3	180,00	912,00	1.092,00	178,00	10.286,64	1.676,76
	Concrete Cast-In Staircase (Existing)(Staircase 9)	0,00	1m3	180,00	912,00	1.092,00	178,00	-	-
	Rebar Steel Mesh 150.150.6 (Double Layer)	4421,75	1000kg	3.780,00	6.278,00	10.058,00	544,30	44.473,94	2.406,76
	Paint	16,31	1kg	4,46	21,57	26,03	1,26	424,43	20,48
	Binissalem Stone	0,00	1m2	127,10	405,90	533,00	31,75	-	-
	Ceramic Vault (4cm) (Staircase 9)	0,00	1m2	40,90	251,00	291,90	165,00	-	-
	Railing (Iron) (Staircase 9)	0,00	1kg	5,37	14,62	19,99	1,54	-	-
	Railing Handle (Staircase 9)	0,00	1m3	10.980,00	1.528,00	12.508,00	- 777,70	-	-
	Timber Plinth (Staircase 9)(Recovered)	0,00	1m3	10.980,00	1.528,00	12.508,00	- 777,70	-	-
	Hydraulic Tiles (Recovered) (Staircase 10)	0,00	1m2	40,90	251,00	291,90	165,00	-	-
	Timber Plinth (Staircase 10)(Recovered)	0,00	1m3	10.980,00	1.528,00	12.508,00	- 777,70	-	-
Balconies	Stone Balcony (Typical Balcony & Miradors)	0,00	1m3	122,00	1.080,00	1.202,00	128,00	-	-
	Concrete Filling (Typical Balcony) (New)	13320,00	1m3	180,00	912,00	1.092,00	178,00	6.060,60	987,90
	Rebar Steel Mesh 150.150.6	237,86	1000kg	3.780,00	6.278,00	10.058,00	544,30	2.392,35	129,46
	Lorca Natural Stone 70x70 cm Tiles	106,15	1m2	127,10	405,90	533,00	31,75	863,46	51,44
	Oak Parquet (Miradors)	23,22	1m3	13.100,00	1.706,00	14.806,00	- 1.041,00	479,71	- 33,73
	Railing (Iron)	0,00	1kg	5,37	14,62	19,99	1,54	-	-
Skylights	Aluminium Square Frame	70,18	1m	55,83	174,40	230,23	12,45	15.839,82	856,56
	Aluminium Diagonal Frame	29,38	1m	55,83	174,40	230,23	12,45	6.630,62	358,56
	Aluminium Surrounding Frame	40,47	1m	55,83	174,40	230,23	12,45	9.135,53	494,02
	Aluminium Side Frame	24,48	1m	55,83	174,40	230,23	12,45	5.525,52	298,80
	Aluminium Vertical Frame (Total)	80,29	1m	55,83	174,40	230,23	12,45	18.123,71	980,06
	Clear Glass	635,27	1m2	48,61	451,50	500,11	36,64	15.473,40	1.133,64
	Frosted Glass	635,27	1m2	48,61	451,50	500,11	36,64	15.473,40	1.133,64
	Frosted Glass (Coffered Ceiling) (Recovered)	0,00	1m2	48,61	451,50	500,11	36,64	-	-
	Timber Frame (Coffered Ceiling) (Recovered)	0,00	1m3	10.980,00	1.528,00	12.508,00	- 777,70	-	-
	Timber Coffer Panel (Coffered Ceiling)	0,00	1m3	10.980,00	1.528,00	12.508,00	- 777,70	-	-
	Timber Beams (Coffered Ceiling) (Pine) (New)	1606,89	1m3	10.980,00	1.528,00	12.508,00	- 777,70	36.623,42	- 2.277,11
	Internal Timber Joists (Coffered Ceiling)	0,00	1m3	10.980,00	1.528,00	12.508,00	- 777,70	-	-

5.5 Results

			Ökobaudat	
	WEIGHT ALL	WEIGHT NEW	PEI	GWP
	[kg]	[kg]	[MJ]	[kg CO2eq]
timber	60035,71	24840,99	457941,67	-20463,96
aggregates	19820,83	0,00	0,00	0,00
stone	4131342,71	61826,84	563498,87	34113,87
concrete	1180664,57	1117952,57	511149,92	83968,05
HP clay	64837,66	50871,87	201962,72	12933,29
glass	13004,78	5919,30	144331,75	10574,30
metal	373922,94	310776,32	4106683,75	255719,91
plastic	128,72	128,72	17513,33	756,85
others	77153,86	76324,26	660104,57	41366,19
TOTAL	5920911,78	1648640,87	6663186,58	418968,50
VEGETAL	59315,69	24840,99	457941,67	
total natural	4257147,63	149581,41	1276495,11	
OTHER NATURAL	4197831,95	124740,41	818553,44	
OTHER	1663764,15	1499059,47	5386691,47	

T5 Results Chart





T6 GWP &PEI Values of Each Typology of Material

The refurbishment project involved replacing the floor slabs with concrete while retaining the existing stone walls.

1.Material Quantities:

-The total weight of materials, including those present before the refurbishment, indicates a significant amount of resources utilised. Notably, the highest weights are attributed to stone (4,131,343 kg) and concrete (1,180,665 kg), which are substantial contributors to the overall material consumption.

-Considering only the new materials added during the refurbishment, the most significant weights are attributed to concrete (1,117,953 kg) and metal (310,776 kg), indicating a considerable use of these materials in the project.

2.Primary Energy Intensity:

-PEI values represent the total amount of primary energy consumed throughout the life cycle of the materials.

-The highest PEI values are associated with metal (4,106,684 MJ) and timber (457,942 MJ). These materials contribute significantly to the energy consumption in the project.

3.Global Warming Potential:

-GWP values measure the total greenhouse gas emissions associated with the materials used.

-Metal (255,720 kg) and concrete (83,968 kg) show the highest GWP values, indicating substantial greenhouse gas emissions during their life cycle.

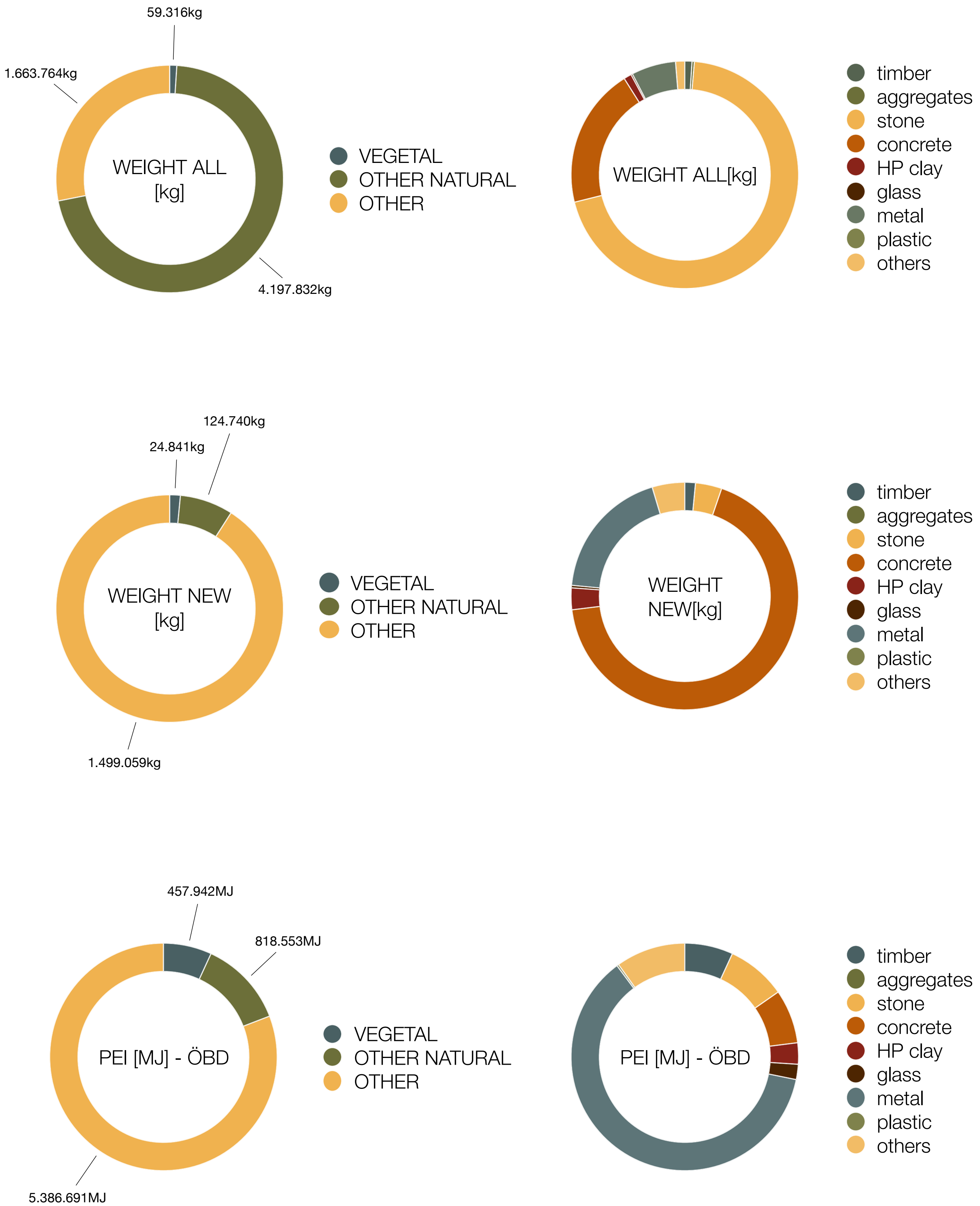
Considering these findings, we can provide some commentary on the sustainability of the building:

Material Selection: The refurbishment project relied heavily on resource-intensive materials such as concrete and metal. These materials have significant environmental impacts during their production, contributing to high energy consumption and greenhouse gas emissions. Considering the principles of sustainability, it is important to explore alternative materials with lower environmental footprints, promoting more sustainable choices in future projects.

Existing Materials: The decision to retain the existing stone walls demonstrates a sustainable approach by reducing the need for additional extraction and production. Preserving and reusing existing materials help to minimise environmental impacts and conserve resources.

Energy Efficiency: While the LCA focused on the material aspects (A1-A3 stages), it is crucial to consider energy efficiency measures implemented during the refurbishment. Improvements in insulation, lighting, or HVAC systems could possibly reduce energy consumption and associated environmental impacts during the building's operational phase. During a conversation with the owners of the building, they stated that they think the energy costs of the building and maintenance is not as high as they expected, which could be an outcome of the architect Sergi Bastidas planned prior during the refurbishment.

Further Analysis: To comprehensively evaluate the building's sustainability, it is essential to conduct a complete life cycle assessment, including stages beyond A1-A3. Assessing the operational phase, maintenance, and end-of-life scenarios would provide a more holistic understanding of the building's environmental performance.



T7 Weights All, Weight New, and PEI Values Divided by Material Class & Type

To lower the initial values obtained in the A1-A3 analysis of the building, several measures could have been implemented without exceeding the scope of this analysis. One significant strategy would have been to explore the increased usage of timber instead of steel beams in the structural design. European building codes permit the structural utilization of timber, offering a sustainable alternative to steel. By incorporating timber beams, the building could have experienced a reduction in its Global Warming Potential (GWP) since timber has a negative value when considering its carbon sequestration capabilities. Although timber beams would require larger dimensions to match the strength of the steel beams, this could have presented additional benefits in terms of enhanced air conditioning and cable passage options within the building.

The specific use of kiln-dried timber could have been considered. Kiln-dried timber possesses favourable properties, including improved stability and durability, which make it suitable for construction applications. Despite the relatively low quantity of new timber used in the project, opting for kiln-dried timber could have resulted in a further reduction in the building's Primary Energy Input (PEI) value compared to other timber types. This choice aligns with the objective of minimizing energy consumption during the A1-A3 stages.

In addition to the proposed measures to lower the environmental impact of the building, it is important to highlight the architect's commendable effort to prioritise material recovery and reuse. By salvaging and utilising existing materials such as vaults, marés stone walls, wooden windows and doors, and flooring, the architect demonstrated a conscious approach to minimizing waste and optimising resource utilization. This strategy not only aligns with sustainability principles but also significantly contributes to reducing the overall environmental impact of the building.

Had the architect not prioritised material recovery and instead relied solely on new materials, the environmental impact would have been considerably higher. The extraction, production, and transportation of new materials typically entail substantial energy consumption and associated greenhouse gas emissions. However, by incorporating existing materials into the refurbishment project, the need for additional production and the associated environmental burdens were minimised.

The architect's decision to prioritise material recovery showcases a holistic approach to sustainable building practices, going beyond the boundaries of the A1-A3 analysis. By leveraging the value of existing materials, the project not only reduced waste but also preserved the unique character and heritage of the building. This approach highlights the importance of considering the entire life cycle of a building and embracing sustainable strategies that prioritise resource conservation and minimise environmental impacts.

06 Analysis of the Environmental Impact

108 Array Windows of Rialto Living Apartments
© Bastidas Architecture

6.1 Similar Studies Prior

New Traditional Architecture (NTA) is often touted as a sustainable building solution, but the question of whether it is truly sustainable remains controversial. However, a study by Alice M. Moncaster, "Widening understanding of low embodied impact buildings: Results and recommendations from 80 multi-national quantitative and qualitative case studies," offers evidence to support the argument that NTA is indeed sustainable.

The study analysed 80 multi-national case studies of low embodied impact buildings and found that NTA consistently demonstrated lower embodied impacts compared to other building types. This is because NTA often incorporates traditional building techniques and materials that have low embodied energy, such as locally sourced stone, brick, and timber. These materials also tend to have longer lifetimes and require less maintenance, reducing the overall impact of the building over its lifetime.

Additionally, NTA typically utilises passive design strategies such as shading, natural ventilation, and orientation, which reduce the need for energy-intensive mechanical systems and decrease the building's carbon footprint. NTA also incorporates elements such as green roofs and rainwater harvesting, further reducing the building's impact on the environment.
It is worth noting that while NTA may have lower embodied impacts, it is not immune to sustainability issues. For example, the use of non-local materials and the lack of energy-efficient systems can increase the building's operational impact. However, by following best practices, NTA can still be a sustainable option for building design.

In conclusion, the study by Alice M. Moncaster supports the argument that New Traditional Architecture is indeed sustainable. With its focus on low embodied impact materials and passive design strategies, NTA has the potential to reduce the environmental impact of buildings over their lifetime.

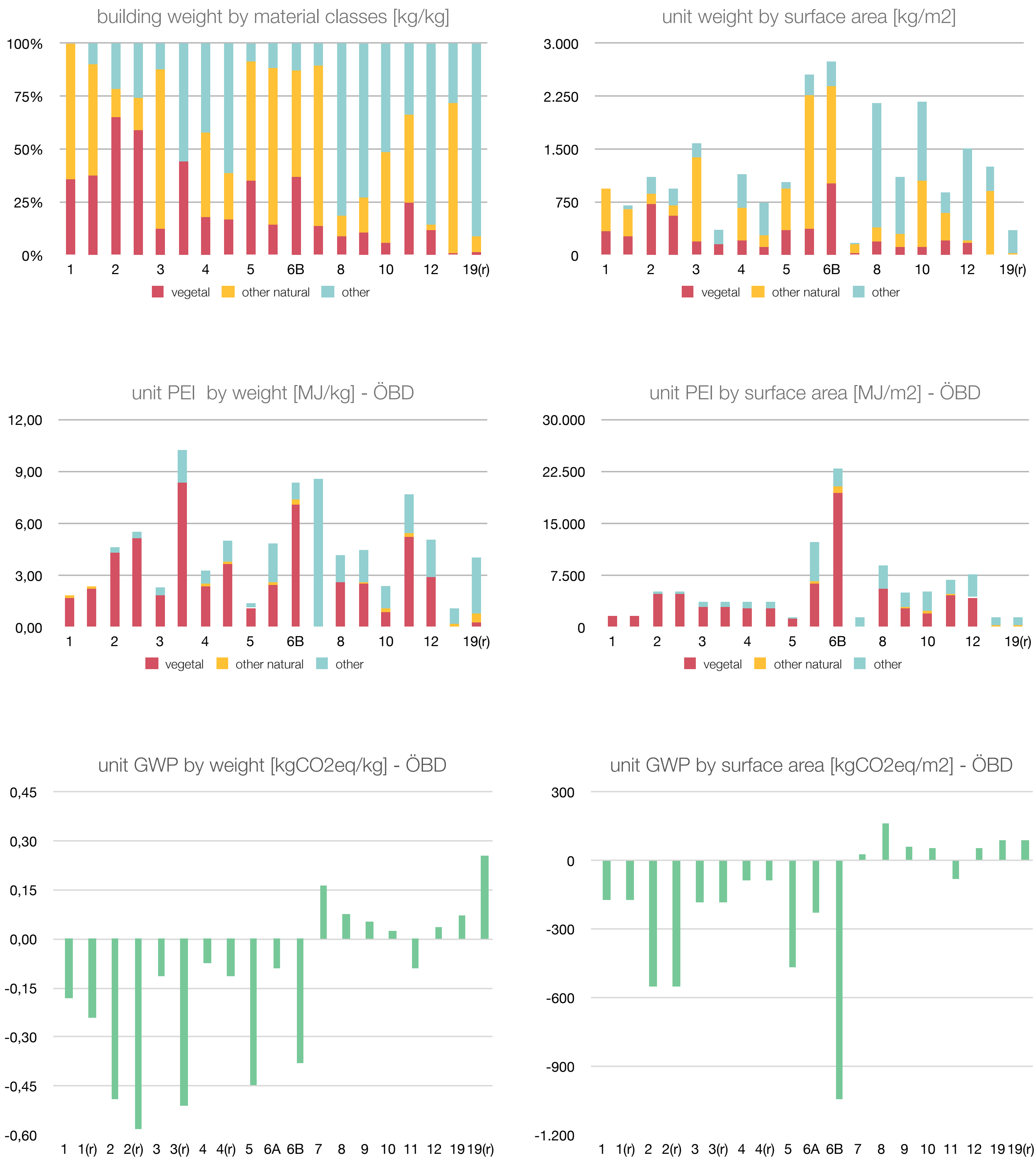
6.2 Buildings In Comparison

To be able to understand the building values better, the results are compared with the results of the case studies from the book “Vegetarian Architecture” by Andrea Bocco Guarneri.

As mentioned at the book, some aspects worth mentioning are;

“The building materials used are analysed in detail but are presented in the charts aggregated in three macro-categories vegetal materials: all other natural materials; man-made. For the sake of comparison, these categories are used to describe all the case studies.

The environmental impacts of buildings are both expressed in absolute values and in values per kilogram per square meter and per capita. The surface area is consistently defined as gross internal area GIA) that is as the sum total of surface areas measured at the inner face of perimeter walls. This choice was due to the fact that what counts is the amount of space available for living, and also to the fact that in buildings where the envelope is insulated with natural materials such as straw bales, the thickness of perimeter walls can be significant and heavily affects the gross floor area (GFA), that is, the sum total of surface area measured at the outer face of perimeter walls. Similarly, GIV (gross internal volume) was considered, not the whole built volume. (A.B. Guarneri, 2020)



T8 Weight, GWP, and PEI Value Comparisons of the Case Study Building and Reference Buildings from 'Vegetarian Architecture by Andrea Bocco Guarneri

#	NAME	GIA	WEIGHT												
		[m2]	tot [kg]	building weight by material classes [kg]			building weight by material classes [kg/kg]			unit weight by surface area [kg/m2]				tot [MJ]	
				vegetal	other natural	other	vegetal	other natural	other	tot	vegetal	other natural	other		
1	Hirose House	114	106.880	38.134	68.735	11	0,36	0,64	0,00	938	335	603	0	196.714	
1(r)		114	81.637	30.882	42.527	8.228	0,38	0,52	0,10	716	271	373	72	196.714	
2	Cheia	23	25.738	16.782	3.408	5.548	0,65	0,13	0,22	1.119	730	148	241	119.697	
2(r)		23	21.744	12.789	3.408	5.548	0,59	0,16	0,26	945	556	148	241	119.697	
3	Casa Steila Mar	572	911.500	112.79	685.043	113.665	0,12	0,75	0,12	1.594	197	1.198	199	2.098.10	1
3(r)		572	204.818	91.153	0	113.665	0,45	0,00	0,55	358	159	0	199	2.098.10	1
4	Sandberghof	411	469.598	85.782	186.211	197.606	0,18	0,40	0,42	1.143	209	453	481	152.287	1
4(r)		411	305.981	51.972	66.090	187.918	0,17	0,22	0,61	744	126	161	457	152.287	1
5	Villa Strohbunt	103	106.864	37.757	60.105	9.002	0,35	0,56	0,08	1.038	367	584	87	152.943	
6A	Createrra	65	166.427	23.937	122.874	19.616	0,14	0,74	0,12	2.560	368	1.890	302	802.515	
6B	Gartist	125	343.872	127.47	172.716	43.680	0,37	0,50	0,13	2.751	1.020	1.382	349	2.870.82	2
7	Bamboo Ark	176	29.460	4.099	22.278	3.083	0,14	0,76	0,10	167	23	127	18	253.430	
8	Biestøa	153	329.165	30.034	31.139	267.991	0,09	0,09	0,81	2.151	196	204	1.752	1.373.86	
9	Food Hub	61	67.683	7.099	11.179	49.405	0,10	0,17	0,73	1.110	116	183	810	303.307	
10	Wangeliner Garten	156	340.417	19.026	145.542	175.849	0,06	0,43	0,52	2.182	122	933	1.127	810.835	
11	WISE	2.212	1.966.39	483.99	820.607	661.795	0,25	0,42	0,34	889	219	371	299	15.159.7	1
12	Maruyama-gumi	183	276.623	32.842	7.500	236.281	0,12	0,03	0,85	1.512	179	41	1.291	1.412.03	
19	Rialto Living	4.680	5.920.91	59.316	4.197.832	1.663.764	0,01	0,71	0,28	1.265	13	897	356	6.663.18	
19(r)		4.680	1.648.64	24.841	124.740	1.499.059	0,02	0,08	0,91	352	5	27	320	6.663.18	

T9 Weight, GWP, and PEI Value Comparisons by Chart of the Case Study Building and Reference Buil

6.3 Commentary

When analysing the unit Global Warming Potential (GWP) by surface area, it becomes evident that the value for the studied building is positive, indicating the emission of greenhouse gases during its life cycle. However, in comparison to other buildings that extensively employed natural and vegetal materials in their construction, the observed GWP value is relatively lower. This finding suggests that despite utilising fewer sustainable materials, the refurbishment of an existing building has the potential to significantly reduce the overall GWP associated with its construction. This reduction in greenhouse gas emissions can be attributed to the reuse and preservation of the building's original materials, which inherently lowers the demand for energy-intensive production processes.

Moreover, when contrasting the unit GWP by weight, the investigated building stands out with the highest value. This outcome implies that the materials utilised in the refurbishment project significantly contribute to greenhouse gas emissions during their production, transportation, and processing stages. The higher GWP value in this context underscores the importance of considering alternative, more sustainable material choices to mitigate the environmental impact of construction activities.

A similar trend is observed when examining the unit Primary Energy Input (PEI) by weight compared to the unit PEI by surface area. Notably, there is a substantial decrease in the PEI value per unit surface area, a reduction that is primarily evident in refurbishment projects. This decrease can be attributed to the fact

EE (ÖBD)											GWP (ÖBD)		
EE by material classes [MJ]			unit PEI by surface area [MJ/m2]				unit PEI by weight [MJ/kg]				tot [kgCO2e]	unit GWP by surface area [kgCO2eq/m2]	unit GWP by weight [kgCO2eq/kg]
vegetal	other natural	other	tot	vegetal	other natural	other	tot	vegetal	other natural	other			
184.379	11.612	723	1.726	1.617	102	6	1,84	1,73	0,11	0,01	-19.535	-171	-0,18
184.379	11.612	723	1.726	1.617	102	6	2,41	2,26	0,14	0,01	-19.535	-171	-0,24
111.541	243	7.912	5.204	4.850	11	344	4,65	4,33	0,01	0,31	-12.665	-551	-0,49
111.541	243	7.912	5.204	4.850	11	344	5,50	5,13	0,01	0,36	-12.665	-551	-0,58
.717.521	0	380.580	3.668	3.003	0	665	2,30	1,88	0,00	0,42	-104.428	-183	-0,11
.717.521	0	380.580	3.668	3.003	0	665	10,24	8,39	0,00	1,86	-104.428	-183	-0,51
.125.516	48.738	348.616	371	2.738	119	848	0,32	2,40	0,10	0,74	-34.911	-85	-0,07
.125.516	48.738	348.616	371	2.738	119	848	0,50	3,68	0,16	1,14	-34.911	-85	-0,11
121.985	1.459	29.499	1.485	1.184	14	286	1,43	1,14	0,01	0,28	-47.906	-465	-0,45
408.173	29.174	365.167	12.346	6.280	449	5.618	4,82	2,45	0,18	2,19	-14.701	-226	-0,09
.436.550	106.735	327.541	22.967	19.492	854	2.620	8,35	7,09	0,31	0,95	-130.775	-1.046	-0,38
0	0	253.430	1.440	0	0	1.440	8,60	0,00	0,00	8,60	4.845	28	0,16
850.855	9.615	513.398	8.980	5.561	63	3.356	4,17	2,58	0,03	1,56	25.165	164	0,08
169.980	6.135	127.192	4.972	2.787	101	2.085	4,48	2,51	0,09	1,88	3.604	59	0,05
309.914	70.204	430.718	5.198	1.987	450	2.761	2,38	0,91	0,21	1,27	8.665	56	0,03
0.333.035	419.070	4.407.638	6.853	4.671	189	1.993	7,71	5,25	0,21	2,24	-178.197	-81	-0,09
795.874	3.546	612.619	7.716	4.349	19	3.348	5,10	2,88	0,01	2,21	9.941	54	0,04
457.942	818.553	5.386.691	1.424	98	175	1.151	1,13	0,08	0,14	0,91	418.968	90	0,07
457.942	818.553	5.386.691	1.424	98	175	1.151	4,04	0,28	0,50	3,27	418.968	90	0,25

ding and Reference Buildings from ‘Vegetarian Architecture by Andrea Bocco Guarneri

that refurbishment projects maximise the utilisation of existing materials, thus reducing the need for energy-intensive production processes associated with new material extraction and manufacturing. The preference for reusing materials in refurbishment projects is advantageous not only in terms of environmental impact but also in saving energy that would otherwise be consumed in the production of new materials.

Overall, these findings highlight the potential benefits of refurbishment projects in terms of minimizing the environmental impact of building construction. The reuse and preservation of existing materials, as exemplified in the investigated building, can contribute to reduced GWP values and lower energy consumption. This underscores the significance of considering refurbishment as a sustainable strategy within the construction industry, offering an opportunity to optimize resource utilization and decrease environmental burdens associated with new construction activities.

07 Conclusion

7.1 Is Rialto Living a Sustainable Project?

7.2 Is New Traditional Architecture more sustainable?

109 Staircase 9 For Residential Access
© Bastidas Architecture

7.1 Is Rialto Living a Sustainable Project?

In conclusion, when evaluating the sustainability of Rialto Living, it is essential to consider its performance in the A1-A3 stages of the life cycle analysis. The comparison of unit Global Warming Potential (GWP) by surface area reveals a positive value, albeit relatively lower compared to buildings that extensively utilised natural and vegetal materials. However, the unit GWP by weight indicates that the building has the highest value among the studied buildings. This emphasises the need for sustainable material choices in construction projects and suggests that the refurbishment of an existing building can effectively reduce the GWP associated with its construction.

The comparison of unit Primary Energy Input (PEI) by weight versus unit PEI by surface area demonstrates a significant decrease in values per unit surface area. This reduction, which is particularly notable in refurbishment projects, highlights the benefits of maximizing material reuse to save energy that would otherwise be expended in producing new materials.

To further enhance the sustainability of Rialto Living, recommendations can be made. These include exploring the increased use of timber instead of steel beams in compliance with European codes, as timber possesses negative carbon sequestration potential. Incorporating kiln-dried timber, which has lower PEI values, could also be beneficial. Moreover, the architect's efforts to recover and utilize existing materials, such as vaults, marés stone walls, wooden windows and doors, and flooring, demonstrate a conscious approach to waste reduction and resource optimisation.

Considering the above findings, while Rialto Living may not achieve the highest sustainability rankings when compared to other buildings, its sustainable aspects are evident. The project showcases the potential of refurbishment projects in minimizing environmental impact through material recovery and reuse. By implementing recommendations for material choices and focusing on resource conservation, Rialto Living can serve as a valuable example of sustainable building practices, contributing to the reduction of carbon emissions and energy consumption in the construction industry.

7.2 Is New Traditional Architecture More Sustainable?

New Traditional Architecture, a design approach that combines elements of traditional architecture with modern building techniques and materials, can be seen as a sustainable approach to building design.

One of the main advantages of New Traditional Architecture is its focus on timeless design. By incorporating elements of traditional architecture, such as gabled roofs and ornate mouldings, into modern building design, New Traditional Architecture creates buildings that are not only beautiful but also have a longer lifespan.

This approach also emphasises the use of natural materials, such as brick, stone, and wood, which are not only durable but also have a lower environmental impact than many modern building materials. These natural materials also help to create a sense of warmth and timelessness, which can contribute to the overall sustainability of the building.

Additionally, New Traditional Architecture often incorporates elements that promote energy efficiency, such as proper orientation, natural lighting and ventilation, which can help to reduce the energy consumption of the building over time.

Another important aspect of New Traditional Architecture is its focus on integrating the building with its surroundings. By designing buildings that are in harmony with their natural environment, New Traditional Architecture can help to promote sustainable development and reduce the overall impact of the building on the surrounding ecosystem.

However, it's important to note that simply using traditional elements and natural materials doesn't guarantee the sustainability of the building. New Traditional Architecture approach should be combined with sustainable building practices, such as energy efficiency and use of renewable energy, water conservation, and responsible waste management, to create truly sustainable buildings.

New Traditional Architecture can be seen as a sustainable approach to building design, as it emphasises timeless design, natural materials, and integration with the surrounding environment, when combined with sustainable building practices it can create buildings that are both beautiful and environmentally responsible.

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Notes

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Annex

110 Northern Façade of Rialto Living
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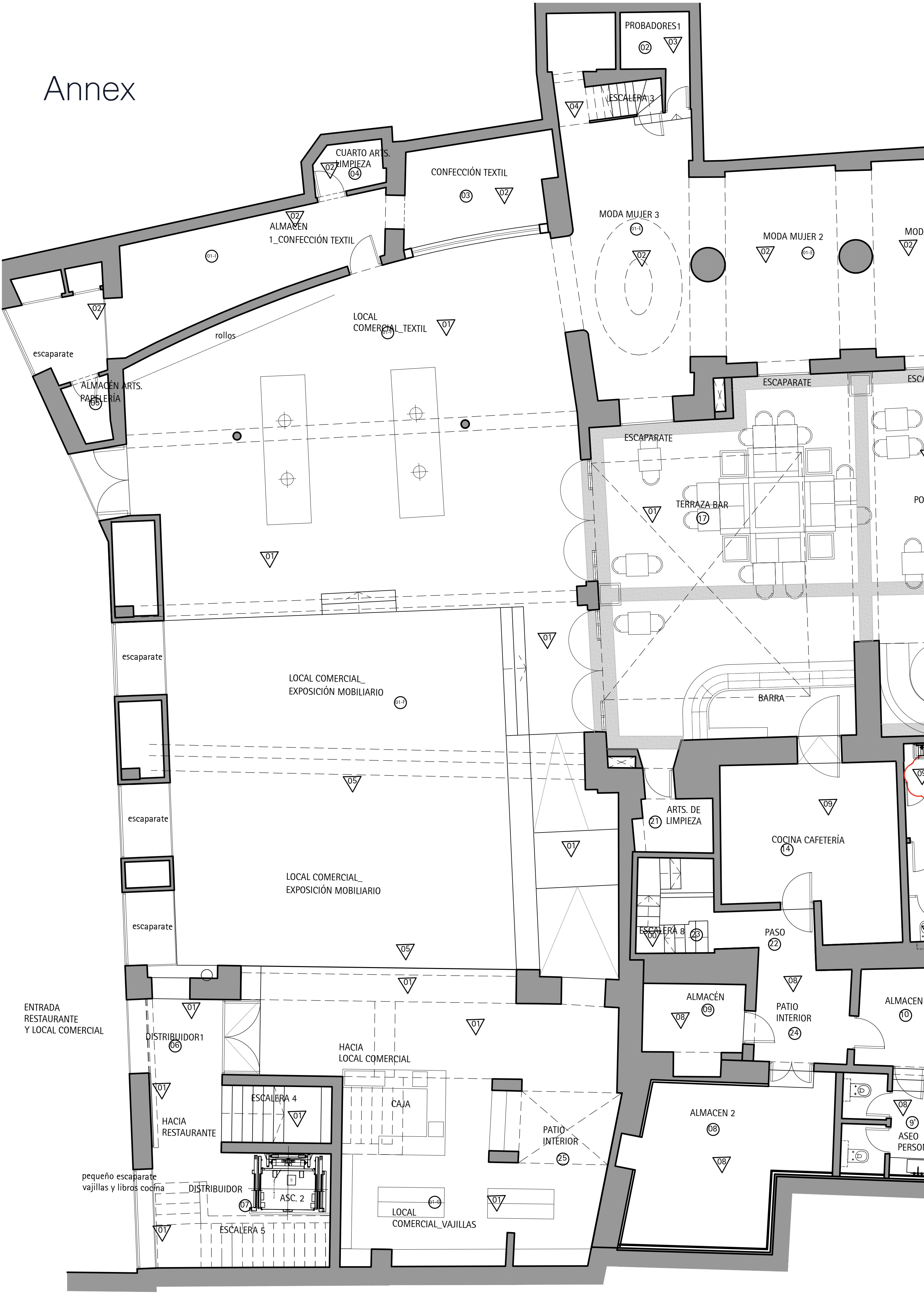
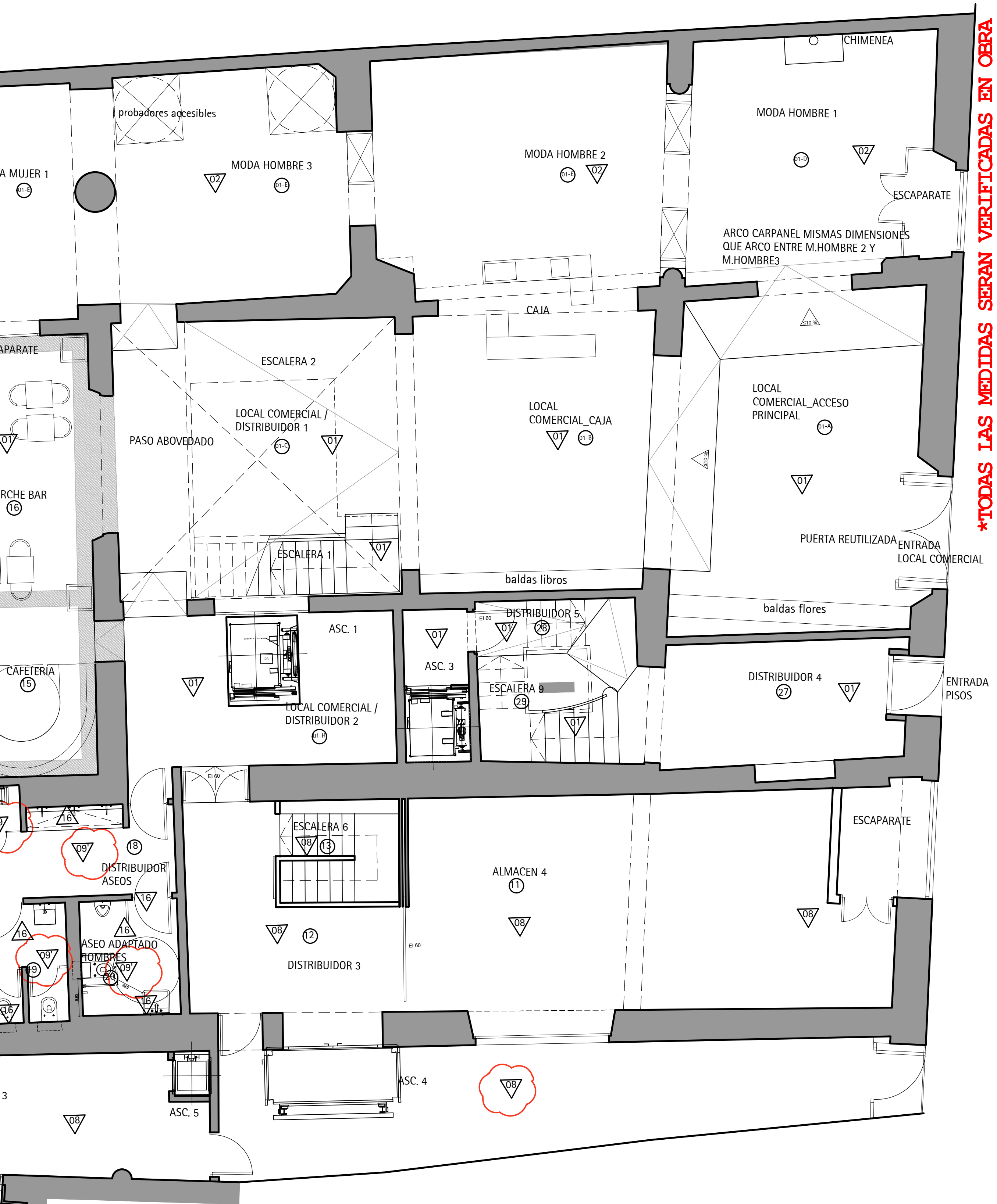

PROBADORES1
ESCALERA 3
CUARTO ARTS. LIMPIEZA
CONFECCIÓN TEXTIL
MODA MUJER 3
MODA MUJER 2
ALMACEN 1_CONFECCIÓN TEXTIL
LOCAL COMERCIAL_TEXTIL
rollos
escaparate
ALMACÉN ARTS. PAPELERÍA
ESCAPARATE
TERRAZA BAR
BARRA
LOCAL COMERCIAL_ EXPOSICIÓN MOBILIARIO
ARTS. DE LIMPIEZA
COCINA CAFETERÍA
ESCALERA 8
PASO
ALMACÉN
PATIO INTERIOR
ENTRADA RESTAURANTE Y LOCAL COMERCIAL
DISTRIBUIDOR1
HACIA LOCAL COMERCIAL
ESCALERA 4
CAJA
HACIA RESTAURANTE
PATIO INTERIOR
ALMACEN 2
pequeño escaparate vajillas y libros cocina
DISTRIBUIDOR
ASC. 2
ESCALERA 5
LOCAL COMERCIAL_VAJILLAS

*Original Floor Finishes Plan, Ground Floor



Plano: PLANTA BAJA ACABADOS

Escala: 1.125

Fecha: 17.DICIEMBRE.2013

Proyecto: PROYECTO BÁSICO Y DE EJECUCIÓN DE REFORMA Y REHABILITACIÓN DE EDIFICIO CAN O'RYAN

Emplazamiento: RIALTO LIVING

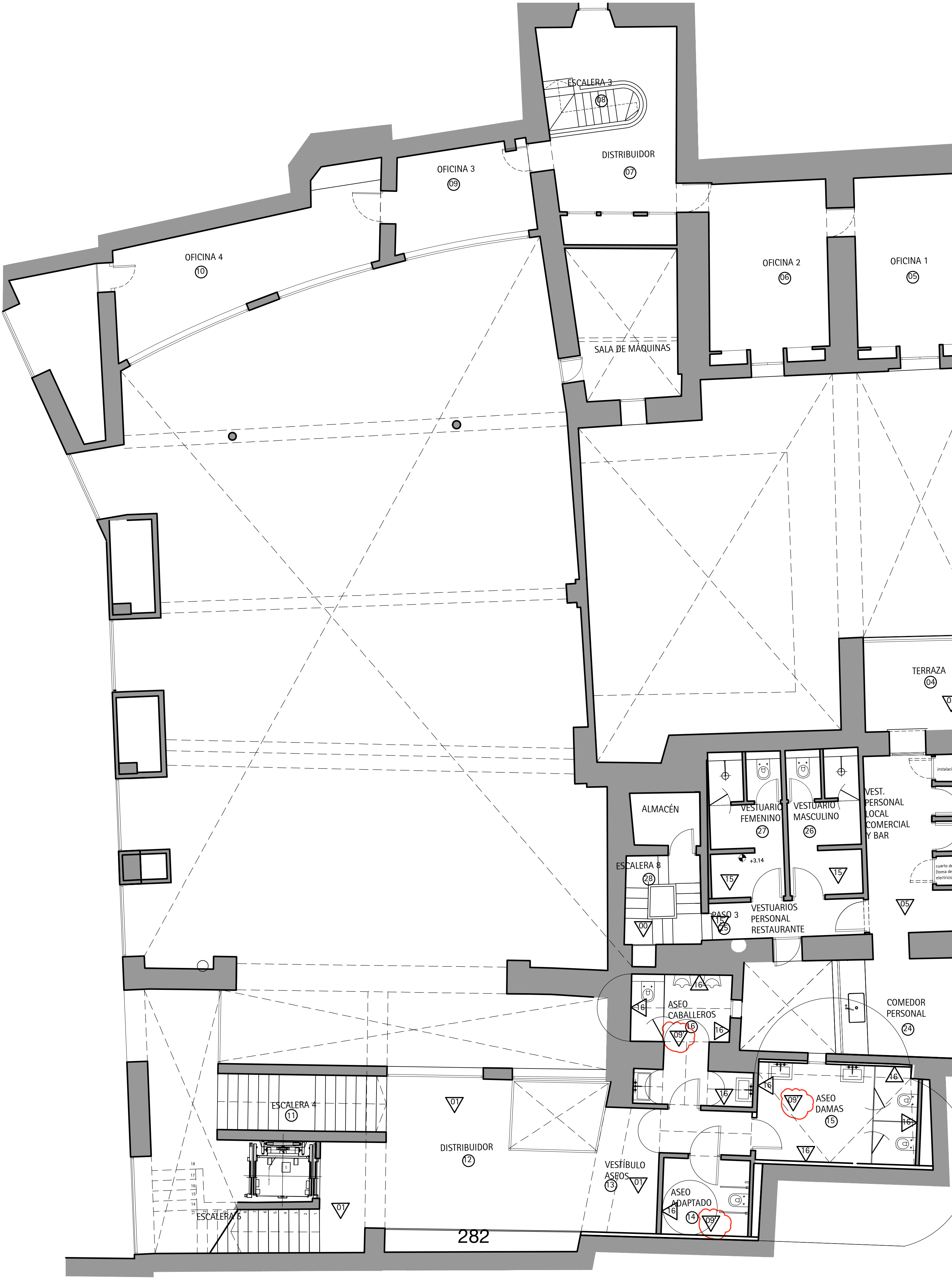
Propietario/promotor:

info@bastidasarchit
Tel.0034.971256

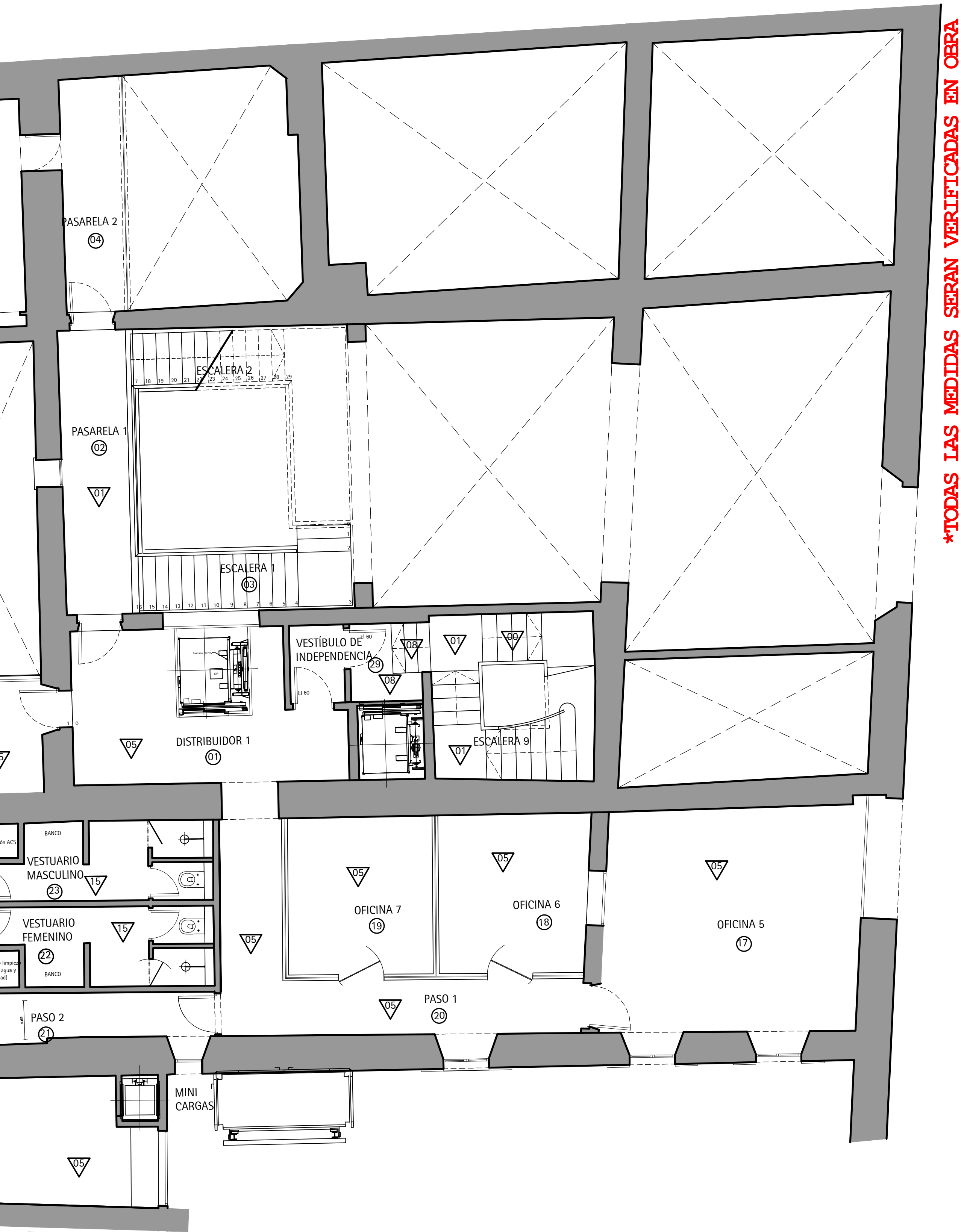
PAVIMENTOS
00_pavimento existente con pintura para suelo
01_piedra natural tipo Lorca abujardado envejecidocon tratamiento hidrófugo y antimanchas. Despiece 70x70.
02_Pavimento existente de piedra de Binisalem limpiado y tratado
03_Pavimento nuevo de piedra de Binisalem
03'_Piedra de Binisalem pulido despiece rectangular con recorte cuadrado en centro de carrara (igual despiece que el existente en restaurante)
04_Tarima de madera existente limpiada y tratada
05_Tarima de madera tipo Roble, tablones anchos y poco nudo
06_Parquet de espiga
07_Suelo hidráulico recuperado
08_Cemento pintado
09_Pavimento cerámico
09'_Pavimento cerámico tipo Zellige

PARAMENTOS VERTICALES
10_Marés descarnado
11_Estucado color blanco sucio
12_Zócalo de madera
13_Pintura lisa
14_Alicatado original recuperado
15_Baldosa cerámica
16_Zócalo alicatado tipo Zellige
17_Barandilla de hierro según diseño de D.F.
18_Baldosa metro

TECHOS
21_Falso techo de pladur
22_Forjado existente de bovedilla cerámica descarnada
23_Moldura recuperada
24_Forjado visto
25_Claraboya
26_Pavimento de vidrio original recuperado
27_Pavimento de vidrio tipo Val Saint Lambert
28_Techo existente


ESCALERA 3
08
DISTRIBUIDOR
07
OFICINA 3
09
OFICINA 4
10
OFICINA 2
06
OFICINA 1
05
SALA DE MÁQUINAS
TERRAZA
04
ALMACÉN
VESTUARIO FEMENINO
27
VESTUARIO MASCULINO
26
VEST. PERSONAL LOCAL COMERCIAL Y BAR
ESCALERA 8
28
+3.14
15
PASO 3
25
VESTUARIOS PERSONAL RESTAURANTE
05
00
ASEO CABALLEROS
16
09
COMEDOR PERSONAL
24
ESCALERA 4
11
01
DISTRIBUIDOR
12
ASEO DAMAS
15
VESTÍBULO ASEOS
13
ASEO ADAPTADO
14
ESCALERA 6

*Original Floor Finishes Plan, Mezzanine Floor



Plano: PLANTA ENTRESUELO ACABADOS

Escala: 1.125

Fecha: 25.NOVIEMBRE.2013

OBRA

Propietario/promotor: INDOVINATE S.L.

Proyecto: PROYECTO BÁSICO Y DE EJECUCIÓN DE REFORMA Y REHABILITACIÓN DE EDIFICIO CAN O'RYAN

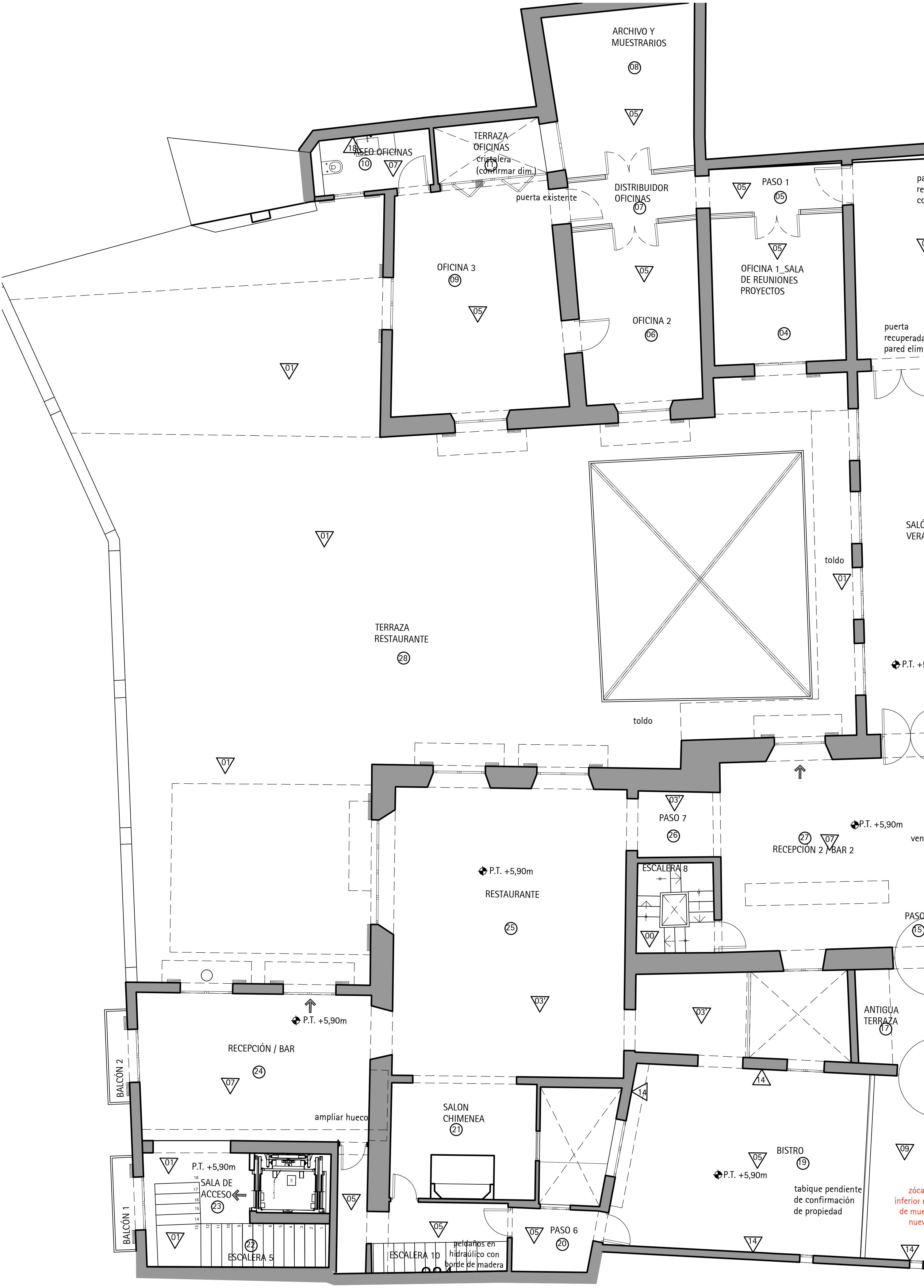
Emplazamiento: RIALTO LIVING
Carrer de Sant Feliu, 3
Palma de Mallorca

info@bastidasarchitects.com
Tel.0034.971256252

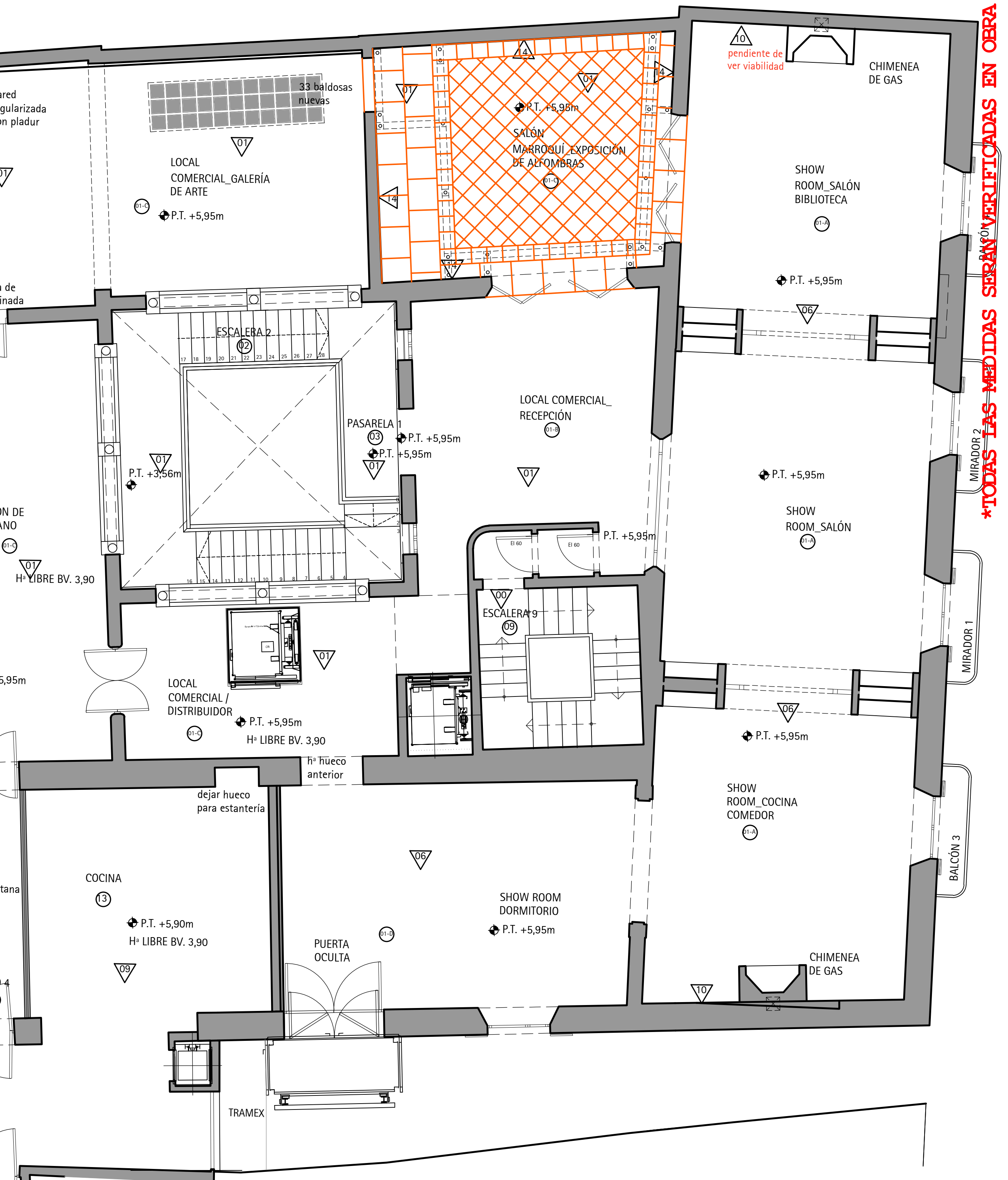
PAVIMENTOS
00_pavimento existente con pintura para suelo
01_piedra natural tipo Lorca abujardado envejecidocon tratamiento hidrófugo y antimanchas. Despiece 70x70.
02_Pavimento existente de piedra de Binisalem limpiado y tratado
03_Pavimento nuevo de piedra de Binisalem
03'_Piedra de Binisalem pulido despiece rectangular con recorte cuadrado en centro de carrara (igual despiece que el existente en restaurante)
04_Tarima de madera existente limpiada y tratada
05_Tarima de madera tipo Roble, tablones anchos y poco nudo
06_Parquet de espiga
07_Suelo hidráulico recuperado
08_Cemento pintado
09_Pavimento cerámico
09'_Pavimento cerámico tipo Zellige

PARAMENTOS VERTICALES
10_Marés descarnado
11_Estucado color blanco sucio
12_Zócalo de madera
13_Pintura lisa
14_Alicatado original recuperado
15_Baldosa cerámica
16_Zócalo alicatado tipo Zellige
17_Barandilla de hierro según diseño de D.F.
18_Baldosa metro

TECHOS
21_Falso techo de pladur
22_Forjado existente de bovedilla cerámica descarnada
23_Moldura recuperada
24_Forjado visto
25_Claraboya
26_Pavimento de vidrio original recuperado
27_Pavimento de vidrio tipo Val Saint Lambert
28_Techo existente


ARCHIVO Y MUESTRARIOS
08
05
ASEO OFICINAS
18
10
07
TERRAZA OFICINAS
cristalera (confirmar dim.)
11
puerta existente
DISTRIBUIDOR OFICINAS
07
PASO 1
05
OFICINA 3
09
OFICINA 2
06
OFICINA 1_SALA DE REUNIONES PROYECTOS
04
01
TERRAZA RESTAURANTE
28
toldo
P.T. +5,90m
RESTAURANTE
25
03'
PASO 7
26
RECEPCIÓN 2 / BAR 2
27
ESCALERA 8
00
RECEPCIÓN / BAR
24
BALCÓN 2
BALCÓN 1
ampliar hueco
SALA DE ACCESO
23
ESCALERA 5
22
SALON CHIMENEA
21
ESCALERA 10
peldaños en hidraúlico con borde de madera
PASO 6
20
ANTIGUA TERRAZA
17
14
BISTRO
19
tabique pendiente de confirmación de propiedad
09

*Original Floor Finishes Plan, First Floor



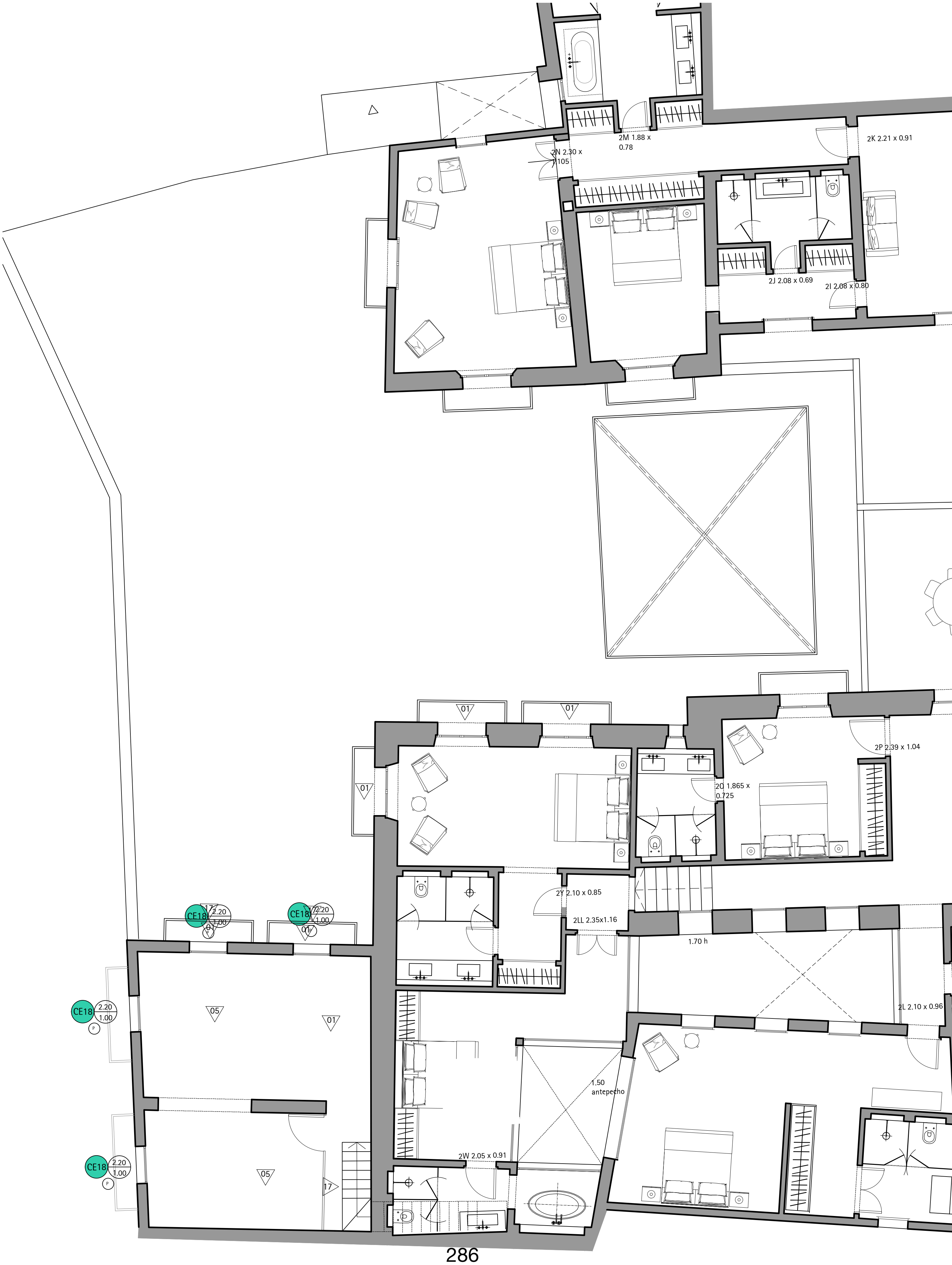
PAVIMENTOS
00_pavimento existente con pintura para suelo
01_piedra natural tipo Lorca abujardado envejecidocon tratamiento hidrófugo y antimanchas. Despiece 70x70.
02_Pavimento existente de piedra de Binisalem limpiado y tratado
03_Pavimento nuevo de piedra de Binisalem
03'_Piedra de Binisalem pulido despiece rectangular con recorte cuadrado en centro de carrara (igual despiece que el existente en restaurante)
04_Tarima de madera existente limpiada y tratada
05_Tarima de madera tipo Roble, tablones anchos y poco nudo
06_Parquet de espiga
07_Suelo hidráulico recuperado
08_Cemento pintado
09_Pavimento cerámico
09'_Pavimento cerámico tipo Zellige

PARAMENTOS VERTICALES
10_Marés descarnado
11_Estucado color blanco sucio
12_Zócalo de madera
13_Pintura lisa
14_Alicatado original recuperado
15_Baldosa cerámica
16_Zócalo alicatado tipo Zellige
17_Barandilla de hierro según diseño de D.F.
18_Baldosa metro

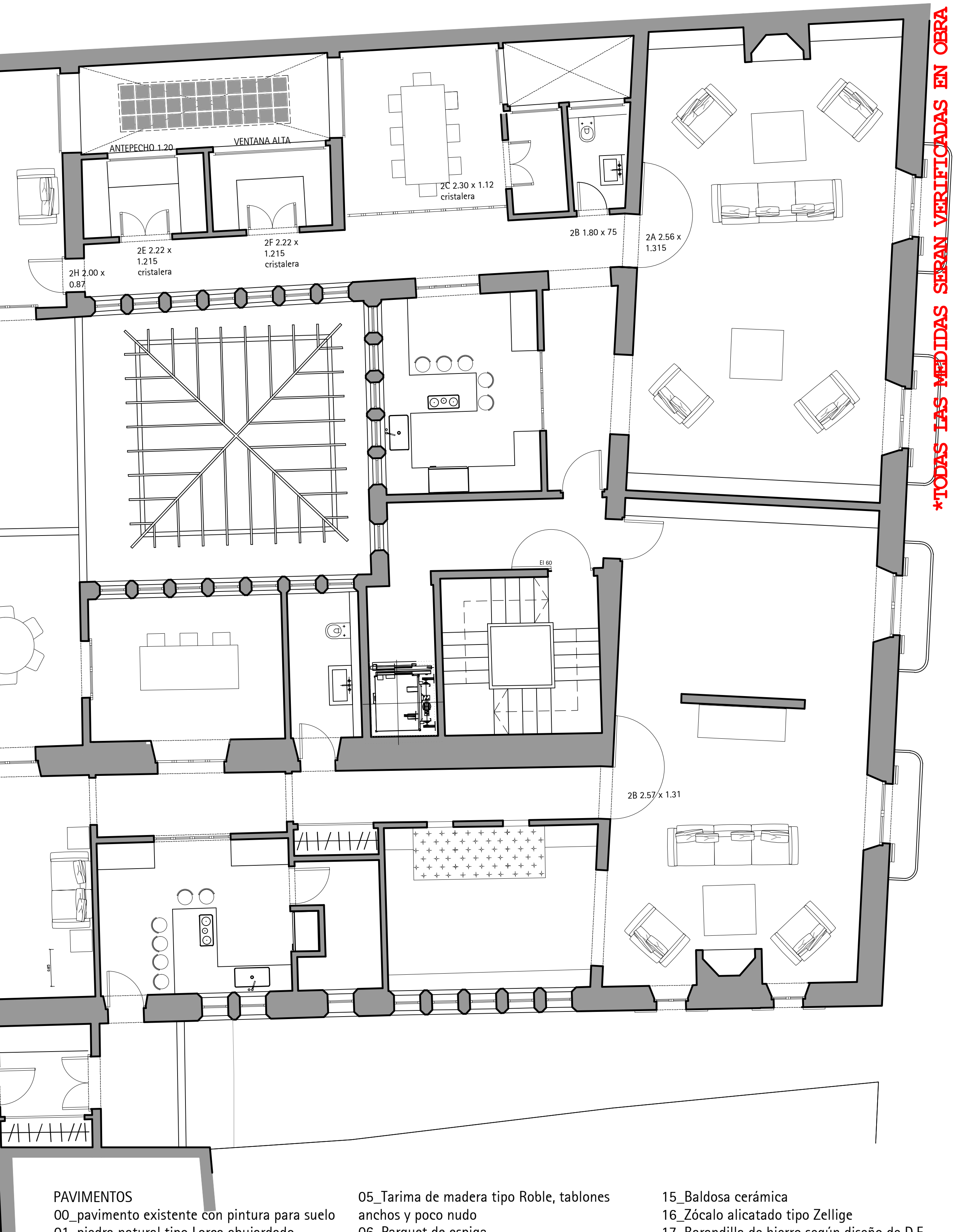
TECHOS
21_Falso techo de pladur
22_Forjado existente de bovedilla cerámica descarnada
23_Moldura recuperada
24_Forjado visto
25_Claraboya
26_Pavimento de vidrio original recuperado
27_Pavimento de vidrio tipo Val Saint Lambert
28_Techo existente

Proyecto: PROYECTO BÁSICO Y DE EJECUCIÓN DE REFORMA Y REHABILITACIÓN DE EDIFICIO CAN O'RYAN
Emplazamiento: RIALTO LIVING
Plano: PLANTA PISO 1 ACABADOS
Escala: 1.125
Propietario/promotor:
Fecha: 25.NOVIEMBRE.2013

info@bastidasarchit
Tel.0034.971256


2N 2.30 x 1.105
2M 1.88 x 0.78
2K 2.21 x 0.91
2J 2.08 x 0.69
2I 2.08 x 0.80
01
2P 2.39 x 1.04
2O 1.865 x 0.725
2Y 2.10 x 0.85
2LL 2.35x1.16
1.70 h
CE18
2.20
1.00
05
17
2L 2.10 x 0.96
1.50 antepecho
2W 2.05 x 0.91

*Original Floor Finishes Plan, Second Floor



Plano: PLANTA PISO 2 ACABADOS
Escala: 1.125
Fecha: 25.NOVIEMBRE.2
OBRA
Propietario/promotor: INDOVINATE S.L.
Proyecto: PROYECTO BÁSICO Y DE EJECUCIÓN DE REFORMA Y REHABILITACIÓN DE EDIFICIO CAN O'RYAN
Emplazamiento: RIALTO LIVING Carrer de Sant Feliu, 3 Palma de Mallorca

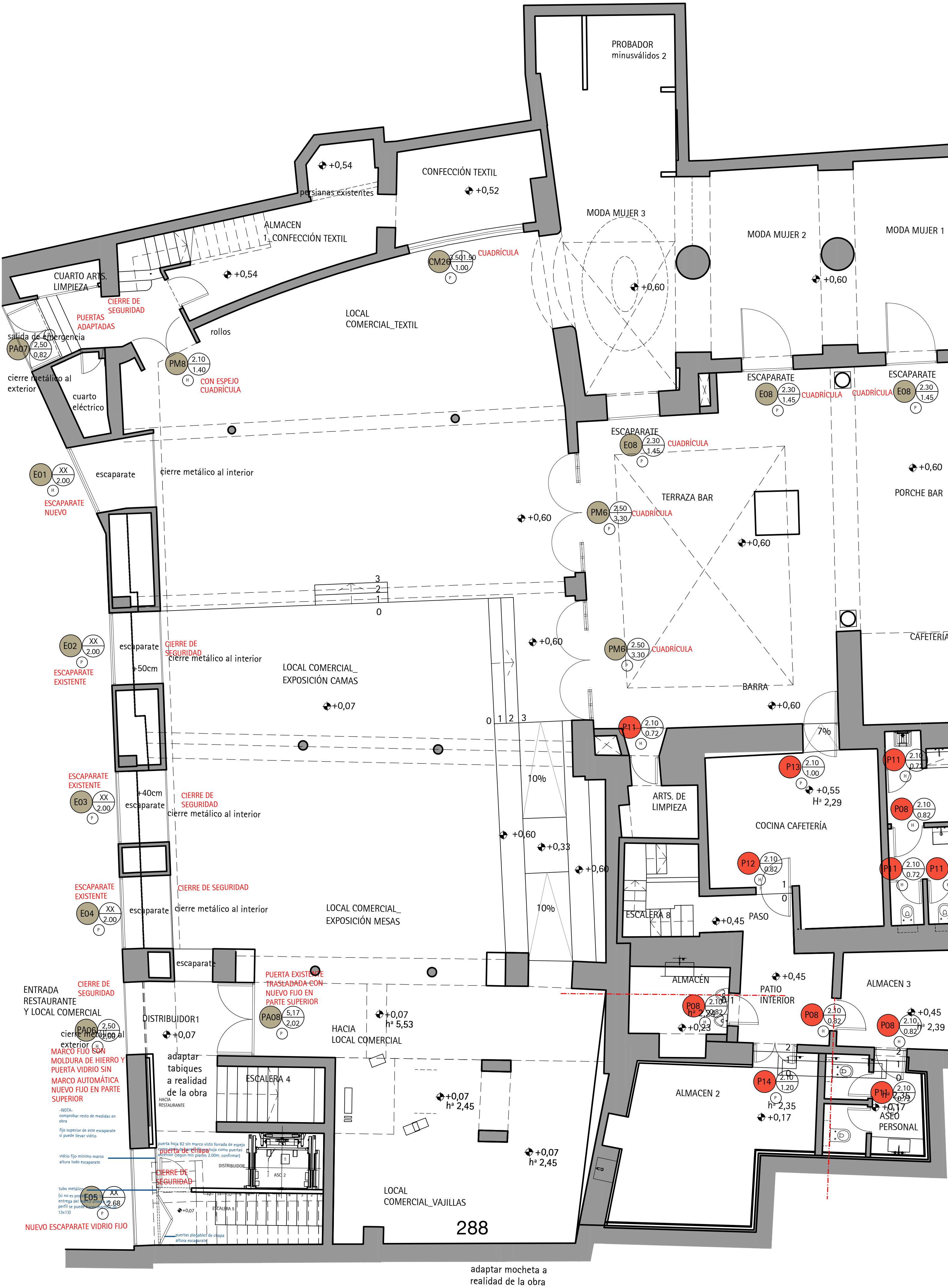
info@bastidasarchitects.com
Tel.0034.971256252

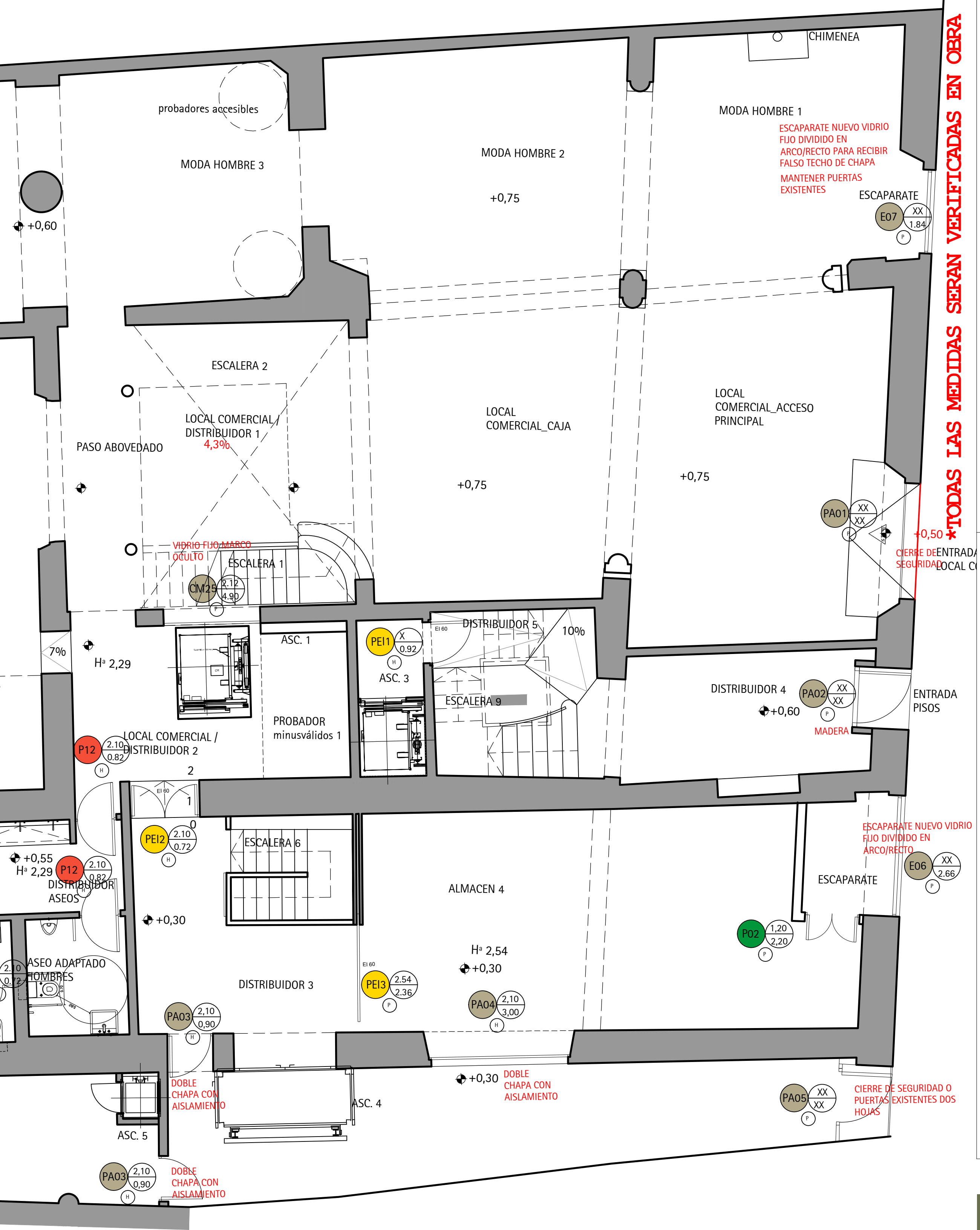
PAVIMENTOS
00_pavimento existente con pintura para suelo
01_piedra natural tipo Lorca abujardado envejecidocon tratamiento hidrófugo y antimanchas. Despiece 70x70.
02_Pavimento existente de piedra de Binisalem limpiado y tratado
03_Pavimento nuevo de piedra de Binisalem
03'_Piedra de Binisalem pulido despiece rectangular con recorte cuadrado en centro de carrara (igual despiece que el existente en restaurante)
04_Tarima de madera existente limpiada y tratada
05_Tarima de madera tipo Roble, tablones anchos y poco nudo
06_Parquet de espiga
07_Suelo hidráulico recuperado
08_Cemento pintado
09_Pavimento cerámico
09'_Pavimento cerámico tipo Zellige

PARAMENTOS VERTICALES
10_Marés descarnado
11_Estucado color blanco sucio
12_Zócalo de madera
13_Pintura lisa
14_Alicatado original recuperado
15_Baldosa cerámica
16_Zócalo alicatado tipo Zellige
17_Barandilla de hierro según diseño de D.F.
18_Baldosa metro

TECHOS
21_Falso techo de pladur
22_Forjado existente de bovedilla cerámica descarnada
23_Moldura recuperada
24_Forjado visto
25_Claraboya
26_Pavimento de vidrio original recuperado
27_Pavimento de vidrio tipo Val Saint Lambert
28_Techo existente

PLANTA PISO 2


PROBADOR minusválidos 2
CONFECCIÓN TEXTIL
+0,54
+0,52
persianas existentes
ALMACEN 1_CONFECCIÓN TEXTIL
MODA MUJER 3
MODA MUJER 2
MODA MUJER 1
CUARTO ARTS. LIMPIEZA
CM26
CUADRÍCULA
+0,60
CIERRE DE SEGURIDAD
PUERTAS ADAPTADAS
salida de emergencia
PA07
rollos
LOCAL COMERCIAL_TEXTIL
PM8
CON ESPEJO CUADRÍCULA
cierre metálico al exterior
cuarto eléctrico
ESCAPARATE
E08
ESCAPARATE
E08
E01
escaparate
cierre metálico al interior
ESCAPARATE NUEVO
TERRAZA BAR
PM6
PORCHE BAR
CAFETERÍA
E02
escaparate
CIERRE DE SEGURIDAD
cierre metálico al interior
ESCAPARATE EXISTENTE
+50cm
LOCAL COMERCIAL_ EXPOSICIÓN CAMAS
+0,07
BARRA
P11
10%
7%
ESCAPARATE EXISTENTE
E03
+40cm
escaparate
CIERRE DE SEGURIDAD
cierre metálico al interior
ARTS. DE LIMPIEZA
P13
+0,55
Hª 2,29
P08
COCINA CAFETERÍA
+0,33
P12
ESCAPARATE EXISTENTE
E04
escaparate
CIERRE DE SEGURIDAD
cierre metálico al interior
LOCAL COMERCIAL_ EXPOSICIÓN MESAS
ESCALERA 8
+0,45
PASO
escaparate
PUERTA EXISTENTE TRASLADADA CON NUEVO FIJO EN PARTE SUPERIOR
ALMACÉN
PATIO INTERIOR
ALMACEN 3
ENTRADA RESTAURANTE Y LOCAL COMERCIAL
CIERRE DE SEGURIDAD
DISTRIBUIDOR1
PA08
hª 5,53
HACIA LOCAL COMERCIAL
+0,23
hª 2,39
PA06
cierre metálico al exterior
MARCO FIJO CON MOLDURA DE HIERRO Y PUERTA VIDRIO SIN MARCO AUTOMÁTICA NUEVO FIJO EN PARTE SUPERIOR
adaptar tabiques a realidad de la obra
ESCALERA 4
hª 2,45
ALMACEN 2
P14
hª 2,35
+0,17
ASEO PERSONAL
puerta de chapa
CIERRE DE SEGURIDAD
E05
NUEVO ESCAPARATE VIDRIO FIJO
LOCAL COMERCIAL_VAJILLAS
adaptar mocheta a realidad de la obra



LEYENDA CARPINTERÍA

PUERTAS Ó CRISTALERAS	NOMBRE	ALTO / ANCHO
VENTANAS	NOMBRE	ANCHO TOTAL / ALTO TOTAL / ANTEPECHO

H HOJA · M MARCO · P PROYECTO (HUECO)

X SIN REVISAR: INACCESIBLE EN OBRA O SIN EJECUTAR

- CARPINTERÍA A RESTAURAR
- CARPINTERÍA METÁLICA
- CARPINTERÍA CONTRA INCENDIOS
- CARPINTERÍA NUEVA
- ARMARIOS
- CARPINTERÍAS ESPECIALES

Proyecto: PROYECTO BÁSICO Y DE EJECUCIÓN DE REFORMA Y REHABILITACIÓN DE EDIFICIO CAN O'RYAN

Plano: PLANTA BAJA CARPINTERÍAS

Escala: 1.125

Fecha: 10 DICIEMBRE 2014

Propietario/promotor: INDOVINATE S.L.

Emplazamiento: RIALTO LIVING, Carrer de Sant Feliu, 3, Palma de Mallorca

OBRA

info@bastidasarchitects.com
Tel.0034.971256252


SALA DE REUNIONES
07
DISTRIBUIDOR
09
replantear escalones en obra (huella 28,00 tabica mínimo 17,50cm)
DISTRIBUIDOR
10
OFICINA 2
06
VE19
VE18
VE17
PE EA
VE15
VE16
recercado de marés. rejas sustituir por nuevas a imitación de balcones originales
posiblemente eliminada
+3,38
ALMACÉN
ESCALERA 8
28
VESTUARIO FEMENINO
27
VESTUARIO MASCULINO
26
PASO 3
25
VESTUARIOS PERSONAL RESTAURANTE
ASEO CABALLEROS
16
VIDRIO FIJO MARCO OCULTO
ESCALERA 4
11
CM16
CM17
VIDRIO FIJO MARCO OCULTO
DISTRIBUIDOR
12
+2,72
Hª 2,88
VESTÍBULO ASEOS
13
Hª b.v. 2,20
espejo
ESCALERA 5
VESTÍBULO ASEOS
1.05 1.10 (AMPLIAR HUECO SI SE USA)
ASEO DAMAS
VESTÍBULO ASEOS ASEO ADAPTADO
ASEO ADAPTADO
14
ASEO DAMAS
15
CM15
VN01
CM2
P11
P8

*TODAS LAS MEDIDAS SERAN VERIFICADAS EN OBRA

LEYENDA CARPINTERÍA

PUERTAS Ó CRISTALERAS — NOMBRE / ALTO / ANCHO

VENTANAS — NOMBRE / ANCHO TOTAL / ALTO TOTAL / ANTEPECHO

H HOJA — M MARCO — P PROYECTO (HUECO)

X SIN REVISAR: INACCESIBLE EN OBRA O SIN EJECUTAR

- CARPINTERÍA A RESTAURAR
- CARPINTERÍA METÁLICA
- CARPINTERÍA CONTRA INCENDIOS
- CARPINTERÍA NUEVA
- ARMARIOS
- CARPINTERÍAS ESPECIALES

Proyecto: PROYECTO BÁSICO Y DE EJECUCIÓN DE REFORMA Y REHABILITACIÓN DE EDIFICIO CAN O'RYAN

Plano: PLANTA ENTRESUELO. FALSOS TECHOS

Escala: 1.125

Fecha: 10 DICIEMBRE 2014

OBRA

Emplazamiento: RIALTO LIVING Carrer de Sant Feliu, 3 Palma de Mallorca

Propietario/promotor: INDOVINATE S.L.

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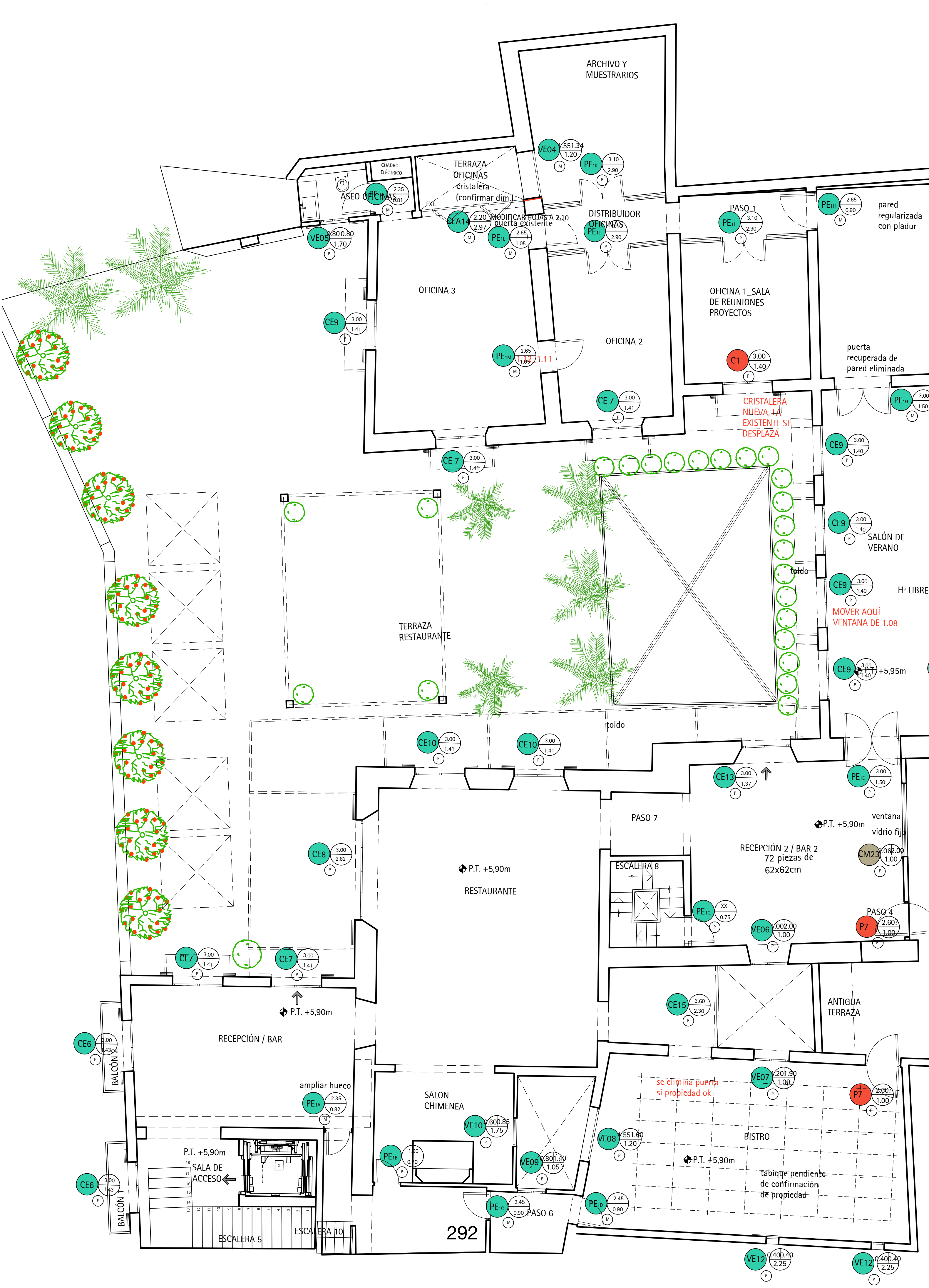
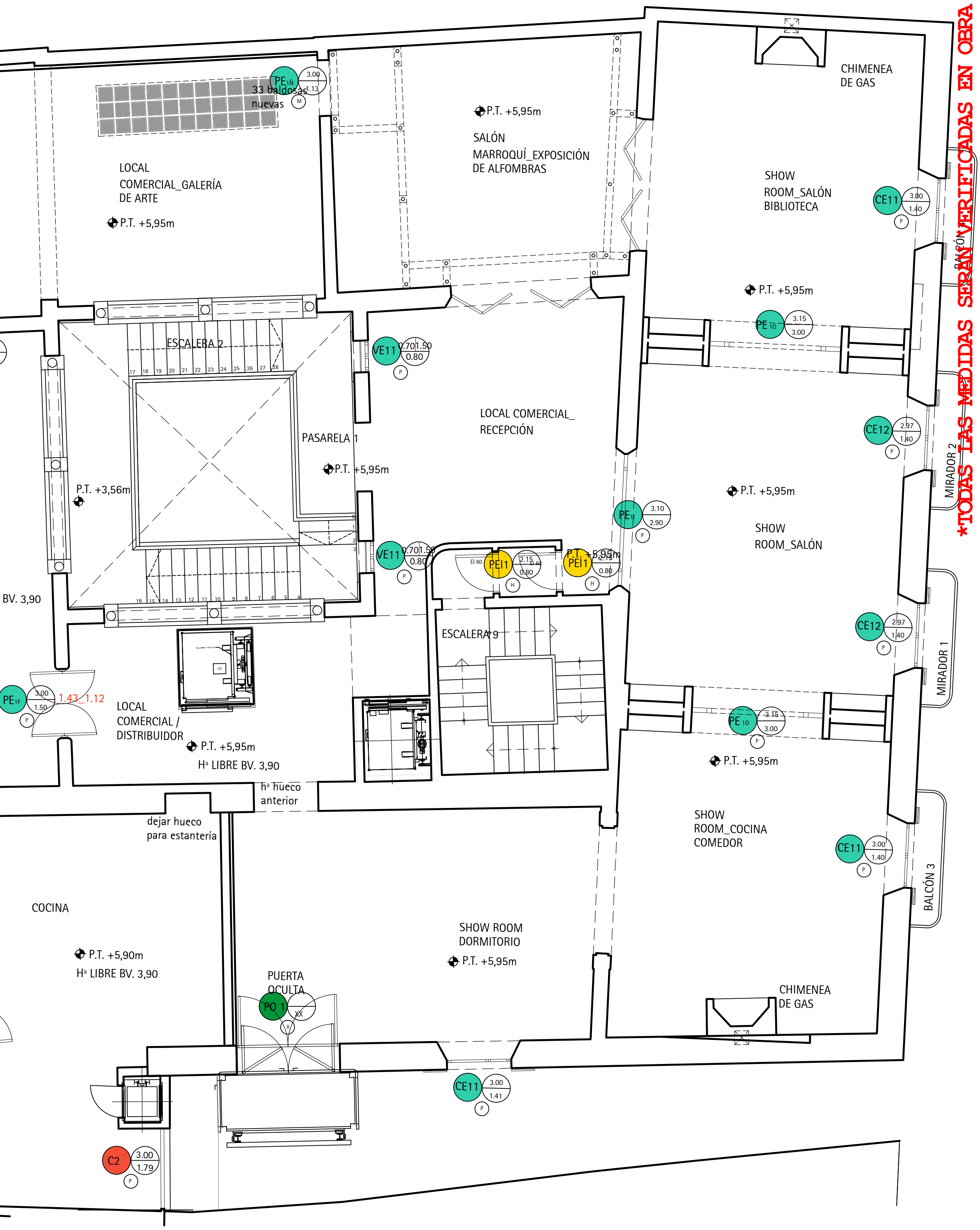


ARCHIVO Y MUESTRARIOS
TERRAZA OFICINAS
cristalera (confirmar dim.)
ASEO OFICINAS
CUADRO ELÉCTRICO
MODIFICAR HOJAS A 2,10 puerta existente
DISTRIBUIDOR OFICINAS
PASO 1
pared regularizada con pladur
OFICINA 3
OFICINA 2
OFICINA 1_SALA DE REUNIONES PROYECTOS
puerta recuperada de pared eliminada
CRISTALERA NUEVA, LA EXISTENTE SE DESPLAZA
SALÓN DE VERANO
toldo
Hª LIBRE
MOVER AQUÍ VENTANA DE 1.08
P.T. +5,95m
TERRAZA RESTAURANTE
toldo
PASO 7
ESCALERA 8
RECEPCIÓN 2 / BAR 2
72 piezas de 62x62cm
ventana vidrio fijo
P.T. +5,90m
PASO 4
RESTAURANTE
ANTIGUA TERRAZA
RECEPCIÓN / BAR
BALCÓN 2
ampliar hueco
SALON CHIMENEA
se elimina puerta si propiedad ok
BISTRO
tabique pendiente de confirmación de propiedad
SALA DE ACCESO
BALCÓN 1
ESCALERA 5
ESCALERA 10
PASO 6



LEYENDA CARPINTERÍA

PUERTAS Ó CRISTALERAS — NOMBRE / ALTO / ANCHO

VENTANAS — NOMBRE / ANCHO TOTAL / ALTO TOTAL / ANTEPECHO

O OBRA · M MARCO · P PROYECTO

X SIN REVISAR: INACCESIBLE EN OBRA O SIN EJECUTAR

- CARPINTERÍA A RESTAURAR
- CARPINTERÍA METÁLICA
- CARPINTERÍA CONTRA INCENDIOS
- CARPINTERÍA NUEVA
- ARMARIOS
- CARPINTERÍAS ESPECIALES

PLANTA PISO 1

Proyecto: PROYECTO BÁSICO Y DE EJECUCIÓN DE REFORMA Y REHABILITACIÓN DE EDIFICIO CAN O'RYAN

Plano: PROYECTO EJECUCIÓN - PLANTA PISO 1

Escala: 1.125

Fecha: 10 DICIEMBRE 2014

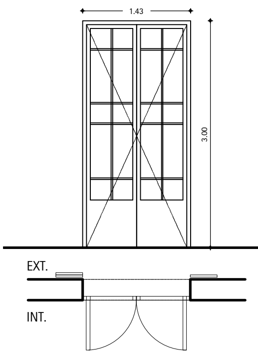
Emplazamiento: RIALTO LIVING Carrer de Sant Feliu, 3 Palma de Mallorca

Propietario/promotor: INDOVINATE S.L.

OBRA

info@bastidasarchitects.com
Tel.0034.971256252

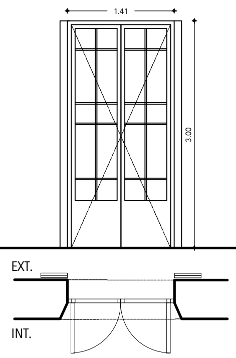
(en 1.30)
FASE 1_CIMG8570



CE6 3.00 / 1.43 (P)

PUERTA EXISTENTE A RECUPERAR,
MADERA EN SU COLOR.
LAS MEDIDAS SON DE HUECO.
CE 6

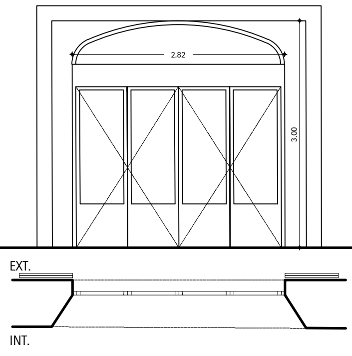
TOTAL
2 UNIDADES
PLANTA PISO 1
BALCONES EN BAR1



CE7 3.00 / 1.41 (P)

PUERTA EXISTENTE A RECUPERAR,
MADERA EN SU COLOR.
LAS MEDIDAS SON DE HUECO.
CE 7

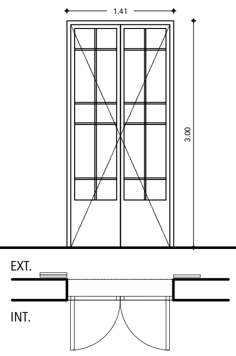
TOTAL
2 UNIDADES
PLANTA PISO 1
OFICINAS 2 Y 3



CE8 3.00 / 2.82 (P)

PUERTA EXISTENTE A RECUPERAR,
MADERA EN SU COLOR.
LAS MEDIDAS SON DE HUECO.
COLOCAR VIDRIO LAMINADO EN
CARA EXTERIOR DELANTE DE
VIDRIERAS
CE 8

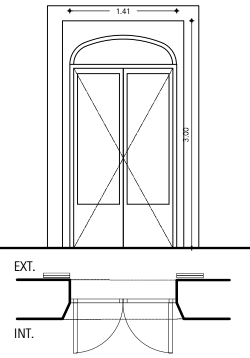
TOTAL
1 UNIDAD
PLANTA PISO 1
RESTAURANTE



CE9 3.00 / 1.40 (P)

PUERTA EXISTENTE A RECUPERAR,
MADERA EN SU COLOR.
LAS MEDIDAS SON DE HUECO.
-NOTA-
SIN PERSIANAS EN SHOW ROOM
SE DESPLAZA UNA DE OFICINA1
CE 9

TOTAL
5 UNIDADES
PLANTA PISO 1
OFICINA 3, SHOW ROOM VERANO

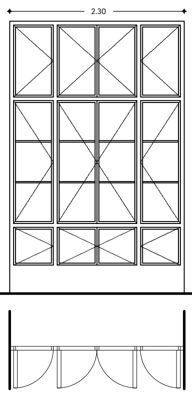


CE10 3.00 / 1.41 (P)

PUERTA EXISTENTE A RECUPERAR,
MADERA EN SU COLOR.
LAS MEDIDAS SON DE HUECO.
COLOCAR VIDRIO LAMINADO EN
CARA EXTERIOR DELANTE DE
VIDRIERAS
CE 10

TOTAL
2 UNIDADES
PLANTA PISO 1
RESTAURANTE

(en 1.20 trasladada)
PUERTAS MAYO 2013
IMG-20130520-WA0019

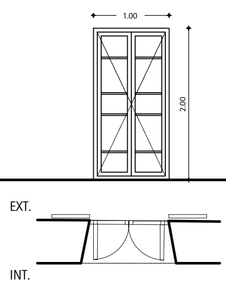


CE15 3.60 / 2.30 (P)

PUERTA EXISTENTE A RECUPERAR,
MADERA EN SU COLOR.
LAS MEDIDAS SON DE HUECO.
confirmar si
pintada
CE 15

TOTAL
1 UNIDAD
PLANTA PISO 1
DISTRIBUIDOR RESTAURANTE

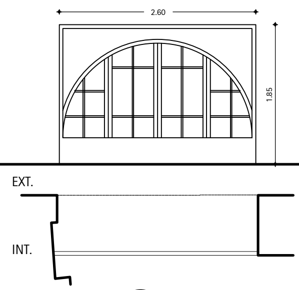
COMPROBAR
ALTURA HOJA



CE16 2.00 / 1.00 (P)

VENTANA EXISTENTE A RECUPERAR,
MADERA EN SU COLOR.
MEDIDAS DE HUECO
CON PERSIANAS EXISTENTES
CE 16

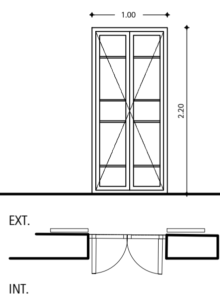
TOTAL
3 UNIDADES
PLANTA ENTRESUELO
OFICINAS_CARRERÓ



CE17 1.85 / 2.60 (P)

VENTANA EXISTENTE A RECUPERAR,
MADERA EN SU COLOR.
MEDIDAS DE HUECO
CE 17

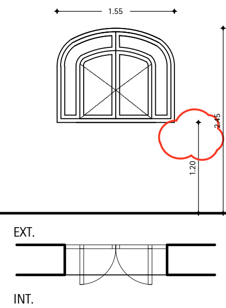
TOTAL
1 UNIDAD
PLANTA ENTRESUELO
OFICINAS



CE18 2.20 / 1.00 (P)

PUERTA EXISTENTE A RECUPERAR,
MADERA EN SU COLOR.
LAS MEDIDAS SON DE HUECO.
CE 18

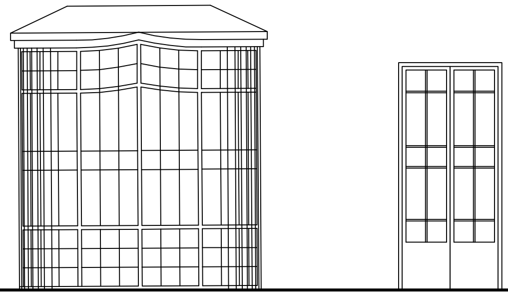
TOTAL
4 UNIDADES
PLANTA PISO 2
SALA VIP



VE04 1.55|1.34 / 1.20 (M)

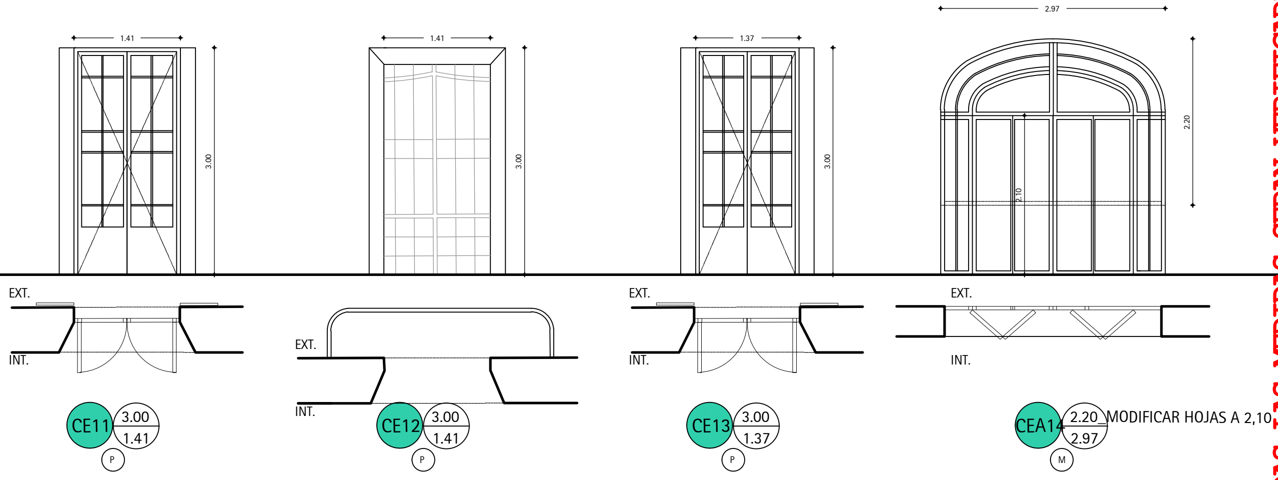
VENTANA EXISTENTE A RECUPERAR,
MADERA EN SU COLOR.
MEDIDAS CON MARCO SEGÚN
DOSIER DE CONTRATAS SOLLER.
CRISTALERA 1.20 TRASLADADA
DIM. CON MARCO SEGÚN DOSIER
VE 04

TOTAL
1 UNIDAD
PLANTA PISO 1
ARCHIVO Y MUESTRARIOS



(en 1.24 trasladada y adaptada)
PUERTAS MAYO 2013
IMG-20130520-WA0045

*TODAS LAS MEDIDAS SERAN VERIFICADAS EN OBRA



PUERTA EXISTENTE A RECUPERAR,
MADERA EN SU COLOR.
LAS MEDIDAS SON DE HUECO.
CE 11

TOTAL
3 UNIDADES
PLANTA PISO 1
SHOW ROOM

PUERTA EXISTENTE A RECUPERAR,
MADERA EN SU COLOR.
LAS MEDIDAS SON DE HUECO.
COMPROBAR MEDIDAS DE MIRADOR
EN OBRA
CE 12

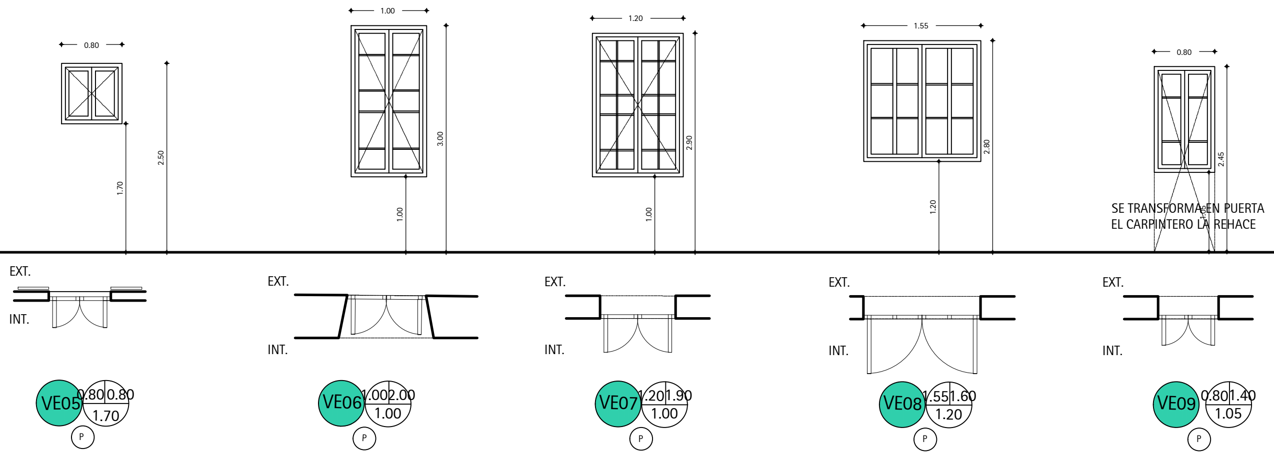
TOTAL
2 UNIDADES
PLANTA PISO 1
SHOW ROOM

PUERTA EXISTENTE A RECUPERAR,
MADERA EN SU COLOR.
LAS MEDIDAS SON DE HUECO.
CE 13

TOTAL
1 UNIDAD
PLANTA PISO 1
BAR 2

PUERTA EXISTENTE A ADAPTAR,
MADERA EN SU COLOR.
MEDIDAS CON MARCO SEGÚN
DOSIER DE CONTRATAS SOLLER.
MODIFICAR PUERTAS A 2,10 DE
ALTURA DE HOJA
CEA 14

TOTAL
1 UNIDAD
PLANTA PISO 1
OFICINA 3



VENTANA EXISTENTE A RECUPERAR,
MADERA EN SU COLOR.
MEDIDAS DE HUECO
VE 05

TOTAL
1 UNIDAD
PLANTA PISO 1
ASEO OFICINAS

VENTANA EXISTENTE A RECUPERAR,
MADERA EN SU COLOR.
MEDIDAS DE HUECO
CON PERSIANAS ORIGINALES
VE 06

TOTAL
1 UNIDAD
PLANTA PISO 1
BAR 2

VENTANA EXISTENTE A RECUPERAR,
MADERA EN SU COLOR.
MEDIDAS DE HUECO
CON PERSIANAS ORIGINALES
VE 07

TOTAL
1 UNIDAD
PLANTA PISO 1
BISTRO

VENTANA EXISTENTE A RECUPERAR,
MADERA EN SU COLOR.
MEDIDAS DE HUECO
VE 08

TOTAL
1 UNIDAD
PLANTA PISO 1
BISTRO

VENTANA EXISTENTE A RECUPERAR,
MADERA EN SU COLOR.
MEDIDAS DE HUECO
VE 09

TOTAL
1 UNIDAD
PLANTA PISO 1
PASO 6

CARPINTERÍA EXISTENTE

OBRA

Fecha: 10 DICIEMBRE 2014

Plano: PLANILLA DE CARPINTERÍAS

Escala: 1.100

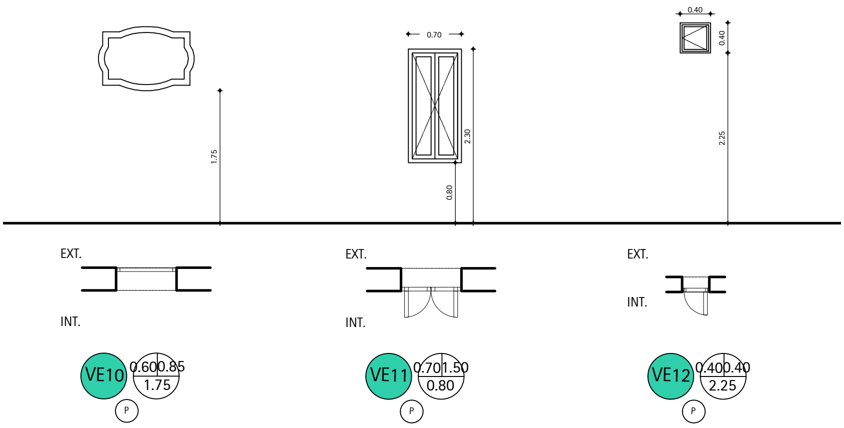
Propietario/promotor: INDOVINATE S.L.

Proyecto: MODIFICACIÓN DURANTE EL TRANSCURSO DE LAS OBRAS DE PROYECTO BÁSICO Y DE EJECUCIÓN DE REFORMA Y REHABILITACIÓN DE EDIFICIO CAN O'RYAN

Emplazamiento: RIALTO LIVING
Carrer de Sant Feliu, 3
Palma de Mallorca

EX

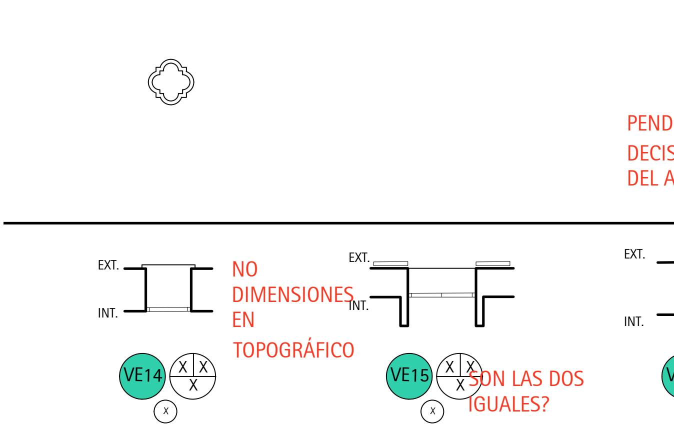
info@bastidasarchitects.com
Tel.0034.971256252



VENTANA EXISTENTE A RECUPERAR, MADERA EN SU COLOR. MEDIDAS DE HUECO	VE 10
TOTAL	1 UNIDAD
PLANTA PISO 1	SALÓN CHIMENEA

VENTANA EXISTENTE A RECUPERAR, MADERA EN SU COLOR. MEDIDAS DE HUECO	VE 11
TOTAL	2 UNIDADES
PLANTA PISO 1	RECEPCIÓN

VENTANA EXISTENTE A RECUPERAR. PARA PINTAR MEDIDAS DE HUECO	VE 12
TOTAL	2 UNIDADES
PLANTA PISO 1	BISTRÓ



NO DIMENSIONES EN TOPOGRÁFICO

¿SON LAS DOS IGUALES?

VENTANA EXISTENTE A RECUPERAR. PARA PINTAR VIDRIO FIJO COMPROBAR DIMENSIONES EN OBRA	VE 14
TOTAL	1 UNIDAD
PLANTA ENTRESUELO	PASARELA 1

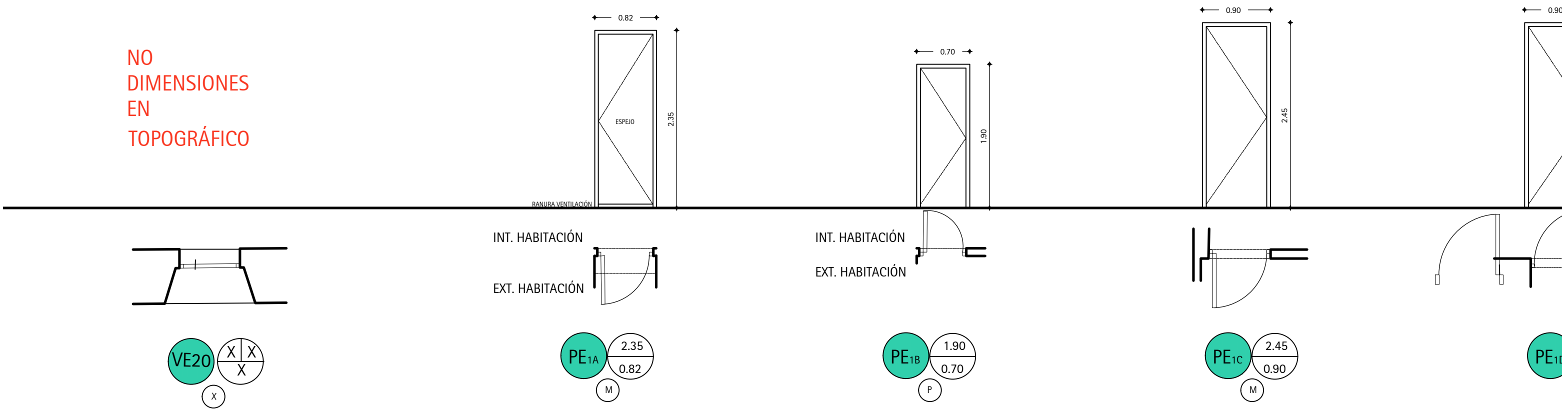
VENTANA EXISTENTE A RECUPERAR. PARA PINTAR ABATIBLE COMPROBAR DIMENSIONES EN OBRA REJAS Y PERSIANAS SUSTITUIDA RECERCADO DE MARÉS AL EXTERIOR	VE 15
TOTAL	2 UNIDADES
PLANTA ENTRESUELO	OFICINAS

VENTANA EXIS[…] PARA PINTAR VENTILACIÓN [...] COMPROBAR D[...] OBRA	
TOTAL	1 UNIDAD
PLANTA ENTR[...]	ALTILLO

DOSIER FASE I_CIMG8568
SEGÚN DOSIER:
1.36-1.40

DOSIER FASE I_CIMG8562
SEGÚN DOSIER:
1.34-1.33

NO DIMENSIONES EN TOPOGRÁFICO



VENTANA EXISTENTE A RECUPERAR. PARA PINTAR COMPROBAR DIMENSIONES EN OBRA	VE 20
TOTAL	1 UNIDAD
PLANTA ENTRESUELO	DISTRIBUIDOR OFICINAS

PUERTA EXISTENTE A RECUPERAR, MADERA PARA PINTAR LAS MEDIDAS SON CON MARCO SEGÚN DOSIER FASE 1: 1.40-1.36 ADAPTADA:ESPEJO EN UNA CARA Y RANURA INF. DE 5CM.	PE 1A
TOTAL	1 UNIDAD
PLANTA PISO 1	BAR1

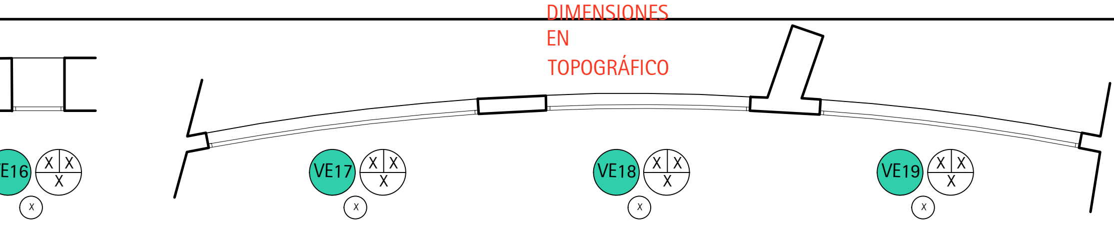
PUERTA EXISTENTE A RECUPERAR, MADERA ACABADO COMO ARRIMADERO. LAS MEDIDAS SON DE HUECO 1.40-1.36	PE 1B
TOTAL	1 UNIDAD
PLANTA PISO 1	SALÓN DE CHIMENEA RESTAURANTE

PUERTA EXISTENTE A RECUPERAR, MADERA PARA PINTAR. LAS MEDIDAS SON CON MARCO SEGÚN DOSIER FASE 1: 1.34-1.33	PE 1C
TOTAL	1 UNIDAD
PLANTA PISO 1	PASO 6 RESTAURANTE

PUERTA EXISTEN[...] MADERA PARA [...] LAS MEDIDAS S[...] DOSIER FASE 1: 1.32-1.33	
TOTAL	1 UNIDAD
PLANTA PISO 1	PASO 6_BISTRO

IENTE DE
IÓN DE USO
LTILLO

NO
DIMENSIONES
EN
TOPOGRÁFICO

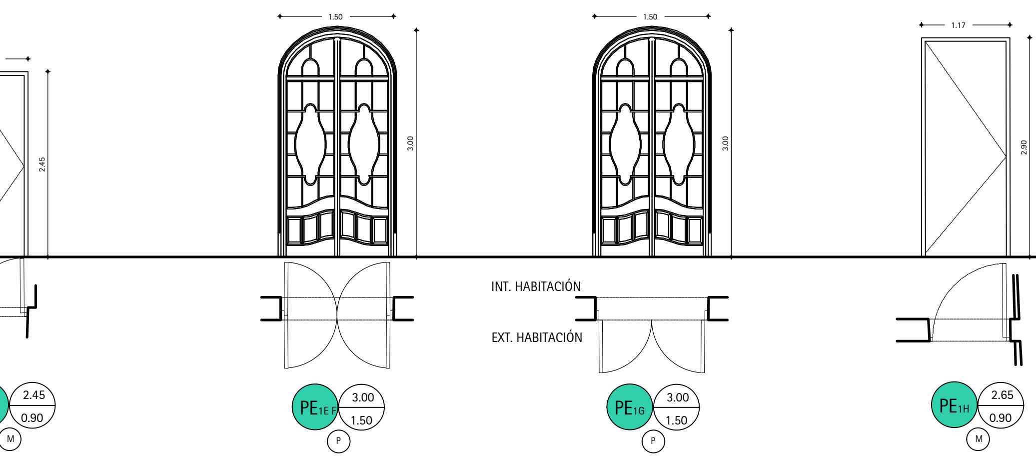


VE 16	VE 17	VE 18	VE 19
...TENTE A RECUPERAR. ...DE MÁQUINAS ...DIMENSIONES EN	VENTANA EXISTENTE A RECUPERAR. PARA PINTAR COMPROBAR DIMENSIONES EN OBRA	VENTANA EXISTENTE A RECUPERAR. PARA PINTAR COMPROBAR DIMENSIONES EN OBRA	VENTANA EXISTENTE A RECUPERAR. PARA PINTAR COMPROBAR DIMENSIONES EN OBRA
VE 16	VE 17	VE 17	VE 17
	TOTAL	TOTAL	TOTAL
	1 UNIDAD	1 UNIDAD	1 UNIDAD
...ESUELO	PLANTA ENTRESUELO	PLANTA ENTRESUELO	PLANTA ENTRESUELO
	OFICINAS	OFICINAS	OFICINAS

DOSIER FASE I_CIMG8346
SEGÚN DOSIER:
1.34-1.33

DOSIER FASE I_CIMG8552
SEGÚN DOSIER:
1.27-1.43
1.43-1.12

DOSIER FASE I_CIMG8529
SEGÚN DOSIER:
1.01-1.12



SE DEBE AMPLIAR
HUECO PARA
USARLA

PE 1C	PE 1 E F	PE 1G	PE 1H
...NTE A RECUPERAR, ...PINTAR ...ON CON MARCO SEGÚN	PUERTA EXISTENTE A RECUPERAR, MADERA PARA PINTAR. VIDRIO NUEVO LAS MEDIDAS SON DE HUECO TRANSFORMADAS EN PUERTAS DE VAIVEN SEGÚN DOSIER FASE I: 1.27-1.43/1.43-1.12	PUERTA EXISTENTE A RECUPERAR, MADERA PARA PINTAR. VIDRIO NUEVO LAS MEDIDAS SON DE HUECO SEGÚN DOSIER FASE 1: 1.03-1.05	PUERTA EXISTENTE A RECUPERAR, MADERA PARA PINTAR. VIDRIO NUEVO LAS MEDIDAS SON CON MARCO SEGÚN DOSIER FASE 1: TRASLADADA DE 1.01-1.12
PE 1C	PE 1 E F	PE 1G	PE 1H
	TOTAL	TOTAL	TOTAL
	2 UNIDADES	1 UNIDAD	1 UNIDAD
	PLANTA PISO 1	PLANTA PISO 1	PLANTA PISO 1
...O	SHOW ROOM VERANO	GALERÍA DE ARTE_SHOW ROOM VERANO	PASO 1 OFICINAS

CARPINTERÍA EXISTENTE

*TODAS LAS MEDIDAS SERAN VERIFICADAS EN OBRA

Plano: PLANILLA DE CARPINTERÍAS
Escala: 1.100
Fecha: 10 DICIEMBRE 2014
Propietario/promotor: INDOVINATE S.L.

OBRA

Proyecto: MODIFICACIÓN DURANTE EL TRANSCURSO DE LAS OBRAS DE PROYECTO BÁSICO Y DE EJECUCIÓN DE REFORMA Y REHABILITACIÓN DE EDIFICIO CAN O'RYAN

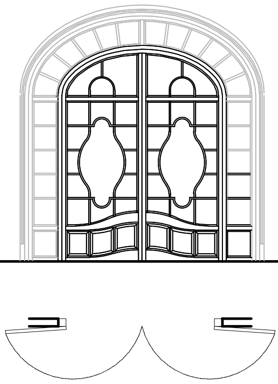
Emplazamiento: RIALTO LIVING
Carrer de Sant Feliu, 3
Palma de Mallorca

info@bastidasarchitects.com
Tel.0034.971256252

DOSIER FASE I_CIMG8639
SEGÚN DOSIER:
PE 1I: 1.01-1.16

DOSIER FASE I_CIMG8639
SEGÚN DOSIER:
PE 1J: 1.02-1.15
PE 1K: 1.01-1.02

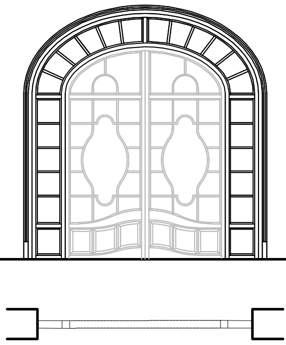
DOSIER FASE I_CIMG8344
SEGÚN DOSIER:
1.09-1.12



PE1I 3.10 / 2.90 P PINTAR?

PUERTA EXISTENTE A RECUPERAR,
MADERA PARA PINTAR. VIDRIO NUEVO
LAS MEDIDAS SON DE HUECO
PE 1I: TRASLADADA DE 1.01-1.16
¡SOLO HOJAS! MARCO PERMANECE EN
POSICIÓN ORIGINAL
PE 1I

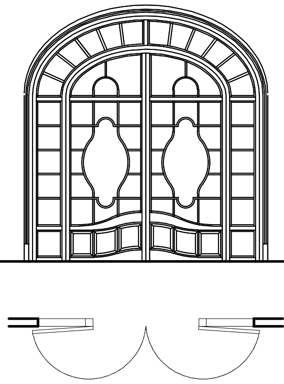
TOTAL
1 UNIDAD
PLANTA PISO 1
OFICINAS



PE1I 3.10 / 2.90 P PINTAR?

PUERTA EXISTENTE A RECUPERAR,
MADERA PARA PINTAR. VIDRIO NUEVO
LAS MEDIDAS SON DE HUECO
PE 1I': 1.01-1.16
MARCO PERMANECE EN POSICIÓN
ORIGINAL (HOJAS SE TRASLADAN)
PE 1I'

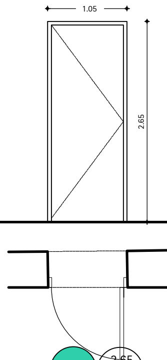
TOTAL
1 UNIDAD
PLANTA PISO 1
RECEPCIÓN



PE1J-K 3.10 / 2.90 P PINTAR?

PUERTA EXISTENTE A RECUPERAR,
MADERA PARA PINTAR. VIDRIO NUEVO
LAS MEDIDAS SON DE HUECO
PE 1J: TRASLADADA DE 1.02-1.15
PE 1K: TRASLADADA DE 1.01-1.02
PE 1I-J-K

TOTAL
2 UNIDADES
PLANTA PISO 1
OFICINAS



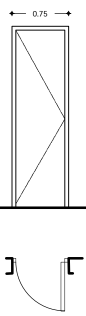
PE1L 2.65 / 1.05 M

PUERTA EXISTENTE A RECUPERAR,
MADERA PARA PINTAR
LAS MEDIDAS SON CON MARCO SEGÚN
DOSIER FASE 1:
1.09-1.12
PE 1L

TOTAL
1 UNIDAD
PLANTA PISO 1
OFICINA 3

DOSIER FASE I_CIMG8334
SEGÚN DOSIER:
1.06-1.08

DOSIER FASE I_CIMG8336
SEGÚN DOSIER:
1.09-1.10



PE1Q XX / 0.75 P

PUERTA EXISTENTE A RECUPERAR,
MADERA EN SU COLOR.
NO APARECE EN DOSIER, COMPROBAR
EN ALMACÉN:
1.46-1.26
PE 1Q

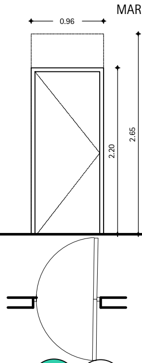
TOTAL
1 UNIDAD
PLANTA PISO 1
ESCALERA 8

PEEA XX / XX P

PUERTA EXISTENTE A RECUPERAR,
PARA PINTAR.
NO APARECE EN TOPOGRÁFICO,
COMPROBAR EN OBRA
PE EA

TOTAL
1 UNIDAD
PLANTA ENTRESUELO
ACCESO A SALA DE MÁQUINAS

MEDIDAS ORIGINALES CON
MARCO SEGÚN DOSIER



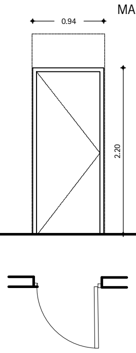
COMPROBAR EN
OBRA SI BASTA LA
ALTURA

PEEB 2.65 / 0.96 M

PUERTA EXISTENTE A RECUPERAR,
MADERA PARA PINTAR.
LAS MEDIDAS SON CON MARCO SEGÚN
DOSIER FASE 1:
1.06-1.08
PE EB

TOTAL
1 UNIDAD
PLANTA ENTRESUELO
BAÑOS RESTAURANTE

MEDIDAS ORIGINALES CON
MARCO SEGÚN DOSIER

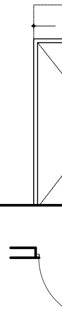


COMPROBAR EN
OBRA SI BASTA LA
ALTURA

PEEC 2.65 / 0.94 M

PUERTA EXISTENTE A RECUPERAR,
MADERA PARA PINTAR.
LAS MEDIDAS SON CON MARCO SEGÚN
DOSIER FASE 1:
1.09-1.10
PE EC

TOTAL
1 UNIDAD
PLANTA ENTRESUELO
BAÑOS RESTAURANTE



PUERTA EXISTE
MADERA PARA
LAS MEDIDAS
DOSIER FASE 1
1.04-1.05

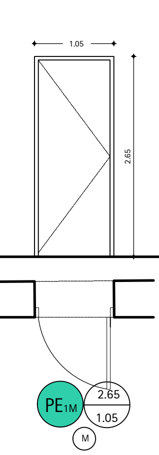
TOTAL
1 UNIDAD
PLANTA ENTR
BAÑOS RESTA

DOSIER FASE I_CIMG8348
SEGÚN DOSIER:
1.09-1.12

DOSIER FASE I_CIMG83[…]
SEGÚN DOSIER:
1.09-1.12

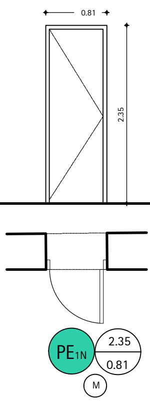
ACTA 24-3_CIMG9753
SEGÚN ACTA 24-3:
1.02-1.03

DOSIER FASE I_CIMG8643
SEGÚN DOSIER:
PE 1O: 1.16-1.17
PE 1P: 1.15-1.16



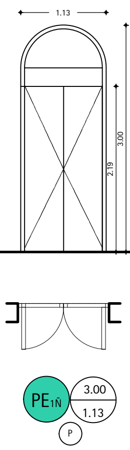
PUERTA EXISTENTE A RECUPERAR,
MADERA PARA PINTAR
LAS MEDIDAS SON CON MARCO SEGÚN
DOSIER FASE 1:
1.11-1.12
PE 1M

TOTAL
1 UNIDAD
PLANTA PISO 1
OFICINA 3



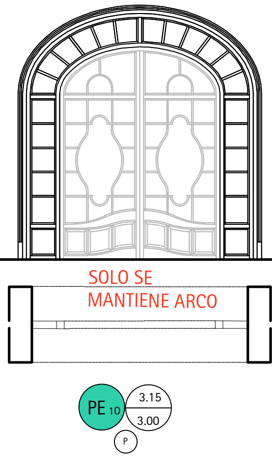
PUERTA EXISTENTE A RECUPERAR,
MADERA PARA PINTAR
LAS MEDIDAS SON CON MARCO SEGÚN
DOSIER FASE 1:
1.13-1.12
PE 1N

TOTAL
1 UNIDAD
PLANTA PISO 1
ASEO OFICINAS



PUERTA EXISTENTE A RECUPERAR, CON
VIDRIERA. MADERA EN SU COLOR.
LAS MEDIDAS SON DE HUECO.
SEGÚN ACTA 24-3:
1.02-1.03
PINTAR?
PE 1Ñ

TOTAL
1 UNIDAD
PLANTA PISO 1
SALÓN MARROQUÍ



PUERTA EXISTENTE A RECUPERAR,
MADERA PARA PINTAR. VIDRIO NUEVO
LAS MEDIDAS SON DE HUECO
PE 1O: 1.16-1.17
PE 1P: 1.15-1.16
puertas siempre abiertas con mecanismos
de fijación
PE 1I-J-K

TOTAL
2 UNIDADES
PLANTA PISO 1
SHOW ROOM

*TODAS LAS MEDIDAS SERAN VERIFICADAS EN OBRA

DOSIER FASE I_CIMG8356
SEGÚN DOSIER:
1.04-1.05

DOSIER FASE I_CIMG8331
SEGÚN DOSIER:
1.12-1.23

DOSIER FASE I_CIMG8340
SEGÚN DOSIER:
1.12-1.21

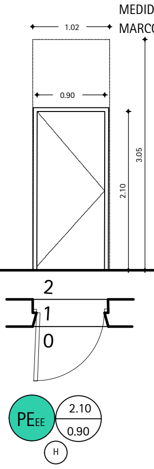
DOSIER FASE I_CIMG8358
SEGÚN DOSIER:
1.32-1.12

MEDIDAS ORIGINALES CON
MARCO SEGÚN DOSIER

[…]ENTE A RECUPERAR,
[…] PINTAR.
[…]SON CON MARCO SEGÚN
[…]:
PE ED

[…]ESUELO
[…]AURANTE

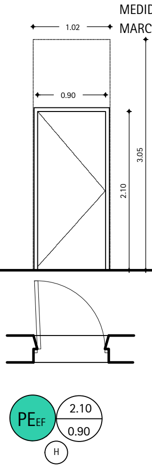
MEDIDAS ORIGINALES CON
MARCO SEGÚN DOSIER



PUERTA EXISTENTE A RECUPERAR,
MADERA PARA PINTAR.
LAS MEDIDAS SON DE HOJA
DOSIER FASE 1:
1.12-1.23
ADAPTAR ALTURA
PE EE

TOTAL
1 UNIDAD
PLANTA ENTRESUELO
PASARELA1

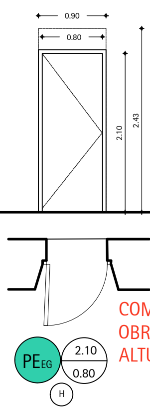
MEDIDAS ORIGINALES CON
MARCO SEGÚN DOSIER



PUERTA EXISTENTE A RECUPERAR,
MADERA PARA PINTAR.
LAS MEDIDAS SON DE HOJA
DOSIER FASE 1:
1.12-1.21
ADAPTAR ALTURA
PE EF

TOTAL
1 UNIDAD
PLANTA ENTRESUELO
PASARELA1

MEDIDAS ORIGINALES CON
MARCO SEGÚN DOSIER



COMPROBAR EN
OBRA SI BASTA LA
ALTURA

PUERTA EXISTENTE A RECUPERAR,
MADERA PARA PINTAR.
LAS MEDIDAS SON DE HOJA
DOSIER FASE 1:
1.12-1.32
ADAPTAR ALTURA
PE EG

TOTAL
1 UNIDAD
PLANTA ENTRESUELO
ANTIGUA TERRAZA

CARPINTERÍA EXISTENTE

Plano: PLANILLA DE CARPINTERÍAS
Escala: 1.100
Fecha: 10 DICIEMBRE 2014

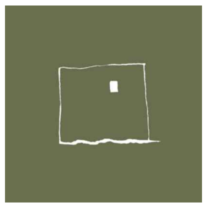
OBRA

Propietario/promotor: INDOVINATE S.L.

Proyecto: MODIFICACIÓN DURANTE EL TRANSCURSO DE LAS OBRAS DE PROYECTO BÁSICO Y DE EJECUCIÓN DE REFORMA Y REHABILITACIÓN DE EDIFICIO CAN O'RYAN

Emplazamiento: RIALTO LIVING
Carrer de Sant Feliu, 3
Palma de Mallorca

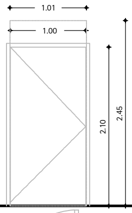
info@bastidasarchitects.com
Tel.0034.971256252

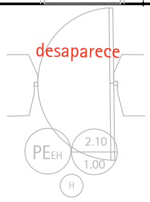


358

DOSIER FASE I_CIMG8354
SEGÚN DOSIER:
1.08-1.05

MEDIDAS ORIGINALES CON
MARCO SEGÚN DOSIER





PUERTA EXISTENTE A RECUPERAR,
MADERA PARA PINTAR.
LAS MEDIDAS SON DE HOJA
DOSIER FASE 1:
1.08-1.05
TRANSFORMADA EN PUERTAS DE VAIVEN
ADAPTAR ALTURA
PE EH

TOTAL
1 UNIDAD
PLANTA ENTRESUELO
DISTRIBUIDOR1

PENDIENTE DE
DECISIÓN DE USO
EN ALTILLO

PE EI | XX | XX | P

PUERTA EXISTENTE A RECUPERAR,
PARA PINTAR.
NO APARECE EN TOPOGRÁFICO,
COMPROBAR EN OBRA
PE EI

TOTAL
1 UNIDAD
PLANTA ENTRESUELO
ACCESO A ALMACÉN

COMPROBAR
ESTADO

PE EJ | XX | XX | P

PUERTA EXISTENTE A RECUPERAR,
PARA PINTAR.
NO APARECE EN TOPOGRÁFICO,
COMPROBAR EN OBRA
PE EJ

TOTAL
1 UNIDAD
PLANTA ENTRESUELO
OFICINA 4

COMPROBAR
ESTADO

PE EK | XX | XX | P

PUERTA EXISTENTE A RECUPERAR,
PARA PINTAR.
NO APARECE EN TOPOGRÁFICO,
COMPROBAR EN OBRA
PE EK

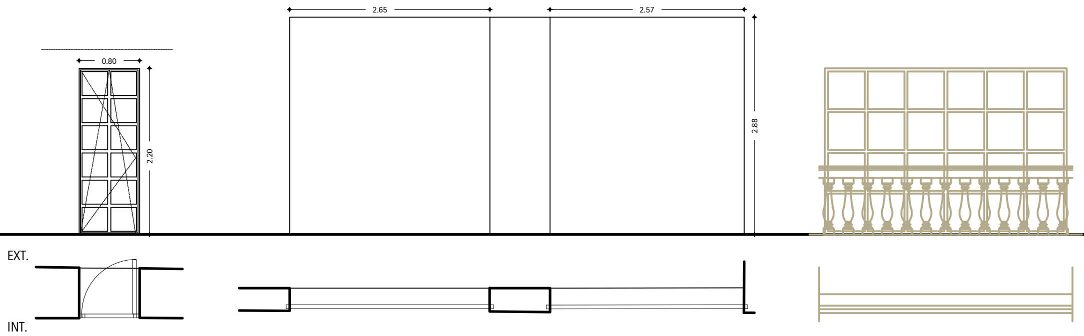
TOTAL
3 UNIDADES
PLANTA ENTRESUELO
OFICINAS

COMPROBAR
ESTADO

PE EL | XX | XX | P

PUERTA EXISTENTE A RECUPERAR,
PARA PINTAR.
NO APARECE EN TOPOGRÁFICO,
COMPROBAR EN OBRA
PE EL

TOTAL
1 UNIDAD
PLANTA ENTRESUELO
SALA DE MÁQUINAS OFICINAS



CM15 | 2.20 | 0.80 | P

CRISTALERA METÁLICA. OSCILOBATIENTE.
PARA PINTAR.
CRISTAL CLIMALIT
MANETA A DEFINIR
LAS MEDIDAS SON DE HUECO
CM15

TOTAL
1 UNIDAD
PLANTA ENTRESUELO
PASO 3 VESTUARIOS

CM16 | 2.88 | 2.65 | P

CRISTALERA METÁLICA. VIDRIO FIJO
MARCO OCULTO.
CRISTAL DE SEGURIDAD
LAS MEDIDAS SON DE HUECO
A CONFIRMAR EN OBRA CUANDO
CONSTRUIDO
CM16

TOTAL
1 UNIDAD
PLANTA ENTRESUELO
DISTRIBUIDOR RESTAURANTE

CM17 | 2.88 | 2.57 | P

CRISTALERA METÁLICA. VIDRIO FIJO
MARCO OCULTO.
CRISTAL DE SEGURIDAD
LAS MEDIDAS SON DE HUECO
A CONFIRMAR EN OBRA CUANDO
CONSTRUIDO
CM17

TOTAL
1 UNIDAD
PLANTA ENTRESUELO
DISTRIBUIDOR RESTAURANTE

DESAPARECE

2.20 | 3.20 | P

CRISTALERA METÁLICA. VIDRIO FIJO
PARA PINTAR.
CRISTAL DE SEGURIDAD
LAS MEDIDAS SON DE HUECO
A CONFIRMAR EN OBRA CUANDO
CONSTRUIDO
CM17

TOTAL
1 UNIDAD
PLANTA ENTRESUELO
DISTRIBUIDOR RESTAURANTE

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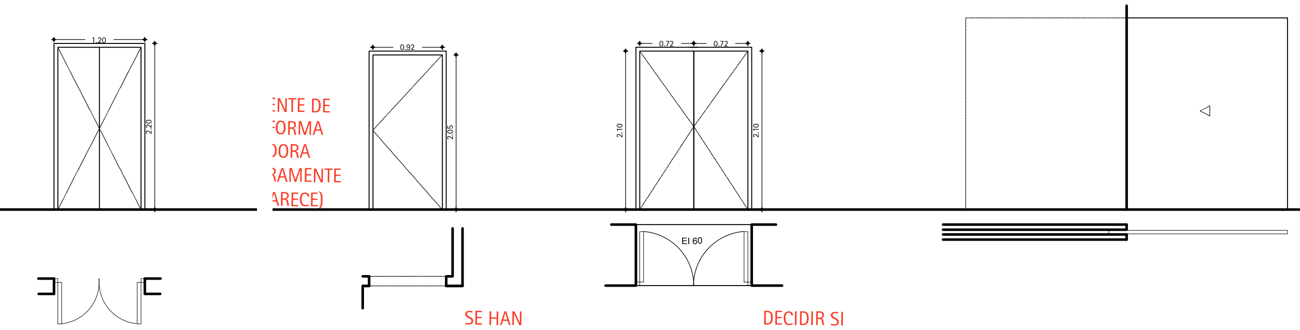


PO 2 | 1,20 | 2,20 | P

PUERTA DE SEGURIDAD PARA ESCAPARATE.
LAS MEDIDAS SON DE HUECO
PO2

TOTAL
1 UNIDAD
PLANTA BAJA
ALMACÉN-ESCAPARATE SAN FELIÚ

PEI1 | 2.15 | 0.82 | H

SE HAN CAMBIADO A 92 SIEMPRE QUE QUEPAN

PUERTA CORTAFUEGOS EI 60
LAS MEDIDAS SON DE HOJA
EN MADERA
(en entresuelo forro para imitar puerta de viviendas)
PEI1

TOTAL
5 UNIDADES
PLANTA PISO 1
VESTÍBULO DE INDEPENDENCIA
PLANTA ENTRESUELO
VESTÍBULO DE INDEPENDENCIA
PLANTA BAJA

PEI2 | 2.10 | 0.72 | H

DECIDIR SI MADERA O METAL

PUERTA CORTAFUEGOS EI 60
LAS MEDIDAS SON DE HOJA
PEI2

TOTAL
1 UNIDAD
PLANTA BAJA
DISTRIBUIDOR 2_3

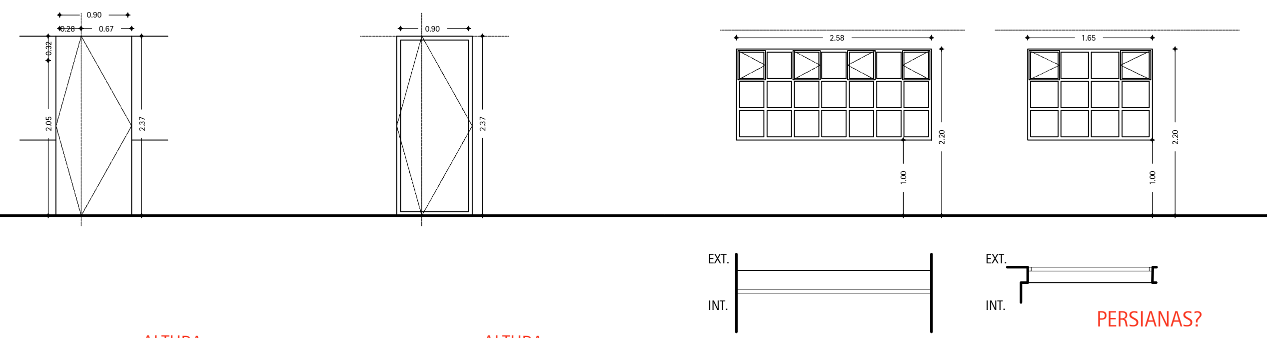
PEI3 | 2.54 | 2.36 | P

COMPROBAR DIMENSIONES REALES EN OBRA

PUERTA CORTAFUEGOS CORREDERA EI 60
LAS MEDIDAS SON DE HUECO
PEI3

TOTAL
1 UNIDAD
PLANTA BAJA
ALMACÉN 4

*TODAS LAS MEDIDAS SERAN VERIFICADAS EN OBRA



CM19 | 2.37 | 1.00 | H

ALTURA PENDIENTE DE ALTURA LIBRE DEF. EN OBRA

STALERA DE VIDRIO SIN MARCO
OTANTE
MEDIDAS SON DE HOJA
CONFIRMAR EN OBRA CUANDO
NSTRUIDO
CM19

TAL
UNIDADES
ANTA ENTRESUELO
ICINA 6 y 7

CM20 | 2.37 | 0.90 | H

ALTURA PENDIENTE DE ALTURA LIBRE DEF. EN OBRA

CRISTALERA METÁLICA.
PIVOTANTE
LAS MEDIDAS SON DE HOJA
A CONFIRMAR EN OBRA CUANDO CONSTRUIDO
CM20

TOTAL
1 UNIDAD
PLANTA ENTRESUELO
OFICINA 5

CM21 | 2.58 | 1.20 | 1.00 | P

VENTANA METÁLICA. ABATIBLE
PARA PINTAR.
CRISTAL CLIMALIT
LAS MEDIDAS SON DE HUECO
CM21

TOTAL
1 UNIDAD
PLANTA ENTRESUELO
COMEDOR PERSONAL

PERSIANAS?

CM22 | 1.65 | 1.20 | 1.00 | P

VENTANA METÁLICA. ABATIBLE
PARA PINTAR.
CRISTAL CLIMALIT
LAS MEDIDAS SON DE HUECO
CM22

TOTAL
1 UNIDAD
PLANTA ENTRESUELO
COMEDOR PERSONAL

CARPINTERÍA EXISTENTE

OBRA

Fecha: 10 DICIEMBRE 2014

Plano: PLANILLA DE CARPINTERÍAS

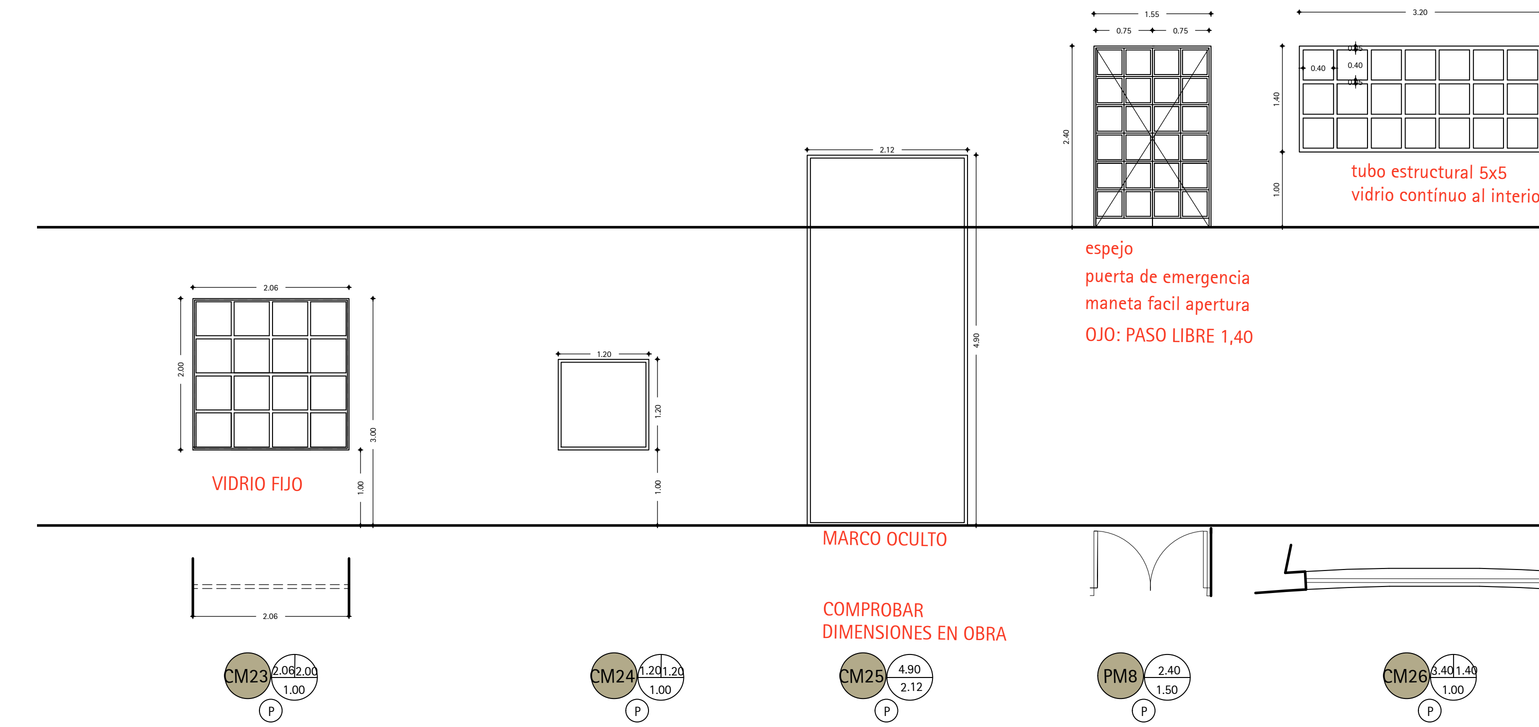
Escala: 1.100

Propietario/promotor: INDOVINATE S.L.

Proyecto: MODIFICACIÓN DURANTE EL TRANSCURSO DE LAS OBRAS DE PROYECTO BÁSICO Y DE EJECUCIÓN DE REFORMA Y REHABILITACIÓN DE EDIFICIO CAN O'RYAN

Emplazamiento: RIALTO LIVING
Carrer de Sant Feliu, 3
Palma de Mallorca

info@bastidasarchitects.com
Tel.0034.971256252



VENTANA VIDRIO FIJO. PARA PINTAR.
LAS MEDIDAS SON DE HUECO
CM23

TOTAL
1 UNIDAD
PLANTA PISO 1
COCINA

VENTANA METÁLICA. VIDRIO FIJO
LAS MEDIDAS SON DE HUECO
CM24

TOTAL
1 UNIDAD
PLANTA ENTRESUELO
OFICINA 6 A OFICINA 5

VENTANA METÁLICA. VIDRIO FIJO
LAS MEDIDAS SON DE HUECO
A COMPROBAR DIMENSIONES EN OBRA
RESOLVER JUNTO CON CAJA DE
ASCENSOR
CM25

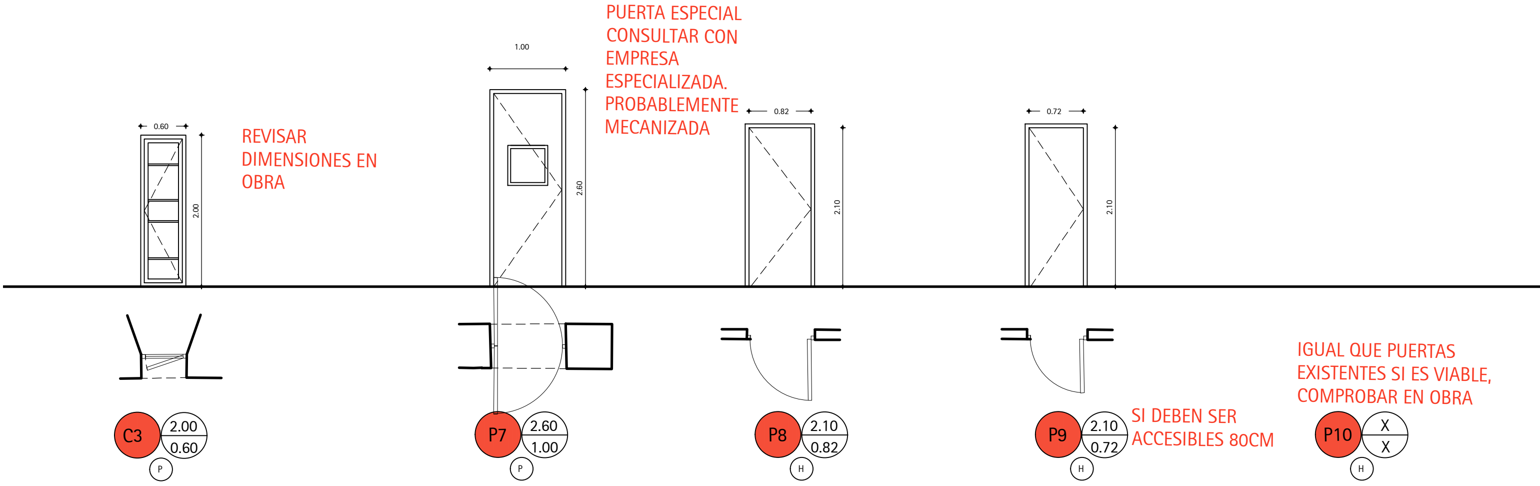
TOTAL
1 UNIDAD
PLANTA BAJA Y ENTRESUELO
HUECO DE ASCENSOR

PUERTA METÁLICA. ESPEJO
LAS MEDIDAS SON DE HUECO
PM8

TOTAL
1 UNIDAD
PLANTA BAJA
ACCESO A ALMACÉN TEXTIL

VENTANA METÁLICA. VIDRIO FIJO
LAS MEDIDAS SON DE HUECO
CM26

TOTAL
1 UNIDAD
PLANTA BAJA
CONFECCIÓN TEXTIL



VENTANA NUEVA
PARA PINTAR
MEDIDAS DE HUECO
ABATIBLE CON COMPÁS
C 3

TOTAL
1 UNIDAD
PLANTA ENTRESUELO
PASO 2 VESTUARIOS

PUERTA DE MADERA PARA PINTAR.
DE VAIVEN
ALTURA PENDIENTE DE COMPROBACIÓN
EN OBRA
P7

TOTAL
2 UNIDADES
PLANTA PISO 1
COCINA

PUERTA DE MADERA PARA PINTAR
LA MEDIDA ES DE HOJA
P8

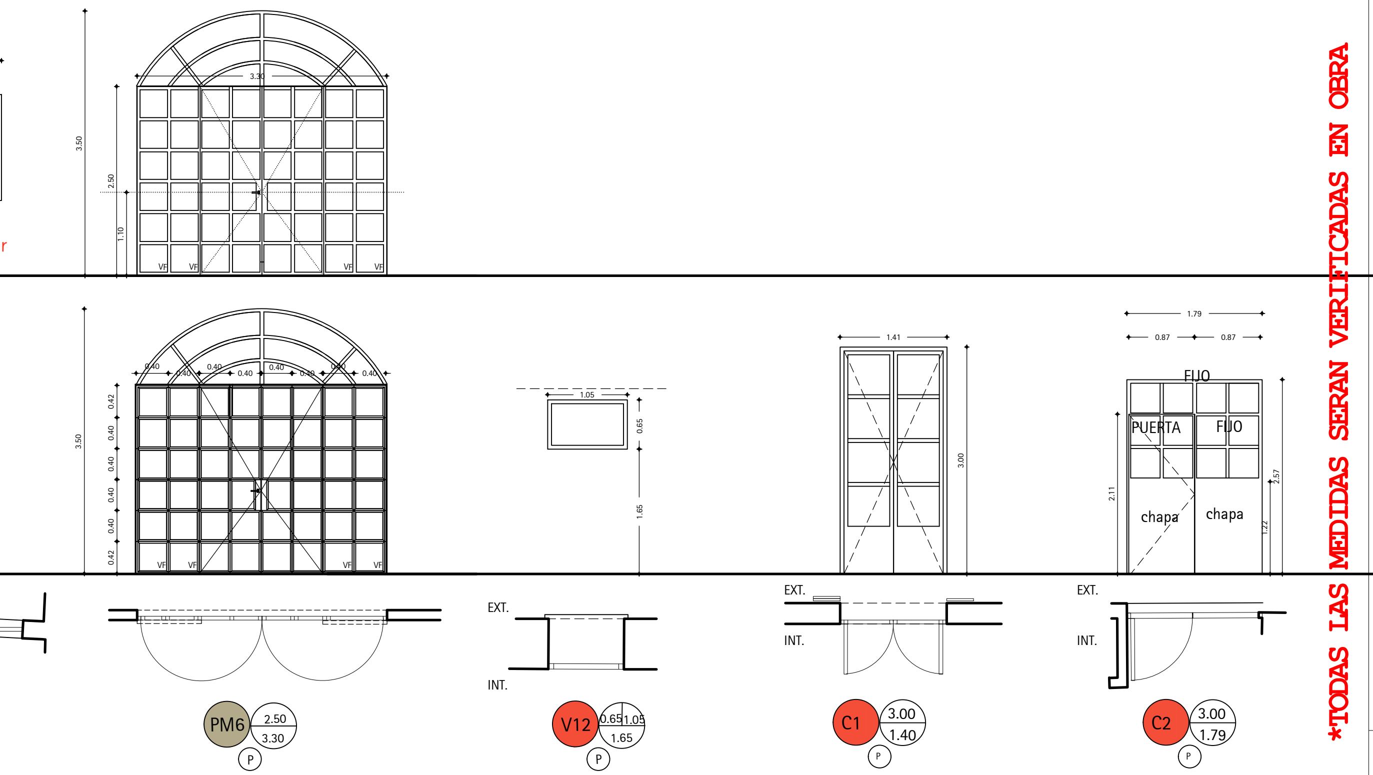
TOTAL
7 UNIDADES
PLANTA ENTRESUELO
VESTUARIOS Y PASO 2 Y 3
PLANTA BAJA
ALMACÉN Y ALMACÉN 3

PUERTA DE MADERA PARA PINTAR
LA MEDIDA ES DE HOJA
P9

TOTAL
2 UNIDADES
PLANTA ENTRESUELO
VESTUARIOS LOCAL Y BAR

PUERTA DE MADERA PARA PINTAR
LA MEDIDA ES DE HOJA
P10

TOTAL
1 UNIDAD
PLANTA ENTRESUELO
PASARELA 2 OFICINAS



*TODAS LAS MEDIDAS SERAN VERIFICADAS EN OBRA

PUERTA METÁLICA. PARA PINTAR.
LAS MEDIDAS SON DE HUECO
PM6

TOTAL
2 UNIDADES
PLANTA BAJA
SALIDA A CAFETERÍA

VENTANA DE MADERA. VIDRIO FIJO
PARA PINTAR.
CRISTAL CLIMALIT TRANSLÚCIDO
LAS MEDIDAS SON DE HUECO
V12

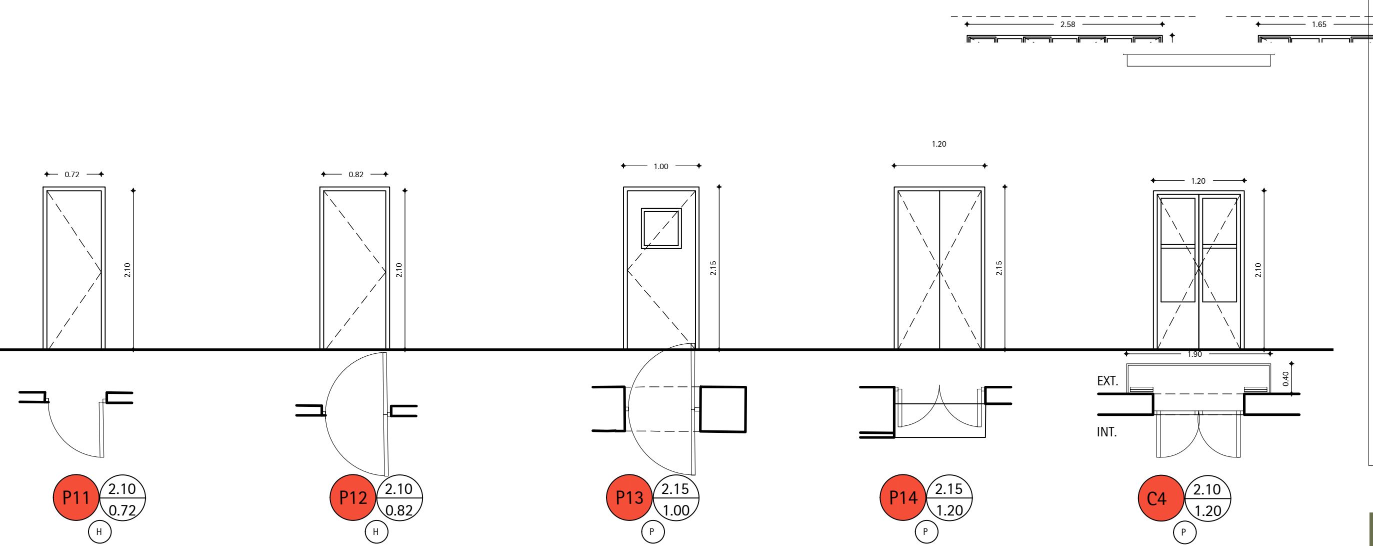
TOTAL
1 UNIDAD
PLANTA ENTRESUELO
VESTUARIOS LOCAL COMERCIAL

PUERTA NUEVA, MADERA EN SU
COLOR.
LAS MEDIDAS SON DE HUECO.
-NOTA-
COPIA DE CE9
C1

TOTAL
1 UNIDAD
PLANTA PISO 1
OFICINA 1

PUERTA NUEVA, HIERRO
LAS MEDIDAS SON DE HUECO.
C2

TOTAL
1 UNIDAD
PLANTA PISO 1
COCINA RESTAURANTE



JERTA DE MADERA PARA PINTAR
A MEDIDA ES DE HOJA
P11

OTAL
2 UNIDADES
LANTA ENTRESUELO
ABINAS DE INODOROS
LANTA BAJA
ABINAS DE INODOROS
UARTO DE LIMPIEZA ASEOS CAFETERÍA
LMACÉN ARTÍCULOS LIMPIEZA

PUERTA DE MADERA PARA PINTAR
LA MEDIDA ES DE HOJA
P12

TOTAL
3 UNIDADES
PLANTA BAJA
ASEOS CAFETERÍA
COCINA CAFETERÍA

PUERTA DE MADERA PARA PINTAR.
DE VAIVEN
ALTURA PENDIENTE DE COMPROBACIÓN
EN OBRA
LAS MEDIDAS SON DE HUECO
P13

TOTAL
1 UNIDAD
PLANTA BAJA
COCINA CAFETERÍA

PUERTA DE MADERA PARA PINTAR.
DOS HOJAS ALTURA PENDIENTE DE
COMPROBACIÓN EN OBRA
LAS MEDIDAS SON DE HUECO
RECERCADO DE MARÉS EXTERIOR
P14

TOTAL
1 UNIDAD
PLANTA BAJA
ALMACÉN 2

PUERTA NUEVA, MADERA EN SU
COLOR.
LAS MEDIDAS SON DE HUECO.
C4

TOTAL
1 UNIDAD
PLANTA ENTRESUELO
ANTIGUA TERRAZA

CARPINTERÍA EXISTENTE

OBRA

Fecha: 27 ENERO DE 2015

Plano: PLANILLA DE CARPINTERÍAS

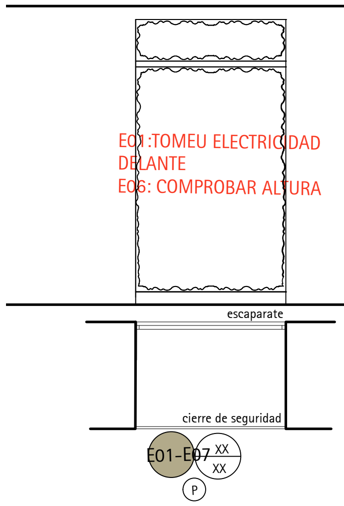
Escala: 1.100

Propietario/promotor: INDOVINATE S.L.

Proyecto: MODIFICACIÓN DURANTE EL TRANSCURSO DE LAS OBRAS DE PROYECTO BÁSICO Y DE EJECUCIÓN DE REFORMA Y REHABILITACIÓN DE EDIFICIO CAN O'RYAN

Emplazamiento: RIALTO LIVING
Carrer de Sant Feliu, 3
Palma de Mallorca

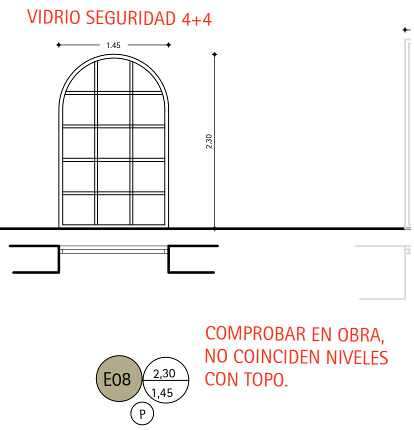
info@bastidasarchitects.com
Tel.0034.971256252



MANTENER EXISTENTES SI POSIBLE
VIDIRO DE SEGURIDAD, CON PERSIANA
METÁLICA EN PARTE INTERIOR
COMPROBAR MEDIDAS EN OBRA SEGÚN
INSTALACIONES PENDIENTES DE DEFINIR
Y CATAS EN ESTRUCTURA
E01-E07

TOTAL
7 UNIDADES

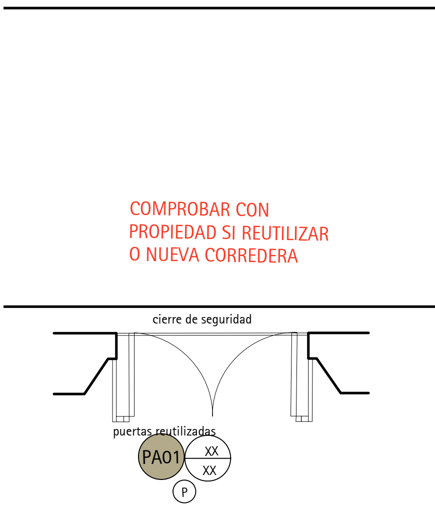
PLANTA BAJA
FACHADAS



ESCAPARATES DE JOYERÍA
VIDIRO DE SEGURIDAD
COMPROBAR MEDIDAS DE HUECO EN
OBRA
E08

TOTAL
3 UNIDADES

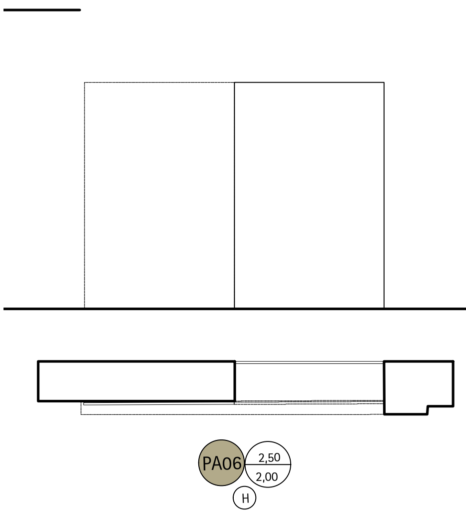
PLANTA BAJA
MODA-CAFETERÍA



PUERTA DE ACCESO A LOCAL
CON CORTINA DE AIRE
CIERRE DE SEGURIDAD EN CARA
EXTERIOR
PUERTAS REUTILIZADAS DE TIENDA
ACTUAL SI ES POSIBLE
PA01

TOTAL
1 UNIDAD

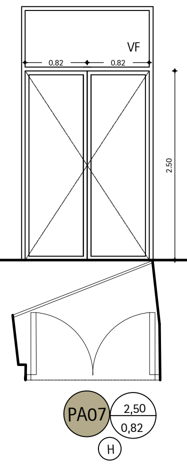
PLANTA BAJA
ACCESO A LOCAL POR C/S. FELIU



PUERTA DE ACCESO A RESTAURANTE Y
LOCAL DESDE CALLE ESTANCO
CORREDERA CON APERTURA
AUTOMÁTICA EN CASO DE INCENDIO
LAS MEDIDAS SON DE HOJA.
CIERRE DE SEGURIDAD EN CARA
EXTERIOR
PA06

TOTAL
1 UNIDAD

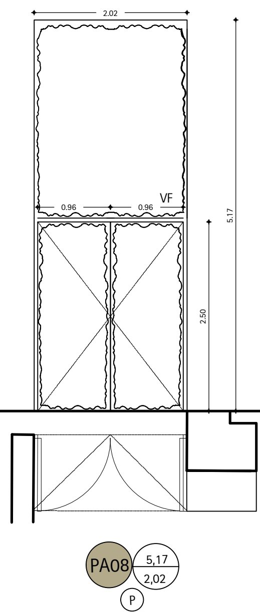
PLANTA BAJA
ACCESO LOCAL DESDE C/ESTANCO



SALIDA DE EMERGENCIA A C/ESTANCO.
SE REUTILIZARÁ EXISTENTE SI POSIBLE
MANETA DE FACIL APERTURA.
LAS MEDIDAS SON DE HOJA.
CIERRE DE SEGURIDAD EN CARA
EXTERIOR
PA07

TOTAL
1 UNIDAD

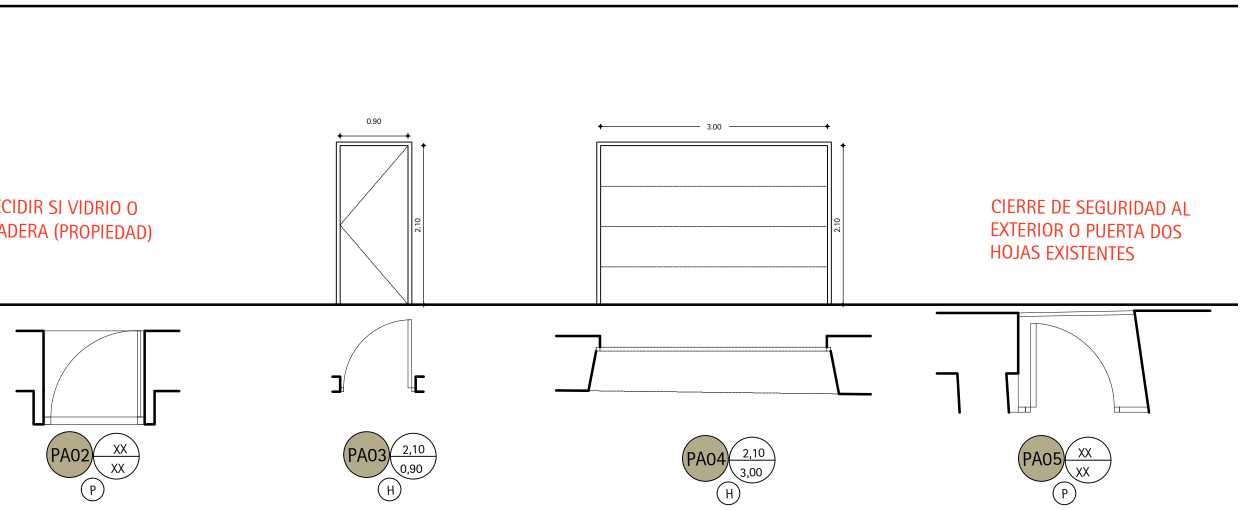
PLANTA BAJA
SALIDA EMERGENCIA C/ESTANCO



PUERTA ENTRE ACCESO A RESTAURANTE
Y LOCAL. SE REUTILIZARÁ EXISTENTE SI
POSIBLE
ABIERTA SIEMPRE EN HORARIO
COMERCIAL.
LAS MEDIDAS SON DE HUECO.
COMPROBAR MEDIDAS EN OBRA.
PA08

TOTAL
1 UNIDAD

PLANTA BAJA
PUERTA ENTRE RESTAURANTE_LOCAL



ERTA DE ACCESO A PISOS
ERTA EXISTENTE REUTILIZADA,
MBIANDO SENTIDO DE APERTURA Y
N MANETA DE FÁCIL APERTURA
PA02

TAL
UNIDAD
ANTA BAJA
CESO A PISOS POR C/S. FELIU

PUERTA DE ACCESO DE SERVICIO DESDE
CARRERÓ.
DOBLE CHAPA PARA AISLAMIENTO Y
SEGURIDAD
LAS MEDIDAS SON DE HOJA
PA03

TOTAL
2 UNIDADES
PLANTA BAJA
ACCESOS DE SERVICIO CARRERÓ

PUERTA DE ACCESO DE SERVICIO DESDE
CARRERÓ A ALMACÉN 04
LAS MEDIDAS SON DE HOJA
SECCIONAL (PANELES SANDWICH PARA
AISLAMIENTO TÉRMICO Y SEGURIDAD)
PA04

TOTAL
1 UNIDAD
PLANTA BAJA
ACCESO ALMACÉN DESDE CARRERÓ

PUERTA DE ACCESO A CARRERÓ
APERTURA AL EXTERIOR. MANETA DE
FÁCIL APERTURA.

COMPROBAR DIMENSIONES EN OBRA Y
COMPOSICIÓN CON FACHADA
PA05

TOTAL
1 UNIDAD
PLANTA BAJA
ACCESO A CARRERÓ

*TODAS LAS MEDIDAS SERAN VERIFICADAS EN OBRA

Plano: PLANILLA DE CARPINTERÍAS

Escala: 1.100

Fecha: 10 DICIEMBRE 2014

OBRA

Propietario/promotor: INDOVINATE S.L.

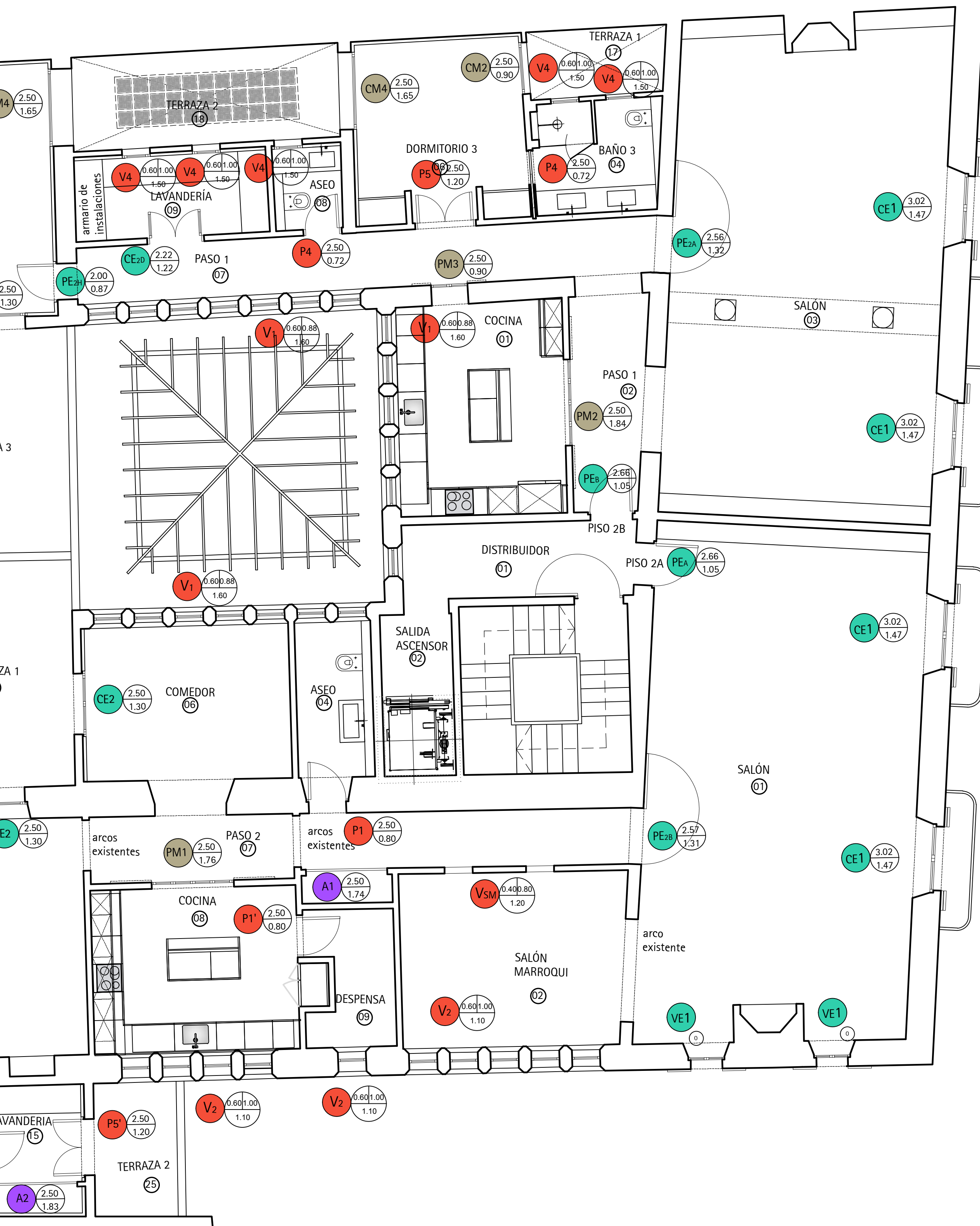
Proyecto: MODIFICACIÓN DURANTE EL TRANSCURSO DE LAS OBRAS DE PROYECTO BÁSICO Y DE EJECUCIÓN DE REFORMA Y REHABILITACIÓN DE EDIFICIO CAN O'RYAN

Emplazamiento: RIALTO LIVING
Carrer de Sant Feliu, 3
Palma de Mallorca

info@bastidasarchitects.com
Tel.0034.971256252

CARPINTERÍA EXISTENTE


BAÑO 2
15
PASO 3
14
SALÓN
10
BAÑO 1
12
DORMITORIO 2
16
DORMITORIO 1
13
PASO 2
11
TERRAZA PP2
TERRAZA
19
TERRAZA
24
DORMITORIO 1
11
BAÑO 1
12
SALÓN
10
DORMITORIO 2
21
PASO 4
13
VESTIDOR
19
BAÑO 2
20
PASO 3
14
TERRAZA 3
26
PASO 5
18
DORMITORIO 3
22
OFICINA
29
TERRAZA
31
OFICINA
30
DORMITORIO 4
16
BAÑO 4
17
BAÑO 3
23



*TODAS LAS MEDIDAS SERAN VERIFICADAS EN OBRA

LEYENDA CARPINTERÍA

PUERTAS Ó CRISTALERAS	NOMBRE / ALTO / ANCHO	CARPINTERÍA A RESTAURAR	CARPINTERÍA METÁLICA
VENTANAS	NOMBRE / ANCHO TOTAL / ALTO TOTAL / ANTEPECHO	CARPINTERÍA NUEVA	ARMARIOS

Proyecto: MODIFICACIÓN DURANTE EL TRANSCURSO DE LAS OBRAS DE PROYECTO BÁSICO Y DE EJECUCIÓN DE REFORMA Y REHABILITACIÓN DE EDIFICIO CAN O'RYAN

Emplazamiento: RIALTO LIVING
Carrer de Sant Feliu, 3
Palma de Mallorca

Plano: PLANTA PISO 2
CARPINTERÍA

Escala: 1.125

Propietario/promotor: INDOVINATE S.L.

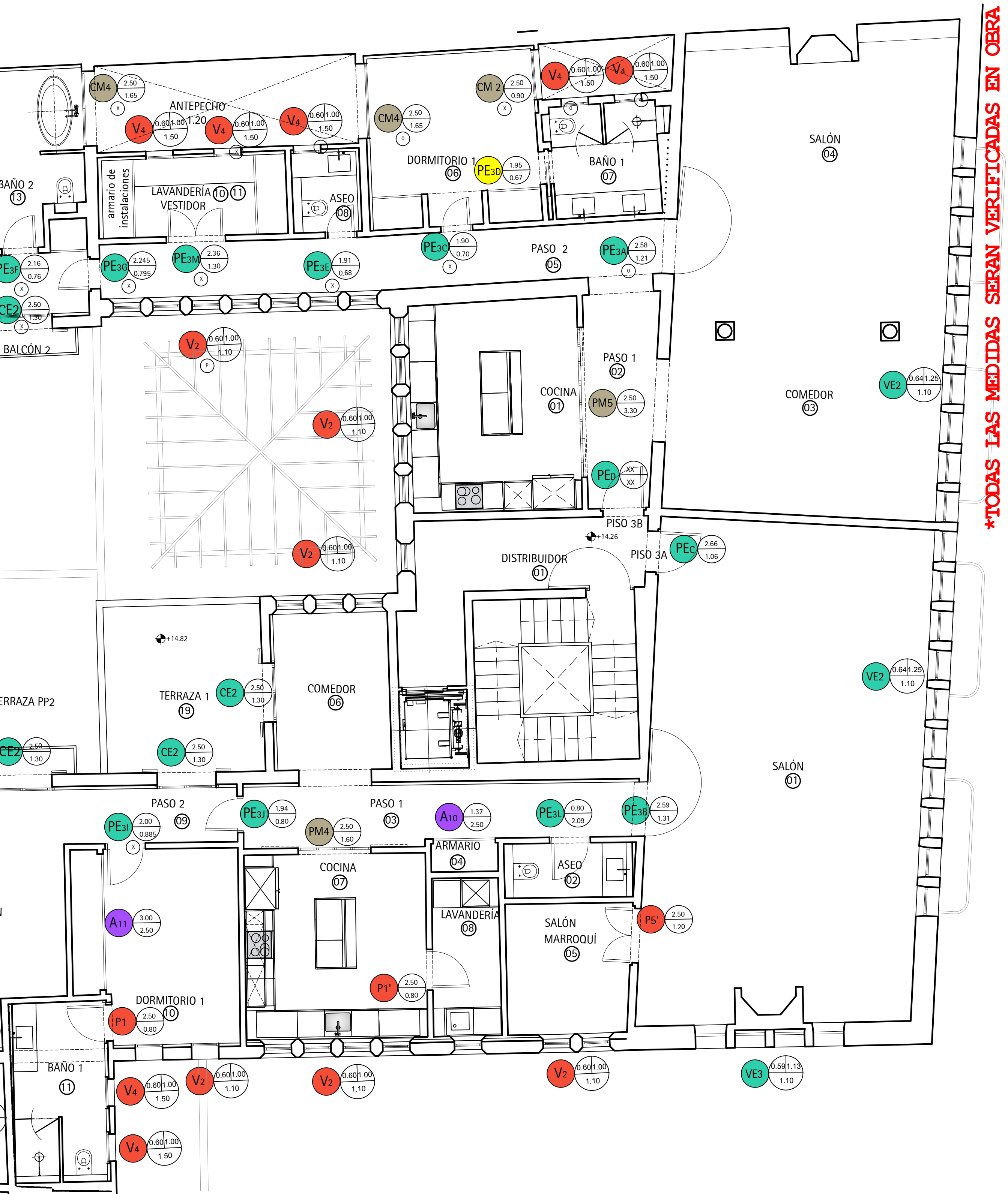
Fecha: 24.FEBRERO.2014

OBRA

info@bastidasarchitects.com
Tel.0034.971256252

PLANTA PISO 2
CARPINTERÍA


TERRAZA 1
15
CE2
2.50
1.30
+14.11
DORMITORIO 2
14
PE3H
2.15
1.15
PASO 4
12
BALCÓN 1
CE2
V3
0.40 0.40
1.40
VESTIDOR
14
DORMITORIO 2
15
P1
2.50
0.80
PE3K
2.08
0.80
SALÓN
12
TERRAZA 3
21
CM5
METALICA
2.14
4.35
BAÑO 2
13
V4
0.60 1.00
1.50
CM1
2.50
2.00
PASO 3
16
CM2
2.50
0.90
DORMITORIO 3
18
BAÑO 3
17
P5
2.50
1.20
TERRAZA
21
+14.76



*TODAS LAS MEDIDAS SERAN VERIFICADAS EN OBRA

LEYENDA CARPINTERÍA

PUERTAS Ó CRISTALERAS	NOMBRE / ALTO / ANCHO	CARPINTERÍA A RESTAURAR	CARPINTERÍA METÁLICA
VENTANAS	NOMBRE / ANCHO TOTAL / ALTO TOTAL / ANTEPECHO	CARPINTERÍA NUEVA	ARMARIOS

OBRA

Fecha: 24.FEBRERO.2014

Plano: PLANTA PISO 3 CARPINTERÍA

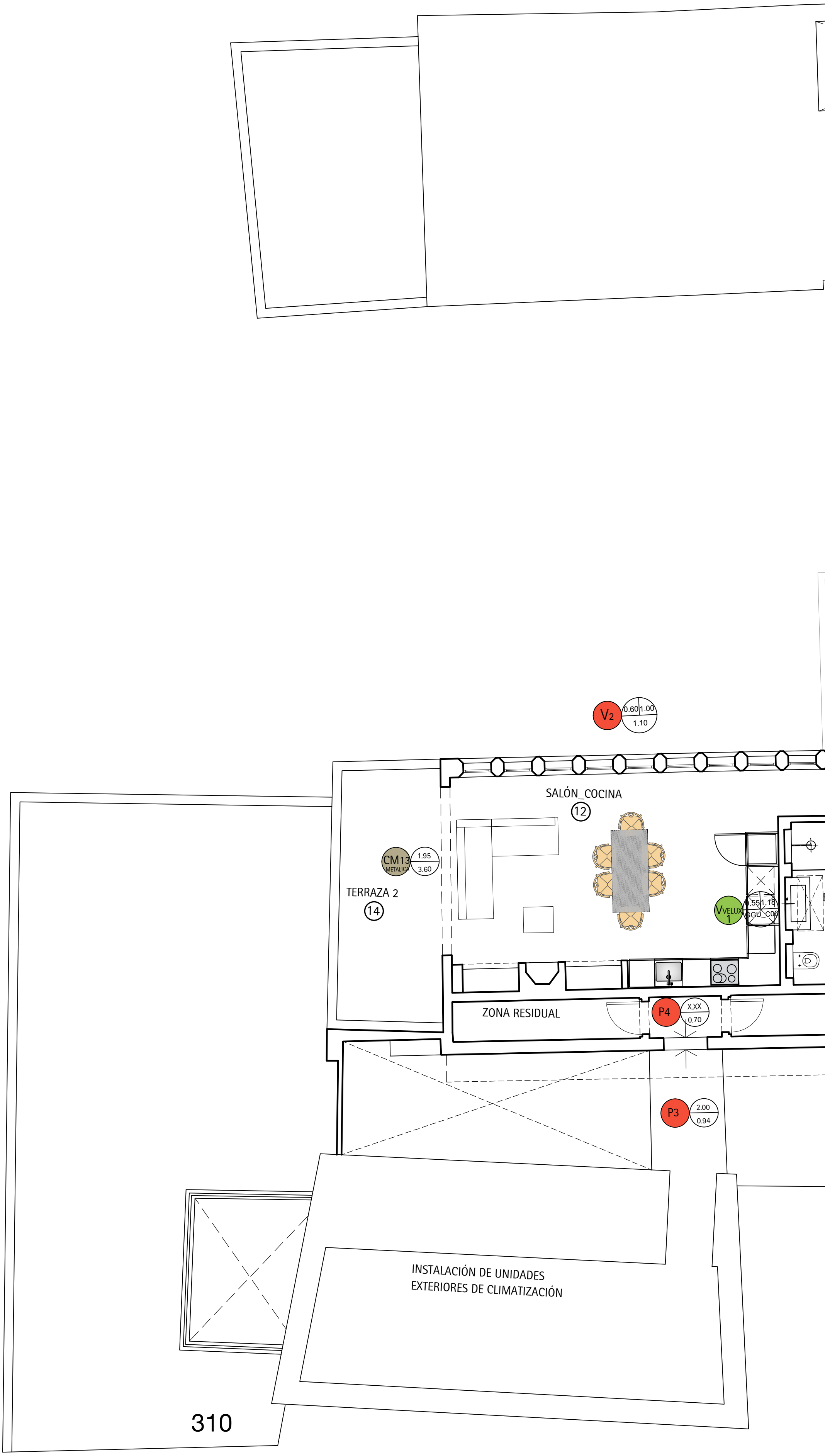
Escala: 1.125

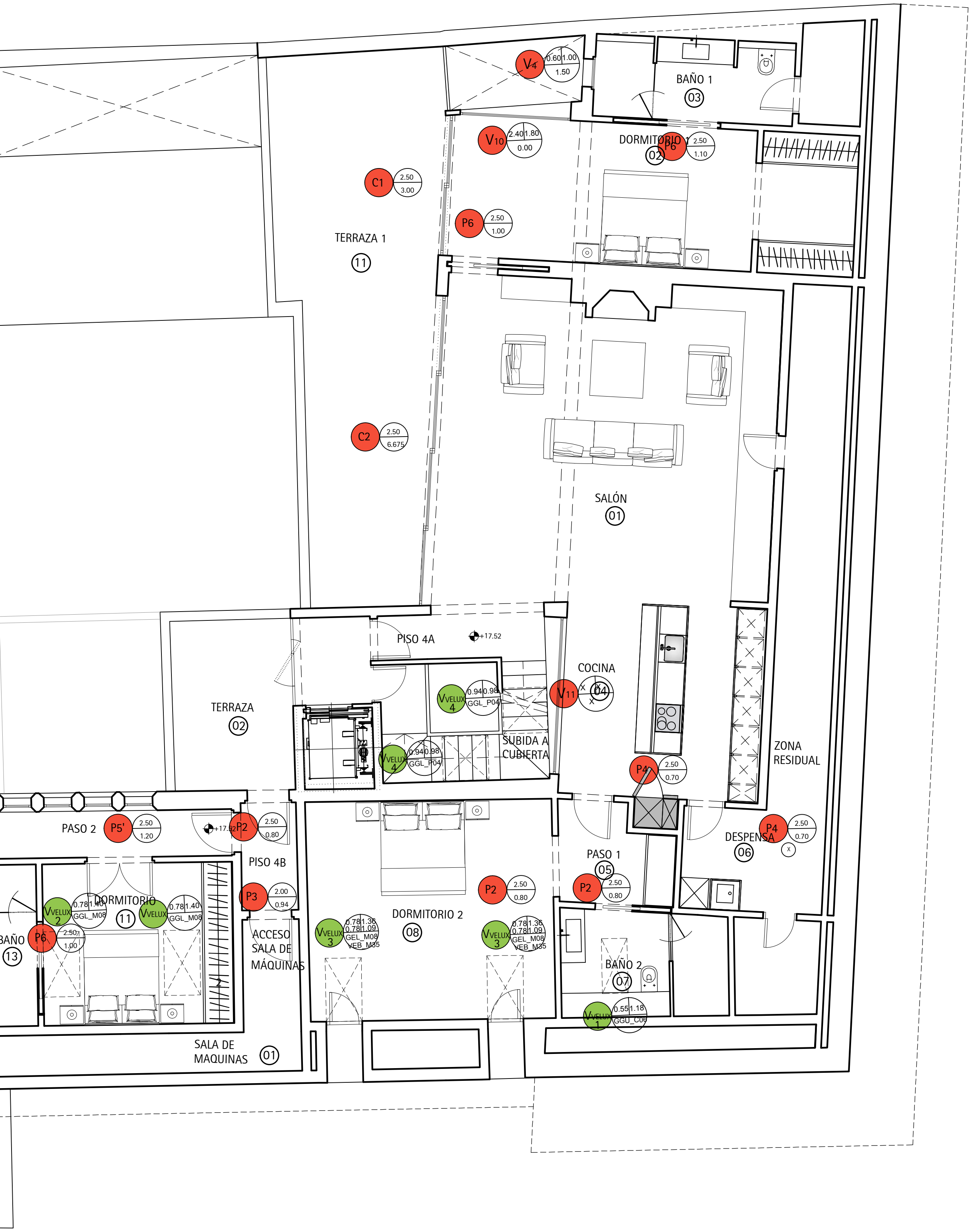
Propietario/promotor: INDOVINATE S.L.

Proyecto: MODIFICACIÓN DURANTE EL TRANSCURSO DE LAS OBRAS DE PROYECTO BÁSICO Y DE EJECUCIÓN DE REFORMA Y REHABILITACIÓN DE EDIFICIO CAN O'RYAN

Emplazamiento: RIALTO LIVING Carrer de Sant Feliu, 3 Palma de Mallorca

info@bastidasarchitects.com
Tel.0034.971256252


V2
0.60 1.00
1.10
SALÓN_COCINA
12
CM13
1.95
3.60
TERRAZA 2
14
ZONA RESIDUAL
P4
XXX
0.70
P3
2.00
0.94
INSTALACIÓN DE UNIDADES
EXTERIORES DE CLIMATIZACIÓN



*TODAS LAS MEDIDAS SERAN VERIFICADAS EN OBRA

OBRA

Fecha: 24.FEBRERO.2014

Plano: PLANTA PISO 4 CARPINTERÍA

Escala: 1.125

Propietario/promotor: INDOVINATE S.L.

Proyecto: MODIFICACIÓN DURANTE EL TRANSCURSO DE LAS OBRAS DE PROYECTO BÁSICO Y DE EJECUCIÓN DE REFORMA Y REHABILITACIÓN DE EDIFICIO CAN O'RYAN

Emplazamiento: RIALTO LIVING Carrer de Sant Feliu, 3 Palma de Mallorca

info@bastidasarchitects.com
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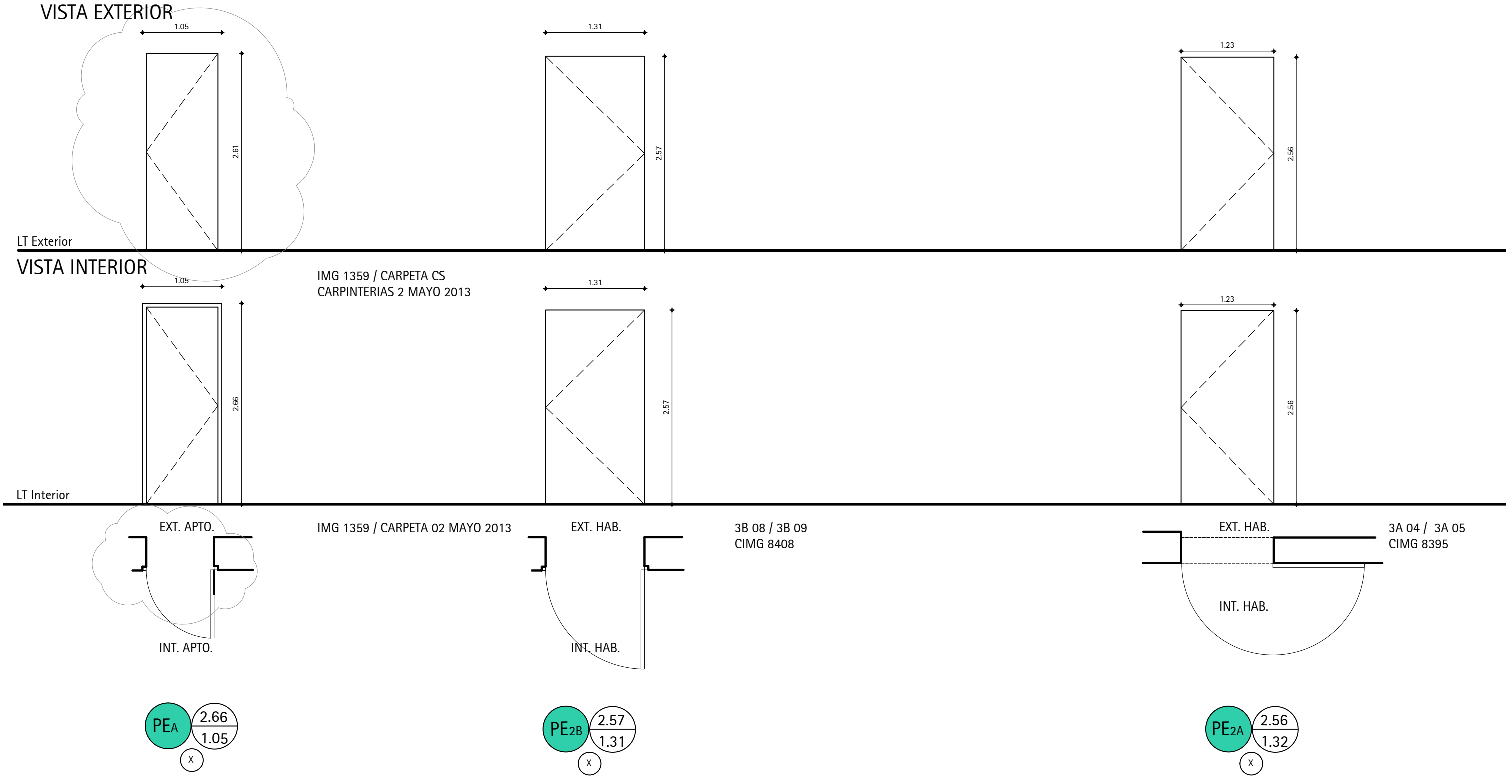
LEYENDA CARPINTERÍA

PUERTAS Ó CRISTALERAS: NOMBRE / ALTO / ANCHO	CARPINTERÍA A RESTAURAR	CARPINTERÍA METÁLICA	VENTANAS VELUX
VENTANAS: NOMBRE / ANCHO TOTAL / ALTO TOTAL / ANTEPECHO	CARPINTERÍA NUEVA	ARMARIOS	

PLANTA PISO 4
CARPINTERÍA

CARPINTERÍA EXISTENTE A RECUPERAR



PUERTA EXISTENTE A RECUPERAR,
PARA PINTAR.
LAS MEDIDAS INCLUYEN LOS
MARCOS.
MANETAS Y HERRAJES, NUEVOS
PE A

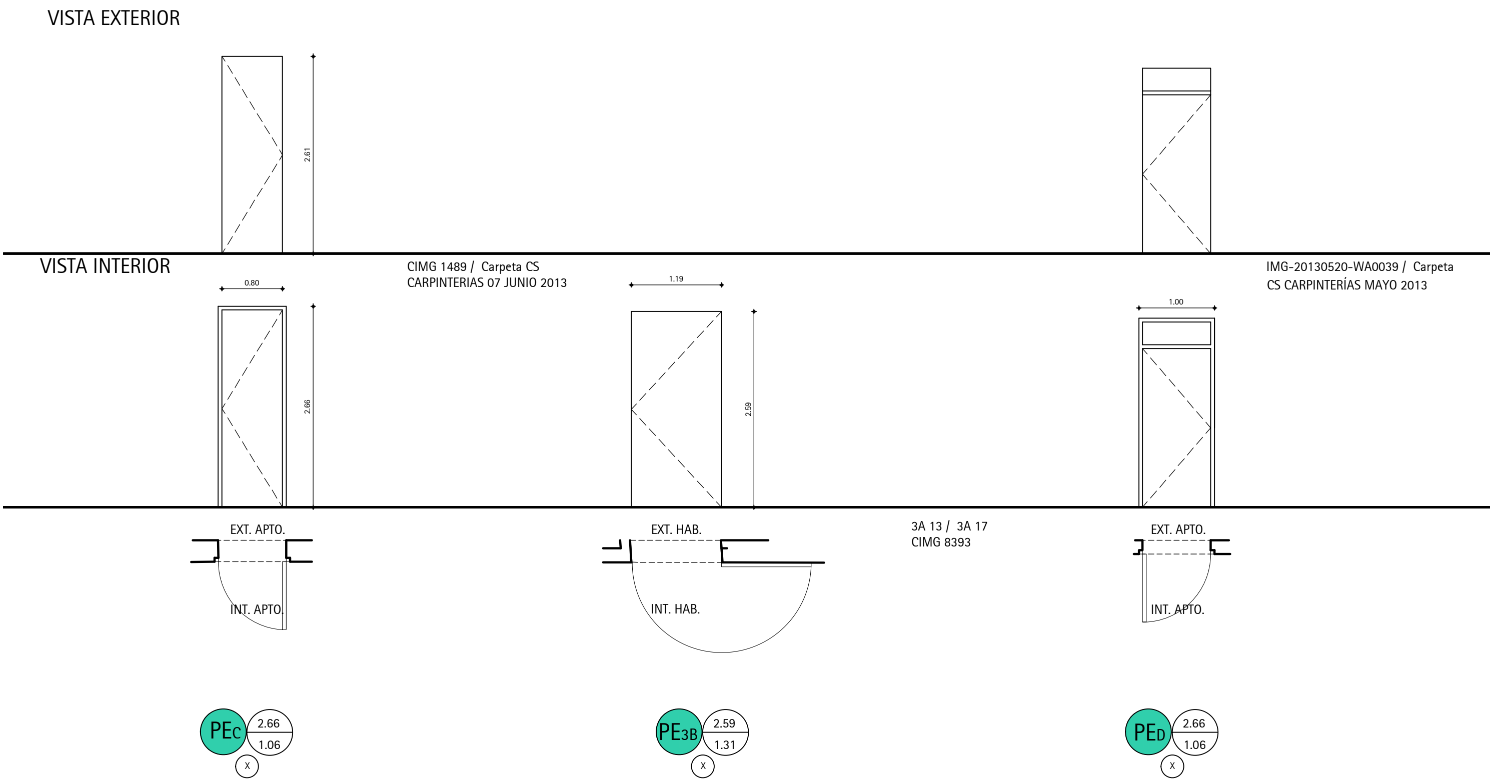
TOTAL
1 UNIDAD
PLANTA PISO 2
PISO 2 A
1 UD. SALÓN

PUERTA EXISTENTE A RECUPERAR
PARA PINTAR.
LAS MEDIDAS INCLUYEN LOS
MARCOS.
MANETAS Y HERRAJES, NUEVOS
PE 2B

TOTAL
1 UNIDAD
PLANTA PISO 2
PISO 2 A
1 UD. SALÓN

PUERTA EXISTENTE A RECUPERAR
PARA PINTAR.
LAS MEDIDAS INCLUYEN LOS
MARCOS.
MANETAS Y HERRAJES, NUEVOS
PE 2A

TOTAL
1 UNIDAD
PLANTA PISO 2
PISO 2 B
1 UD. SALÓN



PUERTA EXISTENTE A RECUPERAR,
PARA PINTAR.
LAS MEDIDAS INCLUYEN LOS
MARCOS.
MANETAS Y HERRAJES, NUEVOS
PE C

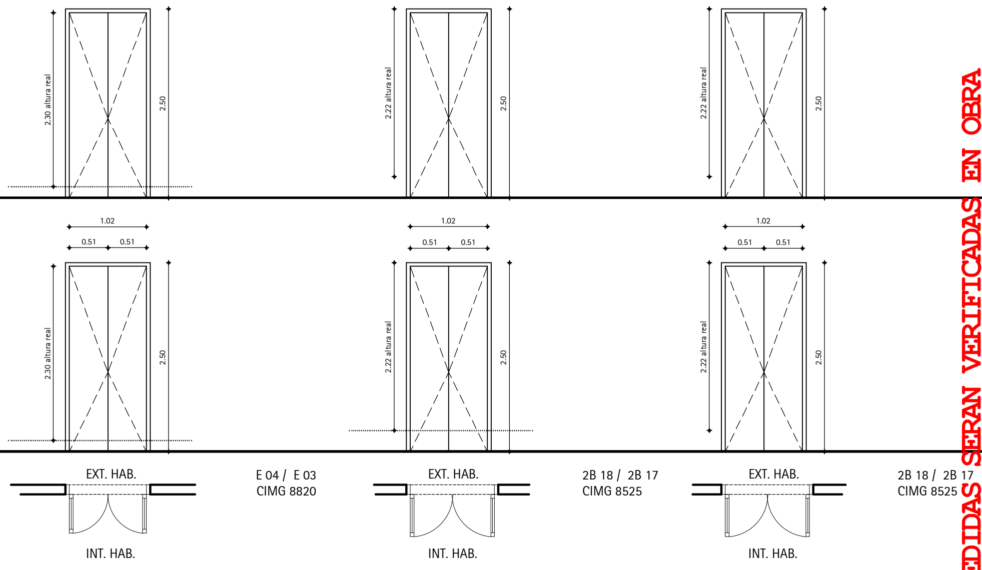
TOTAL
1 UNIDAD
PLANTA PISO 3
PISO 3 A
1 UD. SALÓN

PUERTA EXISTENTE A RECUPERAR
PARA PINTAR.
LAS MEDIDAS INCLUYEN LOS
MARCOS.
MANETAS Y HERRAJES, NUEVOS
PE 3B

TOTAL
1 UNIDAD
PLANTA PISO 3
PISO 3 A
1 UD. SALÓN

PUERTA EXISTENTE A RECUPERAR,
PARA PINTAR.
LAS MEDIDAS INCLUYEN LOS
MARCOS.
MANETAS Y HERRAJES, NUEVOS
PE D

TOTAL
1 UNIDAD
PLANTA PISO 3
PISO 3 B
1 UD. SALÓN



*TODAS LAS MEDIDAS SERAN VERIFICADAS EN OBRA

CE2C 2.30 / 1.12 (X)

CRISTALERA EXISTENTE A RECUPERAR, PARA PINTAR.
LAS MEDIDAS NO INCLUYEN LOS MARCOS. LA ALTURA FINAL, SERÁ DE 2.50 m (INCLUYENDO MARCOS) . SERÁ NECESARIO AGREGAR PLAFÓN INFERIOR.
CE 2C

TOTAL
1 UNIDAD
PLANTA PISO 2
PISO 2 B
1 UD. DESPENSA

CE2D 2.22 / 1.22 (X) Cristalera

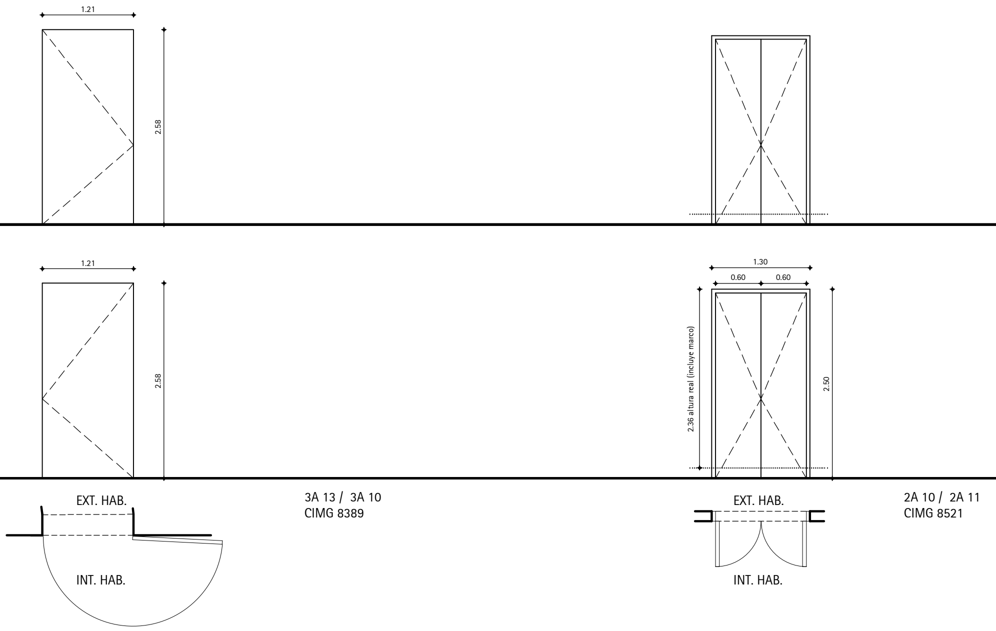
CRISTALERA EXISTENTE A RECUPERAR, PARA PINTAR.
LAS MEDIDAS INCLUYEN LOS MARCOS LA ALTURA FINAL, SERÁ DE 2.50 m (INCLUYENDO MARCOS) . SERÁ NECESARIO AGREGAR PLAFÓN INFERIOR.
CE 2D

TOTAL
1 UNIDAD
PLANTA PISO 2
PISO 2 B
1 UD. LAVANDERÍA

CE2E 2.22 / 1.22 (X) Cristalera

CRISTALERA EXISTENTE A RECUPERAR, PARA PINTAR.
LAS MEDIDAS INCLUYEN LOS MARCOS LA ALTURA FINAL, SERÁ DE 2.50 m (INCLUYENDO MARCOS) . SERÁ NECESARIO AGREGAR PLAFÓN INFERIOR.
CE 2E

TOTAL
1 UNIDAD
PLANTA PISO 2
PISO 2 B
1 UD. VESTIDOR



PE3A 2.58 / 1.21 (0)

PUERTA EXISTENTE A RECUPERAR PARA PINTAR.
LAS MEDIDAS INCLUYEN LOS MARCOS.
MANETAS Y HERRAJES, NUEVOS
PE 3A

TOTAL
1 UNIDAD
PLANTA PISO 3
PISO 3 B
1 UD. SALÓN

PE3M 2.36 / 1.30 (X)

CRISTALERA EXISTENTE A RECUPERAR, PARA PINTAR.
LAS MEDIDAS INCLUYEN LOS MARCOS LA ALTURA FINAL, SERÁ DE 2.50 m (INCLUYENDO MARCOS) . SERÁ NECESARIO AGREGAR PLAFÓN INFERIOR.
PE 3M

TOTAL
1 UNIDAD
PLANTA PISO 3
PISO 3 B
1 UD. LAVANDERÍA / VESTIDOR

CARPINTERÍA EXISTENTE

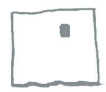
OBRA

Fecha: 24.FEBRERO.2014
Plano: PLANILLA DE CARPINTERÍAS
Escala: 1.100
Propietario/promotor: INDOVINATE S.L.

Proyecto: MODIFICACIÓN DURANTE EL TRANSCURSO DE LAS OBRAS DE PROYECTO BÁSICO Y DE EJECUCIÓN DE REFORMA Y REHABILITACIÓN DE EDIFICIO CAN O'RYAN

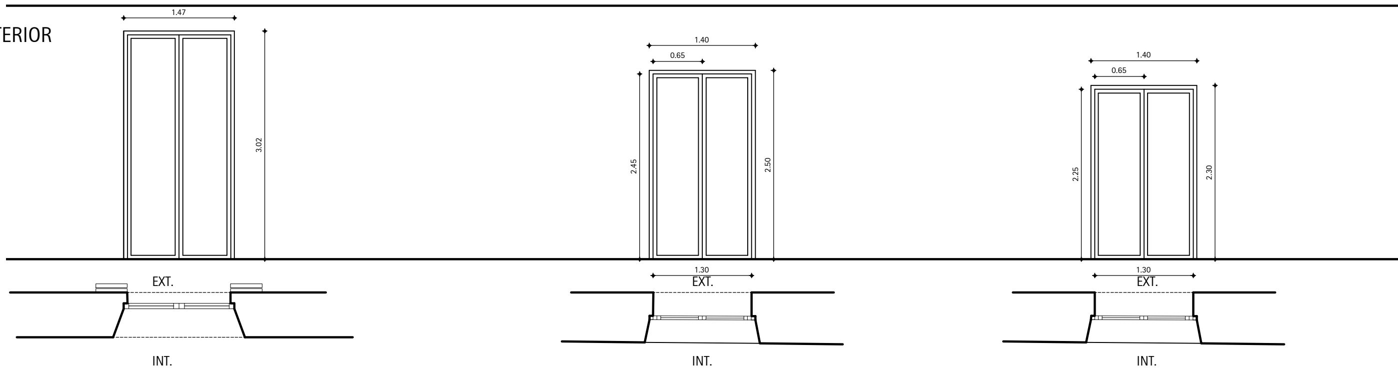
Emplazamiento: RIALTO LIVING Carrer de Sant Feliu, 3 Palma de Mallorca

info@bastidasarchitects.com
Tel.0034.971256252



VISTA EXTERIOR

VISTA INTERIOR



CE1 3.02 / 1.47 (M)

CRISTALERA EXISTENTE A RECUPERAR, PARA PINTAR.
COMPROBAR TODAS LAS MEDIDAS EN OBRA.

CE 1

TOTAL

4 UNIDADES

PLANTA PISO 2

PISO 2 A

2 UDS. SALÓN

PISO 2 B

2 UDS. SALÓN

CE2 2.45 / 1.30 (X)

CRISTALERA EXISTENTE A RECUPERAR, PARA PINTAR.
COMPROBAR TODAS LAS MEDIDAS EN OBRA.

CE 2

TOTAL

18 UNIDADES

PLANTA PISO 2

PISO 2 A		PISO 2 B	
1 UD.	COMEDOR	1 UD.	SALÓN
1 UD.	SALÓN	1 UD.	PASO 2
1 UD.	DORMITORIO 1	1 UD.	DORMITORIO 1
3 UDS.	DORMITORIO 2	1 UD.	DORMITORIO 2

PLANTA PISO 3

PISO 3 A		PISO 3 B	
1 UD.	COMEDOR	1 UD.	PASO 4
1 UD.	PASO 2	3 UDS.	DORMITORIO 2
1 UD.	SALÓN		
1 UD.	DORMITORIO 2		

CE2' 2.25 / 1.30 (X)

CRISTALERA EXISTENTE A RECUPERAR, PARA PINTAR.
COMPROBAR TODAS LAS MEDIDAS EN OBRA.

CE 2'

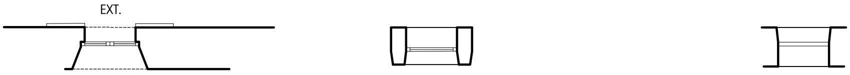
TOTAL

2 UNIDADES

PLANTA PISO 2

PISO 2 B

2 UDS. DORMITORIO 2



VE1	VE2	VE3
0.69 / 1.26 / XXX / O	0.64 / 1.25 / 1.10 / M	0.59 / 1.13 / 1.10 / O
VENTANA EXISTENTE A RECUPERAR, PARA PINTAR. COMPROBAR TODAS LAS MEDIDAS EN OBRA. VE 1	VENTANA EXISTENTE A RECUPERAR, PARA PINTAR. COMPROBAR TODAS LAS MEDIDAS EN OBRA. VE 2	VENTANA EXISTENTE A RECUPERAR, PARA PINTAR. COMPROBAR TODAS LAS MEDIDAS EN OBRA. VE 3
TOTAL	TOTAL	TOTAL
2 UNIDADES	20 UNIDADES	2 UNIDADES
PLANTA PISO 2	PLANTA PISO 3	PLANTA PISO 3
PISO 2 B	PISO 3 A	PISO 3 A
2 UDS. SALÓN	10 UDS. SALÓN	2 UDS. SALÓN
	PISO 3 B	
	10 UDS. SALÓN	

*TODAS LAS MEDIDAS SERAN VERIFICADAS EN OBRA

Proyecto: MODIFICACIÓN DURANTE EL TRANSCURSO DE LAS OBRAS DE PROYECTO BÁSICO Y DE EJECUCIÓN DE REFORMA Y REHABILITACIÓN DE EDIFICIO CAN O'RYAN

Plano: PLANILLA DE CARPINTERÍAS

Escala: 1.100

Fecha: 24.FEBRERO.2014

Emplazamiento: RIALTO LIVING

Propietario/promotor:

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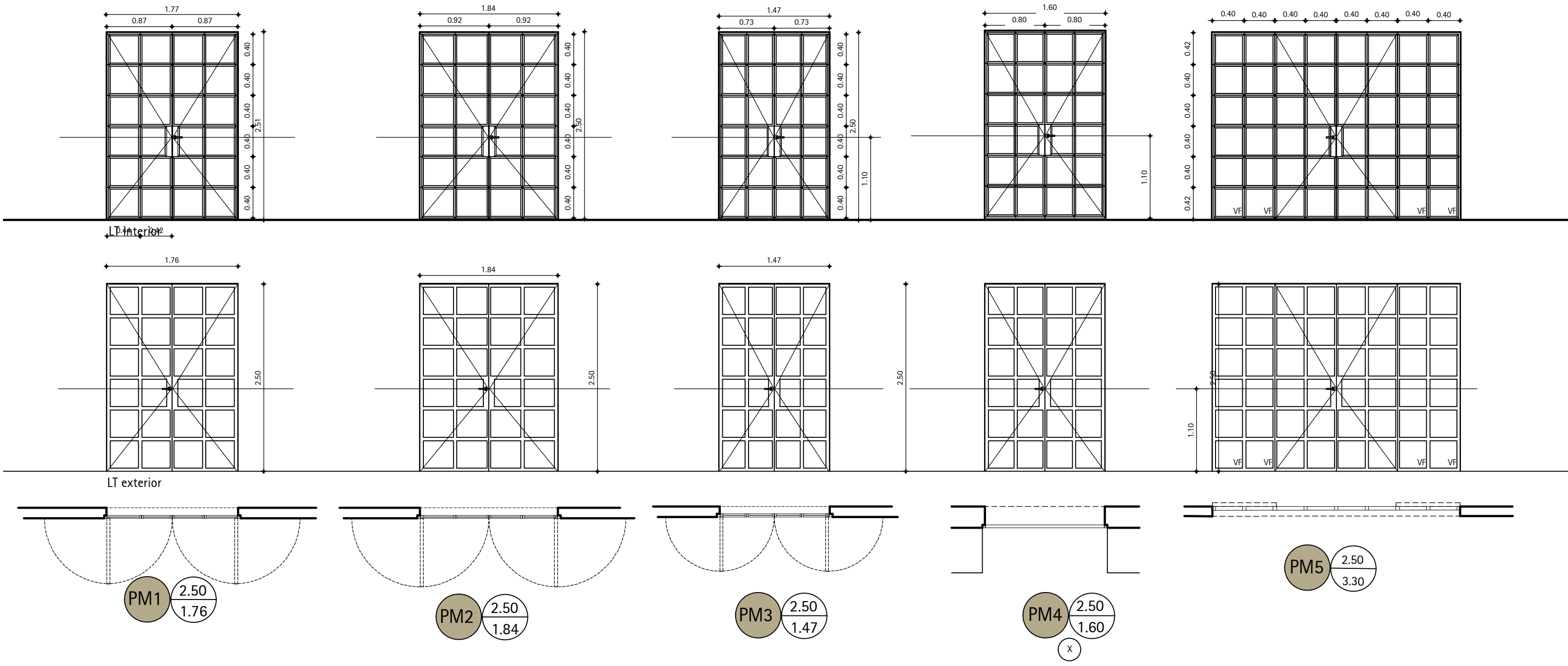
Tel.0034.971256

CARPINTERÍA EXISTENTE

CARPINTERÍA METÁLICA INTERIOR



PUERTA METÁLICA, PARA PINTAR.
CRISTAL CLIMALIT
MANETA A DEFINIR.
PM 1

PUERTA METÁLICA, PARA PINTAR.
CRISTAL CLIMALIT
MANETA A DEFINIR.
PM 2

PUERTA METÁLICA, PARA PINTAR.
CRISTAL CLIMALIT
MANETA A DEFINIR.
PM 3

PUERTA METÁLICA, PARA PINTAR.
CRISTAL CLIMALIT
MANETA A DEFINIR.
PM 4

PUERTA METÁLICA, PARA PINTAR.
CRISTAL CLIMALIT
MANETA A DEFINIR.
PM 5

TOTAL
1 UNIDAD
PLANTA PISO 2
PISO 2 A
1 UD. COCINA

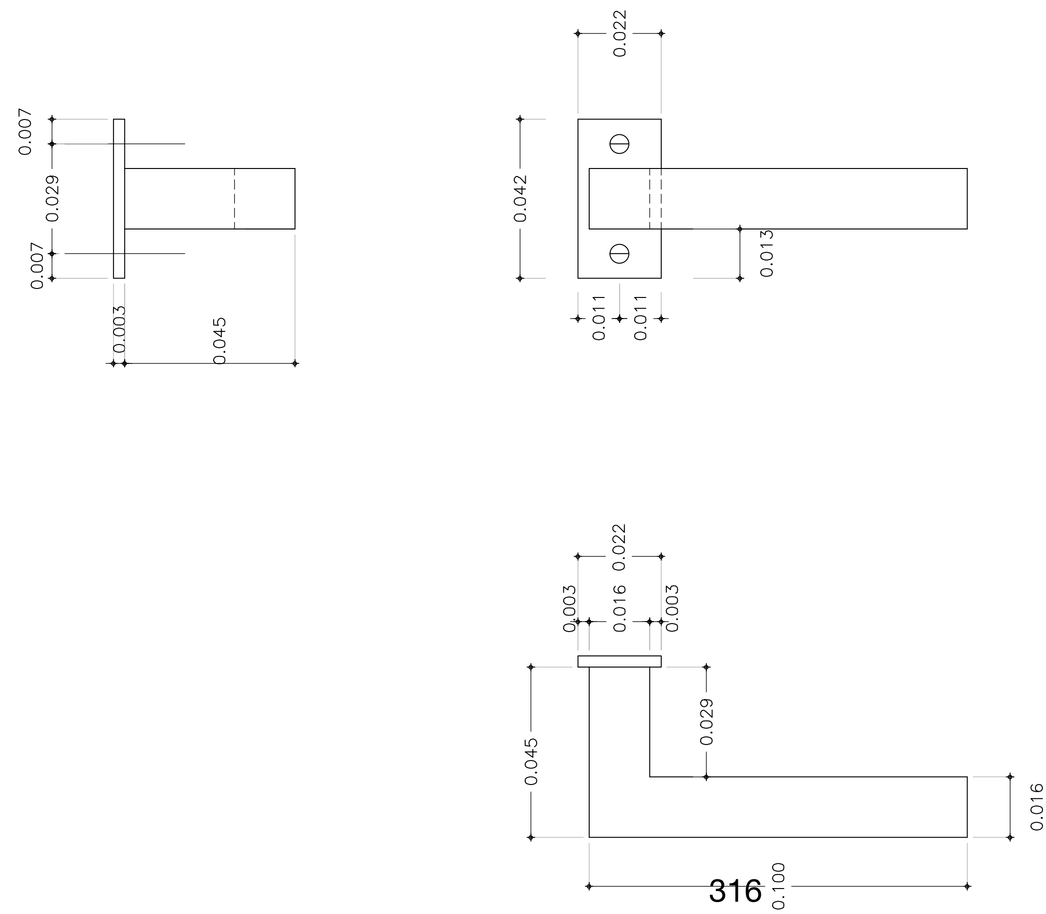
TOTAL
1 UNIDAD
PLANTA PISO 2
PISO 2 B
1 UD. COCINA

TOTAL
1 UNIDAD
PLANTA PISO 2
PISO 2 B
1 UD. COCINA

TOTAL
1 UNIDAD
PLANTA PISO 3
PISO 3 A
1 UD. COCINA

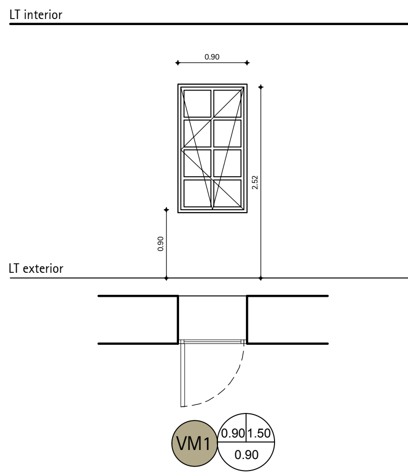
TOTAL
1 UNIDAD
PLANTA PISO 3
PISO 3 A
1 UD. COCINA

CARPINTERÍA METÁLICA EXTERIOR



DETALLE MANETAS
ESC..: 1.5

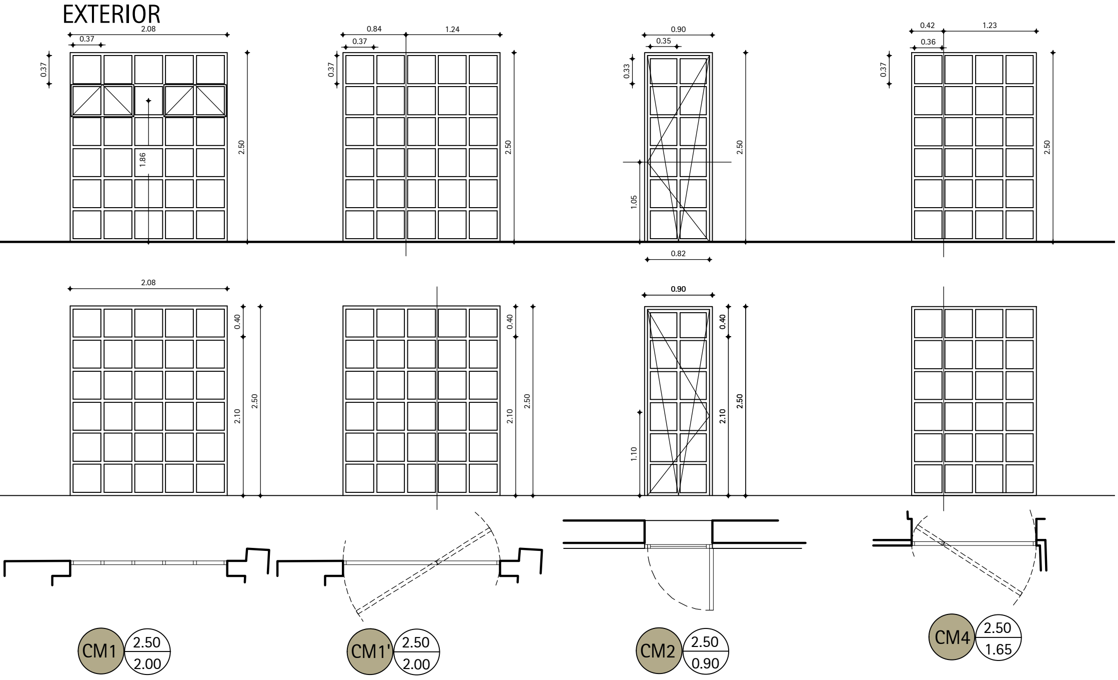
CARPINTERÍA METÁLICA EXTERIOR



VENTANA METÁLICA, OSCILOBATIENTE, PARA PINTAR.
CRISTAL CLIMALIT
MANETA A DEFINIR.
VM 2

TOTAL
3 UNIDADES
PLANTA PISO 2
PISO 2 A
3 UDS. PASO 4

CARPINTERÍA METÁLICA EXTERIOR



CM1	2.50 / 2.00

CRISTALERA METÁLICA, FIJA, PARA PINTAR.
CRISTAL CLIMALIT
DETALLES DE PERFILERIA A TRATAR CON HERRERO
CM 1

TOTAL
5 UNIDADES
PLANTA PISO 2 Y 3
PISO 2 A
1 UD. PASO 3
2 UD. PASO 5
1 UD. DORMITORIO 3
PISO 3 A
1 UD. PASO 3

CM1'	2.50 / 2.00

CRISTALERA METÁLICA, PIVOTANTE, PARA PINTAR.
CRISTAL CLIMALIT
MANETA A DEFINIR.
CM 1'

TOTAL
2 UNIDADES
PLANTA PISO 2
PISO 2 A
1 UD. BAÑO 3
1 UD. PASO 5

CM2	2.50 / 0.90

CRISTALERA METÁLICA, OSCILOBATIENTE, PARA PINTAR.
CRISTAL CLIMALIT
MANETA A DEFINIR.
CM 2

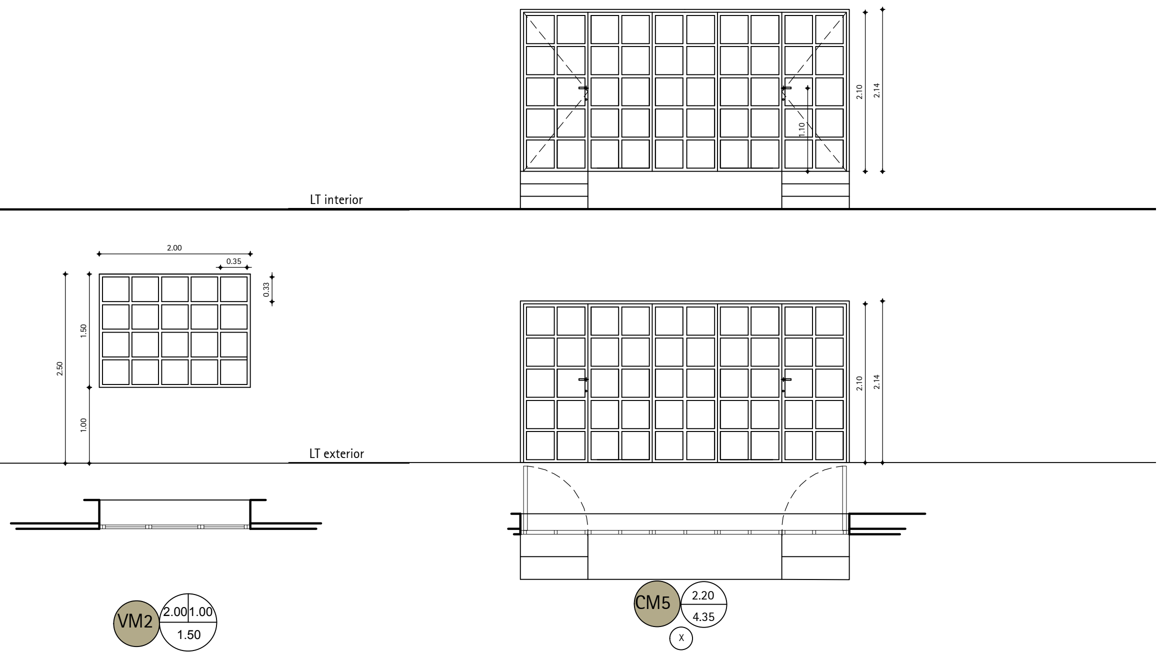
TOTAL
8 UNIDADES
PLANTA PISO 2
PISO 2 A
3 UDS. DORMITORIO 4
PISO 2 B
1 UD. COMEDOR
PLANTA PISO 3
PISO 3 A
3 UDS. DORMITORIO 3
PISO 3 B
1 UD. DORMITORIO 1

CM4	2.50 / 1.65

CRISTALERA METÁLICA, PIVOTANTE PARA PINTAR.
CRISTAL CLIMALIT
MANETA A DEFINIR.
CM 4

TOTAL
3 UNIDADES
PLANTA PISO 2
PISO 2 B
1 UD. COMEDOR
1 UD. SALÓN
PLANTA PISO 3
PISO 3 B
1 UD. DORMITORIO 1

CARPINTERÍA METÁLICA EXTERIOR



VM2	2.00 / 1.00 / 1.50

VENTANA METÁLICA, FIJA, PARA PINTAR.
CRISTAL CLIMALIT
VM 2

TOTAL
1 UNIDAD
PLANTA PISO 2
PISO 2 A
1 UD. DORMITORIO 4

CM5	2.20 / 4.35

CRISTALERA XXXX
PARA PINTAR.
CRISTAL CLIMALIT
MANETA A DEFINIR.
CM 5

TOTAL
2 UNIDADES
PLANTA PISO 3
PISO 3 A
1 UD. DORMITORIO 2
1 UD. DORMITORIO 3

CARPINTERÍA METÁLICA

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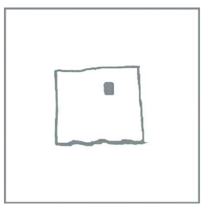
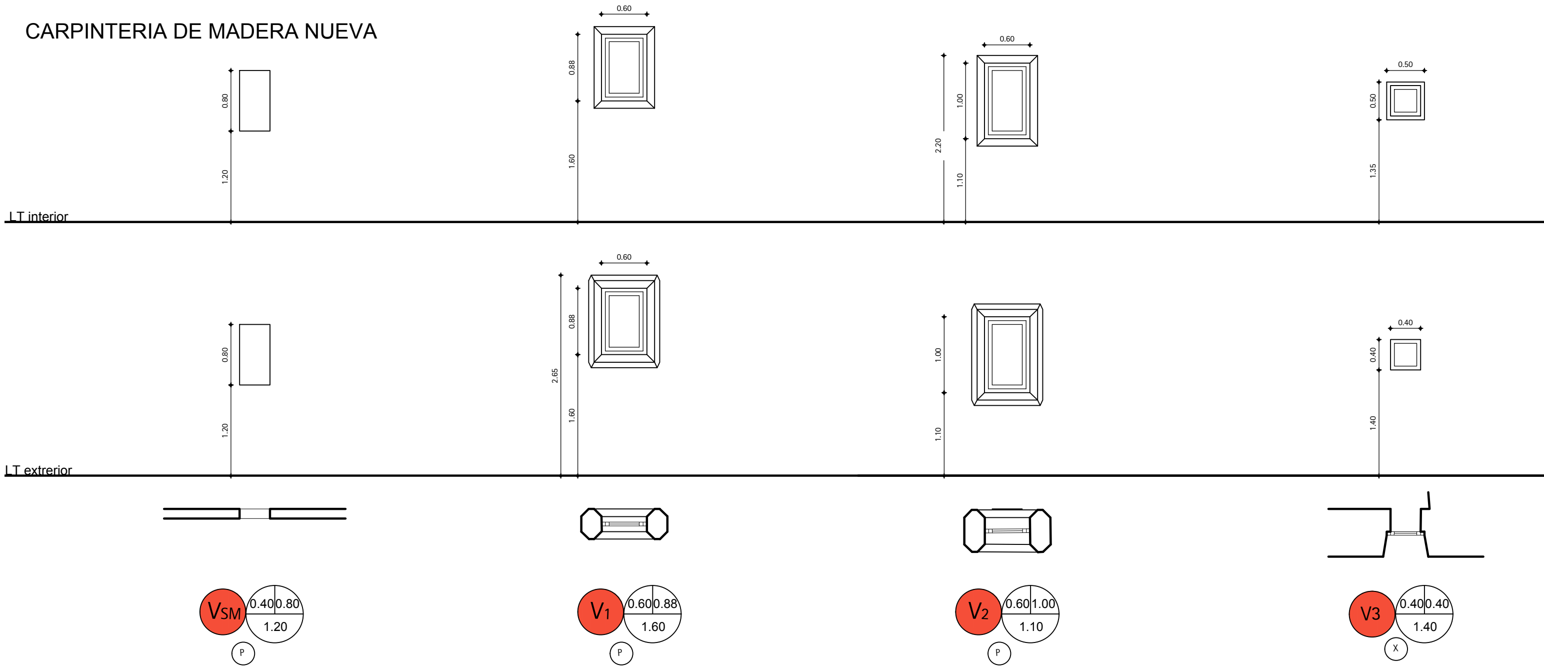
Tel.0034.971256252



CARPINTERIA DE MADERA NUEVA



VENTANA NUEVA, PARA PINTAR.
LAS MEDIDAS SON DE HUECO.
MANETAS Y HERRAJES, NUEVOS.
V SM

TOTAL
2 UNIDADES

PLANTA PISO 2

PISO 2 A

2 UDS. SALÓN MARROQUI

VENTANA NUEVA, PARA PINTAR.
LAS MEDIDAS SON DE HUECO.
MANETAS Y HERRAJES, NUEVOS.
V 1

TOTAL
20 UNIDADES

PLANTA PISO 2

PISO 2 A y PISO 2 B

20 UDS. PATIO INTERIOR

VENTANA NUEVA, PARA PINTAR.
LAS MEDIDAS SON DE HUECO.
MANETAS Y HERRAJES, NUEVOS.
V 2

TOTAL
46 UNIDADES

PLANTA PISO 2

PISO 2 A

10 UDS. SALÓN MARROQUI, DESPENSA Y COCINA

PLANTA PISO 3

PISO 3 A y 3 B

7 UDS. COCINA, LAVANDERÍA Y SALÓN MARROQUÍ
16 UDS. PATIO INTERIOR

PLANTA PISO 4

PISO 4 B

13 UDS. COCINA, LAVANDERÍA Y SALÓN MARROQUÍ
(ESTAS. SERÁN RECERCADAS CON SANTANYI, TAMBIÉN EN EL INTERIOR)

VENTANA NUEVA, PARA PINTAR.
LAS MEDIDAS SON DE HOJA.
MANETAS Y HERRAJES, NUEVOS.
V 3

TOTAL
3 UNIDADES

PLANTA PISO 2

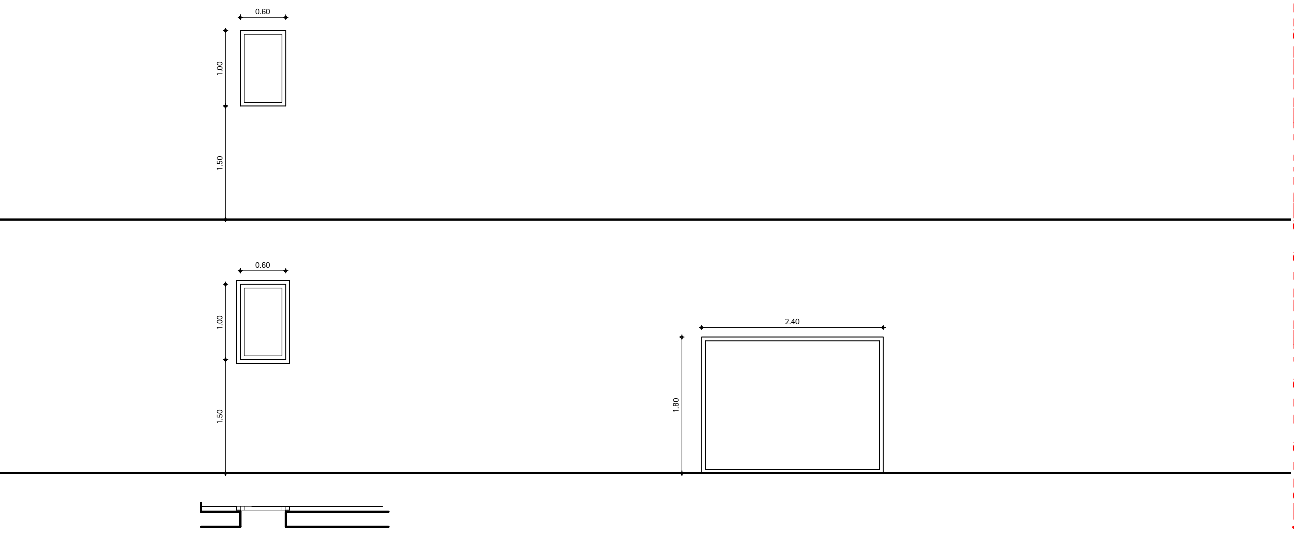
PISO 2 A

1 UD. BAÑO 1
1 UD. BAÑO 2

PLANTA PISO 3

PISO 3 A

1 UD. VESTIDOR



*TODAS LAS MEDIDAS SERAN VERIFICADAS EN OBRA

V4 — 0.60 | 1.00 | 1.50 — X

VENTANA NUEVA, EN HUECO EXISTENTE, PARA PINTAR.
LAS MEDIDAS SON SEGÚN PROYECTO.
OSCILOBATIENTE
ATENCIÓN! EN ZONAS HÚMEDAS MANETAS Y HERRAJES, NUEVOS. V 4

TOTAL
15 UNIDADES

PLANTA PISO 2

PISO 2 A
1 UD. BAÑO 4

PISO 2 B
1 UD. BAÑO 2
1 UD. LAVANDERÍA
1 UD. VESTIDOR

PLANTA PISO 3

PISO 3 A
2 UD. BAÑO 1
1 UD. BAÑO 3
2 UDS. DORMITORIO 1

PISO 3 B
2 UD. LAVANDERÍA
1 UD. ASEO
2 UD. BAÑO 1

PISO 4 A
1 UD. BAÑO 1

V10 — 2.40 | 1.80 | 0.00 — X

VENTANA NUEVA, PARA PINTAR.
LAS MEDIDAS SON DE HUECO
V 10

TOTAL
1 UNIDAD

PLANTA PISO 4

PISO 4 A
1 UD. DORMITORIO 1

Proyecto: MODIFICACIÓN DURANTE EL TRANSCURSO DE LAS OBRAS DE PROYECTO BÁSICO Y DE EJECUCIÓN DE REFORMA Y REHABILITACIÓN DE EDIFICIO CAN O'RYAN

Plano: PLANILLA DE CARPINTERÍAS

Escala: 1.100

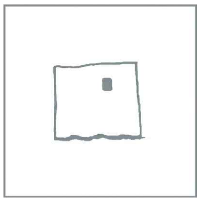
Fecha: 24.FEBRERO.2014

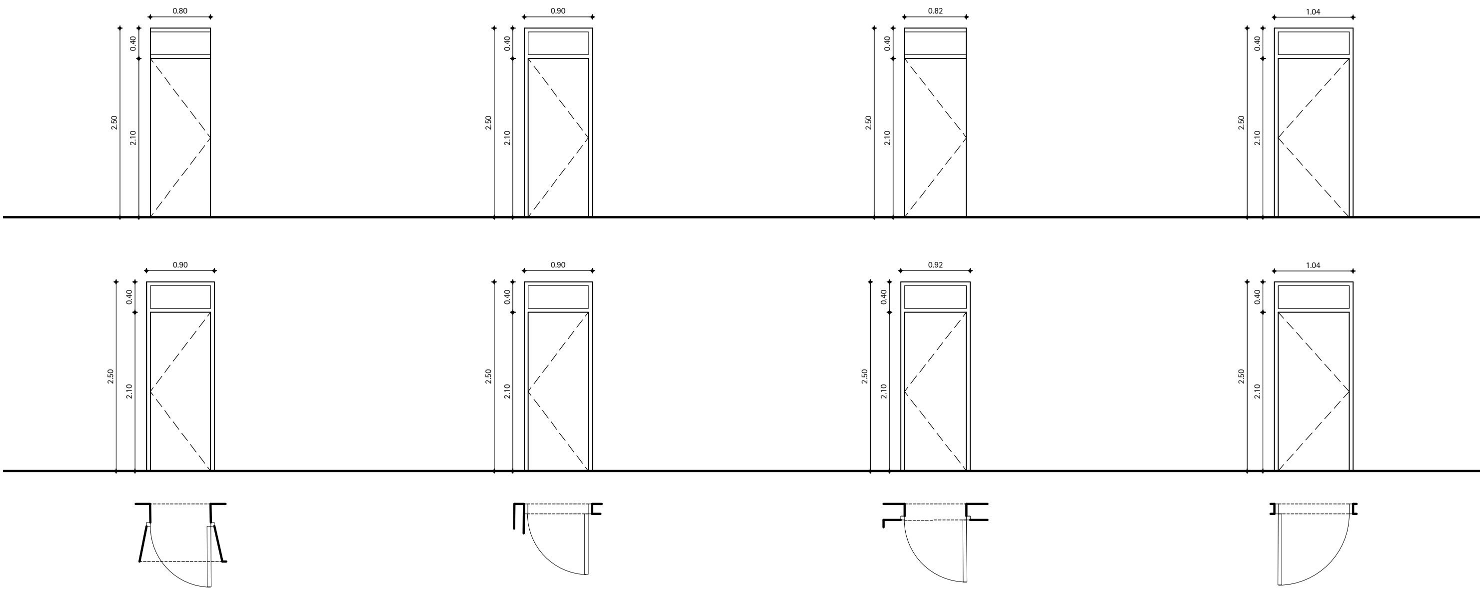
Emplazamiento: RIALTO LIVING
Carrer de Sant Feliu, 3
Palma de Mallorca

Propietario/promotor: INDOVINATE S.L.

OBRA

info@bastidasarchitects.com
Tel.0034.971256252





P1 2.50 / 0.80
X

PUERTA NUEVA, PARA PINTAR.
LAS MEDIDAS SON DE HOJA.
MANETAS Y HERRAJES, NUEVOS.
P 1

TOTAL
4 UNIDADES
PLANTA PISO 2
PISO 2 A
1 UD. ASEO
PLANTA PISO 3
PISO 3 A
1 UD. BAÑO 1
1 UD. BAÑO 2
1 UD. PASO 3

P1' 2.50 / 0.80
X

PUERTA NUEVA, PARA PINTAR.
LAS MEDIDAS SON DE HOJA.
MANETAS Y HERRAJES, NUEVOS.
P 1'

TOTAL
2 UNIDADES
PLANTA PISO 2
PISO 2 A
1 UD. DESPENSA
PLANTA PISO 3
PISO 3 A
1 UD. LAVANDERÍA

P2 2.50 / 0.82
X

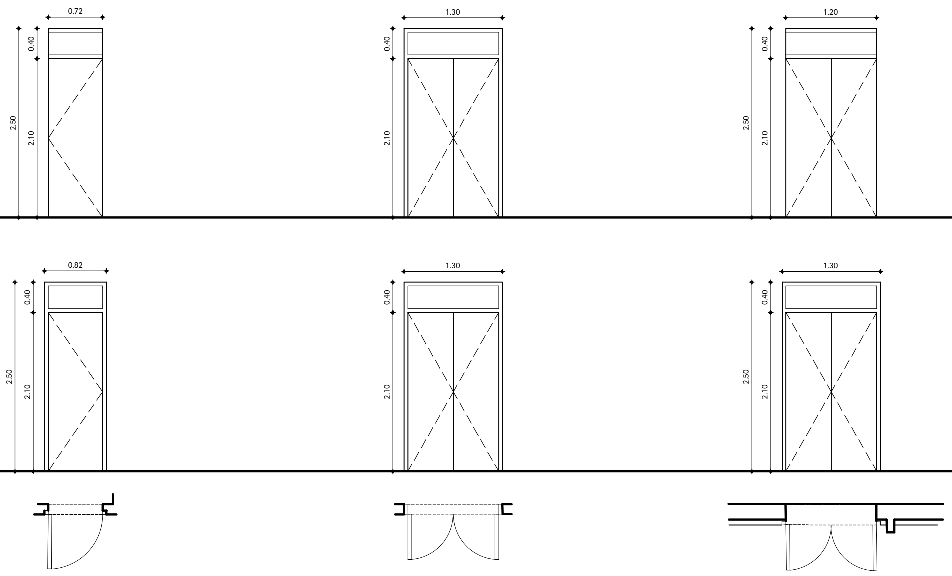
PUERTA NUEVA, PARA PINTAR.
LAS MEDIDAS SON DE HOJA.
MANETAS Y HERRAJES, NUEVOS.
P 2

TOTAL
4 UNIDADES
PLANTA PISO 2
PISO 2 A
1 UD. LAVANDERÍA
1 UD. DORMITORIO 1
PLANTA PISO 4
PISO 4 A
1 UD. DORMITORIO 2
1 UD. BAÑO 2
PISO 4 B
1 UD. DORMITORIO

P3 2.50 / 0.94
X

PUERTA NUEVA, PARA PINTAR.
LAS MEDIDAS SON DE HOJA.
MANETAS Y HERRAJES, NUEVOS.
P 3

TOTAL
2 UNIDADES
PLANTA PISO 4
SALA DE MÁQUINAS
2 UD. ACCESO SALA DE MÁQUINAS



P4 2.50 / 0.72 X

PUERTA NUEVA, PARA PINTAR.
LAS MEDIDAS SON DE HOJA.
MANETAS Y HERRAJES, NUEVOS.

P 4

TOTAL
4 UNIDADES
PLANTA PISO 2
PISO 2 A
1 UD. BAÑO 2
PLANTA PISO 4
PISO 4 A
1 UD. DESPENSA
1 UD. ZONA RESIDUAL
SALA DE MÁQUINAS
1 UD. ZONA RESIDUAL

P5 2.50 / 1.20 X

PUERTA NUEVA, PARA PINTAR.
LAS MEDIDAS SON DE HOJA.
MANETAS Y HERRAJES, NUEVOS.

P 5

TOTAL
2 UNIDADES
PLANTA PISO 2
PISO 2 A
1 UD. BAÑO 4
PLANTA PISO 3
PISO 3A
1 UD. BAÑO 3

P5' 2.50 / 1.20 X

PUERTA NUEVA, PARA PINTAR.
LAS MEDIDAS SON DE HOJA.
MANETAS Y HERRAJES, NUEVOS.

P 5'

TOTAL
3 UNIDADES
PLANTA PISO 2
PISO 2 A
1 UD. LAVANDERÍA
PLANTA PISO 3
PISO 3 A
1 UD. SALÓN MARROQUÍ
PLANTA PISO 4
PISO 4 B
1 UD. DORMITORIO

*TODAS LAS MEDIDAS SERAN VERIFICADAS EN OBRA

Proyecto: MODIFICACIÓN DURANTE EL TRANSCURSO DE LAS OBRAS DE PROYECTO BÁSICO Y DE EJECUCIÓN DE REFORMA Y REHABILITACIÓN DE EDIFICIO CAN O'RYAN

Plano: PLANILLA DE CARPINTERÍAS

Escala: 1.100

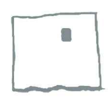
Fecha: 24.FEBRERO.2014

Emplazamiento: RIALTO LIVING
Carrer de Sant Feliu, 3
Palma de Mallorca

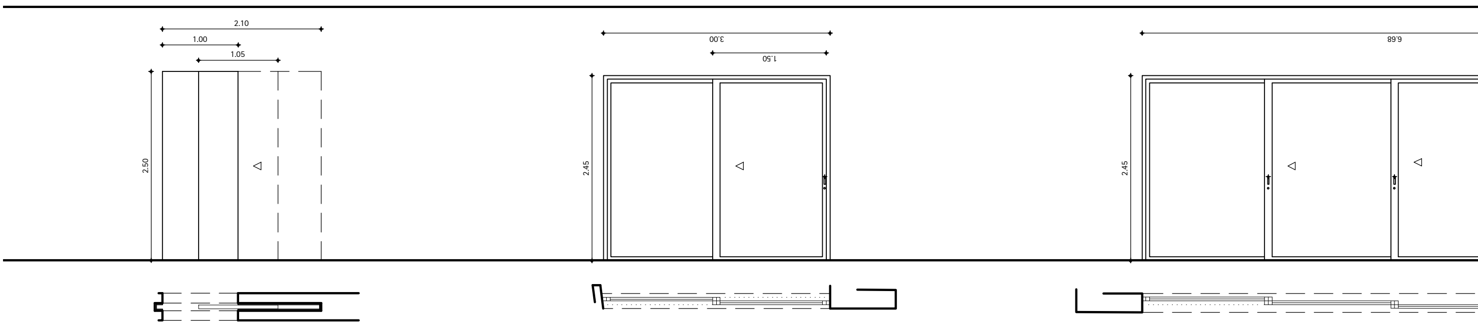
Propietario/promotor: INDOVINATE S.L.

OBRA

info@bastidasarchitects.com
Tel.0034.971256252



CARPINTERÍA DE MADERA NUEVA



P6 2.50 / 1.10
X

PUERTA NUEVA, PARA PINTAR.
LAS MEDIDAS SON DE HOJA.
MANETAS Y HERRAJES, NUEVOS.

P 6

TOTAL
3 UNIDADES

PLANTA PISO 4

PISO 4 A
1 UD. DORMITORIO 1
1 UD. BAÑO 1

PISO 4 B
1 UD. BAÑO

C1 2.45 / 3.00
X

PUERTA NUEVA, PARA PINTAR.
LAS MEDIDAS SON DE HUECO.
MANETAS Y HERRAJES, NUEVOS.

C 1

TOTAL
1 UNIDAD

PLANTA PISO 4

PISO 4 A
1 UD. DORMITORIO

C2 2.45 / 6.675
X

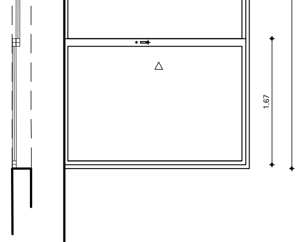
PUERTA NUEVA, PARA PINTAR.
LAS MEDIDAS SON DE HUECO
MANETAS Y HERRAJES, NUEVOS.

C 2

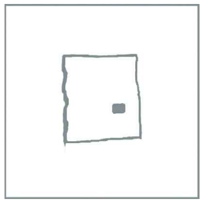
TOTAL
1 UNIDAD

PLANTA PISO 4

PISO 4 A
1 UD. SALÓN



***TODAS LAS MEDIDAS SERAN VERIFICADAS EN OBRA**



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Proyecto:	MODIFICACIÓN DURANTE EL TRANSCURSO DE LAS OBRAS DE PROYECTO BÁSICO Y DE EJECUCIÓN DE REFORMA Y REHABILITACIÓN DE EDIFICIO CAN O'RYAN	Plano:	PLANILLA DE CARPINTERÍAS
		Escala: 1.100	Fecha: 24.FEBRERO.2014
Emplazamiento:	RIALTO LIVING Carrer de Sant Feliu, 3 Palma de Mallorca	Propietario/promotor: INDOVINATE S.L.	OBRA